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Food profile and physical inactivity in university women in the city of Brasília

Perfil alimentar e inatividade física em mulheres universitárias na cidade de Brasília

Perfil alimentario y la inactividad física en mujeres universitarias de la ciudad de Brasilia

Luciana Zaranza Monteiro[1]
Divina Marcia Soares de Oliveira[2]
Mayara Vinnie Souza Soares Parente[3]
Esther de Oliveira Silva[2]
Andrea Ramírez Varela[4]

1. Centro Universitário do Distrito Federal, Departamento de Educação Física e Fisioterapia. Brasília, DF, Brasil.

2. Centro Universitário do Distrito Federal, Departamento de Enfermagem. Brasília, DF, Brasil.

3. Escola Superior de Ciências da Saúde, Departamento de Enfermagem. Brasília, DF, Brasil.

4. Universidade de los Andes, Faculdade de Medicina, Departamento de Saúde Pública. Bogotá, Colômbia.

Corresponding author:
Luciana Zaranza Monteiro
E-mail: lucianazaranza@hotmail.com

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Abstract

Objective: To analyze the association between the food profile, physical activity and weight status among university women. **Method:** This cross-sectional study, included 1.500 Brazilian women. We used a self-administered questionnaire. All questions were obtained from the surveillance of risk and protection factors for chronic diseases survey through telephone interviews. The association was analyzed using chi-square tests and multiple correspondence analysis. **Results:** The sample included 1.500 college women, 64.3% aged 20-29 years. Physically active participants consumed more fruit (p<0.01), salad (p<0.01) and vegetables/greens (p<0.01), whereas physically inactive participants consumed more soft drinks (p<0.01), meat with visible fat (p=0.03) and full fat milk (p=0.04). Physically inactive women also had a higher prevalence of diabetes mellitus (p<0.01), high cholesterol (p<0.01) and dyslipidemia (p=0.04). **Conclusion and implication for practice:** The students showed behaviors that put their health at risk, where alcohol consumption, low consumption of healthy foods and high prevalence of physical inactivity contributed to an increase in risk factors for chronic diseases. Preventive actions with the participation of a multidisciplinary team will help to improve health in the academic environment.

Keywords: Women's Health; Exercise; Continuity of Patient Care; Food Consumption; Health Promotion.

Resumo

Objetivo: Analisar a associação entre perfil alimentar, atividade física e estado nutricional entre mulheres universitárias. **Método:** Estudo transversal com 1500 mulheres. O questionário abordava questões sobre a vigilância de fatores de risco e proteção para doenças crônicas. As associações foram analisadas pelo teste qui-quadrado e análise de correspondência múltipla. **Resultados:** Das 1500 mulheres, 64,3% tinham entre 20 e 29 anos. Aquelas fisicamente ativas consumiram mais frutas (p<0,01), salada (p<0,01) e vegetais/verduras (p<0,01), enquanto as fisicamente inativas consumiram mais refrigerantes (p<0,01), carne com gordura visível (p=0,03) e leite com gordura (p=0,04). As mulheres fisicamente inativas também apresentaram maior prevalência de diabetes mellitus (p<0,01), colesterol elevado (p<0,01) e dislipidemia (p=0,04). **Conclusão e implicação para a prática:** As universitárias apresentaram comportamentos de risco a sua saúde, onde o consumo de álcool, baixo consumo de alimentos saudáveis e a alta prevalência de inatividade física contribuíram para o aumento dos fatores de risco para doenças crônicas. Ações preventivas com a participação de uma equipe multidisciplinar ajudará na melhora da saúde no ambiente acadêmico.

Palavras-chave: Saúde da Mulher; Exercício Físico; Continuidade da Assistência ao Paciente; Consumo de Alimentos; Promoção da Saúde.

Resumen

Objetivo: Analisar la asociación entre el perfil alimentario, la actividad física y el estado nutricional en mujeres universitarias. **Método:** Estudio transversal con 1500 mujeres. El cuestionario abordó preguntas sobre la vigilancia de factores de riesgo y protección para las enfermedades crónicas. Las asociaciones se analizaron mediante la prueba de chi-cuadrado y análisis de correspondencia múltiple. **Resultados:** De las 1500 mujeres, el 64,3% tenía entre 20 y 29 años. Las físicamente activas consumieron más frutas (p<0,01), ensalada (p<0,01) y verduras (p<0,01), mientras que las físicamente inactivas consumieron más refrescos (p<0,01), carne con grasa visible (p=0,03) y leche con grasa (p=0,04). Las mujeres físicamente inactivas también tenían una mayor prevalencia de diabetes mellitus (p<0,01), colesterol alto (p<0,01) y dislipidemia (p=0,04). **Conclusión e implicación para la práctica:** Las estudiantes universitarias mostraron conductas de riesgo para su salud, donde el consumo de alcohol, el bajo consumo de alimentos saludables y la alta prevalencia de inactividad física contribuyeron al aumento de los factores de riesgo para las enfermedades crónicas. Las acciones preventivas con la participación de un equipo multidisciplinario ayudarán a mejorar la salud en el entorno académico.

Palabras claves: Salud de la Mujer; Ejercicio Físico; Continuidad de la Atención al Paciente; Consumo de Alimentos; Promoción de la Salud.

INTRODUCTION

Inadequate nutrition is among the risk factors related to chronic non-communicable diseases (NCDs) and obesity[1]. The 2013 National Health Survey (NHS) updated the prevalence of overweight, estimated at 56.9%, and obesity, at 20.8%, in Brazil[2,3].

Previous studies conducted in the university population have shown a decrease in the consumption of fruits, vegetables, cereals, legumes, and fish, together with an increase in the consumption of meats, sweets, some snacks, and sugary drinks, which suggests a decrease in the adherence to the traditional Mediterranean diet in the young-adult population[4].

With the nutritional transition, the culinary preparations made at home and usually based on fresh and minimally processed foods were replaced by ready-made and ultra-processed products, such as pizzas, sandwiches, and soft drinks[5]. The reduced supply of fresh food and the global distribution of supermarket chains standardized food consumption in the world[5]. Among the effects on the diet, we highlight: increased intake of refined carbohydrates, edible oils, sweetened drinks, and foods of animal origin, as well as reduced consumption of legumes, fruits, and vegetables[6].

The time period between late adolescence and early adulthood is an important time for the establishment of long-term behavior patterns[4]. Changes in the home and school/work environments, in social influences, in financial circumstances, and the establishment of partner relationships are also common[7]. Many of these factors have shown to be associated with diet and eating behaviors in this age range[8].

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 the students' daily lives, even after leaving this environment[9].

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[10]. Physical activity, in this field of knowledge, is accompanied by recommendations and protocols on how to prevent diseases and improve the quality of life, seeking to mitigate and combat the deleterious effects of time and stressors on the human organism[8-10].

According to the World Health Organization (WHO), in 2015, of the total 56 million deaths, it can be noted that 45% were related to cardiovascular diseases, 22% to neoplasms, 10% to chronic respiratory diseases and 4% diabetes[11]. Also according to estimates made by the WHO, approximately 42% of annual deaths from chronic diseases are premature, that is, before the age of 70[11,12].

It is known that two thirds of women's deaths are related to chronic causes and violence[12,13]. In addition, the absolute number of women deaths related to NCDs, in 2012, totalled around 16.2 million, being quite similar that of men, an alarming fact, since NCDs were considered male diseases[12]. Still in studies conducted in 2012, the estimate of deaths of women due to chronic conditions was 18.1 million, with 8.8 million related to cardiovascular causes[14,15].

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[15]. Self-image, relationships, control stress, finances, adoption of preventive behavior and restorative sleep are biological, social, economic and cultural factors that also influence health[5].

It is believed that, in order to guarantee the health supervision of women more broadly, it is important to monitor the indicators that assess risk factors[16], and should be monitored, since they serve as a parameter for assessing the morbidity and mortality profile associated with NCDs[17], as well as may contribute to the appearance of diseases that precede NCDs, called intermediate or metabolic risk factors[18].

College is a critical time where students are presented with a number of challenges including changes in the social and built environments, developing new social networks, having more behavioral autonomy, and adapting to new schedules.[19] During this period of life, college students are more prone to engage in risky health behaviors known to negatively affect well-being, such as physical inactivity, stress, and poor dietary habits[19].

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[20]. 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.

Therefore, the present study aimed to analyze the association between food profile, physical activity and weight status among university women.

METHODS

This cross-sectional study was conducted with healthcare (Nursing, Physical Education and Pharmacy) undergraduate students of a private institution in Brasilia, Brazil.

A convenience sample consisted of 1.500 undergraduate students (who were 18 or older) enrolled in the program during the academic year of 2018 were included in the study. A second attempt to include the students that missed the first day of data collection was made during another day. If the student missed both opportunities, she was not included in the study.

The study population was composed of first to eighth-semester students who were in their classrooms on the day of data collection. The instrument was administered during the break between lessons, in a classroom with a seating capacity for 60 students.

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 that particular class. Next, the researchers introduced themselves and the study project to the students and invited them to participate. The informed consent of each participant, as well as the authorization and the required ethical approval of the Centro Universitário do Distrito Federal, were obtained (protocol number 1.794.275).

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 survey through telephone interviews (VIGITEL) [13]. The questionnaire monitored the main risk and protective factors for non-communicable chronic diseases (NCDs) among adults older than age 18 and is applied on an annual and continuous basis in all Brazilian states and the Federal District[13].

The following demographic variables were included in the analysis: age; socioeconomic level (based on the questionnaire of the ABEP – Brazilian Association of Research Companies)[21]; alcohol consumption (heavy drinking was defined as the consumption of four or more drinks in one sitting for women); smoking (yes/no); and health self-perception (excellent, very good, good, fair or poor).

Food consumption was assessed using healthy and unhealthy diet markers according to the nomenclature used in VIGITEL.[13] Regular consumption of fruits and vegetables (5 or more days/week), recommended consumption of fruits and vegetables (consumption of 5 servings in at least 5 days/week) and regular consumption of beans (5 or more days/week) are considered healthy diet markers.

Unhealthy diet markers included consumption of meat with excess fat (red meat with apparent fat and chicken with skin); consumption of full fat milk; regular consumption of soft drinks or powdered drink mix/artificial juice (5 or more days/week).

Weight 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), obese (≥30)[22].

The use of self-reported measures is an easy and low-cost instrument, and has been used in several national (VIGITEL[13], for example) and international health surveys to assess the nutritional status of populations[23,24]. This information can be obtained through personal interviews or by telephone and through self-administered questionnaires sent by mail[25].

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 domains) or active (150 or more minutes of moderate-intensity physical activity a week). WHO[26] has recommended that adults aged 18–64 years should do at least 150 min of moderate-intensity physical activity per week.

Data are presented as absolute and relative frequencies and displayed with their respective 95% confidence intervals. The association between physical activity and weight status and dietary behaviors were analyzed using chi-square tests. The association between weight status and the remaining variables was analyzed using chi-square tests.

A multiple correspondence analysis was conducted to test the joint relationship between weight status, physical activity and dietary behaviors. The sample size was calculated based on the prevalence of insufficient fruit consumption (81.2%), considering a finite population of size 1000000, an absolute error of 5pp and a confidence coefficient of 99.99%, thus generating a n of 924. We consider 60% as a high rate of loss of response (924 * 1.6 = 1478).

All statistical analyses were performed using the SAS Software, version 9.2, while correspondence analysis was conducted using SPSS, version 21. The level of significance was set at 5%.

RESULTS

The most of the women studied were between 20-29 years (64.3%), self-perception of health – good (44.9%), used alcohol (65.7%), overweight (33.8%) and did not achieve 150 minutes or more of PA per week (48.4%) (Table 1).

Table 2 shows the estimated prevalence of protective and risk behaviors for NCDs in women.

Table 3 shows the association between PA and health-risk behaviors. Physically active participants consumed more fruit ($p<0.01$), salad ($p<0.01$) and vegetables/greens ($p<0.01$), whereas physically inactive participants consumed more soft drinks ($p<0.01$), meat with visible fat ($p=0.03$) and full fat milk ($p=0.04$). Those physically inactive women also had a higher prevalence for diabetes mellitus ($p<0.01$), high cholesterol ($p< 0.01$) and dyslipidemia ($p=0.04$).

Table 4 shows association between weight status and consumption of fruits ($p< 0.01$), salads ($p<0.01$), greens ($p<0.01$), beans ($p<0.01$), soft drinks ($p=0.04$) and meat with fat ($p=0.01$).

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 (150min 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 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.

Table 1. Description of the sample according to students's characteristics. Brasília, Brazil, 2018 (n=1.500).

Variable	n	%
Age (years)		
≤ 19	234	15.6
20-29	965	64.3
≥ 30	301	20.0
Socioeconomic level		
A	66	4.4
B	421	28.0
C	841	56.0
D	172	11.4
Undergraduate course		
Nursing	767	51.1
Physical Education	518	34.5
Pharmacy	215	14.4
Self-perception of health		
Excellent	169	11.2
Very good	335	22.3
Good	674	44.9
Fair	288	19.2
Poor	34	2.2
Smoking		
Yes	348	23.2
No	1.152	76.8
Use of alcohol		
Yes	986	65.7
No	514	34.2
Weight status		
Underweight	78	5.20
Normal weight	839	55.9
Overweight	508	33.8
Obese	75	5.0
PA >150 min/week		
Yes	773	51.5
No	727	48.4
Total	**1.500**	**100**

Source: Research data, 2018.

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[27]. In healthcare for women, knowing the degree of importance attached to these factors can be useful in planning health actions

Table 2. Prevalence of NCDs risk and protective factors in college women. Brasília, Brazil, 2018 (n=1.500).

Variables	n	%	95% CI
Protection Factors			
Consumption five or more times a week			
Fruit	787	52.4	49.94 - 54.99
Raw salad	626	41.7	39.24 - 44.23
Greens or vegetables	779	51.9	49.4 - 54.46
Beans	1.066	71.0	68.77 - 73.36
Risk factors			
Soft drinks consumption (≥ 5 times/week)	421	28.0	25.79 - 30.34
Habitual intake of full-fat milk	622	41.4	38.97 - 43.96
Habitual intake of meat with visible fat	483	32.2	29.84 - 34.56
Sedentary (< 150 min of PA per week)	727	48.4	45.94 - 51.00
Smoking	348	23.2	21.06 - 25.34
Use of alcohol	986	65.7	63.33 - 68.14
Overweight (BMI ≥25 and < 30 kg/m^2)	508	33.8	30.81 - 36.92
Obesity (BMI ≥30 kg/m^2)	75	5.0	3.59 - 6.41
Self-reported diseases			
Arterial hypertension	47	3.13	2.25 - 4.01
Diabetes mellitus	85	5.67	4.5 - 6.84
High cholesterol	225	15.0	13.19 - 16.81
Dyslipidemia	83	5.5	4.38 - 6.69

Source: Research data, 2018.

Table 3. Association between physical activity and related lifestyle factors among university women. Brasília, Brazil, 2018 (n=1.500).

Variable	Physical Activity > 150 min/week						*p*
	No (n=727)			Yes (n=773)			
	n	%	95% CI	n	%	95% CI	
Weight status							
Underweight	47	6.4	4.1 - 8.7	31	4.0	2.2 - 5.7	
Normal weight	389	53.5	48.8 - 58.1	45	58.2	53.7 - 62.6	0.1
Overweight	253	34.8	30.3 - 39.2	25	32.9	28.7 - 37.2	
Obese	38	5.2	3.1 - 7.2	37	4.7	2.8 - 6.7	
Alcohol consumption							
No	257	35.3	31.8 - 38.8	25	33.2	29.9 - 36.5	0.39
Yes	470	64.6	61.1 - 68.1	51	66.7	63.4 - 70.0	
Smoking							
No	551	75.7	72.6 - 78.9	60	77.7	74.8 - 80.6	0.37
Yes	176	24.2	21.1 - 27.3	17	22.2	19.3 - 25.1	
Consumption of fruit							
No	402	55.3	51.6 - 58.9	31	40.2	36.7 - 43.6	<0.01*
Yes	325	44.7	41.0 - 48.3	46	59.7	56.3 - 63.2	

Source: Research data, 2018; * Chi-square test.

Table 3. Continued...

Variable	Physical Activity > 150 min/week						*p*
	No (n=727)			Yes (n=773)			
	n	%	95% CI	n	%	95% CI	
Consumption of salad							
No	460	63.2	59.7 - 66.7	41	53.5	50.0 - 57.0	<0.01*
Yes	267	36.7	33.2 - 40.2	35	46.4	42.9 - 49.9	
Consumption of greens							
No	406	55.8	52.2 - 59.4	31	40.7	37.2 - 44.2	<0.01*
Yes	321	44.1	40.5 - 47.7	45	59.2	55.7 - 62.7	
Consumption of beans							
No	220	30.2	26.9 - 33.6	21	27.6	24.5 - 30.8	0.27
Yes	507	69.7	66.4 - 73.0	55	72.3	69.1 - 75.4	
Consumption of soft drinks							
No	498	68.5	65.1 - 71.8	58	75.1	72.1 - 78.2	<0.01*
Yes	229	31.5	28.1 - 34.8	19	24.8	21.7 - 27.8	
Consumption of full fat milk							
No	406	55.8	52.2 - 59.4	47	61.0	57.6 - 64.5	0.04*
Yes	321	44.1	40.5 - 47.7	30	38.9	35.5 - 42.3	
Consumption of meat with fat							
No	473	65.0	61.6 - 68.5	54	70.3	67.1 - 73.5	0.03*
Yes	254	34.9	31.4 - 38.4	22	29.6	26.4 - 32.8	
Arterial hypertension							
No	698	96.0	94.5 - 97.4	75	97.6	96.6 - 98.7	0.07
Yes	29	3.9	2.5 - 5.4	18	2.3	1.2 - 3.3	
Diabetes Mellitus							
No	671	92.3	90.3 - 94.2	74	96.2	94.9 - 97.5	<0.01*
Yes	56	7.7	5.7 - 9.6	29	3.7	2.4 - 5.0	
High cholesterol							
No	587	80.7	77.8 - 83.6	68	89	86.8 - 91.2	<0.01*
Yes	140	19.2	16.3 - 22.1	85	11	8.7 - 13.2	
Dyslipidemia							
No	678	93.2	91.4 - 95.0	73	95.6	94.1 - 97.0	0.04*
Yes	49	6.7	4.9 - 8.5	34	4.4	2.9 - 5.8	

Source: Research data, 2018; * Chi-square test.

that encourage the adoption of healthy lifestyles, with greater focus on the health measures less prioritized by the population[27].

Our study showed a prevalence of alcohol consumption and tobacco use among undergraduates of 65.7% and 23.2%, respectively. This is rather a worrying result, since alcohol and tobacco use is associated with several behavioral disorders and health problems.

Studies show that the percentage of smokers among Brazilian undergraduate students ranges from 8.1% to 17.8%.

Table 4. Association between weight status, dietary behaviors and related lifestyle factors. Brasília, Brazil, 2018 (n=1.500).

	Underweight (n=78)		Normal weight (n=839)		Overweight (n=508)		Obese (n=75)		
	n	%	n	%	n	%	n	%	p
Alcohol									
No	30	38.4	280	33.3	171	33.6	33	44	0.25
Yes	48	61.5	559	66.6	337	66.3	42	56	
Smoking									
No	63	80.7	638	76.0	399	78.5	52	69.3	0.24
Yes	15	19.2	201	23.9	109	21.4	23	30.6	
Fruit									
No	43	55.1	373	44.4	270	53.1	27	36	<0.01*
Yes	35	44.8	466	55.5	238	46.8	48	64	
Salad									
No	50	64.1	509	60.6	283	55.7	32	42.6	<0.01*
Yes	28	35.9	330	39.3	225	44.2	43	57.3	
Greens									
No	49	62.8	428	51.0	220	43.3	24	32	<0.01*
Yes	29	37.1	411	48.9	288	56.6	51	68	
Beans									
No	10	12.8	251	29.9	139	27.3	34	45.3	<0.01*
Yes	68	87.1	588	70.0	369	72.6	41	54.6	
Soft drinks									
No	57	73.0	623	74.2	342	67.3	57	76	0.04*
Yes	21	26.9	216	25.7	166	32.6	18	24	
Full fat milk									
No	42	53.8	493	58.7	293	57.6	50	66.6	0.40
Yes	36	46.1	346	41.2	215	42.3	25	33.3	
Meat with fat									
No	46	58.9	568	67.7	341	67.1	62	82.6	0.01*
Yes	32	41.0	271	32.3	167	32.8	13	17.3	
PA >150 min/week									
No	47	60.2	389	46.3	253	49.8	38	50.6	0.10
Yes	31	39.7	450	53.6	255	50.2	37	49.3	

Source: Research data, 2018; *Chi-square test

The southern region of the country is highlighted as the biggest producer of tobacco in Brazil[28].

The percentage of smokers in this study (23.2%) is lower than those obtained in general students by the University of Valencia (24.8%)[29], University of Barcelona (23.4%)[30] and University of Leon (29.3%)[31].

Young Brazilians have cultivated the habit of getting drunk. In Brazil, epidemiological studies show alcohol consumption is higher among university students than among high school students[32]. This can be justified by the greater social incentive to alcohol consumption among the younger age groups, associated with the numerous marketing strategies aimed at this specific audience[32].

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[33].

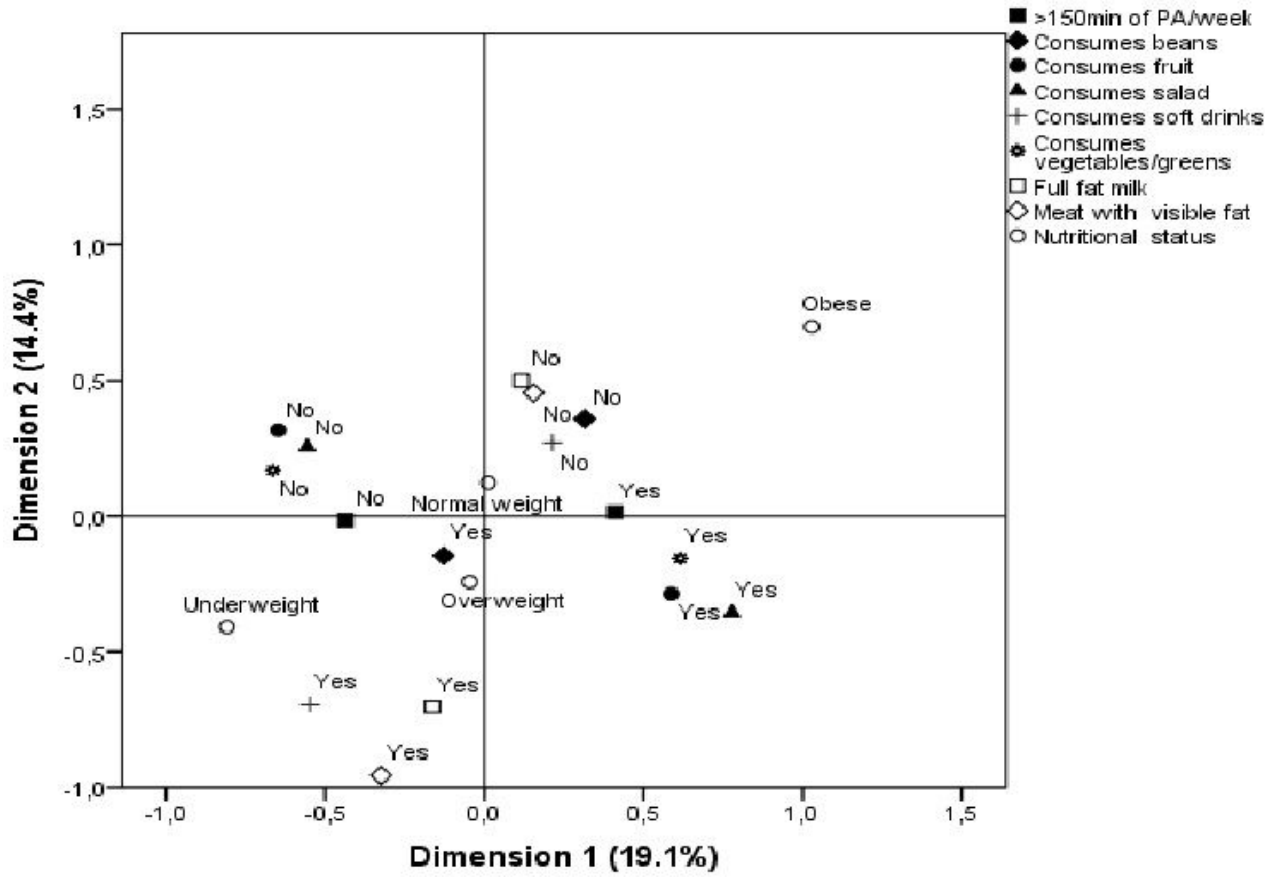

Figure 1. Relationship between dietary behaviors, weight status and physical activity of college women. Brasília, Brazil, 2018 (n=1.500).
Source: Research data, 2018.

In the United States, the 2017 Youth Risk Behaviour Survey reported that 29.8% of their student participants had consumed alcohol in the previous 30 days[34]. In Europe, the prevalence of alcohol use among university students was reported as follows: 46.2% (males) and 28.1% (females) in Bulgaria, 41.1% (males) and 18.1% (females) in Germany, and 20.1% (males) and 10% (females) in Poland, respectively[35]. In Japan, approximately 56.8% and 47.8% of male and female university students were binge drinkers[36].

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[37].

Alcohol consumption accounts for 5.9% of annual global deaths, a significant proportion of which occur among youth[38]. Previous studies have reported that alcohol consumption can lead to poor academic performance, injuries, fights, the use of substances, and risky sexual behaviours among youth[38,39].

The 2013 NHS allowed describing the eating habits of the Brazilian population: the frequency of the regular consumption of beans was 71.9%[40]; 37.3% of the population met the recommended intake of fruits and vegetables[29]; the consumption of meat or chicken with excess fat was 37.2%; the regular intake of soft drinks or processed juices was 23.4%[41].

Another important health-risk behavior is the low level of physical activity among students, and the women showed even lower levels. In a study conducted with students at a university in the State of São Paulo, the women were more sedentary than the men, and 17.4% of them were inactive[42].

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 also found in people of classes C and D[10]. A possible explanation for this behavior is the lack of time, since the type of work in these social classes is demanding and takes up a great deal of time, while the lack of suitable public places for practicing physical activity may also contribute to this high prevalence[42,43].

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[44].

Thus, healthcare students increasingly engage in academic and extracurricular activities, which may limit time spent on physical activity[45]. 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[45].

In addition, a Canadian study carried out with about 3,000 women found influence of the environment associated with physical inactivity. Women who lived in places with more businesses were more likely to be active, as well as a better perception of general security. In contrast, women who lived in places close to food businesses had a greater chance of physical inactivity[46].

An inadequate diet, rich in fats, poor in fruits and vegetables, and physical inactivity are associated with the appearance of several chronic diseases such as hypercholesterolemia, hypertension, diabetes mellitus and cancer and the current reality points to a worrying scenario in the world university environment, where women have a high prevalence of behavioral risk factors[47].

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 women[48].

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[11].

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[49].

The marked prevalence of high full-fat milk consumption by women (41.4%) is worrisome, as this habit is associated with the global risk of cardiovascular diseases, such as coronary heart disease and stroke[3]. The habit of consuming fatty meat was not assessed in other studies conducted with university students. In this study, the women had a high prevalence of consuming fatty mean (32.2%)[3].

A study carried out at the University of Alicante highlights that more than 90% of students have excessive consumption of red meat[4].

A study conducted with university students in Leon (Spain) and Bologna (Italy) showed that both groups consumed more fat and less vegetables than the recommended portions a day[50].

The majority of our sample (55.9%) was normal weight. This agrees with the results of other studies, in which normal weight was also more prevalent among university students[8]. In China, the prevalence of overweight and obesity among college students was 9.5%, with a specific prevalence of 13.5% in males and 6.1% in females[51].

In Saudi Arabia the overweight plus obesity rate among the college students was 28.1%[52]. In addition, a study conducted on university students from 7 European countries showed that weight ideals were rather uniform across the European countries, with female students being more likely to perceive themselves as too fat at normal BMI values[53].

We observed that inactive 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.

CONCLUSION AND IMPLICATION FOR PRACTICE

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.

The students demonstrated a bad lifestyle. Being overweight, low level of physical activity and unhealthy diet at risk are quite common characteristics of the health behavior of students during their time of study.

Therefore, the present study suggests that Brazilian universities create spaces for the promotion of the health of these nursing students and other areas of health within the scope of quality of life, promoting the development of preventive programs that guide students on the importance of a style healthier lifestyle. Students will be future professionals in nursing and other health areas, thus emphasizing healthier behaviors.

AUTHOR'S CONTRIBUTIONS

Study design. Luciana Zaranza Monteiro. Andrea Ramírez Varela

Data collection or production. Divina Marcia Soares de Oliveira. Mayara Vinnie Souza Soares Parente. Esther de Oliveira Silva.

Data Analysis. Luciana Zaranza Monteiro. Andrea Ramírez Varela.

Interpretation of results. Luciana Zaranza Monteiro. Andrea Ramírez Varela.

Writing and critical revision of the manuscript. Luciana Zaranza Monteiro. Divina Marcia Soares de Oliveira. Mayara Vinnie Souza Soares Parente. Esther de Oliveira Silva. Andrea Ramírez Varela.

Approval of the final version of the article. Luciana Zaranza Monteiro. Divina Marcia Soares de Oliveira. Mayara Vinnie Souza Soares Parente. Esther de Oliveira Silva. Andrea Ramírez Varela.

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ASSOCIATED EDITOR

Cristina Rosa Baixinho

SCIENTIFIC EDITOR

Ivone Evangelista Cabral

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