High prevalence of risk factors for non-communicable diseases in university students of a nursing course

Elevada prevalência de fatores de risco para doenças crônicas não transmissíveis em universitários de enfermagem

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Abstract

Background: The inadequate lifestyle of university students can contribute to the occurrence of chronic noncommunicable diseases (NCD). **Objective:** To evaluate the prevalence of NCD risk and prevention factors and verify gender differences for healthy habits among nursing students. **Method:** A cross-sectional study with 974 nursing students. A self-administered questionnaire on health-related life habits was used in the study. **Results:** Of the 974 students, 78.7% were women, 62.6% were between 20-29 years of age, 65.1% consumed alcohol, 57.4% did not do physical activity, and 34.7% were overweight. The women (41.9%) drank more full-fat milk, while the men drank more soft drinks and routinely consumed more meat with fat. The students who did not engage in physical activity smoked more (p<0.01), consumed less fruit (p<0.01), less salad (p<0.01), and less vegetables (p<0.01), and consumed more soft drinks (p=0.03), and meat with fat (p=0.04). In the physically inactive students, a high prevalence of diabetes mellitus (p=0.03) and high cholesterol (p<0.01) was observed. **Conclusion:** The results show a clear profile of NCD risk factors among university students, highlighting the need to implement educational programs to reduce these factors.

Keywords: prevention; chronic diseases; lifestyle; health promotion.

Resumo

Introdução: O estilo de vida inadequado dos universitários pode contribuir para o aparecimento de doenças crônicas não transmissíveis (DCNT). **Objetivo:** Avaliar a prevalência de fatores de risco e proteção para DCNT e verificar as diferenças de gêneros em hábitos saudáveis de estudantes de enfermagem. **Método:** Estudo transversal com 974 estudantes. Foi utilizado um questionário sobre os hábitos de vida relacionados à saúde. **Resultados:** Dos 974 alunos, 78,7% eram mulheres, 62,6% com idade entre 20-29 anos, 65,1% consumiam álcool, 57,4% não realizavam atividade física (AF), e 34,7% tinham sobrepeso. As mulheres (41,9%) apresentavam maior prevalência no consumo de leite com gordura, e os homens consumiam mais refrigerante e tinham o hábito de comer mais carne com gordura. Os universitários que não realizavam AF fumavam mais (p<0,01), apresentavam consumo baixo de frutas (p<0,01), saladas (p<0,01) e verduras (p<0,01), e consumiam mais refrigerante (p=0,03) e carne com gordura (p=0,04). Observamos que os estudantes fisicamente inativos tinham elevada prevalência para desenvolverem diabetes mellitus (p=0,03) e colesterol elevado (p<0,01). **Conclusão:** Os resultados mostram um perfil elevado de fatores de risco para DCNT entre os universitários, mostrando assim a necessidade de implementar programas educacionais, a fim de reduzir esses fatores.

Palavras-chave: prevenção; doenças crônicas; estilo de vida; promoção da saúde.

INTRODUCTION

Non-communicable diseases (NCD) are the main cause of death worldwide. Such chronic diseases have led to a high incidence of premature death and loss of quality of life with significant work and leisure-related consequences, besides having an economic impact on families, communities and society as a whole due to increased inequality and poverty[1].

In Brazil, they are the major health problem and correspond to 72% of total deaths[2]. The main NCDs are circulatory diseases, mainly systemic hypertension, cancer, diabetes mellitus (DM), and chronic respiratory disease[3].

These diseases have common modifiable risk factors, such as smoking, alcohol abuse, sedentary lifestyle, inadequate diet, and obesity[4]. Non-communicable diseases and complications become clinically apparent long after the sufferer´s exposure to the risk factors and an asymptomatic period[5]. Young people, especially university students, are exposed to many of these risk factors.

Research conducted with students has shown that they have a predisposition to certain hazardous behaviors during their academic years[6,7]. Alcohol use, smoking, inadequate diet and lack of exercise were the most prevalent risk behaviors detected among college students[8].

University students undergo a number of physiological changes, typical of young people, as well as possible sociological and cultural changes when they start university, often leaving their family home, experiencing intense feelings of freedom and autonomy, and starting to build their future based on idealized expectations, among others[9].

In this context, universities enable new social relationships and reinforce new behaviors and habits, making students more susceptible to risk behaviors[2]. All these changes directly affect the lifestyle of university students, and risky habits may continue throughout their lives, thereby affecting their health[10]. Today, lifestyle is possibly one of the most important health determinants for the student population[11].

Studies show that, overall, students do not have a healthy lifestyle and most display three or more risk behaviors for DM, hypertension, and cardiovascular diseases[12]. Moreover, NCD risk factors are likely to increase[13].

In Brazil, studies involving university students of nursing courses are still scarce. Consequently, it is essential to assess NCD risk behaviors among university students to prevent this conduct and intervene over the short and long terms. Universities are the ideal environment to establish health promotion and disease control and prevention strategies, and influence students to adopt a healthy lifestyle.

Thus, the aims of this study were: 1) assess the prevalence of risk and prevention factors for NCD and 2) verify gender differences in healthy habits among nursing students.

METHODS

This cross-sectional study was conducted with nursing undergraduate students of a private institution in Brasília, Brazil.

The study population was composed of first to eighth-semester students who were in class on the day of data collection. The sample was randomly selected among 974 undergraduate students older than 18.

The number of participants was defined based on the guidelines on simple random sampling provided by Luiz and Magnanini[14]. The number of students per course was taken into consideration for sample size calculation. The maximum tolerable error rate was 5% and a 95% confidence level was adopted. We assumed a 50% prevalence for the outcome.

A total of 974 students (who were 18 or older) out of the total of 1,300 students enrolled in the program during the academic year of 2016 were included in the study. 326 students, representing 25% of the population, were lost due to not attending class on the day of data collection. A second attempt to include the students who missed the first data collection session was made on another day. If the student missed both opportunities, he/she was not included in the study.

We used a self-administered questionnaire on health-related life habits. All questions were obtained from the Surveillance of Risk and Protection Factors for Chronic Diseases through Telephone Interviews (VIGITEL)[15]. The questionnaire assessed the main risk and protective factors for non-communicable chronic diseases (NCCD) among adults older than age 18 and is applied on an annual, ongoing basis in all Brazilian states and the Federal District[15].

The Vigitel, weight and height measurements were self-reported. A study that compared declared anthropometric measures with those obtained directly, found good agreement on the nutritional diagnosis, determined by the two methodologies, with the authors highlighting the reliability of the measures adopted.

The following demographic variables were included in the analysis: gender (male or female); age; socioeconomic level (based on the questionnaire of the ABEP – Brazilian Association of Research Companies)[16]; alcohol consumption (heavy drinking was defined as the consumption of five or more drinks in one sitting for men and four or more drinks in one sitting for women); smoking (yes/no); and health self-perception (excellent, very good, good, fair or poor), diagnosed diseases (hypertension, diabetes and high cholesterol). The prevalence of hypertension, diabetes mellitus and high cholesterol were assessed according to the positive answer to the question "Has any doctor ever told you that you have high blood pressure / diabetes mellitus / high cholesterol?" (yes/no).

Specific questions were asked about the regularity and frequency of consumption of the following food items: fruit, greens/vegetables, and raw salad (on five or more days a week – the recommended daily intake is five servings a day or more, on five days a week or more); beans (on five or more days a week); soft drinks (five or more days a week); full fat milk (five or more days a week); meat with excess fat (red meat with visible fat and/or chicken with skin).

The level of physical activity was classified as inactive (less than 150 minutes of moderate-intensity physical activity a week or less than 75 minutes of vigorous-intensity physical activity a week accumulated across work, home, transport or discretionary areas) or active (150 or more minutes of moderate-intensity physical activity a week). WHO[17] has recommended that adults aged 18–64 years should do at least 150 min of moderate-intensity physical activity per week.

Nutritional status was assessed by calculating body mass index (BMI) [weight in kilograms divided by the square of height in meters]. Self-reported weight and height, as well as cut-off points were used in the calculation. Participants were classified as: underweight (<18.5), normal weight (18.5-24.9), overweight (25-29.9) and obese (≥30)[18].

Regarding nutrition, protective factors against non-communicable diseases were considered to be: fruit, vegetable and bean consumption at least five or more times per week. Risk factors included soft drink consumption more than five times a week and routine consumption of whole milk and meats with visible fats. A healthy life score was obtained, which was the sum of protective factors for NCDs, categorized from 1 to 5 points and from 6 to 10 points, where the healthier the habits that the participant reports the more points they accumulate.

Data collection was performed between October 2016 and May 2017 by trained researchers. The instrument was administered during the break between lessons, in a classroom with a seating capacity for 60 students. Respondents had sufficient distance from each other to maintain confidentiality. The completed questionnaire was placed in an envelope containing the group name and the course session (morning, afternoon or evening), and handed back to the researchers.

Before distributing the instrument for self-completion and the informed consent form for signing, the researchers briefly introduced themselves and explained the aims and methods of the study to the professor in charge of the class. Next, the researchers introduced themselves and the study project to the students and invited them to participate.

This study was approved by the Research Ethics Committee of the Centro Universitário do Distrito Federal – UDF (protocol number CAAE: 59713316.0.0000.5650).

Data are presented as absolute and relative frequencies and displayed with their respective 95% confidence intervals. The association between risk factors and sex and PA was analyzed using chi-square tests.

Odds ratio were calculated using logistic regression models to analyze if gender, age and socioeconomic level are (moderate/high) healthy life score predictors. Crude and adjusted models were used in the assessment (for all variables together).

A multiple correspondence analysis was conducted to test the joint relationship between risk factors, gender, physical activity and nutritional status. All statistical analyses were performed using the SAS Software, version 9.2, while correspondence analysis was conducted using SPSS, version 2.1. The level of significance was set at 5%.

RESULTS

Of the studied population, 78.7% were women and 21.3% were men, and most students, 62.6% were aged between 20 and 29. It was observed that 56.7% of the students had a socioeconomic status of class C.

Table 1 describes the sample according to demographic, socioeconomic, and health-related characteristics. It was also observed that 65.1% of the students consumed alcoholic beverages, 57.4% exercised 150 min/week or less, and 34.7% were overweight. In relation to their self-perception regarding health, 43.6% of participants stated they were in "good" health.

Table 1. Description of the sample according to students' characteristics. Brasília, FD, Brazil, 2017. (n= 974)

Variable	n	%
Sex		
Female	767	78.7
Male	207	21.3
Age (years)		
≤ 19	152	15.6
20 to 29	610	62.6
≥ 30	212	21.8
Socioeconomic level		
A	41	4.2
B	269	27.6
C	552	56.7
D	112	11.5
Self-perception of health		
excellent	109	11.2
very good	246	25.3
good	425	43.6
fair	174	17.9
poor	20	2.1
Smoking		
yes	223	22.9
no	751	77.1
Use of alcohol		
yes	634	65.1
no	340	34.9
Nutrition status		
underweight	47	4.8
normal weight	537	55.1
overweight	338	34.7
obese	52	5.4
Physical Activity >150 min/week		
yes	414	42.6
no	560	57.4
Total	974	100

Table 2 shows the prevalence estimates for NCD risk and protective factors in the total population and according to gender, respectively. It was noted that 70.7% had a moderate/high health score (6 to 10 points). In relation to alcohol and tobacco use, women drank and smoked more than men, with no statistical difference.

Table 2. Prevalence of NCD risk factors among university students, overall and according to sex. Brasília, FD, Brazil, 2017 (n= 974)

Variables	Total			Female			Male			p-value*
	N	%	95% CI	N	%	95% CI	N	%	95% CI	
Protective factors										
Consumption on five or more days per week										
Fruit	505	51.8	48.7 - 54.9	399	52.0	48.4 - 55.5	106	51.2	44.4 - 58.0	0.84
Raw salad	418	42.9	39.8 - 46.0	335	43.6	40.1 - 47.1	83	40.1	33.4 - 46.7	0.36
Greens or vegetables	530	54.4	51.2 - 57.5	416	54.2	50.7 - 57.7	114	55.0	48.2 - 61.8	0.83
Beans	702	72.0	69.2 - 74.8	545	71.0	67.8 - 74.2	157	75.8	70.0 - 81.6	0.17
Risk factors										
Soft drinks	381	39.1	36.0 - 42.1	293	38.2	34.7 - 41.6	88	42.5	35.7 - 49.2	0.26
Intake of full-fat milk	406	41.6	35.5 - 44.7	322	41.9	38.4 - 45.4	84	40.5	33.8 - 47.2	0.72
Intake of meat with fat	312	32.0	29.1 - 34.9	245	31.9	28.6 - 35.2	67	32.3	26.0 - 38.7	0.91
Physically inactive	560	57.4	54.3 - 60.5	449	58.5	55.0 - 62.0	111	53.6	46.8 - 60.4	0.20
Smoking	223	22.9	20.2 - 25.5	169	22.0	19.1 - 24.9	54	26.0	20.1 - 32.0	0.22
Use of alcohol	634	65.0	62.1 - 68.0	502	65.4	62.0 - 68.8	132	63.7	57.2 - 70.3	0.65
Overweight	338	34.7	31.7 - 37.6	277	36.1	32.7 - 39.5	61	29.4	23.2 - 35.6	0.18
Obesity	52	5.3	3.9 - 6.7	42	5.4	3.8 - 7.0	10	4.8	1.9 - 7.7	0.54
Self-reported diseases										
Arterial hypertension	32	3.0	1.7 - 4.2	23	3.0	1.7 - 4.2	9	4.3	1.5 - 7.1	0.33
Diabetes mellitus	59	6.0	4.5 - 7.5	47	6.1	4.4 - 7.8	12	5.8	2.6 - 8.9	0.86
High cholesterol levels	141	14.4	12.2 - 16.6	107	13.9	11.5 - 16.4	34	16.4	11.3 - 21.4	0.37
Health life score										
Low	285	29.2	26.4 - 32.1	224	29.2	25.9 - 32.4	61	29.4	23.2 - 25.6	0.94
Moderate/High	689	70.7	67.8 - 73.6	543	70.8	67.5 - 74.0	146	70.5	64.2 - 76.7	

*Chi-square test

In the analysis of eating habits, the consumption of vegetables/legumes and beans was more prevalent among the men, while the consumption of fruits and raw salads was more prevalent among the women.

Regarding eating habits considered a risk for NCD, the women (41.9%) drank more full-fat milk (p=0.72), while the men drank more soda and routinely consumed more meat with fat.

A high prevalence of physically inactive students was also noted, with the women (58.5%) less physically active. Consequently, 36.1% were overweight and 5.4% were obese.

In terms of self-reported diseases, no significant differences were observed between genders, but the women had a high prevalence of hypertension (3.0%) and diabetes mellitus (6.1%), while the men presented high cholesterol (16.4%) and dyslipidemia (7.7%).

The studied group is a population at imminent risk for NCD, in which men presented a higher prevalence for smoking (26%) and women showed greater prevalence for alcohol abuse (65.4%), with a significant number of students presenting high cholesterol, excess weight and obesity.

Table 3 shows the association between physical activity (>150 min/week) and protective and risk factors for NCD, in addition to self-reported diseases among students. Those who did not engage in physical activity as recommended (>150 min/week) smoked more (p<0.01) and consumed less fruit (p<0.01), less salad (p<0.01), and less vegetables (p<0.01).

Regarding unhealthy habits, a prevalence of physically inactive students was observed, of which 41.9% drank soda (p=0.03) and 34.6% ate meat with fat (p=0.04).

When analyzing the association between physical inactivity and self-reported disease, a high prevalence of diabetes mellitus (p=0.03) and high cholesterol (p<0.01) was observed among students who did not exercise.

No association was found between the healthy living score (low vs. moderate/high) and gender, age and socioeconomic status (Table 4).

Table 4 shows whether gender, age, and socioeconomic status are associated with healthy living, with no evidence being found of a relationship between the healthy life score and these variables.

Figure 1 shows the joint relationship between NCD risk factors, gender, physical activity and nutritional status, identified using multiple correspondence analysis. For this data set, an explanation was obtained for only 20.5% in two dimensions (sum of dimensions 1 and 2).

The proximity of the data on the chart indicates an association, showing that people with high cholesterol also tend to have high blood pressure and dyslipidemia. In relation to nutritional status, obese students consume vegetables, fruit and salad (believed to be some sort of dietary re-education), but do not exercise (> 150 min/week). The students with low weight do not eat vegetables and salad, while overweight students tended to have diabetes and consume soft drinks and meat with fat. As for the remaining factors, it was not possible to identify a defined profile since the points are very close to the origin (Figure 1).

The low level of explanation may be due to the large number of variables in the analysis.
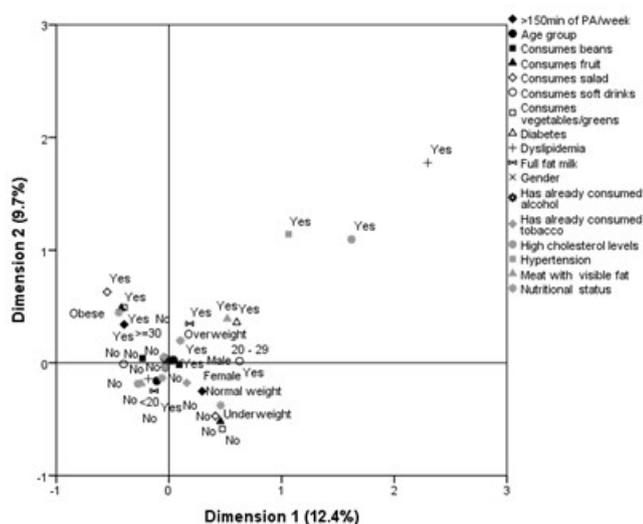
Figure 1. Joint relationship between risk factors, sex, physical activity and nutritional status of university students. Brasília, FD, Brazil, 2017. (n= 974)

Table 3. Association between healthy life habits and physical activity in undergraduate students. Brasília, FD, Brazil, 2017. (n= 974)

Variables	PA >150 min/weeks						p-value*
	No (n=560)			Yes (n=414)			
	n	%	95% CI	n	%	95% CI	
Nutritional status							
Underweight	35	6.2	4.2 - 8.2	12	2.9	1.2 - 4.5	0.11
Normal weight	305	54.4	50.3 - 58.5	232	56.0	51.2 -60.8	
Overweight	189	33.7	29.8 - 37.6	149	35.9	31.3 - 40.6	
Obese	31	5.5	3.6 - 7.4	21	5.0	2.9 - 7.1	
Alcohol consumption							
No	202	36.0	32.0 - 40.0	138	33.3	28.7 - 37.8	
Yes	358	63.9	59.9 - 67.9	276	66.6	62.1 - 71.2	0.38
Smoking							
No	414	73.9	70.2 - 77.5	337	81.4	77.6 - 85.1	
Yes	146	26.0	22.4 - 29.7	77	18.6	14.8 - 22.3	<0.01
Consumption of fruit							
No	315	56.2	52.1 - 60.3	154	37.2	32.5 - 41.8	
Yes	245	43.7	39.6 - 47.8	260	62.8	58.1 - 67.4	<0.01
Consumption of salad							
No	349	62.3	58.3 - 66.3	207	50	45.1 - 54.8	
Yes	211	37.6	33.6 - 41.6	207	50	45.1 - 54.8	<0.01
Consumption of greens							
No	299	53.3	49.2 - 57.5	145	35.0	30.4 - 39.6	
Yes	261	46.6	42.4 - 50.7	269	64.9	60.3 - 69.5	<0.01
Consumption of beans							
No	164	29.2	25.5 - 33.0	108	26.0	21.8 - 30.3	
Yes	396	70.7	66.9 - 74.4	306	73.9	69.6 - 78.1	0.27
Consumption of soft drinks							
No	325	58.0	53.9 - 62.1	268	64.7	60.1 - 69.3	
Yes	235	41.9	37.8 - 46.0	146	35.2	30.6 - 39.8	0.03
Consumption of full fat milk							
No	326	58.2	54.1 - 62.3	242	58.4	53.7 - 63.2	
Yes	234	41.7	37.7 - 45.8	172	41.5	36.8 - 46.3	0.94
Consumption of meat with visible fat							
No	366	65.3	61.4 - 69.3	296	71.5	67.1 - 75.8	
Yes	194	34.6	30.7 - 38.5	118	28.5	24.1 - 32.8	0.04
Arterial hypertension							
No	539	96.2	94.6 - 97.8	403	97.3	95.7 - 98.8	
Yes	21	3.7	2.1- 5.3	11	2.6	1.1 - 4.2.	0.34
Diabetes mellitus							
No	518	92.5	90.3 - 94.6	397	95.8	93.8 - 97.8	
Yes	42	7.5	5.3 - 9.6	17	4.1	2.2 - 6.0	0.03
High cholesterol levels							
No	462	82.5	79.3 - 85.6	371	89.6	86.6 - 92.5	
Yes	98	17.5	14.3 - 20.6	43	10.3	7.4 - 13.3	<0.01

*Chi-square test

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Table 4. Predictive factors of moderate/high healthy life score. Brasília, FD, Brazil, 2017. (n= 974)

Effect	Crude odds ratio	95% CI		p-value	Adjusted odds ratio	95% CI		p-value
Sex (male vs female)	0.98	0.71	1.38	0.94	0.99	0.70	1.38	0.94
Age (20-29 vs ≤ 19)	0.69	0.46	1.04	0.07	0.68	0.45	1.03	0.07
Age (>30 vs ≤ 19)	0.81	0.50	1.30	0.37	0.79	0.49	1.28	0.33
Socioeconomic level (A vs D)	0.88	0.41	1.87	0.73	0.85	0.40	1.82	0.67
Socioeconomic level (B vs D)	0.98	0.61	1.58	0.95	0.95	0.59	1.54	0.85
Socioeconomic level (C vs D)	1.20	0.77	1.87	0.40	1.18	0.75	1.83	0.46

DISCUSSION

This study revealed important aspects regarding the health of Brazilian university students. The sociodemographic profile was composed mostly of women, between 20 and 29 years old, with low family income (3 to 5 minimum wages – class C). For self-reported diseases, 17.5% claimed they had high cholesterol. Another relevant factor in this study is the importance of studying nursing students, considering they will work with health outreach and disease prevention with patients. Therefore, it is believed the academic setting should prepare them for working with preventive actions.

Regarding the sample group, most of the subjects were women, which is explained by the higher percentage of women in health-related courses. In accordance with the results of this study, a previous study[19] investigating alcohol consumption also found that most subjects were women (61.6%) and only 38.4% of the sample were men, as in several other studies on the use of alcohol, which corroborate other findings[20,21].

Young Brazilians have tended to drink heavily. In Brazil, epidemiological studies show alcohol consumption is higher among university students than among high school students[22]. According to estimates, alcohol use is increasing due to lifestyle, anxiety, stress, depression and low self-esteem[22].

University students are more exposed to environments where alcohol is more easily obtained. This points to a greater need for support and effective education in universities for students to stop drinking[21].

A study conducted in more than 100 Brazilian cities with more than 200,000 inhabitants showed alcohol consumption is very high in the 18-24 age group and 15.5% of this population claimed they were dependent on alcohol[21].

The national survey on alcohol use among university students conducted in Brazil, in 2010, found that 86.2% of the respondents had used alcohol at least once in their lives[23]. When the results of the aforementioned survey were compared with the First National Survey on the Patterns of Alcohol Consumption in the Brazilian Population in 2007, it was found that 52% of people over 18 had consumed alcohol at least once in the previous 12 months, whereas 48% were abstinent[23].

Another important health-risk factor is the low level of physical activity among students, with women showing even lower levels. In a study conducted with students at a university in Santa Catarina State, southern Brazil, the women were less physically active than the men, and 17.4% were inactive[24].

The predominance of class C individuals in this study may also have contributed to the increased prevalence of physical inactivity among students. In a study that evaluated the association between physical inactivity and socioeconomic status, the highest prevalence of physical inactivity was found in people of classes C and D[25]. A possible explanation for this is a lack of time, since the type of work in these social classes is demanding and time consuming, while the lack of suitable public places for physical activity may also contribute to this high prevalence[25,26].

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[10].

Thus, nursing students increasingly engage in academic and extracurricular activities, which may limit time spent on physical activity[19]. 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 disease and staying healthy[22]. Other relevant aspects may be personal barriers experienced by students, such as a lack of money and company for the practice of physical activity, in addition to lack of motivation[27].

The body mass index (BMI) results showed that most students were overweight (34.7%), with a higher prevalence among women. A study conducted by the Brazilian Health Inspection System (SVS - Ministry of Health) showed women are more obese (15.5%) than men (14.4%)[28].

Peltzer and Pengpid[29] evaluated nutritional status and associated factors in 15,068 university students from 21 developing and developed countries. The results revealed a 61.1% prevalence of overweight individuals (41% in men and 25.1% in women) and a 27% prevalence of obesity among students.

Costa and Vasconcelos[30] evaluated the weight of 220 female students at a public university in Florianópolis, SC, Brazil, and found that 72.3% were eutrophic, 11.8% were overweight, and 3.2% were obese.

In relation to eating habits, evidence indicates a poor diet with a low fruit and vegetable intake and high levels of saturated fat, which is a significant NCD risk and mortality factor worldwide[30]. In this study, 42.9% consumed salad, 54.4% consumed vegetables/legumes, and 51.8% consumed five or more serves of fruit a week. The data presented here corroborate the findings of another study that identified a low prevalence of fruit and vegetable consumption (less than five days a week) in university healthcare students (44%)[31].

Insufficient fruit (81.2%) and vegetable (57%) intake was prevalent in a study conducted to monitor the health and quality of life indicators of 1,232 students from Bahia, for 10 years[32]. This study found a greater prevalence of inadequate fruit and vegetable consumption among men[32].

These eating habits were also observed in a study with students from the University of Paraná, where 92.1% of students did not eat enough fruit and 80.3% did not eat enough vegetables[29].

The Vigitel[15], which monitors NCD risk factors among the Brazilian population by means of telephone interviews, revealed that Brazilians do not regularly consume fruit or raw salad. For the gender comparison, men (17.6%) consume less fruit and raw salad than women (39.2% versus 49.8%). This finding was similar to the results of this study, where regular fruit consumption was 51.2% and regular consumption of raw salad was 40.1%. The same occurred with soft drink consumption, where the Vigitel[15] detected a consumption of 24.5%, while in this study it was 39.1%.

The incidence of risk behaviors among college students is high[31,33]. Several studies with university students show the vast majority of women have more risk factors for NCD[34].

In recent years, Brazil has made every effort to confront NCD, and promoting physical activity is considered one of the key factors in this process. Some notable actions include the National Health Promotion Policy and the Strategic Action Plans for Confronting NCD in Brazil. To date, the university from this study does not have public policies for this group.

The university as a place for teaching and self-reliant learning triggers numerous changes in the lives of many young students, who must leave home and make significant changes to their habits due to the distance from their families and homes. They acquire and reinforce many new habits during this time that alter their lifestyle and health, which they may maintain throughout their lives or adopt long enough to affect their health[34].

A study by Almeida also found that university creates new and complex challenges in different areas of students' lives, such as leaving home and being away from their families, managing new roles and responsibilities, and responding effectively to the tasks assigned at university[35].

The present study has some limitations. Firstly, the cross-sectional design does not allow the establishment of a time relationship between the variables of interest adopted. Secondly, although NCD risk factors were assessed with a standardized and validated questionnaire, the use of self-reporting methods to collect data might have caused some errors in estimation. Thirdly, the study sample included a much higher number of females than males.

CONCLUSION

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

The results show a clear profile of NCD risk factors among university students, highlighting the need for educational programs to reduce these factors.

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