Cardiovascular risk factors in nursing students at a university in the interior of Amazonas

ABSTRACT | Objective: to identify cardiovascular risk factors among nursing students at a public university in the interior of Amazonas, Brazil. Method: cross-sectional descriptive study with a quantitative approach, carried out with 42 nursing students. Three instruments were applied: a questionnaire designed specifically for the study and two standardized and validated instruments, the International Physical Activity Questionnaire (IPAQ) and the Simplified Questionnaire to assess the consumption of foods that are markers of cardiovascular risk. Results: the most prevalent cardiovascular risk factors were: family history for Systemic Arterial Hypertension (61.9%) and Diabetes Mellitus (40.4%), alcohol consumption (50.0%), stress (73.8%) , overweight and obesity (38.0%), insufficient active and sedentary physical activity practice (50.0%) and consumption of foods that are markers of cardiovascular risk (high and excessive) (30.9%). Conclusion: the identification of cardiovascular risk factors in university students can guide actions aimed at promoting cardiovascular health.
Keywords: Risk Factors; Cardiovascular diseases; Students; Nursing.

RESUMEN | Objetivo: identificar factores de riesgo cardiovascular en estudiantes de enfermería de una universidad pública del interior de Amazonas, Brasil. Método: estudio descriptivo transversal con abordaje cuantitativo, realizado con 42 estudiantes de enfermería. Se aplicaron tres instrumentos: un cuestionario diseñado específicamente para el estudio y dos instrumentos estandarizados y validados, el Cuestionario Internacional de Actividad Física (IPAQ) y el Cuestionario Simplificado para evaluar el consumo de alimentos que son marcadores de riesgo cardiovascular. Resultados: los factores de riesgo cardiovascular más prevalentes fueron: antecedentes familiares de Hipertensión Arterial Sistémica (61,9%) y Diabetes Mellitus (40,4%), consumo de alcohol (50,0%), estrés (73,8%), sobrepeso y obesidad (38,0%), insuficiencia práctica de actividad física activa y sedentaria (50,0%) y consumo de alimentos marcadores de riesgo cardiovascular (alto y excesivo) (30,9%). Conclusión: la identificación de factores de riesgo cardiovascular en estudiantes universitarios puede orientar acciones dirigidas a promover la salud cardiovascular.
Palabras claves: Factores de riesgo; Enfermedades cardiovasculares; Estudiantes; Enfermería.

RESUMO | Objetivo: identificar os fatores de risco cardiovascular entre estudantes de enfermagem de uma universidade pública do interior do Amazonas, Brasil. Método: estudo transversal e descritivo com abordagem quantitativa, realizado com 42 estudantes de Enfermagem. Foram aplicados três instrumentos: um questionário elaborado especificamente para o estudo e dois padronizados e validados, o International Physical Activity Questionnaire (IPAQ) e o Questionário simplificado para avaliação do consumo de alimentos marcadores de risco cardiovascular. Resultados: os fatores de risco cardiovascular mais prevalentes foram: histórico familiar para Hipertensão Arterial Sistêmica (61,9%) e Diabetes Mellitus (40,4%), consumo de álcool (50,0%), estresse (73,8%), sobrepeso e obesidade (38,0%), prática de atividade física insuficiente ativo e sedentário (50,0%) e consumo de alimentos marcadores de risco cardiovascular (elevado e excessivo) (30,9%). Conclusão: a identificação dos fatores de risco cardiovasculares nos universitários poderá guiar as ações voltadas para a promoção da saúde cardiovascular.
Palavras-chaves: Fatores de Risco; Doenças Cardiovasculares; Estudantes; Enfermagem.

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INTRODUCTION

Non-communicable Chronic Diseases (NCDs) are constituted by a group of diseases that include circulatory diseases, diabetes, cancer and chronic respiratory disease, which together correspond to high rates of morbidity and mortality in the world, totaling about 63,0% of the causes of death globally. [1]

In Brazil, CNCDs are the main causes of death. In 2013, these were responsible for 72,6% of registered deaths. Among the cases of deaths from CNCDs, cardiovascular diseases occupied the first place, with 29,7% of identified cases. [2]

According to the World Health Organization (WHO), it is estimated that CNCDs were responsible for 71% of the 57 million deaths that occurred in the world in 2016. In Brazil, CNCDs are equally relevant, being identified as the main cause of deaths in the year 2016 with 74% of total deaths, especially cardiovascular diseases (28%). [3] Currently, at the Global level, it is estimated that, per year, CNCDs are responsible for 41 million deaths (70%). In Brazil, the estimate also

points to a high prevalence of deaths from CNCDs, accounting for 76% of the causes of death. [4]

According to the Pan American Health Organization (PAHO), cardiovascular diseases (CVDs) correspond to a set of heart and blood vessel diseases that include Coronary Heart Disease, Cerebrovascular Disease, Peripheral Artery Disease, Rheumatic Heart Disease, Congenital Heart Disease, Deep vein thrombosis and pulmonary embolism. [5]

CVDs have become the leading causes of death worldwide. In 2016, they were responsible for causing around 17,9 million deaths according to estimates. Most deaths from CVDs occur in low- and middle-income countries, such as Brazil. [5] According to the last survey carried out in 2011, Brazil recorded 30,7% of deaths from circulatory system diseases. [6]

CVDs are caused by several risk factors (RF), which are divided into modifiable and non-modifiable. Among the modifiable risk factors are smoking, dyslipidemia, Diabetes Mellitus (DM), obesity, sedentary lifestyle, Systemic Arterial Hypertension (SAH), alcoholism, stress, unhealthy lifestyle habits, poor sleep quality and the use of certain medications. The non-modifiable or non-preventable ones include heredity, sex and age.[7-8]

It is observed that there are several risk factors for the onset of a cardiovascular event and the greater the number of these factors that an individual presents, the greater the probability of being affected by CVDs. Thus, studies highlight the need to monitor risk factors in order to identify early signs that can be modified by changing lifestyle habits and, consequently, reducing modifiable factors, reducing the chance of developing a cardiovascular disease. [9-10]

Most cardiovascular diseases can be avoided through the approach

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and control of cardiovascular risk factors, however, it is necessary to identify people exposed to risk factors to make them aware of changes in lifestyle, considering that most factors are behavioral and, therefore, modifiable. [8]

Therefore, it is necessary to identify cardiovascular risk factors in different age groups and groups. In this context, research on behavioral habits and health risk factors has been carried out with the population of young adults, because many of the risk factors for cardiovascular diseases are acquired at this stage and tend to last for many years, compromising the quality of individuals' lives, especially during aging. [11-12]

It is noteworthy that the attention to this age group is due to the fact that cardiovascular diseases are developed in the long term and do not show acute signs, which leads young adults, in most cases, not to be cautious about caring for the risk factors. [11,13]

National and international studies have been carried out with university students and show that they had several Cardiovascular Risk Factors (CRFs). The academic environment can produce changes in their lifestyles, impacting health, therefore, it is necessary to carry out a diagnosis of the FRCs to guide the actions of health promotion and disease prevention in the academic environment. [8,12,14-15] In this sense, the guiding question of the research is: what are the cardiovascular risk factors of nursing students at a public university in the interior of Amazonas (AM)? This study aimed to identify cardiovascular risk factors among nursing students at a public university in the interior of Amazonas, Brazil.

METHODS

This is a cross-sectional descriptive study with a quantitative approach,

with 42 students enrolled in the Nursing Course of the Institute of Health and Biotechnology (ISB) of the Federal University of Amazonas (UFAM) located in the interior of the state of Amazonas (AM), in municipality of Coari.

The following inclusion criteria were adopted for participation in the study: students duly enrolled in the Nursing Course, aged 18 years or over. Those under 18 years of age and those who delivered the questionnaire in blank or partially answered, as well as indigenous and pregnant women, were excluded.

A self-administered self-reported questionnaire was used and tested by a preliminary test. The data collection instrument consisted of the following variables: sociodemographic data, personal and family background, academic life, behavioral lifestyle habits, stress level, sleep quality and screen time.

Based on the weight and height described by the participants in the questionnaire, the self-reported Body Mass Index (BMI) was calculated using the formula: BMI = weight (kg)/ height 2 (m). [16]

Standardized questionnaires validated for the Portuguese language were also used, namely: the International Physical Activity Questionnaire (IPAQ) and the Simplified Questionnaire to assess the consumption of foods that are markers of cardiovascular risk. The first is used to measure the levels of physical activity, using its short version, which makes it possible to assess the last week of individuals aged between 15 and 69 years.[7,17] While the second assesses the frequency of food consumption (fries or chips, steak or roasted meat, biscuits, cakes or pies, whole milk, hamburgers, cheeses, butter or margarine, sausage or sausage).

The data were classified according to the guidance of the IPAQ itself: As for the practice of physical activities, it was considered very active, active, insufficiently active A, insufficiently active B and sedentary lifestyle according to the students' response. [17]

Regarding the simplified questionnaire to assess the consumption of foods that are markers of cardiovascular risk, it was based on the score obtained, considering adequate consumption for a score of 100, high consumption of 101 to 119, and excessive consumption for a score of 120. [17] Data collection took place during the month of March 2020.

Data were tabulated and stored using the Microsoft Excel version 2016 program and then transferred to the Statistical Package For The Science program (SPSS version 20.0), represented by absolute and relative frequency, mean, standard deviation, minimum and maximum, in addition to inferential analysis, using Pearson's chi-square and Fisher's exact tests for the association of variables, adopting a significance level of 5%.

The study was submitted to the Research Ethics Committee (CEP) of the Federal University of Amazonas (UFAM) and approved under CAAE nº 19014619.7.0000.5020, in addition to Opinion nº 3.595.332.

RESULTS

Forty-two nursing students participated in the study, with a mean age of 22.7 years (±3,98), with a minimum of 19 years and a maximum of 36 years. There was a predominance of females (71,4%), brown (69,0%), singles (81,0%), Catholics (52,3%), with family income (45,2%) and individual (54,8%) below the minimum wage (Table 1).

Table 1- Sociodemographic characteristics of the study participants. Coari, Amazonas, Brazil, 2021.

Variables	n	%	Mean(SD)
Age group (years)			
19-21	24	57,1	
22-25	12	28,6	22,7(±3,98)
≥ 26	6	14,3	
Sex			
Female	30	71,4	
Male	12	28,6	
Marital status			
Single	34	81,0	
Married/Living together	7	16,7	
Others*	1	2,4	
Religion			
Catholic	22	52,3	
Evangelical	15	35,7	
Christian	3	7,1	
Others**	2	4,8	
Family Income (MW)			
< 1	19	45,2	
≥ 1	23	54,8	
Individual income (MW)			

|	N	%
< 1	10	23,8
≥ 1	32	76,2

Caption: * Others: (Divorced); **Others: (None, Adventist); ***MW: Minimum Wage for February 2020 (R$1.045). Source: authors' data

Table 2- Variables related to the characteristics of behavioral habits. Coari, Amazonas, Brazil, 2021.

Life Habits	Students	
	N	%
Consumption of alcoholic beverages		
Yes	21	50,0
No	21	50,0
Smoking		
Yes	2	4,8
No	40	95,2
Stress		
Yes	31	73,8
No	11	26,2
Sleep Quality		
Very good/good	26	61,9
Very bad/bad	16	38,1
Cholesterol		
Yes	6	14,3
No	36	85,7

Source: authors' data

Figure 1– Classification of the students' Body Mass Index. Coari, Amazonas, Brazil. 2021.

Obesity 3(7,1%)
low weight 3(7,1%)
Overweight 13(31,0%)
Normal Weight 23(54,8%)
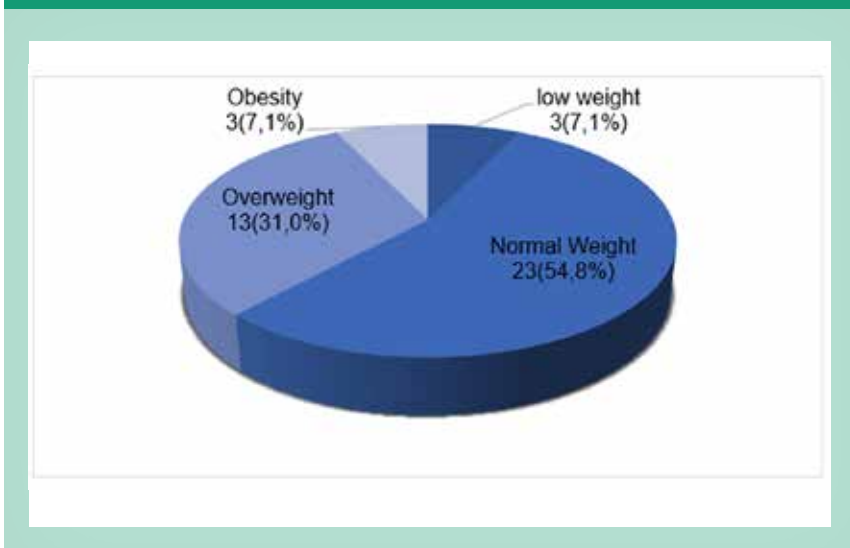
Source: authors' data

With regard to cardiovascular risk factors, specifically with regard to family history, it was found that Systemic Arterial Hypertension (61,9%) and Diabetes Mellitus (40,4%) were the factors most reported by the study participants about cases in the family of at least one of these illnesses.

As for the behavioral habits of life evaluated, it was observed that half of the students participating in this study consume alcoholic beverages (50,0%). Another factor evaluated was smoking, which, in this study, had low adherence by the participants (4,8%). Other factors were identified in the students participating in this research: stress (73,8%), poor/very poor (38,1%) sleep quality, many hours of handling digital devices (80%) and altered cholesterol (14,3%). Table 2 shows the distribution of variables related to the characteristics of behavioral habits.

As for the BMI of self-reported students, it was found that most participants were classified as having normal weight (54,8%), followed by overweight (31,0%) (Figure 1).

The evidence found in this research showed that most students were classified, with regard to the practice of physical activity, in the groups of insufficiently active (42,8%) and active (35,7%), as shown in Figure 2.

Regarding the consumption of cardiovascular risk marker foods, it was found that four (9,5%) female students were classified as having high consumption and five (11,9) male students were represented by excessive consumption, as shown in Table 3 .

DISCUSSION

The profile of the students found in this study is similar to the findings in other researches carried out with the public of university students in which the age group from 18 to 24 years old, female, brown, single, without chil-

dren and with low purchasing power prevails. [13,18]

Regarding the family history factor of university students for CVD, it was observed that when asked about cases in the family of non-communicable chronic diseases, cases of Arterial Hypertension and Diabetes Mellitus stood out.

An investigation carried out with young Brazilian and African university students about the diagnosis of cardiovascular risk assessed family history for hypertension, diabetes, dyslipidemia, stroke, heart disease and myocardial infarction, identified 145 (92,9%) Brazilian students who reported cases in the family, among African students there were 88 (60,7%). [19]

Another study pointed out that the family antecedent factor prevailed in 60 (66,6%) of the 90 (100%) of the sample of participating students. [9]

As for the behavioral habits of life evaluated, it was observed that most students consume alcoholic beverages. Surveys conducted with this population highlight the high prevalence of this practice, pointing out that alcohol is the drug most consumed by young people. [20-21] It is known that the exacerbated consumption of this substance causes countless harm to the individual and society.

Abusive alcohol consumption is related to numerous social and individual problems, including traffic accidents, intra-family problems such as

physical and verbal aggression. In addition, chronic use in the body leads to dependence and negatively affects the individual's body, being considered one of the risk factors for several diseases, including CVDs. [8,22]

Another factor evaluated was smoking, which, in this study, had low adherence by the participants, a result similar to other studies that also evaluated this practice. [7,13,21,23] This being a positive factor identified in this study.

Several factors are pointed out as causes related to alcohol and tobacco consumption among university students, among which are the new relationships that are formed and the fact that they live, in many cases, far from their parents and family, which can cause them to abandon healthy habits as a result of university life. A survey carried out by 217 (82,5%) students from courses in the health area identified that 13,0% of the total participants declared they were smokers. [23] What is surprising since they are future health professionals who will deal with people's health and are opinion makers.

Other risk factors identified in the students were: stress, poor/very bad sleep quality, handling of digital devices and cholesterol problems. These factors negatively affect the quality of life of students and are associated with greater predisposition to the development of diseases.

The number of participants in this research who considered themselves stressed was high (73,8%), this data corroborates a study carried out with 131 (100%) nursing students in which 90 (68,7%) declared that they considered themselves stressed. The reasons given for this feeling were the overload of activities, the daily distance traveled between home and university, and lack of time for leisure. [10]

It was evident that the time that students use computers to develop

Figure 2- Classification of academics according to IPAQ. Coari, Amazonas, Brazil. 2021.
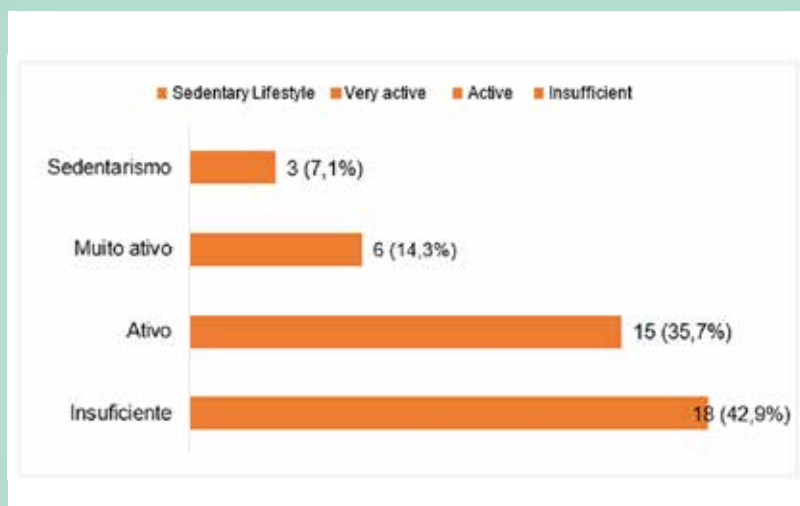
Source: authors' data

Table 3- Classification of cardiovascular risk food consumption among students according to sex. Coari, Amazonas, Brazil. 2021.

Variables	Male		Female	
	N	%	N	%
Adequate consumption	7	16,7	22	52,4
High consumption	-	-	4	9,5
Excessive consumption	5	11,9	4	9,5

Caption: - corresponds to zero. Source: authors' data

their academic activities interferes negatively in the practice of physical activities, making them sedentary.[7,24] In addition, the students reported having altered levels of total cholesterol, which is in line with the finding of an international study that also identified higher levels of cholesterol in university students, such as a survey conducted with 177 (100%) Chilean students that concluded that 35.0% had total cholesterol of 200 mg/dL, 51,4% had low levels of HDL-c and 44,1% had high serum levels of LDL-c. [25]

As for the BMI of the students in this study, students classified as normal weight (54,8%) and overweight (31,0%) prevailed. These data are similar to a study carried out with 84 (100%) nursing students in which 15 (17,9%) were classified as overweight, nine (10,7%) as obese and ten (11,9%) with low weight. [13]

Studies have identified a positive association of BMI with other risk factors such as sedentary lifestyle, increased waist circumference (WC), personal and family history, smoking, alcohol consumption, arterial hypertension (AH) and others. [7,13] Regarding the practice of physical activity, it was found that students classified as insufficiently active (42,8%) and active (35,7%) stood out. Other studies highlighted low adherence of young university students to this practice. [10,14]

It is known that the practice of physical activity brings numerous health benefits and is directly related to the decrease in the chance of young university students to acquire numerous diseases in old age, such as cardiovascular diseases, osteoporosis and diabetes mellitus. Thus, it is important that this practice is encouraged in the university environment, through extracurricular actions that encourage physical exercise, since sedentary lifestyle is a risk to which young people are exposed because they are continually subject to academic work

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Observing the vulnerabilities of students facing the risk of acquiring cardiovascular diseases, national and international studies emphasize the need to make a diagnosis of risk factors in this population with the aim of implementing preventive care for the risks identified through actions aimed at health promotion.

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with deadlines of delivery, long hours of study and, during leisure time, the option to access social media and face situations of physical and mental exhaustion, which, in the long term, maximizes changes in cardiovascular structure and function. [11,13]

Regarding the consumption of cardiovascular risk marker foods, it was found that some students have a diet that is harmful to their health. And the fact that most students (69.04%) were classified as having adequate consumption, it can be inferred that it may be related to the presence of a university restaurant of the Institute of Health and Biotechnology (ISB) that offers students a balanced diet, prepared by a nutritionist, revealing the importance of these programs in public universities.

A study carried out in a Private University Center in the city of Curitiba-PR, with 80 nursing students, identified, with regard to the consumption of foods for cardiovascular risk, that 95% had a consumption score between 101-119, resulting in high consumption.[17]

It is revealed in other studies carried out with university students that they have a deficient eating pattern, since the omission of meals is common, due to the limited time to prepare them and the fact that most of them live alone. Furthermore, many of them choose to consume fast-foods and processed/ultra-processed foods, which are nutritionally inadequate, with an association of these foods with sedentary lifestyle and high cholesterol being pointed out. [20,22]

Observing the vulnerabilities of students facing the risk of acquiring cardiovascular diseases, national and international studies emphasize the need to make a diagnosis of risk factors in this population with the aim of implementing preventive care for the risks identified through actions aimed at health promotion.

A limitation of this study is the small number of participants who made up the research sample, due to the suspension of data collection due to the Covid-19 pandemic, which made it impossible to complete data collection with all students. Another limitation was due to the fact that information on risk factors was collected in a self-reported way through instruments, which may or may not lead to overestimation of the data.

CONCLUSION

This research identified that students are mostly low-income and young adults and, considering the objective of this study, which was to identify cardiovascular risk factors among nursing students, it was found that the results were generally positive. However, it was observed that some of the main risk factors are present in the studied population, such as family history for SAH and DM, alcohol consumption, stress, low adherence to physical activities, inadequate eating habits, sedentary lifestyle and obesity.

Given these findings, educational actions can be developed to sensitize students to changes in lifestyle habits that favor cardiovascular health. It is suggested that more research be carried out to assess the academic population in order to more accurately delineate the factors that predispose to the emergence of CVDs.

References

1. World Health Organization. Global status report on noncommunicable diseases 2010. Geneva: World Health Organization; 2011. 176 p.
2. Malta DC, Andrade SSCA, Oliveira TP, Moura L, Prado RR, Souza MFM. Probabilidade de morte prematura por doenças crônicas não transmissíveis, Brasil e regiões, projeções para 2025. Rev. bras. epidemiol. 2019 abr;22:e190030. doi: 10.1590/1980-549720190030
3. Brasil. Ministério da Saúde. Vigitel Brasil 2019: vigilância de fatores de risco e proteção para doenças crônicas por inquérito telefônico. Brasília, DF: Ministério da Saúde, 2020.
4. Maltal DC, Gomes CS, Barros MBA, Lima MG, Almeida WS, de Sá ACMGN, et al. 1\Noncommunicable diseases and changes in lifestyles during the COVID-19 pandemic in Brazil. Rev. bras. epidemiol. 2021; 24:e210009. doi: 10.1590/1980-549720210009
5. Organização Pan-Americana de Saúde (OPAS-BR). Doenças cardiovasculares [Internet]. Brasília (DF): OPAS-BR; 2017 [acesso em 2021 fev 19]. Disponível em: https://www.paho.org/pt/topicos/doencas-cardiovasculares
6. Carlucci EMS, Gouvêa JAG, Oliveira AP, Silva JD, Cassiano ACM, Bennemann RM. Obesity and sedentary: risk factors for cardiovascular disease. Comun Ciênc Saúde [Internet]. 2013 [cited 2021 Feb 13];24(4):375-84. Available from: http://bvsms.saude.gov.br/bvs/artigos/ccs/obesidade_sedentarismo_fatores_risco_cardiovascular.pdf
7. Vale MEG, Melo MLV, Isidório UA, Feitosa ANA, Sousa MNA, Araújo WA, et al. Cardiovascular risk factors and quality of life in university students. Rev. enferm. UFPE on line. 2018 Oct;12(10):2743-52. doi: https://doi.org/10.5205/1981-8963-v12i10a237491p2743-2752-2018.
8. Mauricio TF, Moreira RP, Costa EC, Bernardo FMS, Lima PA, Viegas BJ. Avaliação da presença dos fatores de risco cardiovascular em estudantes universitários de países lusófonos. Cogitare enferm. 2018 mar; 23(3):e55216. doi: http://dx.doi.org/10.5380/ce.v23i3.55216
9. Correia BR, Cavalcante E, Santos E. A prevalência de fatores de risco para doenças cardiovasculares em estudantes universitários. Rev. Soc. Bras. Clín. Méd. 2010 jan [cited 2021 Feb 15];8:25-29. Available from: http://files.bvs.br/upload/S/1679-1010/2010/v8n1/a006.pdf
10. Wickert DC, Silva LMC, Munhoz OL, Schimith MD, Magnago TSBS, Silveira VN. Fatores de risco cardiovascular e qualidade de vida de estudantes de enfermagem. Rev. enferm. UFSM. 2021dez; 11(e5):1-22. doi: 10.5902/2179769243038
11. Gasparotto GS, Gasparotto LPR, Salles MR, Campos W. Fatores de risco cardiovascular em universitários: comparação entre sexos, períodos de graduação e áreas de estudo. Medicina (Ribeirao Preto, Online). 2013 jun;46(-Suppl2):154-63.doi: https://doi.org/10.11606/issn.21767262.v46i2p154-163
12. Jang I, Kim J. Risk of Cardiovascular Disease Related to Metabolic Syndrome in College Students: A Cross-Sectional Secondary Data Analysis. Int J Environ Res Public Health 2019 Oct, 16(19):2-10.doi:10.3390/ijerph16193708
13. Santos JS, Patrício ACFA, Alves KLA, Albuquerque KF, Pereira IL, Félix IVB. Avaliação para riscos cardiovasculares em estudantes de enfermagem. Rev. min. enferm. 2015;19(4):848-53. doi: 10.5935/1415-2762.20150065
14. Morales G, Guillen-Grima F, Muñoz S, Belmar C, Schifferli I, Muñoz A, et al. Factores de riesgo cardiovascular en universitarios de primer y tercer año. Rev Med Chile Supl. 2017[cited 2021 Feb 17];145: 299-308. Available from: https://scielo.conicyt.cl/pdf/rmc/v145n3/art03.pdf
15. Peralta C, Loayza K, Medina-Palomino F, Rojas-Vilca J. Monitoreo domiciliario de presión arterial y factores de riesgo cardiovascular en jóvenes estudiantes de medicina de una universidad privada en Lima, Perú. Rev Med Hered [online]. 2017;28(3):157-165.doi: 10.20453/rmh.v28i3.3182
16. World Health Organization. Obesity: preventing and managing the global epidemic. Report of a World Health Organization Consultation. Geneva: World Health Organization; 2000. p. 256.
17. Oliveira M da CO da C, Oselame GB, Dutra D de A, Oselame C, Neves EB. Fatores de risco cardiovascular em universitários. RBONE [Internet]. 2017 fev; [cited 2021 Feb 20];11(63):179-86. Available from: http://www.rbone.com.br/index.php/rbone/article/view/515
18.Moreira RP, Maurício TF, Cavalcante TF, Costa EC, Rouberte ESC, Guedes NG, et al. Dyslipidemia risk factor in Brazilian and international university students. Rev. enferm. UFPE on line.. 2019;13:e242504.doi: https://doi.org/10.5205/1981- 8963.2019.242504
19. Sousa ELH, Cavalcante JEA, Sousa DF, Ferreira JM, Meneses RRC, Sousa DL, et al. Comparison of early cardiovascular risk among Brazilian and African university students. Clinical Biochemistry. 2020 Jan; 75:7-14. doi: https://doi.org/10.1016/j.clinbiochem.2019.09.007
20. Silva LDC, Costa JCM, Nunes FDO, Azevedo PR. Comportamentos de risco à saúde em universitários de uma instituição pública. Rev. Pesqui. (Univ. Fed. Estado Rio J., Online). 2020; 12:544-550.doi: http://dx.doi.org/0.9789/2175-5361.rpcfo.v12.8635.
21. Paulitsch RG, Dumith S.C., Susin LRO. Simultaneity of behavioral risk factors forcardiovascular disease in university students. Rev. bras. epidemiol. 2017; 20(Suppl4): 624-635. doi: 10.1590/1980-549720170004000
22. Araújo JL, Costa SMC, Mon-teiro PMF, Rego ARF, Nascimento EGC. Consumo de álcool entre universitários do interior do nordeste brasileiro. Rev. Aten. Saúde. 2019; 17(59): 88-94.doi: https://doi.org/10.13037/ras.vol17n59.5837
23. Augusto da Silva D. Uso do tabaco e dependência da nicotina entre universitários da área da saúde no interior de São Paulo. Nursing [Internet]. 2019fev; [citado 2º de abril de 2021];22(249):2621-6. Disponível em: http://revistas.mpmcomunicacao.com.br/index.php/revistanursing/article/view/255
24. Carvalho CA, Fonseca PCA, Barbosa JB, Machado SP, Santos AM, Silva AAM. The association between cardiovascular risk factors and anthropometric obesity indicators in university students in são Luís in the state of maranhão, Brazil. Ciênc. Saúde Colet. 2015;20(Suppl 2):479-490.doi: 10.1590/1413-81232015202.02342014.
25. Alarcón HM, Delgado FP, Caamaño NF, Osorio PA, Rosas MM, Cea LF. Nutritional status, levels of physical activity and cardiovascular risk factors incollege students of Santo Tomas University. Rev Chil Nutr. 2015; 42(1): 70-76.doi: http://dx.doi.org/10.4067/S0717-75182015000100009.