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Cardiovascular health in nursing and medical students

Saúde cardiovascular em estudantes de enfermagem e medicina

Salud cardiovascular en estudiantes de enfermería y medicina

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ABSTRACT

Objective: To verify whether nursing and medical students take measures regarding their cardiovascular health and the associated risk factors.

Method: Cross-sectional study, online data collection with 413 students in February and March 2021, using specific and validated instruments. Kruskal-Wallis, chi-square and logistic regression were adopted for statistical analyses.

Results: 73.3% self-reported that they were healthy. We identified a higher risk for developing cardiovascular diseases in sedentary students (OR = 38.6, $p < 0.001$), with irregular adherence to physical activity (OR = 16.2, $p < 0.001$) and with a higher level of perceived stress (OR = 1.12, $p < 0.001$).

Conclusion: Students who take action to promote cardiovascular health showed lower risk compared to those who did not. If students do not value their own health during the education process, this may interfere with their professional performance after graduation.

Descriptors: Health promotion. Heart disease risk factors. Student health. Cardiovascular diseases. Disease prevention. Students.

RESUMO

Objetivo: Verificar a realização de medidas para a saúde cardiovascular entre estudantes de enfermagem e medicina e fatores de risco associados.

Método: Estudo transversal, coleta de dados com 413 estudantes de forma online durante os meses de fevereiro e março de 2021, utilizando instrumentos específicos e validados. Kruskal-Wallis, qui-quadrado e regressão logística foram adotados como análise estatística.

Resultados:73,3% se autodeclaram saudáveis. Identificou-se maior risco para o desenvolvimento de doenças cardiovasculares em estudantes sedentários (OR = 38,6, $p < 0,001$), com adesão irregular à atividade física (OR = 16,2, $p < 0,001$) e com maior nível de estresse percebido (OR = 1,12, $p < 0,001$).

Conclusão: Os estudantes que desenvolviam alguma ação para promoção da saúde cardiovascular apresentaram menor risco em comparação àqueles que não desenvolviam nenhuma ação, nessa situação, o estudante que não valoriza a própria saúde,pode interferir na atuação profissional após a formação.

Descritores: Promoção da saúde. Fatores de risco de doenças cardíacas. Saúde do estudante. Doenças cardiovasculares. Prevenção de doenças. Estudantes.

RESUMEN

Objetivo: Verificar si estudiantes de enfermería y medicina toman medidas de salud cardiovasculares y los factores de riesgo asociados.

Método: Estudio transversal, recolección de datos online con 413 estudiantes durante febrero y marzo de 2021, utilizando instrumentos específicos y validados. Para análisis estadísticos se adoptaron Kruskal-Wallis, chi-cuadrado y regresión logística.

Resultados: El 73,3% autodeclaró estar sano. Se identificó mayor riesgo de desarrollar enfermedades cardiovasculares en estudiantes sedentarios (OR = 38,6, $p < 0,001$), con adherencia irregular a la actividad física (OR = 16,2, $p < 0,001$) y con mayor nivel de estrés percibido (OR = 1,12, $p < 0,001$).

Conclusión: Los estudiantes que desarrollaban alguna acción para promover la salud cardiovascular presentaron menor riesgo en comparación con los que no lo hacían. En esta situación, el hecho de no valorar su propia salud durante el proceso de formación puede interferir en el desempeño profesional del estudiante después de su formación.

Descriptores: Promoción de la salud. Factores de riesgo de enfermedad cardiaca. Salud del estudiante. Enfermedades cardiovasculares. Prevención de enfermedades. Estudiantes.

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INTRODUCTION

Health habits adopted since adolescence/youth can follow a person during their entire life cycle, allowing them to develop a lifestyle that favors good health conditions during adulthood[1]. This process continues to take place during university education. However, it is not always adequate, since entering university involves significant changes for most students, such as being away from family, taking on greater responsibility over their self-care, and managing the stress caused by the attempts to achieve good academic performance[2].

In addition to these new responsibilities, university students tend to have more freedom to make personal choices[2], with no direct influence of their family and parents. This can lead to the adoption of behaviors that are harmful to one's health, such as the use of alcohol and tobacco, and a sedentary lifestyle[1]. Some of the health issues that can be triggered in university students by inadequate behaviors are cardiovascular diseases (CVD). A recent Brazilian study with 46 graduation courses found a high prevalence of risk factors for CVD in university students, especially overweight, alcohol consumption, smoking, and physical inactivity[3].

There are a variety of risk factors for CVD, and the higher the number of risk factors the same person has, the lower the possibility of maintaining cardiovascular health[1]. The Brazilian Society of Cardiology (SBC)[4] states that the classic risk factors for CVD are, specially, hypertension, diabetes, dyslipidemia, obesity, physical inactivity, smoking, and family history. There are also other factors involving sociodemographic, ethnic, cultural, dietary, spiritual, psychosocial, and behavioral characteristics[4]. The impact of sociodemographic characteristics such as age, sex, ethnicity, and education are determinant of risk factors for CVDs.

Although university education itself already implies different changes in the lives of university students, some courses can present specific challenges. For example, medicine students have to deal with physical and emotional demands during academic education, which are made worse by entering a setting with little to no tolerance for mistakes. This leads to stress and emotional pressures that affect their wellbeing and can reduce their self-care[5]. As they advance in their formation, they can learn to hide or ignore feelings and emotions, to hold back feelings of impotence or weakness. This can also be related to the adoption of inadequate behaviors that will be risk factors to their health, such as reducing hours of sleep and exercise, smoking, and reducing measures of health prevention and promotion[6]. Therefore, in this context, starting or maintaining care for a better quality of life while dealing with experiences and pressures is challenging.

The setting of nursing education is no different in terms of the challenges faced. Many university students are already in the job market as nursing technicians or in other health field roles, having to handle work and university education simultaneously. In addition to the exhaustion that results from a routine filled with many activities, the time to participate in extracurricular activities in graduation is also restricted, including research and extension projects. This leads them to lose important opportunities for complementing their education[7]. Thus, nursing university students can have little sleep and exercise, and little time for leisure, in addition to other aspects that can have an impact on their health conditions, especially in regard to noncommunicable diseases (NCD), such as CVD[8].

University, especially in the courses in the health field, has a fundamental role in educating workers so they can be aware of the importance of promoting health and preventing CVD, making them signposts of the health related information in society[7]. It is equally important to identify whether undergraduates have healthy habits or are vulnerable to develop CVD. Identifying risk factors for CVD means uncovering the health profile of university students and finding the areas that should be prioritized to develop strategies to promote the health of this population[3]. Thus, since the rates of persons with CVD have been increasing, it is essential to discuss the topic in order to subsidize the making of decisions that minimize the risk of CVD and optimize actions to promote cardiovascular health.

Thus, the goal of this study was to verify whether nursing and medicine students are taking measures related with their cardiovascular health and ascertain the risk factors associated.

METHOD

This is a cross-sectional study developed in two higher education institutions (HEI), a public one and a private one, in a city in the southwest of Minas Gerais, in Brazil. The public institution has nursing and medicine courses, while the private institution only provides the medicine course.

A non-probabilistic sampling by convenience included all persons regularly enrolled in any period of the course, in both institutions, as long as they were aged 18 or older. University students whose registrations were on hiatus and

those who did not fill in the data collection instruments were excluded. 1261 undergraduates were invited, and 413 (32.8%) accepted participation.

To develop the research, we used a sociodemographic and health characterization questionnaire (seeking data regarding: sex; age; socioeconomic level; course; period; diagnosed cardiovascular disease; self-declaration about being healthy; actions taken to promote cardiovascular health).

Previous diagnoses of cardiovascular disease, self-perception about being healthy, and actions to promote health were investigated using YES or NO questions. In this regard, we asked students to consider their self-knowledge about these items.

Furthermore, we considered the following risk factors for CVD, according with the SBC[4] and other studies[1,3]: physical inactivity/sedentary lifestyle; inadequate diet; smoking; drinking; and stress. To evaluate these we applied the following instruments: the International Physical Activity Questionnaire – short version (IPAQ-C)[9] (to evaluate exercise levels); the Youth Risk Behavior Survey Questionnaire[10] (to evaluate dietary standards); Fageström test [11] (to evaluate the degree of nicotine dependence); Alcohol Use Disorders Identification Test-Consumption (AUDIT)[12] (to evaluate alcohol consumption); and Stress Perception Scale (EPS-10) [13] (to evaluate the level of stress perception).

The IPAQ-C is an instrument with four questions, each with subdivisions, regarding the practice of exercise (mild, moderate, vigorous, and sedentary). The questions are separated into items that discuss the amount and frequency of practices per session, in minutes. The classification the instrument provides are "Very Active", "Active", "Irregularly Active", and "Sedentary"[9].

Regarding the Youth Risk Behavior Survey Questionnaire in this study, we only used the questions related to diet (items related with eating habits in the last 7 to 30 days). According to the response options, participants are classified as "adequate" when the score is from seven to eight; "regular" when from four to six; and "inadequate" for three or less points[10].

The Fageström test is an instrument structured on a scale of six items, with a score from 0 to 10. The score allows classifying participants in five levels: very low (0-2 points); low (3-4 points); moderate (5 points); high (6-7 points); and very high (8-10 points). Nicotine dependence is characterized by as core > 5 points[11].

The AUDITis an instrument with 10 items covering three theoretical domains: (1) alcohol consumption; (2) alcohol consumption dependency; and (3) adverse consequences of alcohol consumption. The scores of the AUDIT classify the levels of alcohol consumption as: Zone I – score 0-7;Zone II – score 8-15; Zone III – score 16-19; and Zone IV – score 20-40. The lower the score, the lower the risk stemming from alcohol consumption, and vice-versa[12].

The Stress Perception Scale (EPS-10) evaluates stress considering three aspects: the presence of specific causal agents; physical and psychological symptoms; and general perception of stress, regardless of causing agent. The EPS-10 has 10 questions with four alternatives each. At the end, a score from 1 to 40 is reached, classifying the stress perceived by the participant. The lower the score, the lower the perceived stress[13].

Data collection took place online, during February and March 2021. University students were invited via e-mail and WhatsApp®, where they were present the study and referred to a Google Form where they could find the informed consent form. After reading the informed consent, the student that agreed to participate would click in "I accept" and be directed to the data collection instruments. If they clicked on "I do not accept", the document was finished. After 30 days from the first invitation, data collection came to a close.

To carry out data analysis, all information provided by the participants were inserted into Microsoft Excel 2010® spreadsheets via double input by two different researchers and later validation to guarantee the reliability of the data. Participants were divided into two groups, depending on their response to the variable "actions taken to promote cardiovascular health", thus separating students who performed these actions from those who did not. The groups were compared considering all variables using the chi-squared test for categorical variables and the Kruskal-Wallis for numerical ones.

We used a logistic regression to analyze the association between the actions to promote cardiovascular health and the variables physical activity, dietary habits, nicotine dependence, alcohol consumption, and stress levels. The significance of the model was evaluated using Wald's test. All analyses were carried out in the software R 4.1.2, considering a significance level of 5%.

The study was approved by the Research Ethics Committee at the Universidade de Franca (Opinion No. 4.481.467). All stages of the study followed Resolution 466/2012, from the National Council of Health.

RESULTS

The study included 413 university students, comparing the students from the courses of nursing (N) and medicine (M) regarding actions to promote cardiovascular health (G1) and the absence of these actions (G2). Table 1 shows information about student profile and whether the students take measures to promote their cardiovascular health.

Table 1 shows that nursing students were significantly older. Participants from both groups belonged to the B economic class. Most participants 388 (93.9%) do not know whether they have any CVD. Considering the self-report of students regarding the state of their health, 240 (58.1%) take actions to promote their health (G1) and 206 (49.9%) declared being healthy. The self-report on the health state was significantly higher, in both groups of students who take actions to promote cardiovascular health (G1-N and G1-M).

The level of physical activity, dietary habits, alcohol consumption, tobacco dependency, and perception of stress are shown in Table 2.

In Table 2, results showed that the two groups of participants that carried out actions to promote cardiovascular health (G1-N and G1-M) were significantly more active and satisfied with their body weight, although they also carried out more measures to reduce and/or maintain their weight. Both groups also remained seated for a longer time during the week, as did the group G2-N. Dietary habits and the use of tobacco and alcohol were no different between the groups. The groups that declared not taking actions to promote their cardiovascular health (G2-N and G2-M) showed a significantly higher perception of stress.

Table 3 presents likelihood estimates, that is, logistic regressions, associated with the lack of actions to promote cardiovascular health, considering the results found here about the profile of the students, Sociodemographic Characterization Questionnaires, IPAQ-C, Youth Risk Behavior Survey Questionnaire – "dietary habits" section, Fagerström Test, AUDIT, and EPS-10.

In Table 3, there were significantly higher chances of sedentary lifestyle (OR = 38.0, $\beta = 3.64$, SE = 0.67, $p < 0.001$), irregular practice of physical activities (OR = 16.2, $\beta = 2.78$, SE = 0.49, $p < 0.001$), and perceived level of stress (OR = 1.12, $\beta = 0.12$, SE = 0.03, $p < 0.001$) for students that did not take measures to promote cardiovascular health.

Table 1 – Academic, sociodemographic, and health characteristics of the participants (n=413). Passos, Minas Gerais, Brazil, 2021

Variables	Nursing		Medicine		Total (n = 413)	p‖
	G1-N* (n = 48)	G2-N† (n = 51)	G1-M‡ (n = 192)	G2-M§ (n = 122)		
Sex						**0.067**
Male	11 (22.9%)	13 (25.5%)	67 (34.9%)	33 (27%)	124 (30%)	
Female	36 (75%)	38 (74.5%)	125(65.1%)	89 (73 %)	288 (69.7%)	
Not declared	1 (2.1%)	0 (0%)	0 (0%)	0 (0%)	1 (0.2%)	
Age						**0.004**
Mean (SD¶)	24.5 (7.3)	23.7 (5.4)	22.1 (4.6)	22 (4.0)	22.5 (5.0)	
Socioeconomic classification						**0.007**
A¶	5 (10.4%)	7 (13.7%)	67 (34.9%)	35 (28.7%)	114 (27.6%)	
B1**-B2††	26 (54.2%)	32 (62.7%)	88 (45.8%)	61 (50.0%)	207 (50.1%)	
C1‡‡-C2§§	17 (35.4%)	11 (21.6%)	35 (18.8%)	26 (21.3%)	89 (21.5%)	
D‖‖-E¶¶	0 (0%)	1 (2.0%)	2 (1.0%)	0 (0%)	3 (0.7%)	

Table 1 – Cont.

Variables	Nursing		Medicine		Total (n = 413)	p‖
	G1-N* (n = 48)	G2-N† (n = 51)	G1-M‡ (n = 192)	G2-M§ (n = 122)		
Course						**<0.001**
Medicine – Private	145 (60.4%)	109 (63.0%)	254 (61.5%)			
Medicine – Public	47 (19.6%)	13 (7.5%)	60 (14.5%)			
Nursing – Public	48 (20.0%)	51 (29.5%)	99 (24.0%)			
Semester						**0.039**
1st	47 (19.6%)	47 (27.2%)	94 (22.8%)			
2nd	29 (12.1%)	13 (7.5%)	42 (10.2%)			
3rd	63 (26.2%)	35 (20.2%)	98 (23.7%)			
4th	18 (7.5%)	14 (8.1%)	32 (7.7%)			
5th	29 (12.1%)	30 (17.3%)	59 (14.3%)			
6th	21 (8.8%)	11 (6.4%)	32 (7.7%)			
7º	11 (4.6%)	2 (1.2%)	13 (3.1%)			
8º	7 (2.9%)	10 (5.8%)	17 (4.1%)			
9º	6 (2.5%)	1 (0.6%)	7 (1.7%)			
10º	9 (3.8%)	10 (5.8%)	19 (4.6%)			
CVD diagnosis**						**0.174**
Yes	1 (2.1%)	4 (7.8%)	11 (5.7%)	4 (3.3%)	20 (4.8%)	
No	47 (97.9%)	47 (92.2%)	180(93.8%)	114(93.4%)	388 (93.9%)	
Did not know	0 (0%)	0 (0%)	1 (0.5%)	4 (3.3%)	5 (1.2%)	
Self-reported healthy						**<0.001**
Yes	39 (81.2%)	31 (60.8%)	167 (87%)	74 (60.7%)	311 (75.3%)	
No	9 (18.8%)	20 (39.2%)	25 (13.0%)	48 (39.3%)	102 (24.7%)	

Source: Research data, 2021.

*G1-N = Group 1 – nursing; †G2-N = Group 2 – nursing; ‡G1-M = Group 1 – medicine; §G2-M = Group 2 – medicine; p‖ = significance level; ¶SD = standard deviation; ¶A = Family income of 9.48 minimum wages (R$1100.00); **B1 = Family income of 4.95 minimum wages (R$1100.00); ††B2 = Family income of 2,77 minimum wages (R$1100.00); ‡‡C1 = Family income of 2.77 minimum wages (R$1100.00); §§C2 = Family income of 1.67 minimum wages (R$1100.00); ‖‖D = Family income of 0.74 minimum wages (R$1100.00); ¶¶E = Family income of 0.74 minimum wages (R$1100.00); **CVD = cardiovascular disease.

Table 2 – Classification of participants according with measures taken for cardiovascular health (n=413). Passos, Minas Gerais, Brazil, 2021

Variables	Nursing		Medicine		Total (n = 413)	p‖
	G1-N* (n = 48)	G2-N† (n = 51)	G1-M‡ (n = 192)	G2-M§ (n = 122)		
IPAQ-C**						**0,007**
Very Active	17 (35.4%)	2 (3.9%)	61 (31.8%)	8 (6.6%)	88 (21.3%)	
Active	21 (43.8%)	22 (43.1%)	91 (47.4%)	30 (24.6%)	164 (39.7%)	
Irregularly Active	9 (18.8%)	17 (33.3%)	29 (15.1%)	52 (42.6%)	107 (25.9%)	
Sedentary lifestyle	1 (2.1%)	10 (19.6%)	11 (5.7%)	32 (26.2%)	54 (13.1%)	
Time sitting – Week days						**0.028**
Medium (SD††)	457.8 (384.4)	683.3 (1035.5)	669.0 (527.4)	772.4 (520.3)	677.0 (602.5)	
Time sitting – Weekends						**0.161**
Medium (SD††)	445.4 (239.8)	493.0 (362.0)	472.4 (244.7)	529.9 (227.5)	488.9 (256.3)	
Satisfaction with body weight						**<0.001**
Yes	22 (45.8%)	15 (29.4%)	111(57.8%)	45 (36.4%)	193 (46.7%)	
No	26 (54.2%)	36 (70.6%)	81 (42.2%)	77 (63.1%)	220 (53.3%)	
Initiatives to reduce/maintain weight						**0.048**
Yes	40 (83.3%)	38 (74.5%)	163(84.9%)	89 (73.0%)	330 (79.9%)	
No	8 (16.7%)	13 (25.5%)	29 (15.1%)	33 (27%)	83 (20.1%)	
Classification of dietary habits						**0.461**
Adequate consumption	14 (29.2%)	14 (27.5%)	70 (36.5%)	36 (29.5%)	134 (32.4%)	
Regular consumption	31 (64.6%)	29 (56.9%)	103(53.6%)	69 (56.6%)	232 (56.2%)	
Inadequate consumption	3 (6.2%)	8 (15.7%)	19 (9.9%)	17 (13.9%)	47 (11.4%)	
Nicotine used						**0.141**
Yes	3 (6.2%)	8 (15.7%)	14 (7.3%)	7 (5.7%)	32 (7.7%)	
No	45 (93.8%)	43 (84.3%)	178 (92.7%)	115 (94.3%)	381 (92.3%)	
Number of cigarettes per day						**0.487**
Less than 10	3 (100%)	7 (87%)	14 (100%)	6 (85.7%)	30 (93.8%)	
From 10 to 20	0 (0%)	1 (12.5%)	0 (0%)	1 (14.3%)	2 (6.2%)	

Table 2 – Cont.

Variables	Nursing		Medicine		Total (n = 413)	p‖
	G1-N* (n = 48)	G2-N† (n = 51)	G1-M‡ (n = 192)	G2-M§ (n = 122)		
Fagerström Test						**0.619**
Mild dependence	3 (100%)	5 (62.5%)	13 (92.9%)	5 (71.4%)	26 (81.2%)	
Moderate dependence	0 (0%)	2 (25.0%)	1 (7.1%)	2 (28.6%)	5 (15.6%)	
Severe dependence	0 (0%)	1 (12.5%)	0 (0%)	0 (0%)	1 (3.1%)	
Drinking						**0.238**
Yes	34 (70.8%)	29 (56.9%)	137(71.4%)	81 (66.4%)	281 (68.0%)	
No	14 (29.2%)	22 (43.1%)	55 (28.6%)	41 (33.6%)	132 (32.0%)	
Frequency of drinking						**0.253**
≤ 1 once a month	11 (32.4%)	6 (20.7%)	33 (24.1%)	21 (25.9%)	71 (25.3%)	
2-4 times a week	20 (58.8%)	18 (62.1%)	98 (71.5%)	52 (64.2%)	188 (66.9%)	
≥ 4 times a week	3 (8.8%)	5 (17.2%)	6 (4.4%)	8 (9.9%)	22 (7.8%)	
Number of drinks						**0.436**
1 or 2	18 (52.9%)	16 (55.2%)	63 (46.0%)	34 (42.0%)	131 (46.6%)	
3 or 4	6 (17.6%)	6 (20.7%)	45 (32.8%)	28 (34.6%)	85 (30.2%)	
5 or 6	6 (17.6%)	5 (17.2%)	25 (18.2%)	12 (14.8%)	48 (17.1%)	
7 or 8	3 (8.8%)	1 (3.4%)	3 (2.2%)	3 (3.7%)	10 (3.6%)	
10 or more	1 (2.9%)	1 (3.4%)	1 (0.7%)	4 (4.9%)	7 (2.5%)	
AUDIT‡‡‡						**0,125**
Zone I	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Zone II	15 (44.1%)	17 (58.6%)	86 (62.8%)	49 (60.5%)	167 (59.4%)	
Zone III	7 (20.6%)	4 (13.8%)	29 (21.2%)	20 (24.7%)	60 (21.4%)	
Zone IV	12 (35.3%)	8 (27.6%)	22 (16.1%)	12 (14.8%)	54 (19.2%)	
Stress perception						**<0.001**
Mean (SD†††)	20.5 (5.3)	23.1 (5.4)	19.3 (5.4)	22.0 (5.5)	20.7 (5.6)	

Source: Research data, 2021.
*G1-N = Group 1 – nursing; †G2-N = Group 2 – nursing; ‡G1-M = Group 1 – medicine; §G2-M = Group 2 – medicine; p‖ = significance level; ***IPAQ-C = International Physical Activity Questionnaire, short version; ††† ¶SD = standard deviation; ‡‡‡AUDIT =Alcohol Use Disorders Identification Test-Consumption.

Table 3 – Logistic regression of self-declared participants regarding the lack of measure to promote cardiovascular health (n=413). Passos, Minas Gerais, Brazil, 2021

	OR*	CI95%†		β‡	SE§	Statistic	p‖
Level of physical activity (Active)	2.36	1.00	6.10	0.86	0.46	1.88	0.06
Level of physical activity (Irregularly active)	16.12	6.52	44.38	2.78	0.49	5.73	0.00
Level of physical activity (sedentary lifestyle)	38.02	10.94	156.88	3.64	0.67	5.40	0.00
Dietary habits = regular	1.25	0.64	2.46	0.22	0.34	0.64	0.52
Dietary habits = inadequate	2.71	0.93	8.01	1.00	0.54	1.83	0.07
Tobacco = moderate dependence	0.61	0.23	1.64	-0.50	0.50	-1.01	0.31
AUDIT-C§§ = Zone III	0.55	0.25	1.18	-0.60	0.39	-1.51	0.13
AUDIT-C§§ = Zone IV	0.41	0.16	0.95	-0.90	0.45	-2.02	0.04
Stress perception	1.12	1.06	1.19	0.12	0.03	3.90	0.00

Source: Research data, 2021.
Result of Wald's test: chi-squared = 59.6, df = 7, P(> X2) = 1.8e-10. Categorical independent variable values consider category 1 as a reference.
*OR = Odds ratio; †CI95% = Confidence interval of 95% for the odds ratio value. ‡β = Beta; §SE = standard error; ‖p = significance level; ¶B1 = Family income R$10.427,74; **B2 = Family income R$5.449,60; ††C1 = Family income R$3.042,47; ‡‡C2 = Family income R$1.805,91; §§AUDIT-C = Teste Alcohol Use Disorders Identification Test-Consumption.

DISCUSSION

This study aimed to verify whether nursing and medicine students take action regarding their cardiovascular health, and the risk factors associated. Results suggested that nursing students are significantly older than medicine students, which can be related to the fact that the nursing course received many more students who are already in the job market, specifically, working as nursing technicians[2]. The predominance of females in both courses (nursing and medicine) is consistent with literature, as this gender relation is a historical-social construction of university courses related to care, which tend to have more feminine presence[2].

Results regarding social class were above the mean of the Brazilian population. Classes A and B make up for approximately 23.6%[14,15] of the population, while, in this study, they represented 77.7% of the participants. It should be noted that taking action for health promotion is not strictly related with socioeconomic conditions, since caring for one's health is an essential human strategy, and many actions do not involve financial costs, such as the practice of physical activity. However, evidence shows that the socioeconomic level has an influence on the health conditions of university students, with those with a lower income paying less attention to healthy habits when compared to those with higher incomes[2].

Most participants declared to take action to promote their cardiovascular health (58.1%), and 93.9% did not have a diagnosed CVD. This indicates that most are concerned with their health conditions. Maybe the fact that the participants in the study are graduating in the health field can explain the result, since they can be more aware of the relevance of carrying out activities to prevent CVDs and to promote health, in order to avoid diseases and increase their quality of life and wellbeing. The prevalence of behaviors that negatively influence health in undergraduates from different fields, especially concerning diets, physical activity, nicotine use, and alcohol ingestion, shows a growing risk of developing chronic health issues[16].

However, the results of this study are different from data in literature about medicine university students, such as those from a multicentric study carried out in 22 medical schools in Brazil, in which participants showed lower scores of self-care for their health[17]. Although most participants in this study take action to promote cardiovascular health, those who take no such actions cannot be ignored.

Regarding the practice of exercising, participants who declared that they carry out actions of cardiovascular health

promotion were classified as active or very active, while those who declare not developing actions to promote cardiovascular health were classified as irregularly active or sedentary, both in the group of nursing students and in that of medicine students. One of the reasons can be the difficulties conciliating academic work with the practice of physical activities. In this regard, a study analyzed the reasons why participants abandoned the practice of physical activity, finding that being too tired is the main cause. However, they note that this is a complex, multidimensional phenomenon, and indicate the need to combat physical inactivity in the university environment through programs to raise awareness about the importance of physical activity and promote exercising[18].

In this context, sedentary behavior is predominant in current society, and this is also true among university students. This behavior is seen as determinant for the risk of CVDs and death by chronic diseases[19]. This confirms the efficacy of contemporary strategies adapted to the interests of university students to promote physical activity and the consequent maintenance of cardiovascular health.

Regarding the body weight of the participants from the courses of nursing and medicine, the results were significant, showing that participants who do actions to promote their cardiovascular health are more satisfied, while those who do not have a higher level of dissatisfaction. Both groups expressed that they carry out initiatives to reduce and/or maintain their weight. It stands out that, regarding eating habits, there was a slightly higher number of inadequate consumption in the group of students who do not take action to promote cardiovascular health. This is in agreement with a study carried out in China with university students, which showed that 61.6% were not satisfied with their body image and had a high level of dietary restrictions[20].

The eating standards of university students are a consequence of the different habits adopted after entering higher education[21]. Therefore, the risk for adopting inadequate eating habits is higher and increases the odds of developing chronic diseases, including CVDs. This shows the need to promote health eating behaviors. Factors that determine eating habits in university students from the United States found that most (80%) followed no specific diet and reported a moderately good self-perception of health[21]. Therefore, strategies to promote healthy diets are necessary, since health students will be future professionals that, ideally, will serve as examples and influence the lifestyle of the population.

Considering the use of nicotine, it was prevalent in 7.7% of participants, with severe and moderate dependence in nursing and medicine students who declared not taking action to promote cardiovascular health. There has been a remarkable recent increase in the access of university students to tobacco through electronic cigarettes and hookahs, showing the need to take action to control this type of smoking.

However, there is a significant prevalence of smoking in Brazilian students. This can be related with strategic public measures of control adopted in the Brazilian context.[22–24]. A Brazilian study with medicine undergraduates found a prevalence of 5.23%[25], and its authors highlighted that future health workers should be capable of having a role in the control of smoking in society. For this to happen, they need to learn about measures to control the tobacco epidemic and be trained in regard to smoking cessation during their graduations, in order to become healthy and understand their social role in the struggle against smoking.

The results of this investigation showed the prevalence of alcohol consumption among nursing and medicine undergraduates is 68%. It is noteworthy that those who mention taking action to promote their health drink more alcohol than those who declare to take no such actions. This can be associated to the possibility that the student does not see alcohol as something bad for their health. The risk zone identified by the AUDIT instrument showed a significant difference in the groups, especially in Zone II, considering them as risk users.

A multicentric study[26] developed in Korean universities showed different results in their participants, indicating that 54.5% of medicine undergraduates presented a low risk according to the AUDIT instrument, although the incidence of alcohol consumption was approximately 90%. Similarly, a research found an alcohol consumption of 83.7% among nursing students[27]. It is possible to infer that alcohol consumption during university can bring harm after graduation, since health behavior, including alcohol consumption, can affect the quality of the counseling provided to patients[26]. Furthermore, it should be noted that alcohol can lead to other activities that are negative influences to health, such as association of alcohol and tobacco, inadequate diets, physical inactivity, irregular sleeping patterns, illegal drugs, and even insufficient academic performance, as mentioned by several studies[26,27].

Regarding stress perception, those who declared they do not take action to promote their cardiovascular health showed a higher perception of stress. The reason for stress in the university context can be related with several factors. They include the adaptation required in the beginning of the course, personal and affective conflicts, expectations regarding the end of graduation, time limits, the personality of professors, an overload of activities, and the competitive nature of higher education.

It stands out that stress in the university student can lead them to other risk factors, such as developing inadequate eating patterns, which in turn would make them more vulnerable to overweight/obesity[28]. Thus, it is essential for actions to be established in communities and higher education institutions to prevent stress, identify it early, and treat it.

Sedentary lifestyle, inadequate eating habits, and perceived stress levels were significantly associated, in this study, with the risk of developing CVDs as a result of not taking actions to promote cardiovascular health, as declared by the participants. Health promoting should be interwoven with higher education, since students should be in adequate health conditions if they are to learn better in the education process; they also should be prepared to teach, and have a good lifestyle after education[29]. Corroborating this issue, a study shows that inadequate behaviors, including physical inactivity, eating habits, and alcohol/tobacco consumption, can have an impact on the academic success and on the mean grades of university students[30].

HIEs should intervene to promote the health of students and prevent health issues, regardless of their current health situations, in order to mitigate the risk that they would develop life habits that are harmful to their health[29]. Similarly, it is necessary to strengthen public policies and educational programs for health promotion and prevention.

It is undeniable that HIEs have an essential role as promoters of health. The environment, services, and strategies adopted may or may not be positive influences for students to take action to promote their cardiovascular health. The effects will be seen during education, throughout their lives, and will have a long-term impact concerning health care.

A limitation of this study is the fact that its sample was composed by accessibility/convenience, involving only these two universities, which prevents its results from being generalized. It could also be mentioned that the measures for cardiovascular health were carried out through online collection instruments, depending on the self-report of participants.

Among the implications of the advance of scientific knowledge for the field of health and nursing, these results show a path to be followed in regard to approaches to prevent the development of CVDs and promote the cardiovascular health of nursing and medicine undergraduates, making it possible to plan effective strategies.

CONCLUSION

This contributes to knowledge about risk factors to the cardiovascular health of nursing and medicine undergraduates. Our results showed that actions to promote cardiovascular reduce the risk for sedentary lifestyles, regular exercise, and stress. Thus, strategies focused on exercising and reducing stress should be prioritized.

University students, especially in nursing and medicine, have a unique education, and will work as agents to transform the health of the population. This involves, among other elements, practicing health promotion to mitigate diseases. If the student does not value their own health during their education, this could interfere in their professional activity after education.

Future studies can be carried out in order to further investigate our findings, preferably with approaches of a higher level of evidence. Furthermore, contemporary strategies to influence attitudes and behaviors of university students regarding topics related to cardiovascular health should be encouraged, in order to reduce the risk of cardiovascular diseases. The HEIs have a very important role in encouraging actions to promote cardiovascular health, but elementary and high school, families, and the community as a whole are also very relevant in this regard.

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