REVIEW ARTICLE

REVISTA ENFERMAGEM ATUAL IN DERME

# *KNOWLEDGE OF RISK FACTORS FOR CARDIOVASCULAR DISEASES BY UNIVERSITY STUDENTS: SCIENTIFIC EVIDENCE*

# CONHECIMENTO DOS FATORES DE RISCO DE DOENÇAS CARDIOVASCULARES POR ESTUDANTES UNIVERSITÁRIOS: EVIDÊNCIAS CIENTÍFICAS

**Braima Embaló[1] * Davide Carlos Joaquim[2] * Mama Saliu Culubali[3] * Virgínia Cláudia Carneiro Girão[4] * Daniel Freire de Sousa[5] * Ana Caroline Rocha de Melo Leite[6]**

## ABSTRACT

**Objective**: To identify and assess scientific evidence regarding university students' knowledge about risk factors for Cardiovascular Diseases (CVD). **Method**: This is an integrative review, carried out in 2020, in the MEDLINE, CINAHL, PubMed, Scopus, and Web of Science databases. Based on the guiding question, the search for articles took place using the descriptors "Students", "Universities", "Knowledge", "Cardiovascular Diseases", and "Risk Factors" and their correspondents in English. **Results:** Of the 17 articles included, six were available from Scopus, and all were in English. It was observed that students have a low level of knowledge about risk factors for CVD and do not recognize their vulnerability to them, in addition to not adopting preventive measures and a healthy lifestyle. Publications suggested the need for health professionals in educational settings to improve knowledge related to health, incorporate healthy lifestyle practices, and develop strategies to reduce CVD risk levels. **Conclusion:** The deepening of knowledge and a critical look at the literature showed a lack in the production of Brazilian studies on the subject, awakening the need to conduct more research and literature reviews to strengthen evidence-based practice.

**Keywords:** Students; Universities; Cardiovascular Diseases; Risk Factors; Knowledge.

## RESUMO:

**Objetivo**: Identificar e avaliar as evidências científicas em relação ao conhecimento de estudantes universitários sobre os fatores de risco de Doenças Cardiovasculares (DCV). **Método**: Trata-se de revisão integrativa, realizada em 2020, nas bases de dados MEDLINE, CINAHL, PubMed, Scopus e Web of Science. Baseado na pergunta norteadora, foi feita a busca dos artigos, utilizando-se descritores "Estudantes", "Universidades", "Conhecimento", "Doenças cardiovasculares" e "Fatores de riscos" e seus correspondentes em inglês. **Resultados**: Dos 17 artigos incluídos, 6 estavam disponíveis no Scopus e todos estavam em língua inglesa. Observou-se que estudantes tinham baixos níveis de conhecimento sobre os fatores de risco de DCV e não reconheciam a vulnerabilidade a elas, além de não adotarem medidas preventivas e um estilo de vida saudável. As publicações sugeriram a necessidade de profissionais de saúde em ambientes educacionais, visando aprimorar o conhecimento relacionado à saúde, incorporar práticas de estilo de vida saudáveis e desenvolver estratégias de redução dos níveis de risco de DCV. **Conclusão**: O aprofundamento do conhecimento e o olhar crítico sobre a literatura apontaram carência na produção de estudos brasileiros sobre a temática, despertando a necessidade de condução de mais pesquisas e revisões da literatura para fortalecimento da prática baseada em evidências.

**Palavras-chave**: Estudantes (Estudiantes); Universidades (Universidades); Doenças Cardiovasculares (Enfermedades Cardiovasculares); Fatores de Risco (Factores de Riesgo); Knowledge.

[1] Enfermeiro pela Universidade da Integração Internacional da Lusofonia Afro-Brasileira – UNILAB. Redenção - CE, Brasil. ORCID https://orcid.org/0000-0002-7787-1889

[2] Enfermeiro pela Universidade da Integração Internacional da Lusofonia Afro-Brasileira – UNILAB. Doutorando do Programa de Pós-graduação em Ciências Morfofuncionais da Universidade Federal do Ceará – UFC. Mestre pelo Programa de Pós-Graduação em Enfermagem da UNILAB. Redenção - CE, Brasil. ORCID https://orcid.org/0000-0003-0245-3110

[3] Enfermeiro pela Universidade da Integração Internacional da Lusofonia Afro-Brasileira – UNILAB. Redenção - CE, Brasil. ORCID https://orcid.org/0000-0002-8079-866X

[4] Médica Veterinária pela Universidade Estadual do Ceará – UECE. Doutora em Farmacologia pela Universidade Federal do Ceará – UFC. Mestre em Ciências Veterinárias pela UECE. Docente do Departamento de Morfologia da UFC. Fortaleza, Ceará – Brasil. ORCID https://orcid.org/0000-0002-0676-8585

[5] Farmacêutico pela Universidade Federal do Ceará – UFC. Doutor em Biotecnologia em Saúde pela Rede Nordeste de Biotecnologia – RENORBIO. Docente dos Cursos de Enfermagem e Farmácia da Universidade da Integração Internacional da Lusofonia Afro-Brasileira – UNILAB. Redenção - CE, Brasil. ORCID https://orcid.org/0000-0002-2333-5343

[6] Odontóloga pela Universidade Federal do Ceará – UFC. Doutora em Ciências Médicas pela UFC. Mestre em Farmacologia pela UFC. Docente dos Cursos de Enfermagem e Farmácia da Universidade da Integração Internacional da Lusofonia Afro-Brasileira – UNILAB. Redenção - CE, Brasil. ORCID https://orcid.org/0000-0002-9007-7970

REVISTA ENFERMAGEM ATUAL IN DERME

## INTRODUCTION

In the current context, Non-Communicable Chronic Diseases (NCCDs), such as Cardiovascular Diseases (CVD), diabetes, cancer, and chronic respiratory diseases[1], represent a serious problem for global public health, as a consequence of the high number of deaths and disabilities[2] observed in developed and underdeveloped countries[3]. In fact, NCCDs are responsible for the death of 41 million people per year, a figure that corresponds to 71% of all deaths[4]. In etiopathogenic terms, they result from the action of genetic, physiological, environmental, and lifestyle factors[4].

Defined as a group of disorders that affect the heart and arterial and venous circulation[5,6], which includes coronary artery and cerebrovascular disease and aortic atherosclerosis[7], CVD represents the leading cause of death in the world[8]. Indeed, this condition is responsible for 30% of the 50 million deaths recorded worldwide in recent decades[9]. Its etiology, although it involves factors considered non-modifiable, such as gender, age, family history, and ethnicity, also comprises modifiable or avoidable elements, such as sedentary lifestyle, obesity, Systemic Arterial Hypertension (SAH), Diabetes Mellitus (DM), dyslipidemia, smoking, inadequate diet, and alcohol intake[10,11].

Although it affects mainly adults over 60 years old[6], in addition to the occurrence in individuals under 40 years of age, usually associated with genetic conditions[12], the literature shows the increased prevalence of risk factors for CVD among young adults, represented especially by obesity and sedentary lifestyle[13]. In particular, the greater occurrence of CVD in younger age groups may be related to the perception that these diseases only occur in older individuals[14,15]. The dietary changes experienced by this public as a consequence of the urbanization process and easy access to processed foods also contribute to this reality[16].

Faced with this new scenario, university students stand out as a vulnerable group for CVD, especially considering their sedentary behavior[17,18], alcohol and cigarette consumption[19], stress[20], and alteration of eating habits[21]. Corroborating this assumption, studies report the presence of CVD risk factors among students from different courses, such as Medicine[22], Nursing[23], Nutrition, and Physiotherapy[24].

In this sense, the literature emphasizes that enrollment in University favors the contact with and development of CVD risk factors by students, especially those who are forced to distance themselves from family and take responsibility for their housing, food, and financial conditions[23,25]. With the progression of their studies, other factors are added, such as the extensive workload in the classroom and internships, adoption of consumption of industrialized foods due to the scarcity of time and money, limited access to healthy foods in the university environment, and reduced availability and time to exercise[23,25,26].

REVISTA ENFERMAGEM ATUAL IN DERME

Despite the presence of these risk factors among university students, studies reveal a lack of knowledge of these factors among these students, which can interfere with their health status. In this sense, according to Rezende *et al.*[27], the assessment of the levels of knowledge and identification of risk factors is paramount for health promotion in the context of CVD, especially for the academic community, which is often a reference for society.

Thus, considering the above, this study aimed to identify and evaluate scientific evidence regarding the knowledge of university students about CVD risk factors.

## METHODS

It consists of an integrative review of the literature, which aims to identify, describe, gather and synthesize results of studies. When it is well developed, it enables the integration of research on a given subject, fostering the development and direction of other investigations, assisting in decision making and allowing the incorporation of evidence in clinical practice[28].

Based on Sousa *et al.*[29], this review was elaborated in six stages, namely: identification of the theme and objectives of the integrative review; formulation of the guiding question; search in the literature and careful selection of studies; categorization of the studies found and analysis of the publications included; interpretation of the results; report of the review and synthesis of the knowledge evidenced in the studies.

For the formulation of the guiding question, the PICO strategy was used, which represents an acronym meaning “patient, intervention, comparison and outcome”. These four components are fundamental to the research issue and the construction of the guiding question, particularly when studying a very specific topic[29].

Based on this strategy, this review considered “P” university students, “I” and “C” were not applied and “O” knowledge about cardiovascular diseases risk factors. In order to answer the objective of the study, the following guiding question was defined: “What do university students know about the risk factors for cardiovascular diseases?”. For the search of the articles, we used the controlled descriptors in Portuguese “Estudantes”, “Universidades”, “Conhecimento”, “Doenças cardiovasculares” and “Fatores de riscos”, indexed in the descriptors in Health Sciences (DeCS), and their respective correspondents in English “Students”, “Universities”, “Knowledge”, “Cardiovascular diseases” and “Risk factors”. All words were combined together and associated through the Boolean operator “AND”.

The search and analysis of the articles were carried out during the months of February and March 2020, through the Journal Portal of the Coordination for the Improvement of Higher Education Personnel

REVISTA ENFERMAGEM ATUAL IN DERME

(CAPES)/Ministry of Education (MEC), using the following databases: *Medical Literature Analysis and Retrieval System Online* (MEDLINE); *Cumulative Index to Nursing and Allied Health Literature* (CINAHL); *National Library of Medicine* (PubMed); Scopus – multidisciplinary basis; and *Web of Science*.

We included in the review full articles, available for free, published in the last 10 years (2010 to 2020 – this time frame was based on the possibility of including a larger number of studies addressing the theme), in Portuguese, English and Spanish. We excluded repeated articles, editorials, letters to the editor, theses, dissertations, review articles, reports, and articles not related to the theme or not relevant to this review.

After collection, the data were organized based on the tool adapted from Ursi[30], consisting of a specific Check List model, divided into nine domains, whose objective is to facilitate the description and publication of the data present in articles[31]. These were primarily organized according to: article title; authors, journal and publishing field; place where the research was conducted and year in which it was published; and database in which it was indexed. Subsequently, we examined the objective, type of study and evidence level and, later, the results and conclusion.

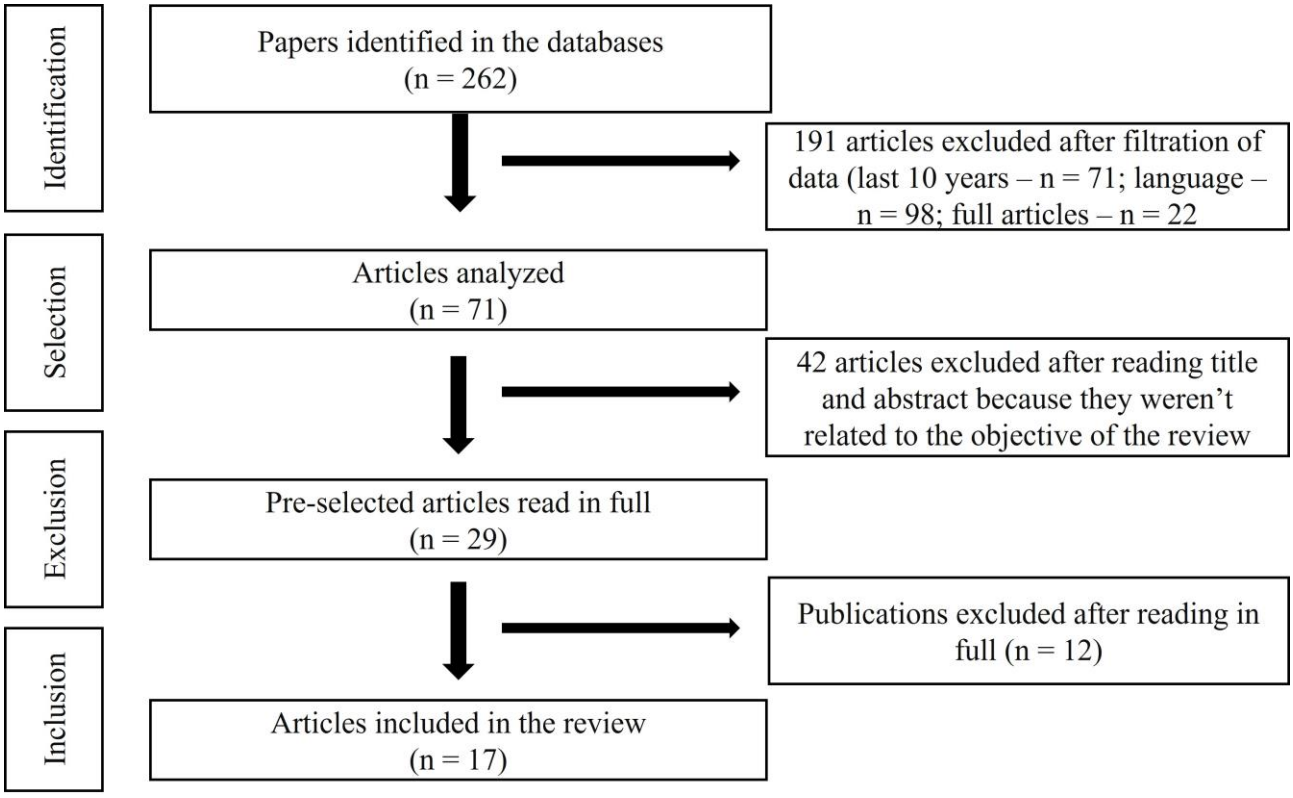
The analysis of the classification of the articles' evidence was based on the proposal by Stillwell *et al*.[32]. These authors categorize the research evidence into seven levels, in which the first corresponds to the best external evidence, presenting more reliable information, and the latter comprises information with a lower degree of reliability.

## RESULTS

Through that search strategy, we found 262 papers, out of which 191 had been published in the last 10 years. Among these, 93 were in English, Spanish or Portuguese and, within those, 71 were available in full. After reading the title and abstract of the 71 publications, 42 were excluded because they were not related to the objective of the review. Of the 29 articles read in full, 9 were excluded for duplicity and 3 because they did not meet the inclusion criteria. Thus, 17 publications comprised the review (Figure 1).

REVISTA ENFERMAGEM ATUAL IN DERME

**Figure 1** – Flowchart identifying the study selection process to make up the integrative review. Redenção - CE, Brazil, 2020




Source: The authors

Out of all articles included, 5 were available on Scopus and all were in English. As for the year of publication, 3 were published in 2012, a quantitative equal to that observed in the years 2015, 2017 and 2019.

Regarding the place where the study was carried out, 3 were conducted in Turkey, a number equal to that found in the United States of America. Concerning the publishing field, 11 studies were developed in the field of Medicine (Table 1).

**Table 1** – Characterization of the publications included in the review, according to title, authors, year, journal, field, country, and database. Redenção - CE, Brazil, 2020.

| N. | Article title | Author and year | Journal and field | Country | Database |
|---|---|---|---|---|---|
| **01** | Knowledge, attitude, and practice on salt and assessment of dietary salt and fat intake among University of Sharjah Students | Ismael et al. 2019 | Journal Nutrients<br><br>Nutrition | United Arab Emirates | Scopus |
| **02** | Cardiovascular risk factors among lower Silesian students of the Faculty of Medicine: knowledge and | Kalka et al. 2016 | Adv Clin Exp Med<br><br>Medicine | South and Southeast Poland | Scopus |

| | | | | | |
|---|---|---|---|---|---|
| | distribution | | | | |
| **03** | Knowledge, attitude, and practice of Malaysian Public University students on risk factors for cardiovascular diseases | Ibrahim et al. 2016 | Journal of Applied Pharmaceutical Science<br><br>Medicine | Malaysia | Scopus |
| **04** | Prevalence of obesity and hypertension among University students' and their knowledge and attitude towards risk factors of Cardiovascular Disease (CVD) in Jeddah, Saudi Arabia | Baig et al. 2015 | Pak J Med Sci<br><br>Medicine | Saudi Arabia | Scopus |
| **05** | Diabetes Mellitus-related knowledge among University students in Ajman, United Arab Emirates | Khan et al. 2012 | SQU Medical Journal<br><br>Medicine | United Arab Emirates | Scopus |
| **06** | Awareness of cardiovascular risk factors among University students in Turkey | Güneş et al. 2019 | Primary Health Care Research & Development<br><br>Medicine | Turkey | PubMed |
| **07** | Prevalence, risk awareness and health beliefs of behavioral risk factors for cardiovascular disease among University students in nine ASEAN countries | Peltzer et al. 2018 | BMC Public Health<br><br>Pharmacy | Nine countries in the ASEAN* | PubMed |
| **08** | Assessment of knowledge of critical cardiovascular risk indicators among college students: does stage of education matter? | Sarpong et al. 2017 | Int. J. Environ. Res. Public Health Nursing | United States of America | PubMed |
| **09** | The perception and knowledge of cardiovascular risk factors among Medical students | Reiner et al. 2012 | Meoica'l Education- Croat Med J.<br><br>Medicine | Croatia | Medline |
| **10** | Cardiovascular health risk behavior among Medical students in a teaching hospital | Giri et al. 2012 | J Nepal Health Res Counc<br><br>Medicine | Nepal | Medline |
| **11** | Awareness and knowledge of cardiovascular disease risk factors among Medical students | Maksimović et al. 2017 | Wien Klin Wochenschr<br><br>Medicine | Serbia | Medline |
| **12** | An experiential cardiovascular health education program for | Holland et al. 2014 | The ABNF Journal | United States of America | Web of Science |

REVISTA ENFERMAGEM ATUAL IN DERME

| | | | | | |
|---|---|---|---|---|---|
| | African American college students | | Medicine | | |
| **13** | Cardiovascular disease risk factors and knowledge level in Nursing students | Kaya et al. 2019 | Clin Exp Health Sci<br><br>Nursing | Turkey | Web of Science |
| **14** | Factors predicting nutrition and physical activity behaviors due to cardiovascular disease in Tehran University students: application of health belief model | Najarkolaei et al. 2015 | Iran Red Crescent Med J<br><br>Medicine | Tehran | Web of Science |
| **15** | Knowledge, attitude and behaviour regarding dietary salt intake among Medical students in Angola | Magalhães et al. 2015 | Cardiovascular Journal of Africa<br><br>Medicine | Angola | Web of Science |
| **16** | University students' knowledge levels about cardiovascular risk factors and assessment of their health behaviours in Turkey | Kes et al. 2018 | Journal of American College Health<br><br>Nursing | Turkey | CINAHL |
| **17** | Cardiovascular risk factors among college students: knowledge, perception, and risk assessment | Tran et al. 2017 | International Journal of Caring Sciences<br><br>Nursing | United States of America | CINAHL |

*ASEAN - Association of Southeast Asian Nations.
Source: The authors

Concerning the objectives of the studies, they mainly involved evaluating the knowledge, attitudes, and practices regarding CVD risk factors by university students. Other objectives mentioned were: - to study the prevalence of obesity and hypertension among university students; - to investigate the knowledge and practices related to DM by these students; - to determine the prevalence of CVD risk factors in this public; - to assess the impact of medical education on knowledge and acknowledgment of the importance of implementing preventive measures against CVD, according to the perception of medical students; - to know the results of the risk assessment of CVD among university students; - to identify the important predictors of nutrition and physical activity in relation to CVD in these students (Table 2).

Regarding the methodological design, 16 articles were descriptive studies, and, on the evidence level, all publications presented level VI.

REVISTA ENFERMAGEM ATUAL IN DERME

**Table 2** – Characterization of the publications included in this review, according to objective, type of study, and level of evidence. Redenção - CE, Brazil, 2020.

| N. | Objective | Type of study | Evidence level |
|---|---|---|---|
| **01** | To investigate the knowledge, attitudes, and practices related to the presence of salt in the diet of UOS[a] students and to evaluate the ingestion of total, saturated and trans fats, cholesterol, and sodium | Descriptive | VI |
| **02** | To evaluate medical students' knowledge about CVD[b] risk factors and their prevalence in the population researched | Descriptive | VI |
| **03** | To measure and evaluate the knowledge, attitudes, and practices of university students concerning CVD[b] risk factors | Descriptive | VI |
| **04** | To investigate the prevalence of obesity and hypertension among university students and their knowledge and attitudes regarding CVD[b] risk factors | Descriptive | VI |
| **05** | To evaluate university students' knowledge and practices regarding DM[c], including the differences related to gender and family history | Descriptive | VI |
| **06** | To determine the awareness level of university students, especially freshmen, in terms of CVD[b] risk factors (high cholesterol, stress, hypertension, smoking, obesity, diabetes, physical inactivity, family history of CVD[b], unhealthy diet, exposition to passive smoking, and low socioeconomic level) | Descriptive | VI |
| **07** | To investigate the prevalence, awareness, and health beliefs related to CVD[b] risk factors among university students in nine countries in the ASEAN[d] | Descriptive | VI |
| **08** | To estimate and compare the awareness level of students in the 1st professional year in the Pharmacy course and university students in the 2nd semester of the same course about their numbers (cholesterol, arterial pressure, blood sugar, and BMI[e]) | Descriptive | VI |
| **09** | To evaluate the perceptions, knowledge, and awareness regarding CVD[b] risk factors among medical students | Descriptive | VI |
| **10** | To evaluate health behavior and the perception of medical students related to cardiovascular diseases | Descriptive | VI |
| **11** | To evaluate the knowledge and attitude of medical students related to CVD[b] risk factors and to evaluate the impact of medical education in the knowledge and acknowledgement of the importance of implementing preventive measures of these diseases for these students | Descriptive | VI |
| **12** | To investigate the application of a culturally specific test and a curriculum developed for African American university students in order to increase awareness about the risk of CVD[b] | Descriptive and mixed | VI |

REVISTA ENFERMAGEM ATUAL IN DERME

| | | | |
|---|---|---|---|
| **13** | To determine the knowledge about CVD[b] risk factors and the evaluation of risk among Nursing students | Descriptive | VI |
| **14** | To identify important predictors in nutrition and physical activity related to CVD[b] in university students in Tehran | Descriptive | VI |
| **15** | To determine the ingestion of salt and to evaluate the knowledge, attitude, and behaviors related to that ingestion among medical students | Descriptive | VI |
| **16** | To evaluate the knowledge levels of university students about CVD[b] risk factors and their health behaviors | Descriptive | VI |
| **17** | To evaluate the knowledge and perceptions of university students about CVD[b] risk factors and to identify these risks | Descriptive | VI |

[a]University of Sharjah (UOS); [b]Cardiovascular diseases; [c]Diabetes Mellitus; [d]Association of Southeast Asian Nations; [e]Body Mass Index.
Source: The authors

Regarding the results observed in the articles, they emphasized that, despite the differences between university students from different colleges and course time, in general, students had low levels of knowledge about CVD risk factors. Among these factors, were mentioned physical inactivity, high-fat diet, smoking, obesity, genetic factors, hypertension, and type 2 DM. The studies also pointed out the presence of risk factors among students, such as overweight, obesity, hypertension, excessive intake of fats and sodium, lack of physical activity, alcohol intake, and smoking (Table 3).

Some studies also found that, despite the students' awareness of CVD risk factors, they did not see themselves at risk of developing these diseases, did not adopt preventive measures and did not have a healthy lifestyle practice. Other authors also showed a low level of knowledge about health indicators among university students, the perception that the Medicine course was harmful to health and differences between genders regarding attitudes and practices in health.

Regarding the conclusion, the articles, in general, concluded that university students had an insufficient level of awareness and knowledge about CVD risk factors, as well as high prevalence of these factors among them. The studies also suggested the need for the presence of health professionals in educational environments, in order to improve health-related knowledge, incorporate healthy lifestyle practices and develop strategies to reduce CVD risk levels among students.

REVISTA ENFERMAGEM ATUAL IN DERME

**Table 3** – Characterization of the publications included in this review, according to results and conclusion. Redenção - CE, Brazil, 2020.

| N. | Results | Conclusion |
|---|---|---|
| 01 | Among the students, the results indicated a low knowledge score regarding the presence of salt in the diet, as well as a high prevalence of overweight (28%), obesity (14%), and stage 1 (31%) and 2 (20%) hypertension. A high percentage of students who exceeded the recommended intake of total fat (48%), saturated fat (90%) and trans-fat (64%), and sodium (89%) was observed. All students did not meet the adequate recommended potassium intake | Knowledge, attitudes and practices related to salt consumption among students revealed the non-recommended intake of total, trans and saturated fat, and sodium. This result highlights the need to develop specific awareness campaigns regarding the culture of salt and fat intake and its association with health |
| 02 | The students correctly identified five risk factors for CVD[a], among which the most cited were lack of physical activity and high-fat diet, followed by smoking, obesity, genetic factors, and hypertension. The results showed that there is a relatively healthy awareness on the part of students regarding risk factors for CVD[a]. However, there was no correlation with a healthy lifestyle | The study revealed an insufficient level of awareness of the CVD[a] risk factors among medical students |
| 03 | Among university students from different colleges, significant differences were found in relation to knowledge of CVD[a] risk factors (SAH[b], DM[c], sedentary lifestyle, heredity, stress, smoking, unhealthy diet, and lack of physical exercise), as well as differences in attitude and practice between the genders. The data indicated that the practice of healthy lifestyle was not adequate among the participants | The study suggests that students should increase health practice for the prevention of CVD[a]. Despite the high knowledge by students, it is not consistent with the attitudes and practices |
| 04 | The results indicated that 7.5% of the participants were hypertensive, 29.8% were overweight, 10.7% were moderately obese, and 7.9% were severely obese. Most participants were aware that a healthy lifestyle could prevent CVD[a], although they did not practice it | There is a large gap in knowledge, attitude, and practice among the young Saudi university population in relation to the risk factors of CVD[a] |
| 05 | Of the participants, 25% were overweight or obese and only 27% exercised regularly. About DM[c], 70% of the students knew that the disease was characterized by the presence of high blood sugar levels and that family history was an important risk factor. More than half of those surveyed linked obesity and physical inactivity to risk factors for DM[c] | Despite exposure to various sources of information, the level of students' knowledge about DM[c] is inadequate. It is recommended that health professionals engage in educational environments in order to improve health-related knowledge and incorporate healthy lifestyle practices among students |

REVISTA ENFERMAGEM ATUAL IN DERME

| | | |
|---|---|---|
| 06 | The study revealed that male students are less aware of the risk factors for CVD[a] (high cholesterol, stress, hypertension, smoking, obesity, diabetes, physical inactivity, and others) than female students. Comparations between the BMI[d] groups revealed that obese individuals attributed less importance to risk factors of CVD[a] | The observations indicated that the levels of awareness of CVD[a] risk factors need to be improved among university students. Therefore, it is extremely important that primary care health professionals develop interventions to reduce risk levels of CVD[a] |
| 07 | In all nine ASEAN[e] countries, there was a prevalence of CVD[a] risk factors among students. For the five risk factors considered (smoking, unhealthy diet, obesity, physical inactivity, and harmful alcohol use), students' awareness of the involvement of these factors in CVD[a] was low. However, the female students presented lower prevalence of these factors and a "healthier" belief when compared to male students, except in exercising | The research found a high prevalence of behavioral risk factors for CVD[a], limited awareness of these risks and negative health beliefs. The results may favor the development of health promotion strategies among university students of ASEAN[e]. |
| 08 | The students' level of knowledge about the four health indicators (cholesterol, arterial pressure, blood sugar, and BMI[d]) was extremely low. Among the Pharmacy students of the 1st year and freshmen, differences were observed in terms of knowledge about total cholesterol and arterial pressure. In both groups, less than 50% of the students knew their BMI[d], with a higher percentage found among those in the 1st professional year. The percentage of correct answers to the other three health indicators (cholesterol, blood sugar, and BMI[d]) was low among students | The research revealed a low level of awareness of students about their health indicators. It also showed that two or more years of higher education and the choice of a professional health career make a difference in the level of students' awareness about health. However, more research is needed to understand the low level of awareness of critical health indicators among students |
| 09 | Although insufficient, the perception and knowledge of some CVD[a] risk factors (dyslipidemia, arterial hypertension, and metabolic alterations) were significantly better among undergraduate students than among freshmen. At the end of medical school, many students were smokers, despite knowing the harmful effects of smoking. They had a reduced awareness of the contribution of obesity in the development of CVD[a] | The results suggest an urgent need to raise awareness among medical students about the importance of obesity and reduced physical activity in the development of CVD[a] |
| 10 | Faced with the possibility of developing CVD[a], 85 (53%) students showed concern, although only 33 (38%) had adopted preventive practices (physical activity, and regular consumption of fat and salt). Of the total number of participants, 101 (64%) believed that life in medical school had a | The study showed a high prevalence of risk behaviors for CVD[a] among medical students |

REVISTA ENFERMAGEM ATUAL IN DERME

| | | |
|---|---|---|
| | detrimental effect on health | |
| 11 | More advanced students in medical school had greater knowledge about the risk factors for CVD[a] (cholesterol, metabolic syndrome, and lipid-lowering therapy) than those who were at the beginning of the course. Only about 20% of the students knew all the risk factors included in the metabolic syndrome. Factors such as physical inactivity, obesity, type 2 DM[c], smoking, and hypertension were not considerably classified as important CVD[a] risk conditions | The study clearly showed that medical students' knowledge of the CVD[a] risk factors should be improved. Furthermore, medical education should provide basic knowledge that enables the effective prevention of these diseases |
| 12 | Regarding the program, which consisted of weekly classes, during which occurred experimental activities, self-assessments, discussions, and homework with African American students, its effectiveness was verified. Several benefits of the intervention were identified, such as increased knowledge about risk factors for CVD[a] and physical capacity, as well as better eating habits and greater knowledge about stress management strategies | Experimental workshops with small groups can be effective for understanding the risks and establishing healthy habits for the prevention of CVD[a] among African American university students |
| 13 | The students' level of knowledge about CVD[a] risk factors (BMI[d], arterial pressure, blood sugar, cholesterol, and triglycerides) was low. The percentage of overweight and obese participants was 18.8% for men and 22.1% for women. An inversely proportional relationship was observed between the higher level of knowledge about the CVD[a] risk factors and the reduction in blood sugar and cholesterol values | The research showed a reduced knowledge of the CVD[a] risk factors among Nursing students, in addition to the presence of these risk factors |
| 14 | It was found that the female students had a more adequate nutrition. A positive association was observed between knowledge, perceived severity of CVD[a] and self-efficacy with the practice of physical activity, as well as a negative relationship between this behavior and perceived barriers (fear of strangers, bad weather, and many school tasks) | The study indicated that the contrasts between health beliefs can predict the risk behavior of college students in the face of heart disease. However, more research is needed to verify the predictors of high-risk behaviors in these students |
| 15 | Among the students, salt intake was higher than the internationally recommended maximum limit, although they were aware of its consequences. Less than half of the participants reported being aware of their high sodium intake. Regarding potassium, the average intake by the students was lower than the recommended value. In | The study indicated a high salt intake among medical students and an inadequate perception of their intake level, as well as insufficient attitude and behavior in relation to their control. Given this scenario, nutritional education is necessary to improve the knowledge and eating habits of these students |

REVISTA ENFERMAGEM ATUAL IN DERME

| | | |
|---|---|---|
| | relation to other classical risk factors for CVD[a], a high prevalence of physical inactivity and alcohol intake was observed, as well as a low prevalence of hypertension, diabetes, and obesity | |
| 16 | Among the students, low levels of knowledge about CVD[a] risk factors (smoking, alcohol, unhealthy diet, physical inactivity, BMI[d], and stress) were found. Of the participants, 46.1% were smokers, 31.9% consumed alcohol, 20.8% were overweight, 1.6% were obese, and 26.1% had chronic diseases. The results showed that students did not have healthy behaviors, such as physical exercise, adequate nutrition, and stress control | The evaluations of knowledge levels showed that the students did not have adequate knowledge and that there was a positive and significant relationship between positive health behaviors and levels of knowledge about CVD[a] risk factors. In this sense, it can be suggested that studies and screening in chronic diseases and regular medical consultations can prevent these diseases |
| 17 | Participants knew the CVD[a] risk factors (diabetes, overweight/obesity, hypertension, hyperlipidemia, smoking), but did not perceive themselves as at risk of developing them. When the CVD[a] risk factors were evaluated, it was found that more than 50% of the students had one or more of these factors | The high level of knowledge of the CVD[a] risk factors was not sufficient to reduce the risks of these diseases among students. Thus, changing the perception of these factors may play a greater role in reducing the risks of these diseases in the long term |

[a]Cardiovascular Diseases; [b]Systemic Arterial Hypertension; [c]Diabetes Mellitus; [d]Body Mass Index; [e]Association of Southeast Asian Nations.
Source: The authors

## DISCUSSION

The statistics presented in the literature reveal that CVD represents one of the main causes of death in the global context. Therefore, the relevance of studying cardiovascular risk factors in university students is based on the situation that this public, due to physical, emotional, and social transformations, seeks independence and new experiences, associated with a high burden of stress caused by the university environment, and becomes vulnerable to risk behaviors, even with access to information[19].

Thus, understanding these factors can prevent, maintain, or restore the health of this population and avoid socioeconomic impacts[33], since these elements can be modifiable according to the environment and exposure time[34].

In this review, we evaluated the productions that addressed the prevalence, knowledge, attitudes, and practices in relation to CVD risk factors in university students. The verification of these aspects in young adults makes it possible to identify the susceptibility level of these individuals to these diseases. Therefore, the compilation of the studies will help to identify gaps in knowledge, which may improve the practices and policies aimed at the promotion and

REVISTA ENFERMAGEM ATUAL IN DERME

prevention of CVD among university students.

Evaluating the number of studies included in this review according to the database, the highlight for Scopus can be understood because it is the largest database, containing abstracts of peer-reviewed publications, from Elsevier[35]. As for the language of the articles included here, the fact that all are in English can be justified because it is one of the strategies used for scientific internationalization[36] or because possible databases that include articles in the Portuguese language weren't included in the review.

Regarding the greater number of studies published in different years, this result may suggest the relevance and interest of the theme portrayed here in different moments. As for the place of study included in this review, the emphasis on Turkey, in addition to the USA, was an unexpected data, since China has stood out for encouraging the development of research[37]. The prominence of the USA can be justified by the possibility that this country develops more research in this area as a consequence of eating habits, lifestyle, and occurrence of cardiovascular diseases in the population, since it is considered one of the global leaders in science and technology[38].

Concerning the field of publication of the articles, the large number of papers available in journals in the medical field, although it evidences the importance of the theme for Medicine, suggests a deficiency in the integration between the different health fields, which is in line with what is stated in the literature. According to Guimarães and Branco[39], health work should involve interdisciplinary, multidisciplinary, and transdisciplinary actions.

Regarding the majority of publications presenting, as a methodological design, the descriptive study, although it describes data that were verified, recorded, analyzed, classified and interpreted, without the interference of the researcher and with the use of standardized data collection techniques[40], it does not seek to evaluate a possible association between the cause of the disease and its effect[41]. On the predominance of studies with evidence level VI, this finding suggests that the publications do not present strong evidence, which may impair their clinical applicability[32].

When analyzing the objectives of the articles included, the greater number of publications that evaluated the knowledge, attitudes, and practices related to CVD risk factors in university students exceeded the expectations of this review because they were not limited to the knowledge of these factors. This result is important in the sense that interventions aimed at the promotion and prevention of CVD, of an individual or collective nature, are better performed if based on the knowledge of the attitudes and practices of the public to which they are intended[42].

REVISTA ENFERMAGEM ATUAL IN DERME

The same can be said in relation to the studies portrayed here, which proposed to present the prevalence of risk factors or of CVD itself among university students, the results of the assessment of this risk and the analysis of the impact of education on knowledge and acknowledgement of the importance of implementing preventive measures against CVD. Indeed, knowing these different aspects can interfere in actions aimed at preventing, maintaining, and restoring the health of university students in the face of these diseases.

Concerning the results presented by the studies included in the review, the fact that, in general, students presented low levels of knowledge about CVD risk factors was surprising, especially considering that this phenomenon occurred among students from different colleges and course time. Also emphasizing how unforeseen this finding is, it is known that these students presented numerous risk behaviors for these diseases and that the University represents an important means of disseminating information on these risk factors to many young people[43].

However, this data may result from the way the media and the consumerism of today's society link these risk factors to pleasure, especially in fast food advertisements, in addition to the fact that it is accepted that the consequences of behavioral risk factors on health are usually manifested at older ages[44]. This data can also result from the parents' education level, especially the mother's, because of the role that she undertakes in the care of children[45]. Indeed, in research by Paulitsch et al.[46], the authors observed that students whose mothers had 5 to 11 years of schooling were more likely to have an additional risk factor compared to those whose mothers had schooling greater than or equal to 12 years.

Thus, regardless of the cause of misinformation, its consequence may not decrease the incidence of CVD among university students, in addition to promoting the increase in costs for the public and private sectors[47].

Regarding CVD risk factors, the literature classifies them into modifiable risk factors (environmental and behavioral), such as smoking, alcoholism, high cholesterol, systemic arterial hypertension, physical inactivity, stress, and secondary conditions (DM, obesity, contraceptive use, and abdominal obesity), and non-modifiable risk factors (genetic and biological), represented by heredity, gender, and advanced age[44].

Specifically, the risk factors for CVD reported in the studies included here were numerous and comprised both modifiable and non-modifiable factors, with a higher number among the former. These factors were also observed by other authors[44,48], who highlighted sedentary lifestyle. The latter, together with hypertension, smoking, hyperglycemia, and overweight/obesity, is one of the globally known CVD risk factors[49].

REVISTA ENFERMAGEM ATUAL IN DERME

In this review, smoking was the modifiable risk factor most cited by students, which may be associated with the high practice of this habit among university students[50] and/or the fact that it is one of the main modifiable cardiovascular risk factors[51]. According to the literature, smoking is responsible for numerous and diverse chronic diseases and for half of all preventable deaths[50]. It is considered responsible for the increase of oxidative stress, inflammatory process, and endothelial and platelet dysfunction, phenomena that can cause damage to the body[51].

Concerning the result presented by the articles that, despite being aware of the risk factors of CVD, students did not believe in their vulnerability to these diseases, it can be understood if it is assumed that the age above 45 years for men and 55 years for women is considered as a susceptibility factor to CVD[52]. As for the non-adoption of preventive measures by students, this result may be associated with the very belief that they are not susceptible to CVD and/or with lack of time[53]. As for the lack of practice of a healthy lifestyle, despite the awareness of risk factors, it can be explained by problems in time administration, the need to perform well[53], impairment of eating habits and mealtimes, and adoption of a more sedentary lifestyle[54].

Regarding the low level of knowledge about health indicators among university students, this finding is worrisome because it suggests that these students are unaware of the reality experienced by them, which may compromise the application of policies and strategies aimed at good action and performance of the health system, as well as the monitoring of these diseases in this population.

Concerning the perception of university students that the Medicine course was harmful to their health, this result corroborates Stegers-Jager et al.[55], who reported that the challenge of medical schools is to provide academic environments that do not compromise health and stimulate progress in studies. Specifically, the chronic stress experienced by these students may increase the risk of cardiometabolic and neurodegenerative diseases, in addition to causing cognitive decline and adverse effects in the hippocampus[55].

This data can also be understood if we admit that medical students present, in general, an inadequate lifestyle marked by sedentarism, inadequate eating habits, limited time for leisure, and high workload, as well as high frequency of tests and expectations of themselves, social isolation, competition with friends, and excessive subjects to study[56,57].

As for the differences between genders regarding the health attitudes and practices of university students observed by the studies discussed here, this result seems to reflect the stereotypes related to gender, especially expressing the image of the man as the one who is stronger, who does not take care of himself or others and who does not seek

REVISTA ENFERMAGEM ATUAL IN DERME

health services. On the other hand, the woman is the one who is naturally a caregiver and who requires more attention due to the particularities of the female organism[58]. This data is worrisome, since men seem to be more vulnerable to chronic and severe illnesses, in addition to having an earlier death[59,60].

## CONCLUSIONS

We can conclude that the reduced knowledge about the risk factors of cardiovascular diseases presented by university students from different educational institutions and course time, associated with the non-recognition of vulnerability to these diseases and non-adoption of preventive measures and healthy lifestyle, emphasizes the urgency of the development and application of strategies aimed at health promotion.

The data in the review enabled us to deepen the knowledge and critical look about what is produced by the national and international literature on the theme portrayed here. In this context, few Brazilian studies were included, which alerts us to the need to conduct more research related to the knowledge of cardiovascular disease risk factors among university students, fostering the elaboration of new literature reviews and strengthening evidence-based practice.

## REFERÊNCIAS

1. Bao TQ, Hoang VM, Lan VH, Linh BP, Giang KB, Nga PQ, et al. Risk factors for Non-Communicable Diseases among adults in Vietnam: Findings from the Vietnam STEPS Survey 2015. J Glob Heal Sci. Korean Society of Global Health; 2020;2(1). DOI: 10.35500/jghs.2020.2.e7

2. WHO. Who Global Status Report on Non-Communicable Diseases 2014. [En ligne]. WHO World Health Organization; 2014 [cité le 7 janvier 2021].

3. Malta DC, Andrade SC, Claro RM, Bernal RTI, Monteiro CA. Evolução anual da prevalência de excesso de peso e obesidade em adultos nas capitais dos 26 estados brasileiros e no Distrito Federal entre 2006 e 2012. Rev Bras Epidemiol. 2014;17(SUPPL. 1):267-76. DOI: 10.1590/1809-4503201400050021

4. WORLD HEALTH ORGANIZATION. Noncommunicable diseases. Key Facts; 2018. WHO 2018.

5. Figueiredo AR, Cabral ABS, Almeida ACO, Ribeiro MA, Araújo MR de S, Ferreira MFDC, et al. Ação educativa acerca dos fatores de riscos de doenças cardiovasculares em adolescentes: relato de experiência. Rev Eletrônica Acervo Saúde. 2020;(42):e2292. DOI: 10.25248/reas.e2292.2020

6. Zainel AJAL, Nuaimi AS Al, Mohamed Ahmed Syed, A/Qotba HA. Risk Factors Associated with Cardiovascular Diseases among Adults Attending the Primary HealthCare Centers in Qatar, a Cross-Sectional Study. J Community Med Public Heal [En ligne]. 2020 [cité le 6 janvier 2021];4. Disponible: https://www.gavinpublishers.com/articles/research-article/Journal-of-Community-Medicine-Public-Health/risk-factors-associated-with-cardiovascular-diseases-among-adults-attending-the-primary-health-care-centers-in-qatar-a-cross-sectional-study

7. Bhupathi V, Mazariegos M, Cruz Rodriguez JB, Deoker A. Dairy Intake and Risk of

Cardiovascular Disease. Vol. 22, Current Cardiology Reports Springer; 2020.

8. Précoma DB, de Oliveira GMM. Atualização da Diretriz de Prevenção Cardiovascular da Sociedade Brasileira de Cardiologia. Soc Bras Cardiol [En ligne]. 2019 [cité le 10 janvier 2021];113(4):787-891. Disponible: https://www.scielo.br/scielo.php?pid=S0066-782X2019001000787&script=sci_arttext&tlng=pt

9. A.F. S, D.B. P, J.P. A, H CF, J.F.K. S, G.M.M. O. I Diretriz Brasileira de Prevenção Cardiovascular. Arq Bras Cardiol [En ligne]. 2013 [cité le 10 janvier 2021];101(6). Disponible: https://www.scielo.br/scielo.php?pid=S0066-782X2013004500001&script=sci_arttext&tlng=pt

10. Martins LN, Souza LS de, Silva CF da, Machado RS, Silva CEF da, Vilagra MM, et al. Prevalência dos Fatores de Risco Cardiovascular em Adultos Admitidos na Unidade de Dor Torácica em Vassouras, RJ. onlineijcs.org [En ligne]. 2011 [cité le 10 janvier 2021];24(5):299-307. Disponible: http://www.onlineijcs.org/english/sumario/24/pdf/v24n5a05.pdf

11. Akbari G. Molecular mechanisms underlying gallic acid effects against cardiovascular diseases: An update review. Avicenna J Phytomedicine. 2020;10(1):11-23. DOI: 10.22038/ajp.2019.13537

12. Isbister J, Semsarian C. Cardiovascular genomics and sudden cardiac death in the young. Aust J Gen Pract. 2019;48(3):90-5. DOI: 10.31128/AJGP-09-18-4715

13. Herdy A, López-Jiménez F, … CT-AB, 2014 U. Diretriz sul-americana de prevenção e reabilitação cardiovascular. ArqBrasCardiol [En ligne]. 2014 [cité le 6 janvier 2021];103(2):1-31. Disponible: https://www.scielo.br/scielo.php?pid=S0066-782X2014003000001&script=sci_arttext&tlng=pt

14. Spence JD, Pilote L. Importance of sex and gender in atherosclerosis and cardiovascular disease. Vol. 241, Atherosclerosis 2015. p. 208-10.

15. Back IR, Dias BC, Batista VC, Ruiz AGB, Peruzzo HE, Druciak CDA, et al. <b>Fatores de risco para doenças cardiovasculares em universitários: diferenças entre os sexos / Risk factors for cardiovascular diseases in university students: differences between the sexes<b>. Ciência, Cuid e Saúde. 2019;18(1). DOI: 10.4025/cienccuidsaude.v18i1.40096

16. Oliveira CQ de. AVALIAÇÃO DO SOBREPESO, OBESIDADE, ALTERAÇÕES DA PRESSÃO ARTERIAL E DA APTIDÃO FÍSICA ENTRE ADOLESCENTES DA REDE MUNICIPAL DE ENSINO DE PETRÓPOLIS. Pró-Reitoria Pesqui e Pós-Graduação [En ligne]. 2020 [cité le 10 janvier 2021];0(0). Disponible: http://seer.ucp.br/seer/index.php/propep/article/view/1693

17. Cotten E, Prapavessis H. Increasing Nonsedentary Behaviors in University Students Using Text Messages: Randomized Controlled Trial. JMIR mHealth uHealth. 2016;4(3):e99. DOI: 10.2196/mhealth.5411

18. Mussi FC, Pitanga FJG, Pires CG da S. Tempo sentado acumulado como discriminador de sobrepeso, obesidade, obesidade abdominal e alterações lipídicas em universitárias de enfermagem. Rev Bras Cineantropometria e Desempenho Hum. Universidade Federal de Santa Catarina; 2017;19(1):40-9. DOI: 10.5007/1980-0037.2017v19n1p40

19. Silva LDC, Costa JCM, Nunes FDO, Azevedo PR. Health risk behaviors in college students of a public institution. Rev Pesqui Cuid é Fundam Online. 2020;12:544-50. DOI: 10.9789/2175-5361.rpcfo.v12.8635

20. Lima MMM, Felício JF, M'batna AJ, Ferreira DS, Cavalcante MCSL, Dutra FCS, et al. Perfil de manifestação de estresse em universitários: um estudo transversal. Rev Enferm Atual In Derme. 2021;95(33):1-14. DOI: 10.31011/reaid-2021-v.95-n.33-art.903

21. Sogari G, Velez-Argumedo C, Gómez MI, Mora C. College students and eating habits: A study using an ecological model for healthy behavior. Nutrients. 2018;10(12):1-16. DOI: 10.3390/nu10121823

22. Calixto L de F, Montiel EM da S, Rocha KS dos S, Lima D von G, Marcon MV, Kluthcovsky ACGC, et al. Fatores de risco para doenças cardiovasculares em estudantes de medicina. Int J Dev Res. 2019;9(10):30725-31. DOI: 10.1590/S0066-782X2005001400011

23. Macedo TTS de, Mussi FC, Geovana C, Ramon J, Teixeira B, Portela PP. Perfil alimentar , clínico e padrão de atividade física em ingressantes universitários de enfermagem. Rev Cubana Enferm [En ligne]. 2019 [cité le 8 octobre 2020];1(25):2-21. Disponible: http://www.revenfermeria.sld.cu/index.php/enf/article/view/1785

24. Mendes MLM, Silva FR da, Messia CMB de O, Carvalho PGS de, Silva TFA da. Hábitos alimentares e atividade física de universitários da área de saúde do município de Petrolina-PE. Tempus Actas de Saúde Coletiva. 2016;10(2):205. DOI: 10.18569/tempus.v10i2.1669

25. Pires CG da S, Mussi FC, Cerqueira BB de, Pitanga FJG, Silva DO da. Prática de atividade física entre estudantes de graduação em enfermagem. Acta Paul Enferm. 2013;26(5):436-43. DOI: 10.1590/s0103-21002013000500006

26. Miranda MLP, Kamiji MM, Torezzan C, Antunes AEC. Avaliação antropométrica e análise do consumo alimentar de universitários da Faculdade de Ciências Aplicadas – UNICAMP. Segurança Aliment e Nutr. 2015;21(2):461. DOI: 10.20396/san.v21i2.8634475

27. Rezende LCM, Fontes WD de, Martins KP, Santos SR. Fatores de risco para hipertensão arterial sistêmica em crianças. Rev enferm UFPE line, Recife,. 2014;8(8):2611-6. DOI: 10.5205/reuol.6081-52328-1-SM.0808201405

28. Souza MT de, Silva MD da, Carvalho R de. Revisão integrativa: o que é e como fazer. einstein [En ligne]. 2010 [cité le 10 janvier 2021];8(1):102-6. Disponible: https://www.scielo.br/pdf/eins/v8n1/pt_1679-4508-eins-8-1-0102

29. Sousa LMM de, Marques-Vieira CMA, Severino SSP, Antunes AV. A metodolgia de revisão integrativa da literatura em enfermagem. Rev Investig EM Enferm [En ligne]. 2017;17-26. Disponible: http://www.sinaisvitais.pt/images/stories/Rie/RIE21.pdf#page=17

30. Ursi ES, Gavão CM. Prevenção de lesões de pele no perioperatório: revisão integrativa da literatura. Rev Lat Am Enfermagem. 2006;14(1):124-31. DOI: 10.1590/s0104-11692006000100017

31. Ferreira MJA da S, Lima RF, Albuquerque AJ, Santos VEFA, Silva ARS, Medeiros CSQ. O Cuidado à Criança Com Insuficiência Renal: Uma Revisão Integrativa da Literatura. Cad Grad - ciências Biológicas e da Saúde FACIPE [En ligne]. 2013 [cité le 10 janvier 2021];1(1):37-49. Disponible: http://periodicos.set.edu.br/facipesaude/article/view/1058

32. Stillwell SB, Fineout-Overholt E, Melnyk BM, Williamson KM. Evidence-based practice, step by step: Searching for the evidence. Am J Nurs. Am J Nurs; 2010;110(5):41-7. DOI: 10.1097/01.NAJ.0000372071.24134.7e

33. Aprígio D de P, Araújo VB de, Omatsu VL, Mendes BM, Jesus JL de, Furtado O, et al. Evaluation of risk factors for the development of cardiovascular diseases in students of Serra dos Órgãos University. Rev DA JOPIC [En ligne]. 2020 [cité le 10 janvier 2021];3(6):15-22. Disponible: http://www.revista.unifeso.edu.br/index.php/jopic/article/view/1901

34. Gasparotto G da S, Gasparotto LPR, Salles MR de, Campos W de. Fatores de risco cardiovascular em universitários:

comparação entre se- xos, períodos de graduação e áreas de estudo. Med (Ribeirão Preto) [En ligne]. 2013 [cité le 10 janvier 2021];46(2):154-63. Disponible: http://revista.fmrp.usp.br/

35. ALBACH, VM; MEDEIRO M. Utilização da Revisão Bibliográfica Sistemática em Turismo: Panorama Internacional e Ibero-americano dos Trabalhos Presentes no Scopus e Redalyc. Publ UEPG Appl Soc Sci, Ponta Grossa. 2020;28(e 202014492):1-14.

36. Cintra PR, Silva MDP da, Furnival AC. Uso do inglês como estratégia de internacionalização da produção científica em Ciências Sociais Aplicadas: estudo de caso na SciELO Brasil. Em Questão. 2020;26(1):17-41. DOI: 10.19132/1808-5245261.17-41

37. Oliveira GX de, Vestena D, Costa CRR da, Traverso LD, Bichueti RS. Internacionalização das universidades: estudo sobre a produção científica. Rev Gestão e Desenvolv. 2020;17(1):196. DOI: 10.25112/rgd.v17i1.2020

38. Lymn N, Bates S. State of US science enterprise report shows US leads in S&E as China rapidly advances. Natl Sci Found [En ligne]. 2018 [cité le 6 janvier 2021];1-5. Disponible: https://www.nsf.gov/news/news_summ.jsp?org=NSF&cntn_id=244271&preview=false

39. Guimarães BE de B, Castelo Branco AB de A. Trabalho em Equipe na Atenção Básica à Saúde: Pesquisa Bibliográfica. Rev Psicol e Saúde. 2020;12(1):143-55. DOI: 10.20435/pssa.v12i1.669

40. Franco FR, Rocha RT, Pereira CA. Humanidades & Tecnologia em Revista (FINOM)- a importância de desenvolvimento do Centro de Atenção à Saúde do Idoso em Paracatu/MG: a busca por uma assistência adequada e o papel do enfermeiro. Humanidades Eecnologia em Rev [En ligne]. 2020 [cité le 6 janvier 2021];23. Disponible: http://revistas.icesp.br/index.php/FINOM_Humanidade_Tecnologia/article/view/1210

41. Oliveira MA, Vellarde GC, Sá RAM de. Entendendo a pesquisa clínica III: estudos de coorte. Femina [En ligne]. 2015 [cité le 6 janvier 2021];43(34):105-10. Disponible: https://pesquisa.bvsalud.org/portal/resource/pt/lil-763819?lang=en

42. Denti IA, Brock F, Biasi LS De. Comportamento e atitudes para prevenir doenças cardiovasculares. Perspect Erechim [En ligne]. 2016 [cité le 10 janvier 2021];40(149):139-51. Disponible: http://www.uricer.edu.br/site/pdfs/perspectiva/149_554.pdf

43. Abdela OA, Ayalew MB, Yesuf JS, Getnet SA, Biyazin AA, Lemma MY, et al. Ethiopian university students' knowledge and perception towards cardiovascular disease risk factors: a cross sectional study. Am J Cardiovasc Dis [En ligne]. 2019 [cité le 6 janvier 2021];9(1):1-7. Disponible: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6420697/

44. Toledo RA, Jurca CF, Rios CAG, Lima LFG, Rodrigues VO, Santos RO. Fatores de risco cardiovascular modificáveis em estudantes de medicina de um centro universitário brasileiro. Brazilian J Dev. 2019;5(10):19944-57. DOI: 10.34117/bjdv5n10-197

45. Lazzarini A, Sampaio C, … VG-RC em, 2018 U. Mulheres na Ciência: papel da educação sem desigualdade de gênero. Rev Ciência em Extensão [En ligne]. 2018 [cité le 6 janvier 2021];14(2):188-94. Disponible: https://ojs.unesp.br/index.php/revista_proex/article/view/1717

46. Paulitsch RG, Dumith SC, Susin LRO. Simultaneidade de fatores de risco comportamentais para doença cardiovascular em estudantes universitários. Rev Bras Epidemiol. 2017;20(4):624-35. DOI: 10.1590/1980-5497201700040006

47. Dos Santos CT, Raul Ferreira de Souza Machado, Thais Lemos de Souza Macêdo, Dandhara Martins Rebello, João Paulo Brum Paes, Ivana Picone Borges de Aragão. Rastreamento do autoconhecimento e da

presença dos fatores de risco cardiovascular em população da periferia da cidade de Vassouras: Dados preliminares. Rev Saúde. 2019;10(2):12-7. DOI: 10.21727/rs.v10i2.1882

48. Mascena GV, Cavalcante MSB, Marcelino GB, Holanda SA, Brandt CT. Fatores de risco cardiovascular em estudantes da Faculdade de Ciências Médicas de Campina Grande. Med (Ribeirao Preto Online). 2012;45(3):322. DOI: 10.11606/issn.2176-7262.v45i3p322-328

49. Teston EF, Cecilio HPM, Santos AL, De Arruda GO, Radovanovic CAT, Marcon SS. Factors associated with cardiovascular diseases in adults. Med. 2016;49(2):95-102. DOI: 10.11606/issn.2176-7262.v49i2p95-102

50. Macêdo TTS de, Mussi FC, Palmeira CS, Mendes AS. Consumo de bebida alcoólica, tabaco e drogas ilícitas em ingressantes universitários da área de enfermagem. Rev Divulg Científica Sena Aires. 2020;9(1):77-88. DOI: 10.36239/revisa.v9.n1.p77a88

51. Jacondino CB, Schwanke CHA, Closs VE, Gomes I, Borges CA, Gottlieb MGV. Associação do tabagismo com biomarcadores REDOX e fatores de risco cardiometabólicos em idosos. Cad Saúde Coletiva. 2019;27(1):45-52. DOI: 10.1590/1414-462x201900010279

52. Freire AK da S, Alves NCC, Santiago EJP, Tavares AS, Teixeira D da S, Carvalho IA, et al. Panorama No Brasil Das Doenças Cardiovasculares Dos Últimos Quatorze Anos Na Perspectiva Da Promoção À Saúde. Rev Saúde e Desenvolv [En ligne]. 2017 [cité le 6 janvier 2021];11(9):21-44. Disponible: https://www.uninter.com/revistasaude/index.php/saudeDesenvolvimento/article/view/776

53. Dias AC, Carlotto R, de Oliveira C, Teixeira M. Dificuldades percebidas na transição para a universidade. Rev Bras Orientação Prof. Associacao Brasileira de Orientadores Profissionais; 2019;20(1):19-30. DOI: 10.26707/1984-7270/2019v20n1p19

54. Prati SRA, Porto WJ, Ferreira L. Estilo de vida de universitários: uma investigação sobre hábitos alimentares, atividade física e estresse. BIOMOTRIZ. 2020;14(2):69-78. DOI: 10.33053/biomotriz.v14i2.30

55. Stegers-Jager KM, Savas M, van der Waal J, van Rossum EFC, Woltman AM. Gender-specific effects of raising Year-1 standards on medical students' academic performance and stress levels. Med Educ. Blackwell Publishing Ltd; 2020;54(6):538-46. DOI: 10.1111/medu.14068

56. Steiner-Hofbauer V, Holzinger A. How to Cope with the Challenges of Medical Education? Stress, Depression, and Coping in Undergraduate Medical Students. Acad Psychiatry. 2020;44(4):380-7. DOI: 10.1007/s40596-020-01193-1

57. Thomas E, M G. Prevalence and Determinants of Overweight and Obesity among Medical Students. Nsatl J Physiol Pharm Pharmacol. 2020;10(1):1. DOI: 10.5455/njppp.2020.10.1035506112019

58. Bertolini DNP, Simonetti JP. The male genre and health care: the experience of men at a health center. Esc Anna Nery - Rev Enferm. 2014;18(4):722-7. DOI: 10.5935/1414-8145.20140103

59. Balbino CM, Silvino ZR, Santos JS dos, Joaquim FL, Souza CJ de, Santos LM dos, et al. Os motivos que impedem a adesão masculina aos programas de atenção a saúde do homem. Res Soc Dev. 2020;9(7):e389974230. DOI: 10.33448/rsd-v9i7.4230

60. Bruno PS, Zanini MTB, Soratto MT, Feltrin JO. Saúde do homem: limites e possibilidades. Enferm Bras [En ligne]. 2011 [cité le 10 janvier 2021];10(5):274-9. Disponible: http://www.portalatlanticaeditora.com.br/index.php/enfermagembrasil/article/view/3874

REVISTA ENFERMAGEM ATUAL IN DERME

**Corresponding author**
Ana Caroline Rocha de Melo Leite.
Universidade da Integração Internacional da Lusofonia Afro-Brasiliera - Campus das Auroras - Rua José Franco de Oliveira, s/n, CEP – 62.790-970 – Redenção-Ceará, fone (85) 99168-0679 e e-mail: acarolmelo@unilab.edu.br

**Submission:** 2021-05-25
**Approval** 2021-09-26