



Lifestyle of university students and its repercussions on health: integrative review

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ABSTRACT. Lifestyle represents modifiable behavior patterns that can impact individuals' health. The objective of this study was to describe the available scientific evidence regarding the lifestyle of university students and its repercussions on the health conditions of this population. This is an integrative review conducted from August to September 2022. The search was performed in the electronic databases: CINAHL, MEDLINE, SciELO, SCOPUS, and Web of Science. For this purpose, the controlled descriptors 'students', 'universities', 'lifestyle', and 'health', indexed in DeCS/MeSH, respectively, were used. The Boolean operator 'AND' was employed as a connector. Only articles published in the last ten years (2012 to 2022) and in Portuguese, English, and Spanish were included. After the searches, 3,029 articles were identified. With the application of the inclusion/exclusion criteria, eight articles remained that answered the study's guiding question: "What is the lifestyle of university students and what are its repercussions on the health conditions of this population?". Analyzing the results of the included studies, it was observed that university students presented an inadequate lifestyle with poor eating habits, smoking, alcoholism, insufficient physical activity, and abnormal sleep patterns, which consequently relate to health problems presented by these students such as general/abdominal obesity, low serum vitamin D levels, osteopenia/osteoporosis, increased LDL-cholesterol, male sexual dysfunction, depressive symptoms, current and future mental health problems, and suboptimal health status. Therefore, it was possible to observe that the university lifestyle can negatively impact the health conditions of this population. In this regard, the present study points out the relevance of monitoring and the adoption of proactive health education measures by health authorities and educational institutions aimed at improving the quality of life of students.

Keywords: students; universities; lifestyle; health.

Estilo de vida de estudantes universitários e suas repercussões na saúde: revisão integrativa

RESUMO. O estilo de vida representa padrões de comportamentos modificáveis que podem repercutir na saúde dos indivíduos. O objetivo deste estudo foi descrever as evidências científicas disponíveis acerca do estilo de vida de estudantes universitários e suas repercussões nas condições de saúde dessa população. Trata-se de uma revisão integrativa realizada no período de agosto a setembro de 2022. A busca foi realizada nas bases de dados eletrônicas: CINAHL, MEDLINE, SciELO, SCOPUS e Web of Science. Para tanto, foram utilizados os descritores controlados "estudantes", "universidades", "estilo de vida" e "saúde", indexados no DeCS/MeSH, respectivamente. Como operador booleano, foi empregado o conector "AND". Foram incluídos apenas artigos publicados nos últimos dez anos (2012 a 2022) e nas línguas português, inglês e espanhol. Após as buscas, foram identificados 3.029 artigos. Com a aplicação dos critérios de inclusão/exclusão, restaram oito artigos que responderam à questão norteadora do estudo: "Qual é o estilo de vida dos estudantes universitários e quais as suas repercussões nas condições de saúde dessa população?". Ao se analisar os resultados dos estudos incluídos, observou-se que os universitários apresentaram um estilo de vida inadequado com maus hábitos alimentares, tabagismo, alcoolismo, prática insuficiente de atividade física e padrão de sono anormal, que consequentemente se relacionam a problemas de saúde apresentados por estes estudantes como obesidade geral/abdominal, baixos níveis séricos de vitamina D, osteopenia/osteoporose, aumento de LDL-colesterol, disfunção sexual masculina, sintomas depressivos, problemas de saúde mental atuais e futuros e estado de saúde abaixo do ideal. Portanto, foi possível observar que o estilo de vida universitário pode repercutir de forma negativa nas condições de saúde dessa população. Nesse sentido, o presente estudo aponta a pertinência do acompanhamento e da adoção de medidas proativas de educação em saúde pelas entidades sanitárias e instituições de ensino voltadas à melhoria da qualidade de vida dos estudantes.

Palavras-chave: estudantes; universidades; estilo de vida; saúde.

Estilo de vida de estudiantes universitarios y sus repercusiones en la salud: revisión integrativa

RESUMEN. El estilo de vida representa patrones de comportamientos modificables que pueden repercutir en la salud de los individuos. El objetivo de este estudio fue describir las evidencias científicas disponibles acerca del estilo de vida de estudiantes universitarios y sus repercusiones en las condiciones de salud de esta población. Se trata de una revisión integrativa realizada en el período de agosto a septiembre de 2022. La búsqueda fue realizada en las bases de datos electrónicas: CINAHL, MEDLINE, SciELO, SCOPUS y Web of Science. Para ello, fueron utilizados los descriptores controlados "estudiantes", "universidades", "estilo de vida" y "salud", indexados en DeCS/MeSH, respectivamente. Como operador booleano, fue empleado el conector "AND". Fueron incluidos solamente artículos publicados en los últimos diez años (2012 a 2022) y en los idiomas portugués, inglés y español. Tras las búsquedas, se identificaron 3.029 artículos. Con la aplicación de los criterios de inclusión/exclusión, quedaron ocho artículos que respondieron a la pregunta orientadora del estudio: "¿Cuál es el estilo de vida de los estudiantes universitarios y cuáles son sus repercusiones en las condiciones de salud de esta población?". Al analizar los resultados de los estudios incluidos, se observó que los universitarios presentaron un estilo de vida inadecuado con malos hábitos alimenticios, tabaquismo, alcoholismo, práctica insuficiente de actividad física y patrón de sueño anormal, que consecuentemente se relacionan con problemas de salud presentados por estos estudiantes como obesidad general/abdominal, bajos niveles séricos de vitamina D, osteopenia/osteoporosis, aumento de LDL-colesterol, disfunción sexual masculina, síntomas depresivos, problemas de salud mental actuales y futuros y estado de salud por debajo de lo ideal. Por lo tanto, fue posible observar que el estilo de vida universitario puede repercutir de forma negativa en las condiciones de salud de esta población. En este sentido, el presente estudio señala la pertinencia del seguimiento y la adopción de medidas proactivas de educación en salud por parte de las entidades sanitarias e instituciones de enseñanza orientadas a la mejora de la calidad de vida de los estudiantes.

Palabras clave: estudiantes; universidades; estilo de vida; salud.

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Introduction

Lifestyle is understood as a way of living based on modifiable behavioral patterns that can have repercussions on individuals' health. It is related to various aspects such as personal characteristics and the socioeconomic and environmental interactions in which the individual is embedded (World Health Organization [WHO], 1998).

The behavioral patterns that characterize a lifestyle include, among others, dietary habits, alcohol consumption, tobacco use, physical activity, sleep patterns, emotional balance, and interpersonal relationships (Madeira et al., 2018).

The lifestyle of university students has been a focus of scientific inquiry, particularly for those in the early stages of their university life. According to Sousa and Prati (2021), entering university is a critical period in a student's life. If not properly managed, this transition can have repercussions on psychosocial development, lifestyle, and health conditions. This is often due to factors such as distance from the family unit, a new sense of autonomy, the transition to adulthood, personal academic commitments, the search for identity, and the need for peer acceptance. Furthermore, personal characteristics and the academic environment itself can predispose these students to the initiation and maintenance of alcohol and other drug use. This, in turn, can lead to changes in dietary habits and sleep patterns, exposure to risky situations, unprotected sex, interpersonal violence, and automobile accidents, in addition to causing impaired academic performance (Dázio et al., 2016).

In a cross-sectional observational study, Ramis et al. (2012) investigated the prevalence of smoking and alcohol consumption among students at a public university. They found that 75% of students consumed alcoholic beverages at least once a month, and the prevalence of risk for alcoholism was 6.2%. Regarding smoking, 10.2% of students reported smoking regularly or on weekends. Students living with friends reported higher consumption. Similarly, a study by Barros and Costa (2019) that evaluated the alcohol consumption profile of 124 university students found a prevalence of 79.8%. Among them, 15% reported driving under the influence of alcohol, and 26% reported engaging in unprotected sex after consuming alcohol. More recently, Moreira et al. (2023) analyzed the knowledge, attitude, and practice (KAP) regarding condom use for preventing sexually transmitted infections (STIs) among 162 university students. They observed that 52.5% of students had an inadequate attitude, and 98.1% had inadequate prevention practices.

University students often exhibit unhealthy dietary habits, characterized by the frequent consumption of high-calorie, unhealthy foods such as soft drinks (30.3%) and cookies (26.7%). This dietary profile can be correlated with a lack of regular physical activity (53.1%) and sleep restriction (52%) (Mota et al., 2020).

The evidence suggests that university students exhibit an unhealthy lifestyle that can have repercussions on their health, affecting not only their physical and mental well-being but also their academic performance and their professional and interpersonal relationships (Silva Junior, 2020). From this perspective, it is apparent that while most studies describe the lifestyle of university students, there is a scarcity of research that synthetically examines this lifestyle and its repercussions on their health conditions.

Therefore, the objective of this study was to describe the available scientific evidence on the lifestyle of university students and its repercussions on their health conditions.

Materials and Methods

This study is an Integrative Literature Review, a method designed to systematically gather and synthesize the results of previous studies on a specific topic in a rigorous, integrated, and orderly manner. This approach provides comprehensive knowledge of the investigated issue, allowing for the characterization of the current state of scientific knowledge and an assessment of the need for further research, as well as an evaluation of the applicability of the findings (Pompeo et al., 2009).

The development of this review followed six stages: 1) identification of the topic and formulation of the research question; 2) establishment of eligibility criteria; 3) identification of studies in scientific databases; 4) critical evaluation and analysis of the selected studies; 5) interpretation of the results; and 6) presentation of the synthesized data in the structure of an Integrative Review (Mendes et al., 2008).

The research question was formulated using the PICO strategy, an acronym where each letter represents a component of the question: P – Patient or Problem; I – Intervention; C – Control or Comparison; O – Outcome (Santos et al., 2007). However, it should be noted that not all elements are necessarily used in the formulation of every research question (Garcia et al., 2016).

Accordingly, for this study, the research question was structured by defining 'P' as university students and 'O' as the lifestyle of university students and its repercussions on their health conditions. The 'I' (Intervention) and 'C' (Comparison) components were not applied. This led to the following research question: "What is the lifestyle of university students, and what are its repercussions on their health conditions?"

The literature search and analysis were conducted from August to September 2022. To identify and select scientific publications, the following databases were searched: Cumulative Index to Nursing and Allied Health Literature (CINAHL), Medical Literature Analysis and Retrieval System Online (MEDLINE), Scientific Electronic Library Online (SciELO), SCOPUS, and Web of Science. The search used the controlled descriptors in English ('students', 'universities', 'lifestyle', 'health') and their Portuguese equivalents ('estudantes', 'universidades', 'estilo de vida', 'saúde'), indexed in the Medical Subject Headings (MeSH) and Health Sciences Descriptors (DeCS), respectively. The Boolean operator 'AND' was used to combine the descriptors.

Inclusion criteria were: articles published in the last ten years (2012 to 2022), in Portuguese, English, or Spanish, and available in full text at no cost. Exclusion criteria included: dissertations, theses, editorials, letters to the editor, reports, review articles, duplicate articles within or between databases, and articles that did not answer the research question. It is important to note that this study only considered publications depicting the lifestyle of university students in the pre-COVID-19 pandemic period. A subsequent study will compare findings from the pre-, intra-, and post-pandemic periods.

A data extraction instrument, adapted from the checklist developed and validated by Ursi (2005), was used. This instrument, designed for Integrative Literature Reviews, was adapted for this study to collect data on the following items: authors, year of publication, article title, journal/publication area, database, publication type, study location, level of evidence, and the main findings of the publications (Ferreira et al., 2013; Kakushi & Évora, 2016).

To assess the level of evidence, the classification system proposed by Stillwell et al. (2010) was applied. This system categorizes studies into seven levels, wherein levels 1 and 2 represent strong evidence, levels 3 and 4 represent moderate evidence, and levels 5 to 7 represent weak evidence (Table 1).

Table 1. Levels of evidence by study type.

Tipo de evidência	Level of Evidence	Description
Systematic review or meta-analysis	I	Evidence from a systematic review or meta-analysis of all relevant randomized controlled trials (RCTs), or from clinical practice guidelines based on systematic reviews of RCTs.
Randomized controlled trials	II	Evidence from at least one well-designed randomized controlled trial.
Non-randomized Controlled Trial	III	Evidence from a well-designed controlled trial without randomization.
Cohort Study or Case-Control	IV	Evidence from a well-designed cohort study or case-control.
Systematic Review of Descriptive and Qualitative Studies	V	Evidence from a systematic review of descriptive and qualitative studies.
Descriptive or Qualitative Study	VI	Evidence from a single descriptive or qualitative study.
Expert Opinion or Consensus	VII	Evidence from the opinion of authorities and/or reports from expert committees.

Source: Adapted from Stillwell et al. (2010).

Results

The initial database search yielded 3,029 articles. After applying the inclusion criteria, 715 articles remained. Following the screening of titles and abstracts, 649 articles were excluded for not addressing the research question, and 13 were excluded for being review articles. This resulted in 53 publications being selected for full-text reading. Of these, 45 were subsequently excluded: 10 for being duplicates and 35 for not addressing the research question. Ultimately, eight articles comprised the final sample for this review.

Of the eight articles included in the review, three were indexed in MEDLINE, two in SCOPUS, two in Web of Science, and one in CINAHL. No publications from SciELO were included. Regarding the year of publication, three articles were published in 2015, two in 2018, and one each in 2013, 2014, and 2017. As for the publication area, five articles were published in the field of Medicine, two in Epidemiology, and one in Public Health (Table 2).

Regarding the country where the studies were conducted, two were from China, and one each from the United States, Germany, Saudi Arabia, South Korea, Ghana, and the United Kingdom. In terms of study design, six publications were descriptive/cross-sectional studies, one was a descriptive/longitudinal study, and one was a cohort study. Concerning the level of evidence, seven studies were classified as level VI evidence, and one study was classified as level IV.

The main findings of the included articles revealed several health alterations related to the lifestyle behaviors of university students:

- Unhealthy dietary habits were associated with general/abdominal obesity; low serum vitamin D levels; osteopenia/osteoporosis; and male sexual dysfunction (decreased semen volume, sperm concentration, and total sperm count).
- Physical inactivity was associated with general/abdominal obesity; increased LDL-Cholesterol; low serum vitamin aD levels; osteopenia/osteoporosis; and suboptimal health status.
- Smoking was associated with current and future mental health problems (MHPs), suboptimal health status, and decreased semen volume, sperm concentration, and total sperm count.
- Alcohol use was associated with increased LDL-Cholesterol, current and future mental health problems, and depressive symptoms.

Furthermore, relationships between other behaviors and health alterations were observed, including: - Excessive use of electronic devices was associated with suboptimal health status; - Demographic factors were associated with overweight/obesity (Tables 2 and 3).

Table 2. Characteristics of the included studies, organized by authors, title, journal/area, and database.

No.	Authors / Year of Publication	Title of Publication	Journal / Area	Database
1	Martin et al. (2013)	Cardiovascular Risk: Gender Differences in Lifestyle Behaviors and Coping Strategies	International Journal of Behavioral Medicine / Medicine	CINAHL
2	Velten et al.	Lifestyle Choices and Mental Health: A Longitudinal	BMC Public Health /	MEDLINE

	(2018)	Survey with German and Chinese Students	Epidemiology	
3	Ansari et al. (2014)	Does the Importance of Religious Faith and Healthy Lifestyle Modify the Relations Between Depressive Symptoms and Four Indicators of Alcohol Consumption? A Survey of Students at Seven Universities in England, Wales, and Northern Ireland	Substance Use & Misuse / Medicine	MEDLINE
4	Ma et al. (2018)	Association Between Lifestyle Factors and Suboptimal Health Status Among Chinese College Freshmen: A Cross-Sectional Study	BMC Public Health / Epidemiology	MEDLINE
5	Hammad & Benajiba (2017)	Lifestyle Factors Influencing Bone Health in Young Adult Females in Saudi Arabia	African Health Sciences / Medicine	SCOPUS
6	Yang et al. (2015)	Lifestyles Associated with Human Semen Quality: Results from the MARHCS Cohort Study in Chongqing, China	Medicine / Medicine	SCOPUS
7	Joh et al. (2015)	Lifestyle and Dietary Factors Associated with Serum 25-hydroxyvitamin D Levels in Young Korean Adults	Journal of Korean Medical Science / Medicine	Web of Science
8	Mogre et al. (2015)	Demographic, Dietary and Physical Activity Predictors of General and Abdominal Obesity in University Students: A Cross-Sectional Study	SpringerPlus / Health Sciences	Web of Science

Source: Prepared by the authors (2022).

Tabela 3. Publicações organizadas de acordo com autores, ano de publicação, tipo de publicação, local do estudo e nível de evidência.

No.	Authors / Year of Publication	Study Design	Study Location	Level of Evidence	Main Findings
1	Martin et al. (2013)	Descriptive, cross-sectional	United States	VI	High BMI, less frequent exercise, smoking, and frequent high-volume alcohol consumption per week were significant predictors of increased LDL-Cholesterol.
2	Velten et al. (2018)	Descriptive, longitudinal	Germany	VI	Frequent alcohol consumption, smoking, and irregular social rhythm were positive predictors of current and future mental health problems in students.
3	Ansari et al. (2014)	Descriptive, cross-sectional	United Kingdom	VI	Drinking problems and possible alcohol dependence were associated with depressive symptoms among students.
4	Ma et al. (2018)	Descriptive, cross-sectional	China	VI	Excessive use of electronic devices, smoking, low physical activity, and unhealthy dietary habits were positively associated with suboptimal health status.
5	Hammad & Benajiba (2017)	Descriptive, cross-sectional	Saudi Arabia	VI	High intake of soft drinks, lack of physical exercise, and limited calcium and vitamin D supplementation were related to osteopenia and osteoporosis among female university students.
6	Yang et al. (2015)	Cohort study	China	IV	Smoking, consumption of soft drinks, and intake of fried/barbecued foods were associated with decreased semen volume, sperm concentration, and total sperm count among students.
7	Joh et al. (2015)	Descriptive, cross-sectional	South Korea	VI	Frequent noodle consumption, intake of sugary drinks, and low physical activity were associated with low serum vitamin D levels in Korean students.
8	Mogre et al. (2015)	Descriptive, cross-sectional	Ghana	VI	Demographic factors, dietary habits, and low physical activity levels were associated with overweight/general obesity and abdominal obesity in students. - Overweight/general obesity was associated with consuming fruits and vegetables less than 3 times per week.

Source: Prepared by the authors (2022).

Discussion

The significance of this study is grounded in the understanding that a clearer comprehension of university students' lifestyles and their health implications can foster more attentive care for this population. This, in turn, can facilitate the adoption of effective measures to mitigate potential harms associated with their vulnerability and distress.

The temporal and geographical distribution of the articles included in this review underscores the global relevance of this topic. The fact that a majority of the studies were published more than five years ago, with a significant portion published within the last five years across different continents, highlights the enduring and widespread interest in this area.

A higher representation of articles from the field of Medicine was observed, an outcome that may be explained by the prominence of the MEDLINE database among those searched in this review. Furthermore, while the other consulted databases include journals from various health disciplines, they also have a strong representation of medical journals.

Regarding the prevalence of descriptive studies among the included articles, this may reflect the perceived importance of the topic. Descriptive studies are fundamental for determining the distribution of diseases or health-related conditions according to time, place, and individual characteristics, thereby laying the groundwork for further analytical research (Merchán-Hamann & Taulil, 2021).

When analyzing the main findings of the included articles, studies 5 and 7 clearly demonstrated a relationship between physical inactivity, unhealthy dietary behaviors, and adverse bone health outcomes, such as osteopenia/osteoporosis and low serum vitamin D levels. A similar pattern was observed in studies 2 and 3, which linked alcohol and tobacco use to depressive symptoms and mental health problems. These findings are corroborated by the results of Hernández-Corona et al. (2021), whose review showed a relationship between high consumption of soft drinks, processed foods, snacks, fast food, and obesity. In addition to poor dietary habits, smoking, sedentary behavior, and alcohol abuse are known predictors for the development of obesity (Dutra et al., 2017). A cohort study of 231 university students found that 35.0% of participants were inactive/sedentary, 30.3% consumed alcohol, and 2.2% were smokers. The same study reported prevalence rates of 23.4% for overweight and 49.1% for excess body fat, with approximately 20.0% exhibiting abdominal obesity. Overweight was associated with alcohol consumption and higher intake of ultra-processed foods (Silva, 2022). According to Barros et al. (2021), alcohol consumption increases the risk of excess weight, in addition to the metabolic alterations it causes. Often, alcohol is consumed alongside high-calorie foods, such as fatty meats.

A review conducted by Sarris et al. (2016) analyzed several studies demonstrating the relationship between lifestyle and sexual dysfunction. Indeed, smoking, sedentary behavior, and alcoholism pose risks to sexual health (Franco et al., 2021). Among university students, smoking often serves as a gateway to other drug use, predisposing them to emergency room visits, psychological/behavioral problems, and the long-term development of cardiovascular diseases. Consistent with the findings of this review, a study with university students reported that tobacco and alcohol consumption often occurred in festive settings, primarily due to the influence of smoking friends or as a coping mechanism for sadness and anxiety (Alves et al., 2021).

Regarding osteopenia/osteoporosis and low serum vitamin D levels, the latter can lead to the former. Both conditions are related to intrinsic and extrinsic factors, including hormonal influences, genetic predispositions, age-related changes, and a sedentary lifestyle (Soares & Andrade, 2019).

Continuous monitoring of university students is both necessary and essential, not only to understand their lifestyle profiles but also to guide the development of policies aimed at more effective prevention of potential health problems in this population.

Conclusion

Based on the results obtained, it can be concluded that although this review included a limited number of articles, most of which were published in medicine-focused databases, its implications are not confined to medical professionals alone. The relevance of the topic is underscored by the prevalence of descriptive studies and the diverse geographical origins of the research, spanning various countries and continents.

Therefore, this study provides evidence that university students often exhibit an unhealthy lifestyle, which has negative repercussions on their health. Consequently, our findings highlight the need for more attentive oversight and proactive interventions from both health authorities and educational institutions targeting this population. Furthermore, there is a clear need for new studies with more comprehensive approaches to better understand the lifestyle of university students and its health consequences. Such research should consider the specificities and real needs of this population to guide the creation, strengthening, and expansion of public policies aimed at improving their quality of life.

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