Knowledge of university nursing students on cardiovascular risk factors

Conhecimentos de universitários de enfermagem sobre fatores de risco cardiovascular

Conocimientos de universitarios de enfermería sobre factores de riesgo cardiovascular

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RESUMO

Objetivo: Analisar o conhecimento de universitários de enfermagem ingressantes e concluintes sobre fatores de risco cardiovascular (FRCV). Métodos: Estudo transversal realizado em universidade pública, na Bahia, com 286 estudantes de enfermagem, em 2017. Aplicou-se instrumentos para caracterização sociodemográfica, acadêmica e do conhecimento sobre FRCV. As variáveis foram analisadas em frequências absolutas e relativas, médias, medianas e Intervalo Interquartílico (IIQ) e pelo teste de Mann-Whitney. Adotou-se nível de significância de 5%. Resultados: Dos 286 universitários, 53,5% conceituaram corretamente FRCV e 98,3% conheciam algum dos FRCV. A mediana de FRCV conhecidos pelos universitários do 1◦ ao 5◦ semestre foi de 4 (IIQ=3;5) e do 6◦ ao 10◦ de 5 (IIQ=3;6), (p= 0.00). Entre os FRCV mais citados constatou-se sedentarismo (65,9%) e tabagismo (54,7%). Quanto ao conhecimento específico sobre cada FRCV, menor proporção de acertos recaiu sobre malefícios do tabagismo (44,3%), recomendações para atividade física (81,2%) e controle da hipertensão arterial (96,2%), valores recomendados para circunferência da cintura (62,7%) e HDL-C (95,1%), consumo aceitável de bebida alcoólica (83,3%), conceito e consequências do estresse (82,2%) e outros parâmetros de interpretação de alguns FRCV (43,2%). Conclusão: Os universitários conheciam parcialmente os FRCV, especialmente nos primeiros semestres do curso, exigindo investimentos continuados na formação.

Descritores: Estudantes de Enfermagem; Fatores de Risco Cardíaco; Conhecimento.

ABSTRACT

Objective: To analyze the knowledge of incoming and outgoing nursing students about cardiovascular risk factors (CVRFs). Methods: Cross-sectional study carried out at a public university, in Bahia, with 286 nursing students, in 2017. Instruments were applied to characterize sociodemographic, academic and knowledge about CVRFs. The variables were analyzed in absolute and relative frequencies, means, medians and Interquartile Range (IIQ) and by the Mann-Whitney test. A significance level of 5% was adopted. Results: Of the 286 university students, 53.5% correctly conceptualized CVRFs and 98.3% knew some of the CVRFs. The median CVRFs known by university students from the 1st to the 5th semester was 4 (IIQ=3;5) and from the 6th to the 10th semester was 5 (IIQ=3;6), (p= 0.00). Among the most cited CVRFs were sedentary lifestyle (65.9%) and smoking (54.7%). Regarding specific knowledge about each CVRFs, the lowest proportion of correct answers was related to the harm caused by smoking (44.3%), recommendations for physical activity (81.2%) and control of high blood pressure (96.2%), recommended values for circumference waist size (62.7%) and HDL-C (95.1%), acceptable consumption of alcoholic beverages (83.3%), concept and consequences of stress (82.2%) and other parameters for interpreting some CVRFs (43.2%). Conclusion: University students were partially aware of the CVRFs, especially in the first semesters of the course, requiring continued investment in training.

Descriptors: Nursing Students; Cardiac Risk Factors; Knowledge.

RESUMEN

Objetivo: Analizar el conocimiento de estudios universitarios incipientes y concluyentes sobre factores de riesgo para enfermedades cardiovasculares (FRCV). Métodos: Estudio transversal realizado en una universidad pública de Bahía, con 286 estudiantes enfermos, en 2017. Aplicación de instrumentos sociodemográficos, académicos y de caracterización del conocimiento sobre los FRCV. Las variables se analizaron en frecuencias absolutas y relativas, medias, medianas y rango intercuartil (IIQ) mediante la prueba de Mann-Whitney. Se adoptó un nivel de significancia del 5%. Resultados: De los 286 estudiantes universitarios, el 53,5% conocía correctamente la FRCV y el 98,3% conocía alguna FRCV. La mediana de FRCV entre los estudiantes universitarios de 1.° año o 5.° semestre fue 4 (IIQ=3.5) y en 6.° año o 10.° semestre fue 5 (IIQ=3.6), (p= 0.00). Entre los FRCV más citados encontramos el sedentarismo (65,9%) y el tabaquismo (54,7%). A mayor conocimiento específico sobre cada FRCV, menor proporción de respuestas correctas se dieron en relación con problemas de tabaquismo (44,3%), recomendaciones de actividad física (81,2%) y control de la hipertensión arterial (96,2%), valores recomendados de circunferencia de cintura (62,7%). %) y cHDL (95,1%), consumo de aceites provenientes de bebidas alcohólicas (83,3%), concepción y consecuencias del estrés (82,2%) y otros parámetros de interpretación de algunos FRCV (43,2%). Conclusión: Las universidades reconocen parcialmente el FRCV, especialmente en los primeros semestres de la carrera, lo que requiere una inversión continua en capacitación.

Descriptores: Estudiantes de Enfermería; Factores de Riesgo Cardíaco; Conocimiento..

ORIGINAL

Introdução

Cardiovascular diseases (CVD) are the main causes of morbidity and mortality, causing 17 million deaths per year worldwide, with emphasis on coronary and cerebrovascular diseases [1]. In Brazil, they corresponded to 220,000 deaths in 2022 [2].

Coronary and cerebrovascular diseases are more commonly diagnosed in adults and their manifestation results from the interaction of multiple modifiable and non-modifiable cardiovascular risk factors (CVRF), often acquired at early ages. Modifiable CVRF, also known as behavioral, include smoking, inadequate diet, sedentary lifestyle, excessive alcohol consumption, and psychosocial stress. Also noteworthy in this group are overweight, arterial hypertension, dyslipidemia, and type 2 diabetes mellitus. The non-modifiable ones, on the other hand, refer to age, sex, race/color and genetic inheritance[1]. It is noteworthy that the complexity of the pathophysiology in the process of atherosclerosis formation and the variety of risk factors for arterial disease have important impacts on morbidity and mortality [3].

In Brazil, the prevalence of modifiable CVRF is high and the main strategies for its reduction include the implementation of public health promotion policies and actions aimed at preventing and controlling these factors. If effective, they can minimize mortality and cardiovascular morbidity [3], so the implementation of lifestyle changes, primary and secondary prevention, combined with early diagnosis and appropriate therapy are fundamental [1].

The effective management of CVRF requires a multidisciplinary approach and a qualified workforce to screen risk groups, share knowledge and experiences related to prevention and control measures, and encourage the appreciation of changes in ways of living. Studies have shown the effectiveness of nurse-managed programs to reduce the risk of cardiovascular disease in individuals, groups, and communities[4-5]. In this sense, it is essential to continue academic training of future nurses to support health care and effective therapeutic conduct.

Investigating the knowledge about CVRF prevention and control measures throughout university nursing education is fundamental, given that the knowledge acquired is a primary step to direct the self-care of nursing university students[1] and it is one of the indicators of client care in relation to clinical evaluation and the sharing of nursing care practices[6]. In addition, university students' knowledge of CVRF provides information to evaluate curricula and identify possible gaps in training [6,7].

Knowledge about CVRF is essential in clinical practice, as health service users need and ask for the guidance of health professionals on the appropriate recommendations for the prevention and control of health problems, considering them possible specialists on the subject. University students who are concerned with knowing the care and treatment for the prevention of CVD will be able to recognize the value of adopting healthy lifestyle habits and serve as a model in counseling future clients [6-8].

The insufficient knowledge of university students in the health area about the prevention and control measures of CVRF disfavors the search for preventive behaviors, as well as does not ensure the proper competence to guide and recognize individuals exposed to cardiovascular risks. Consequently, actions that could contribute to reducing the burden of CVD morbidity and mortality in

the population are compromised[3]. With health education actions, nurses can generate opportunities for reflection on healthy ways of living and teach care practices for the maintenance and restoration of life to different population groups [6, 8-9].

Based on the above, and knowing that few studies have been dedicated to verifying the knowledge of nursing students about CVRF, the objective of this investigation was: To analyze the knowledge of freshmen and graduating nursing students about CVRF.

Methodology

This is a cross-sectional study with university students from an undergraduate nursing course at a public university located in the state of Bahia, Brazil.

University students who met the inclusion criteria participated in the investigation: being enrolled between the first and tenth semester of the course, of both sexes and with a minimum age of 18 years. The exclusion criteria were university students who were removed from the course due to suspension or exchange.

The number of students enrolled in each semester of the course in the data collection period was: 48 in the first, 39 in the second, 18 in the third, 32 in the fourth, 34 in the fifth, 34 in the sixth, 39 in the seventh, 29 in the eighth, 36 in the ninth and 44 in the tenth, totaling 353 university students. All were invited to participate in the study, according to the enrollment record made available by the Collegiate of the Undergraduate Course. Of these, 286 (81.0%) met the inclusion criteria and agreed to participate in the research, constituting the participants of this investigation.

For data collection, in 2017, three instruments were used, namely:

1. Sociodemographic data: consisting of closed and semi-structured questions to collect data on age in years, gender, self-declared race/color, marital status, monthly family income, number of dependents on family income, monthly personal expenses and employment status.

2. Academic life data: composed of closed and open questions related to the current semester, workload taken in the semester, participation in extra-class activities, number of hours dedicated to the course outside class hours, number of courses taken in the current semester and professional experience in the health area.

3. Knowledge about FRCV: composed of two open questions, one multiple choice and 29 closed questions. The open questions evaluated the FRCV known by the students and the disciplines that addressed the theme. The multiple-choice question surveyed the sources of information on CVRF accessed by the participants, and the closed ones focused on anthropometric measurements, lipid profile, smoking, physical activity, alcohol consumption, hypertension, type 2 diabetes mellitus, stress, and prevention and control of CVRF. The instrument used was built by Pires; Azevedo; Mussi [10], based on the literature and its content, was checked in the current literature to verify the updating of the theme according to guidelines [11-12].

To operationalize the data collection, a meeting was initially scheduled with the coordinator of the Collegiate of the Undergraduate Nursing Course and the objectives of the research were explained. Then the day, time and place for the first approach to the students and the identification of rooms attended in their respective semesters were agreed. At the time scheduled in the collegiate for the day of the first approach of the students, in the classroom, the presentation of the researchers, the explanation of the objectives and importance of the research and the orientation of the data collection procedures were carried out. Those interested in participating were given the Informed Consent Form (ICF) for reading and asked to reflect on its content and analyze acquiescence to the study. The researchers were scheduled to return to the classroom a week later to clarify doubts, identify adherence to the research and sign the Informed Consent Form. A copy of the informed consent form was given to the study subjects. The questionnaires were answered by the university students in the classroom.

This study is part of the matrix project entitled "Cardiovascular risk factors in nursing undergraduates: implications for health care (FRCENF)", which was approved by the Research Ethics Committee. The development of the research with human beings complied with national and international standards of ethics in research involving human beings, based on resolution 466/2012 of the National Health Council of the Ministry of Health.

Categorical variables were analyzed in absolute (n) and relative (%) frequencies. Age was analyzed as mean and standard deviation, and the other quantitative variables were analyzed as medians and Interquartile Range (IQR), since the data did not show symmetry. For categorical independent variables with two categories, this association was investigated using the Mann-Whitney test, when comparing the median CVRF known by university students from the 1st to the 5th semesters with the median CVRF known by university students from the 6th to the 10th semesters. All analyses were conducted using the Statistical Package of Social Science (SPSS) software, version 22.0. A significance level (α) of 5% was adopted.

Results

A total of 286 university students participated in this study, with a mean age of 23.4 years (SD = 4.4), with a minimum age of 18 and a maximum of 50 years. There was a predominance of university students aged 22 years or older (69.6%), female (90.2%), inactive in terms of employment status (81.5%), self-declared black (87.8%) and single with a partner (90.9%).

Regarding monthly family income, 44.1% received between 3 and 5 minimum wages and 61.6% had three to four people dependent on the income. Monthly personal expenses for 64.7% were greater than or equal to one minimum wage (Table 1).

Table 1 - Sociodemographic characteristics of nursing students, Bahia.

Sociodemographic characteristics	Total n (%)
Age group	
18 to 21 years old	87 (30,4)
22 years or older	199 (69,6)
Sex	
Female	258 (90,2)
Male	28 (9,8)
Self-declared race/color	
Black (brown and black)	251 (87,8)
White	33 (11,5)
Yellow	2 (0,7)
Marital status	
Single with partner	260 (90,9)
Married/Stable Union	24 (8,4)
Separated/divorced	2 (0,7)
Family income/month (in MW) *	
Up to 2	83 (29,0)
3 to 5	126 (44,1)
≥ 6	77 (26,9)
No of dependents on family income	
1 to 2	76 (26,6)
3 to 4	176 (61,6)
> 4	34 (11,8)
Personal expenses/month (in MW)	
<1	101(35,3)
≥ 1	185 (64,7)
Employment situation	
Active	53 (18,5)
Inactive	233 (81,5)

Nota: *Salário-mínimo (SM) da época da pesquisa R$880,00.

Regarding the characteristics of academic life, there was a predominance of university students attending the semesters: seventh (15.4%), fifth (11.5%) and ninth (11.5%). Most of them took four or more courses (67.5%), had a semester workload between 401 and 500 hours (58.8%), did not perform extracurricular activities (51.4%), dedicated 2 to 3 hours to studies outside class hours (43.0%) and had no experience in the health area (91.6%).

Table 2 - Characteristics of the academic life of nursing university students, Bahia.

Characteristics of academic life	n (%)
Current semester	
1st semester	31 (10,8)
2nd semester	28 (9,8)
3rd semester	13 (4,5)
4th semester	25 (8,7)
5th semester	33 (11,5)
6th semester	28 (9,8)
7th semester	44 (15,4)
8th semester	24 (8,4)

9th semester	33 (11,5)
10th semester	27 (9,4)
Mandatory workload taken in the semester	
136 to 400 h	69 (24,1)
401 to 500 h	168 (58,8)
≥ 500 h	49 (17,1)
Hours of study dedicated to the course outside of class hours	
0 to 1h	43 (15,0)
2 to 3 h	123 (43,0)
> 3	120 (42,0)
Number of courses in the current semester	
≤ 3	93 (32,5)
≥ 4	193 (67,5)
Participation in extracurricular activities	
Yes	139 (48,6)
No	147 (51,4)
Professional experience in the health area	
Yes	24 (8,4)
No	262 (91,6)

Regarding knowledge about CVRF, of the 286 university students, 53.5% mentioned the correct definition of the concept of CVRF, 98.3% reported knowing some of the CVRF and 1.7% were unaware of them. The median number of CVRF reported was 4 (IQR=3; 6), and it was observed that most reported knowing 3 to 5 CVRF (54.7%), followed by those who reported knowing 6 to 8 (21.2%), (Figure 1).

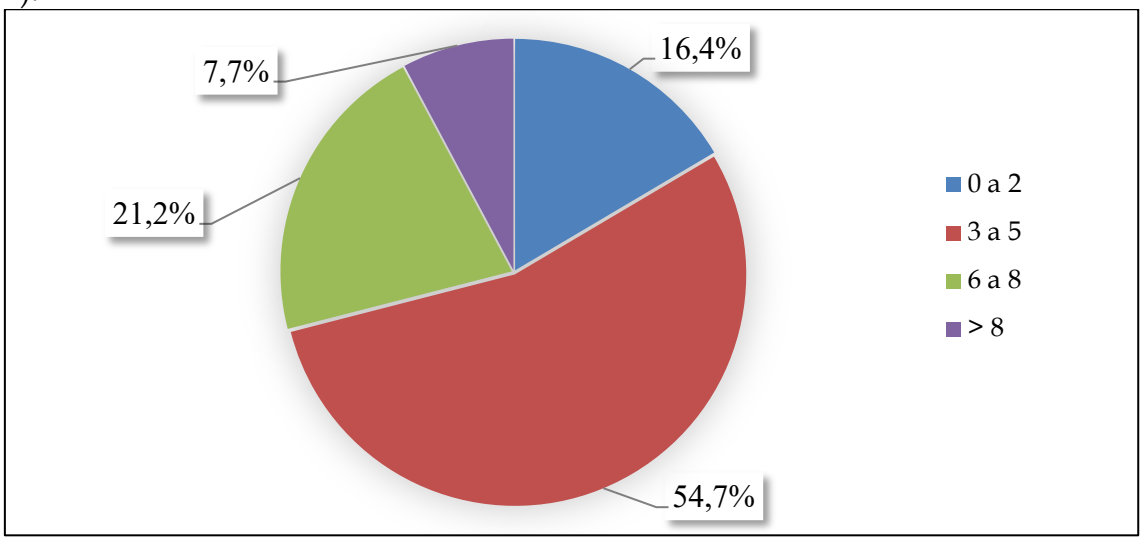

Figure 1 - Number of CVRF known to nursing students, Bahia**.**

Among the most cited modifiable CVRF were sedentary lifestyle (65.9%), smoking (54.7%), inadequate diet (48.1%), obesity (42.9%), systemic arterial hypertension (40.4%) and excessive alcohol consumption (36.6%). Among the non-modifiable diseases, the most frequently described were heredity (42.9%) and age (19.9%) (Table 3).

Table 3 - Cardiovascular risk factors known to nursing students. Bahia.

FRCV mentioned	n (%)
Sedentary lifestyle	189 (65,9)
Smoking	157 (54,7)
Inadequate diet	138 (48,1)
Heredity	123 (42,9)
Obesity	123 (42,9)
Systemic arterial hypertension	116 (40,4)
Excessive alcohol consumption	105 (36,6)
Type 2 diabetes mellitus	87 (30,3)
Stress	73 (25,4)
Age	57 (19,9)
Sex	35 (12,2)
Race/color	23 (8,0)

The median of CVRF known to university students from the 1st to the 5th semester was 4 (IQR=3; 5) and for university students from the 6th to the 10th semester was 5 (IQR=3; 6. The Wilcoxon Mann-Whitney test rejected the hypothesis of equality of medians between the groups, considering the significance of 5% (p= 0.00)

Table 4 shows the proportion of correct answers regarding the knowledge of university students about CVRF. A higher proportion of correct answers was observed for the risk of active and passive smokers (79.4%). However, more than a third were unaware of cessation methods (32.8%) and smoking as a risk factor and its harms (44.3%).

Regarding physical activity, although 87.5% of the students revealed that they knew its benefits, only 18.8% knew the recommendations for this practice.

Regarding overweight, there was a higher frequency of correct answers in the definition of the calculation of the body mass index (95.8%), but a lower number of correct answers in the identification of the parameters used for the diagnosis of excess weight (41.8%), as well as for the interpretation of waist circumference (37.3%) and BMI (56.1%).

Regarding dyslipidemia, the highest frequency of correct answers fell on the concept of HDL-C and LDL-C lipoproteins (80.5%), the lipids that are part of the biochemical dosage (75.3%) and the recommended value for total cholesterol (72.1%). On the other hand, there was a lower frequency of correct answers to the recommendations for prevention and control (53.0%) of dyslipidemia. The percentage of correct answers for the recommended values for LDL-C (23.0%) and HDL-C (4.9%) was small.

About arterial hypertension, correct answers were more prevalent for the identification of factors that interfere with blood pressure values (78.4%) and for the correct technique for measuring blood pressure (71.8%). The lowest percentage of correct answers fell on the interpretation of blood pressure values (53.7%) and recommendations related to the control of this disease (3.8%).

Regarding excessive consumption of alcoholic beverages, the highest percentage of correct answers was for the benefits of controlling consumption (67.2%), and the lowest for the maximum amount of daily consumption (16.7%).

About diabetes mellitus, there was a higher percentage of correct answers for secondary prevention measures (64.5%) and the benefits of its control (58.5%).

Only 47.4% of the students knew the normal value of fasting blood glucose and 18.5% knew the risk factors for diabetes and considered it as CVRF.

Regarding stress, there was a low frequency of correct answers to the concept and the consequences (17.8%). The interpretation parameters of some CVRF were also investigated, and only 56.8% marked the alternative that contained the correct parameters (Table 4).

Table 4 – Proportion of correct answers regarding the knowledge of undergraduate nursing students about CVRF. Bahia.

Correct Answers	n (%)
Smoking	
Risk of active and passive smokers	228 (79,4)
Smoking cessation support methods	193 (67,2)
Smoking as RF and its harms	160 (55,7)
Physical activity	
Benefits of regular exercise	251 (87,5)
Recommendations for physical activity in adults	54 (18,8)
Overweight	
How to calculate BMI	275 (95,8)
BMI values that indicate overweight and obesity	161 (56,1)
Parameters for diagnosing overweight	120 (41,8)
Normal WC values for Brazilian men and women	107 (37,3)
Dyslipidemia	
Concept of HDL-C and LDL-C	231 (80,5)
Serum lipids that should be included in biochemical dosing	216 (75,3)
Recommended value for total cholesterol	207 (72,1)
Recommendations for prevention and control of dyslipidemia	152 (53,0)
Recommended value for LDL-C	66 (23,0)
Recommended value for HDL-C	14 (4,9)
Hypertension	
Factors that interfere with blood pressure values	225 (78,4)
Blood pressure measurement technique	206 (71,8)
Reference value for blood pressure interpretation	154 (53,7)
Recommendations for the control of arterial hypertension	11 (3,8)
Excessive alcohol consumption	
Benefits of controlling excessive alcohol consumption	193 (67,2)
Maximum daily consumption of alcoholic beverages and damage to health	48 (16,7)
Type 2 Diabetes Mellittus	
Secondary prevention measures for type 2 diabetes mellitus	185 (64,5)
Benefits of intensive management of type 2 diabetes mellitus	168 (58,5)
Recommended values for fasting blood glucose	136 (47,4)
Risk factors for diabetes and diabetes as CVRF	53 (18,5)
Stress	
Concept of stress and consequences of stress	51 (17,8)
Interpretation parameters of some CVRF	
BP below 120x80 mmHg, total cholesterol below 200 mg/dl, non-smoking, fasting glucose below 126 mg/dL, physical exercise of at least three weekly sessions of 30 minutes.	163 (56,8)

Table 5 shows that several sources of information on CVRF were accessed by the university students, with emphasis on curricular components of the undergraduate nursing course (89.2%), books (84.3%), internet (84.0%), guidance of health professionals (64.1%), television (57.8%) and scientific journals (53.7%). The least cited means of information were the guidance of other people (28.6%), participation in university extension activities (25.4%), participation in research activities (25.1%) and other sources (4.2%).

Table 5 – Nursing university students according to the sources of information accessed about the CVRF. Bahia.

Sources of information about FRCV	n (%)
Curricular components of the undergraduate nursing course	256 (89,2)
Books	242 (84,3)
Internet	241 (84,0)
Guidance from health professionals	184 (64,1)
Television	166 (57,8)
Scientific journals	154 (53,7)
Participation in scientific events	132 (46,0)
Newspapers	110 (38,3)
Guidance from others	82 (28,6)
Participation in university extension activities	73 (25,4)
Participation in research activities	72 (25,1)
High School Subjects	48 (16,7)
Other sources	12 (4,2)

Table 6 shows that both in high school and in the undergraduate nursing course, the students interacted with knowledge about CVRF. Of the 48 students who reported knowing CVRF in high school, all mentioned the subjects in which the theme was addressed, with emphasis on Science (43.7%), Chemistry (43.7%) and Physical Education (37.5%). Of the 256 university students who mentioned interacting with the theme in the undergraduate course, 182 reported the curricular components, the most cited being: Biology applied to nursing (51.6%), Nursing fundamentals for individual care (35.1%), Nursing care for people in the hospital context (26.9%) and Nursing fundamentals in collective health care (20.3%).

Table 6 – Nursing students according to the curricular components of high school and undergraduate courses that addressed CVRF. Bahia.

Components	n (%)
Undergraduate course (n= 182)	
Biology applied to nursing	94 (51,6)
Nursing Fundamentals for Individual Care	64 (35,1)
Nursing care for people in the hospital context	49 (26,9)
Fundamentals of nursing in collective health care	37 (20,3)
Nursing care in urgency and emergency	35 (19,2)
Human physiology applied to nursing	23 (12,6)
Health education	12 (6,5)
Biochemistry III	12 (6,5)
Introduction to nutrition	7 (3,8)

Primary care in urgent and emergency situations in the community	6 (3,2)
Health surveillance	4 (2,1)
Pathology	4 (2,1)
Nursing in the health care of the elderly	4 (2,1)
Curricular Internship I	3 (1,6)
Curricular Internship II	3 (1,6)
Epidemiology	3 (1,6)
Nursing in women's health care in maternity	2 (1,0)
Human histology applied to nursing	2 (1,0)
Nursing in the care of newborns and hospitalized children	1 (0,5)
Human anatomy applied to nursing	1 (0,5)
Health and sexuality	1 (0,5)
High school (n = 48)	
Sciences	21 (43,7)
Chemistry	21 (43,7)
Physical education	18 (37,5)
Philosophy	4 (8,3)
Physics	4 (8,3)
Portuguese	3 (6,2)

Discussion

In the group studied, referring to sociodemographic variables, the female gender predominated, which has been found in other studies in this area of training [13-16]. The predominance of singles and young adults characterizes the marital status and age group of university students at the time of admission to the University [9,13-14], corroborating with other research in this field of training in Brazil [6]. Inactive work status was more frequent given that the participants are in the professional training phase and that the course requires activities in two shifts, making it difficult to have an employment relationship [6,18] and supporting other studies [13,15-16]. The higher percentage of self-declared black people is due to the fact that the survey was carried out in the state of Bahia, where Afro-descendants predominate [19]. The average monthly family income, which is more frequent, is equivalent to that of middle-class families and has already been identified in previous studies with nursing students in the state of Bahia [20].

Variables of academic life prevalent in this study, such as 401 to 500 semester hours, dedication to study of two or more hours in addition to the mandatory activities of the course and non-engagement with extracurricular activities, corroborate the investigation on CVRF in university students of a Federal Public University in the State of Minas Gerais [6]. The university students investigated were enrolled between the 1st and 10th semester of the course, with a higher proportion between the 5th and 10th semesters (54.8%). In this training period, most students were already carrying out theoretical and practical activities, which were developed in skills laboratories and in mandatory curricular internships.

Regarding knowledge about CVRF, although the vast majority of university students mentioned knowing some of them, the median CVRF reported per student was low. In addition, less than half cited modifiable risk

factors such as inadequate diet, hypertension, obesity, and type II diabetes mellitus.

The median of CVRF known by university students from the 1st to the 5th semester was lower than the median of CVRF known by university students from the 6th to the 10th semester, indicating that students in more advanced stages of training have the opportunity to interact with a greater number of curricular components and other academic activities that address the theme. However, the median of CVRF reported was low regardless of the stage of training and corroborated with other studies carried out with university students in Turkey and Argentina [9,14].

A relevant percentage of university students were unaware of smoking as a risk factor, its harms and methods of cessation. The lack of this knowledge impairs the potential of future nurses to help in the educational process and to support smoking cessation.[13] Previous studies have also shown limited knowledge of university students about this risk factor [6,13], reinforcing the need for the theme to be part of the academic training program.

Although most university students knew the benefits of physical activity, a small percentage knew the recommendations for an individual to be considered active. University students, as future nursing professionals, will be responsible for applying their skills and competencies with an emphasis on healthy attitudes and behaviors in the population and, for this, it is of paramount importance to have mastery over the recommendation of physical activity [13,15].

Most of them knew how to calculate BMI, but it is also essential to know the reference values for the correct interpretation. However, the percentage of correct answers about the diagnosis of obesity in this study was partial, which did not allow most of the group studied to identify this relevant public health problem, including prevalent among university students[18]. Although the highest frequency of correct answers was found in the questions related to lipoproteins (HDL-C and LDL-C), most students were also unaware of their reference values. The lack of knowledge of lipid values can hinder future nurses in the early identification of people at cardiovascular risk. Studies conducted worldwide reveal a high prevalence of hypercholesterolemia and hypertriglyceridemia in young academics and poor knowledge about the values of the lipid profile [21-22].

Systemic arterial hypertension is a chronic disease, with a high prevalence worldwide [23] and periodic blood pressure measurements help in the early diagnosis of the disease and are attributions of the nursing team [16]. In this study, most of the university students obtained a high percentage of correct answers in the questions about the factors that interfere with blood pressure values and the correct measurement technique. However, few students were correct about the reference values for the interpretation of blood pressure and the recommendations for its control, which is fundamental knowledge for nurses to stimulate measures to prevent and control hypertension, as well as to identify groups at risk for one of the main modifiable CVRF [24].

With regard to the control of type 2 diabetes mellitus, it is important to recognize secondary prevention measures and their benefits, with a higher percentage of correct answers for these items. However, knowledge about the normal values of fasting blood glucose, the risk factors for diabetes, and the risks of the disease was evidenced to a lesser extent, which can compromise the prevention and screening of the disease [6,18].

Most university students knew the benefits of controlling excessive alcohol consumption, but few knew the maximum recommended daily amount for men and women. The identification of the pattern of alcohol use offers professionals the opportunity to prevent and reduce the losses associated with excessive alcohol consumption through health education [13].

For stress, modifiable CVRF, a low percentage of correct answers was identified in relation to the concept and its consequences. This risk factor is inherent to human life in contemporary society and when chronic can compromise health, social and professional relationships. Knowledge about stressful events and the consequences of stress helps in health care actions and in supporting coping strategies [15,17], so it is a fundamental theme in the university education of future nurses.

It is also noteworthy that a little more than half of the students were able to identify the question that concomitantly analyzed the knowledge about a set of parameters (blood pressure values, total cholesterol, fasting glucose, recommendation of physical exercise and smoking), demonstrating that emphasis needs to be given to the parameters for evaluating CVRF so that they can identify people at risk, as well as guiding care collectively and individually. Through knowledge, it is possible to raise awareness and value the changes in ways of living [22,24].

The students interacted with several sources of information about CVRF, the most cited being the curricular components of the undergraduate nursing course. However, the level of knowledge of the undergraduates was unsatisfactory, requiring continued investments throughout their academic training. During the course, it is necessary to encourage the participation of university students in extracurricular activities, such as lectures, courses and scientific events related to the prevention and control of CVRF. In addition, given the relevance of the theme, an optional curricular component, with theoretical and practical activities, can greatly contribute to the training of future nurses in the thematic area.

The results of this study reveal the importance of monitoring the teaching-learning process about CVRF, from the beginning and in different phases of the course, in order to identify facilities, difficulties and ensure the necessary reinforcements for the consolidation of competences, skills and attitudes in this field of knowledge. The university course is characterized by a training context that must offer learning opportunities that go beyond the classroom, covering other formative academic activities, such as monitoring, extracurricular courses, scientific initiation and extension activities, spaces that can be focused on learning the theme. It is necessary to evaluate and encourage curricular enrichment activities on the subject and the university student needs to be sensitized to understand the importance of his involvement and commitment in health promotion, prevention and control of cardiovascular risk factors, qualifying his training.

Conclusion

The median of CVRF known by university students was low, being higher among those between the 6th and 10th semesters than among those between the 1st and 5th semesters. The university students showed partial knowledge about

CVRF, requiring investments in training, especially with regard to prevention and control measures and the parameters for interpreting these factors.

The knowledge of university students about CVRF needs to be expanded in the different activities inherent to teaching, research and extension, which can enhance learning throughout the academic training process. The results also point to the need for educational interventions aimed at well-being and healthy lifestyle in the academic context.

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