Mental Health Risk Factors in University Medical Students: A Systematic Review

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Abstract

Introduction: Mental health is a fundamental component of the comprehensive well-being of university students, which influences their ability to face the challenges of daily life, establish healthy relationships and reach their full potential. However, various risk factors can threaten this balance, generating vulnerability to mental disorders or emotional disorders. The objective of the review is to recognize the mental health risk factors in Latin American university students of the medical career. Methodology: This is a systematic review, descriptive observational research with a quantitative approach, where bibliographic databases such as PubMed, Scopus, Cochrane, Spanish Medical Index (IME), Spanish Bibliographic Index in Health Sciences (IBECS), SciELO, Scopus, Springer, ProQuest, Scielo, Redalyc and Dialnet were used. The results showed that the high prevalence of mental disorders among medical students is mainly attributed to risk factors related to sex/gender, the academic environment, and psychosocial factors. Negative educational environments show a significant association with an increase in anxiety and depressive disorders in most studies. Students in the first levels of training have a poorer quality of life and an increase in the presence of Common Mental Disorders.

Keywords: Mental Health, Risk Factors, Medical Students.

Introduction

The World Health Organization (WHO) defines health as a "state of complete physical, mental and social well-being, and not only the absence of disease or infirmity", by emphasizing the mental and social well-being of the physical, mental health is recognized as a fundamental right closely linked to the right to health in general, which is mentioned in the Constitution of the different Latin American countries and other international norms; Mental health, according to the WHO, is understood as "a state of mental well-being that allows people to cope with life's stressful moments, develop all their skills, be able to learn and work properly and contribute to the improvement of their community. It is a fundamental part of health and well-being that

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sustains our individual and collective capacities to making decisions, building relationships, and shaping the world we live in. Mental health is also a fundamental human right. And an essential element for personal, community and socioeconomic development", which is why the State must guarantee the necessary instruments for the fulfillment of this right, because like physical health, its transgression leads to a functional loss for the State. Mental disorders are considered serious conditions that affect the cognitive behavioral field of patients; maintaining adequate mental health allows them to face daily activities, maintain a good physical condition, be productive at work and achieve personal potential through the relationship with their environment; A growing increase in mental health has been driven by events such as natural disasters, poverty, and violence. In the United States, more than half of the population will be diagnosed with a mental health disorder during their lifetime, which is why 46% of South American countries dedicate 2 to 5% of their health budgets annually to meet the demands of patients with mental health diagnoses (1–3).

There is currently research that describes certain actions to maintain adequate mental health, such as a positive attitude, sufficient rest, meditation, developing skills to cope with problems, practicing physical exercises systematically and obtaining professional help if necessary; situations that in the context of a university student in the health branch in Latin America can be difficult to fully comply with since the State still faces difficulties such as the underreporting of mental illnesses, the difficulties of coverage of qualified human resources and the limited availability of mental health care through public and/or private insurance (4–7).

Statement of the Problem

Mental disorders are considered a public health problem, the director of the WHO's department of mental health and substance use, Dévora Kestel, assures that "All countries have ample opportunities to make good progress towards better mental health for their population. Whether it is developing stronger mental health policies and legislation, introducing mental health into health insurance, promoting and strengthening community mental health services, or integrating mental health into mainstream health care, schools or correctional facilities, the report includes many examples that show that strategic changes can bring significant improvement." (8).

By 2019, almost one billion people were affected by a mental disorder, of which 14% were adolescents. Suicides account for more than one in 100 deaths, and 58% of them occurred before the age of 50. Mental disorders are the leading cause of disability and are responsible for one in every six years lived with disability. People who are diagnosed with a serious mental disorder die on average 10 to 20 years earlier than the general population, most from preventable physical illnesses. Childhood sexual abuse and harassment or bullying are considered to be important causes of depression. Social and economic inequalities, public health emergencies, wars, and climate crises are among the structural threats to mental health present around the world (8).

In an individual's life, multiple determinants at the individual, social and structural levels can combine to protect or undermine mental health. Certain individual psychological and biological factors, such as emotional skills, substance abuse, and genetics, can make people more vulnerable to mental health conditions. Exposure to unfavorable social, economic, geopolitical, and environmental situations also increases the risk of mental health conditions; those that occur in sensitive periods of development such as early childhood are more harmful, for example, it is known that severe parenting and physical punishment harm children's health and that bullying is an important risk factor for mental health conditions. Different interventions are based on promoting and preventing the individual, social and structural determinants of mental health,

and then influencing to reduce risks, increase resilience and create enabling environments for the individual (3,7,9,10).

Depression continues to occupy the leading position among mental disorders, affecting twice as many women as men, with 10 to 15% of women in industrialized countries and between 20% and 40% of women in developing countries. For anxiety and substance use disorders, it is 73.5% in the Region of the Americas, 47.2% in North America, and 77.9% in Latin America and the Caribbean (LAC) (11,12).

The mental health of university students is considered a relevant issue, as it constitutes a limit situation to enhance professional and social skills. The WHO reports that the mortality rate of young people has increased in Latin America, with suicide being one of the main causes at 30% with a representation of 16% in mental disorders; in this sense, 50% were not diagnosed or treated in time, generating reasons for suicide; It is estimated that in 2020 it may rise to 1.5 million. Studies report that most adolescent mental health problems include premature deaths from accidents, suicides, violence, pregnancy-related complications, and preventable or treatable illnesses (13,14).

Considering the exposure of university students in the field of health to all the determinants mentioned below, in the context of the countries that are part of the Latin American community; Through this research topic, it is intended to answer the following question:

What risk factors are present in the mental health of Latin American university students in the medical career?

Justification

The proposed topic has been prioritized by the faculty of medical sciences of the University of Cuenca, as it is included in its thirteenth line of research: Health professionals. For its part, the Institute for Public Health Research (INSPI) has prioritized mental health and behavioral research in its line of research: non-infectious diseases. Similarly, the Ministry of Public Health (MSP) considers within its eleventh line of research: mental health and behavioral disorders. With these clarifications we can realize that the issue raised constitutes a local and national priority.

The new knowledge that we will obtain will account for the situation of Latin American students in the mental health branch, identified through the specific determinants of each research reviewed.

The new knowledge acquired through the research proposal will be able to generate spaces for reflection, in order to face probable situations of affectation in the mental health of the university community.

Objectives

General Objective

To recognize mental health risk factors in Latin American university medical students.

Specific objectives

1.   To compile scientific dissemination that addresses mental health risk factors in Latin American university students in the health branch.

2.   Identify those specific risk factors that will allow establishing criteria for prevention and promotion in mental health.

3.   To analyze diagnostic methods for the identification of risk factors.

Methodology

This is a systematic review, descriptive observational research with a quantitative approach, where bibliographic databases were used that deal with the factors of the selected problem, such as: PubMed, Scopus, Cochrane, Spanish Medical Index (IME), Spanish Bibliographic Index in Health Sciences (IBECS), SciELO, Scopus, Springer, ProQuest, Scielo, Redalyc and Dialnet. The information has been assessed with a time limit from 2020 to 2025, only on Spanish, English and Portuguese language sites. Studies with the following search algorithm have been considered: ("Mental health" OR "psychological health") AND ("risk factors" OR "Predispositions") AND ("medical students" OR "Undergraduate medical students" OR "Medical trainees") AND ("latin america" OR "hispanoamerica" OR "Iberoamérica"), in Spanish ("Salud mental" OR "salud psicologica") AND ("risk factors" OR "Predispositions") AND ("medical students" OR "medical students" OR "Medical trainees") AND ("Latin America" OR "Hispanic America" OR "Ibero-America").

In order to choose the different articles, inclusion and exclusion criteria have been used.

Inclusion Criteria

•   Studies carried out in Latin America.

•   Scientific studies in the format of articles.

•   Date of publication within the last five years.

•   The institution selected as part of the research has to teach the medical career in its curriculum.

•   Public and private universities.

Exclusion Criteria

•   Studies carried out in countries that are not part of the Community of Latin American and Caribbean States.

•   Articles focused on protective factors in university health professionals.

•   Research focused on intervention without risk factor analysis.

•   Articles not available in full text.

To ensure the quality of the study, a peer review group has been formed with the help of digital tools such as the free program "Parsifal" and the addition of the following quality criteria:

1.   The design of the study is aligned with the objectives set.

2.   Validated tools were used to measure mental health.

3.   The study has a clear methodology regarding data collection and analysis.

4.   Adequate selection of the sample with a correct application of the inclusion and exclusion criteria.

5.   Declaration of conflicts of interest and financing.

6.   The results are applicable to the context of Latin American university students of the medical career.
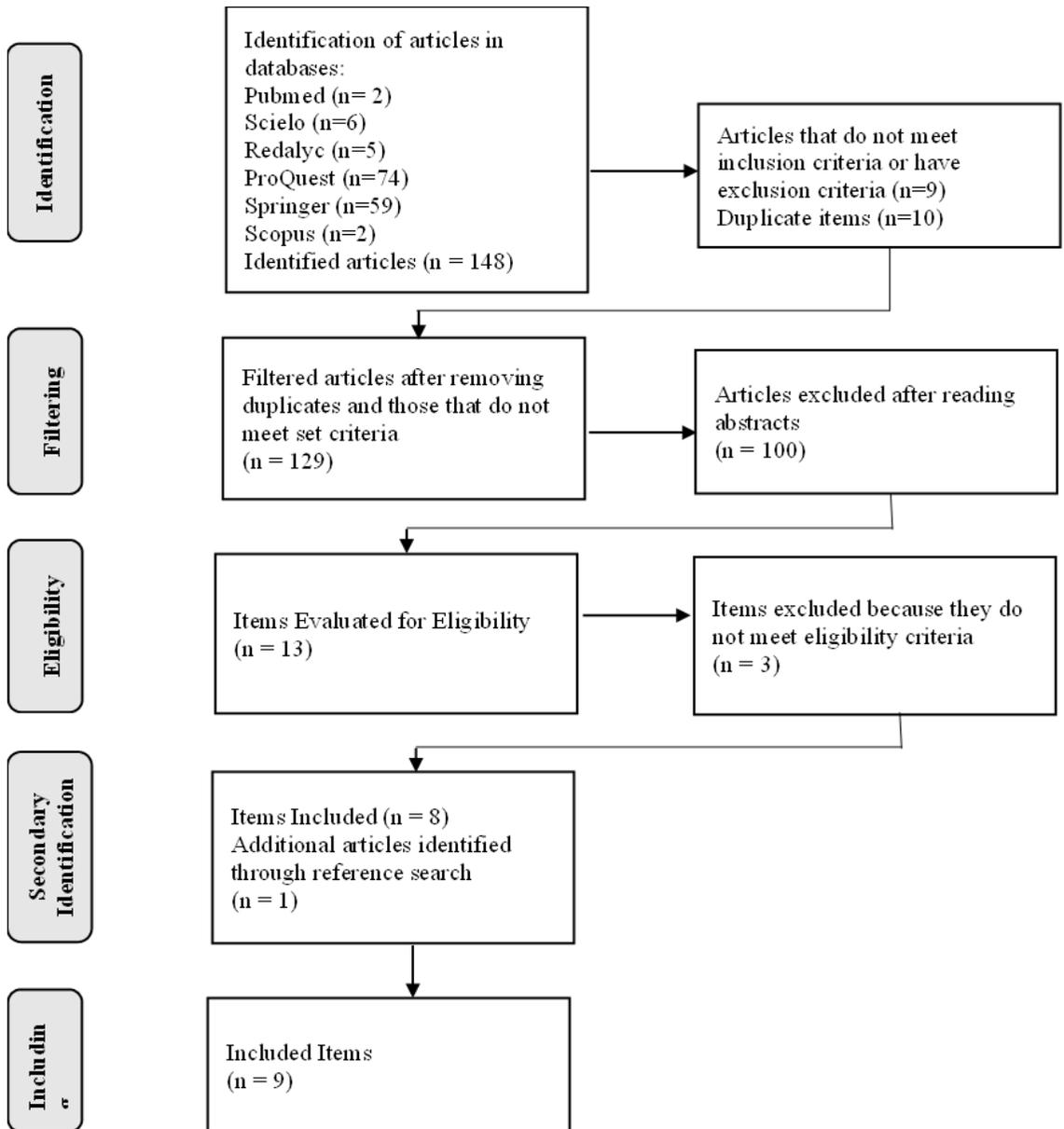

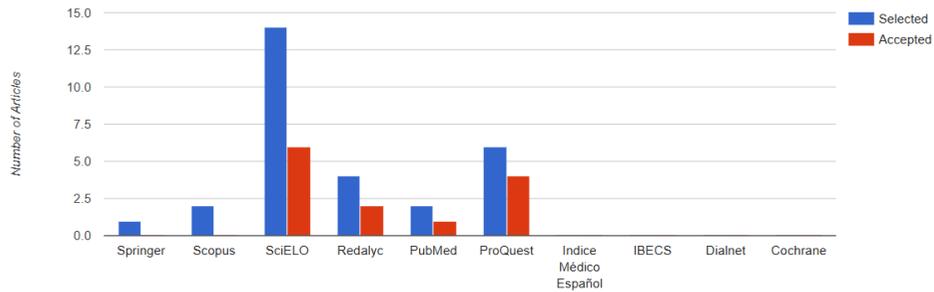Figure 1.1: Flowchart for Item Selection

Figure 1.2:

Bar graph, indicator of the distribution of selected articles and those accepted for review

Adapted by: Vásquez-Pizarro, Anthony

Of the total number of articles selected for the study based on inclusion and exclusion criteria, 48.3% belong to the SciELO search engine, 20.7% to ProQuest, 13.8% to Redalyc, 6.9% to Scopus and 6.9% to PubMed. After reading the respective abstracts of each abstract, articles were accepted only from SciELO, Redalyc, PubMed, and ProQuest.
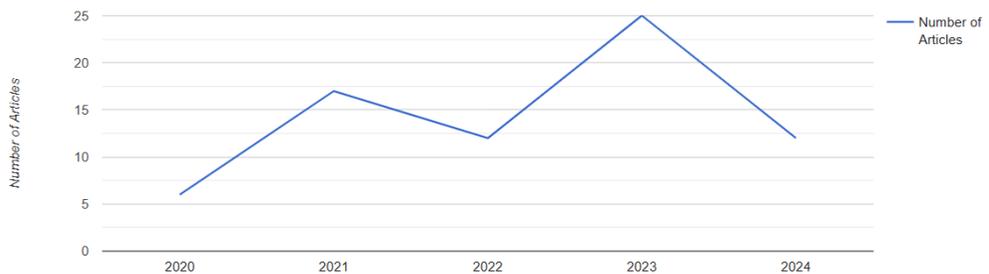

Figure 1.3

Line graph, indicator of the distribution of articles based on the year of publication.

The articles were selected based on inclusion criteria, which specify that the review will be from the last five years of publication. Among the selected research, most belong to the year 2023 and 2021.

Results

The distribution of accepted research on risk factors influencing the mental health of medical students is mainly concentrated in databases such as SciELO, ProQuest, and PubMed, with a characteristic representation in the countries of Brazil and Peru, with a general focus on the Latin American region. The predominant languages are Portuguese and English, so access for the international scientific community is more feasible. The highest percentage of universities are privately managed, however, institutional diversity also stands out with the inclusion of state universities. The methodology used mostly

addresses a cross-sectional design, with tools with specific questionnaires to measure psychological and emotional variables.

Author/Year	Title	Database	Country	Language	University	Type of Study/Tools	Relevant Results
Zeladita Huaman et al (2024)	Emotional Impact on Health Personnel, Medical Students, and General Population Samples During the COVID-19 Pandemic in Lima, Peru	PubMed	Peru	English	Private	Transversal y descriptivo/Emotional Impact Profile*, MEQ* y AUDIT*	Food intake due to emotional effect is higher in women compared to men. 8.6% of the population are considered low-risk drinkers. 1.1% of the population are considered risk drinkers, The level of alcohol consumption is higher in men and students who live alone. Emotional eating (overeating) is significantly, positively and moderately correlated with the emotional impact of the COVID 19 pandemic. The overweight or obese population has higher levels of

						emotional consumption.
Cavalcante Cardoso et al (2021)	Prevalence of common mental disorders among medical students during the Covid-19 pandemic	SciELO	Savior	English, Portuguese	Private	Analytical, observational, quantitative, cross-sectional/ SRQ-20*

High association with female, white, single living with their families who do not have their own income relative to CCT.

Pursuing a medical career itself is the main risk factor for elevated rates of CMD.

Academic characteristics such as the period of the course and the administrative type (public or private) do not correlate with psychological distress.

Possible factors for the development of CMD are not practicing physical activity, consuming substances that improve

							academic performance.
							Smoking, dissatisfaction with academic performance, inadequate sleep, lack of appetite, frequent headaches, perception of poor digestion, suicidal ideation, and feelings of sadness were more associated.
							68.8% of students with CMD consumed alcoholic beverages.
							74.7% of students with CMD had insomnia.
							55.8% of students with CMD presented suicidal behaviors.
							83.1% of students with CMD showed signs of depressive disorders.
							31.2% of students with CMD had a

							diagnosis of COVID-19.
Guimarães Nogueira et al (2020)	Evaluation of anxiety levels and their associated factors in medical students	SciELO	Brazil	Portuguese	Private	Quantitative Cross-Sectional Analytical Study/Beck Anxiety Questionnaire*	There is a higher prevalence of anxiety disorder in women than in men. Regarding the general prevalence of anxiety disorders: mild to moderate 25.7%, moderate severe 15%, severe 6.4%. 50% of students perform physical activity. 60.6% of the students report being in psychological and psychiatric therapy.

							81% of students claim to sleep less than 7 hours.
							22.5% of students report insomnia.
							58.5% of students use substances to disturb sleep.
							68.3% of students are not satisfied with their achievement.
							45.1% of students have thought about dropping out of the course.
							Insomnia was significantly associated with moderate to severe anxiety.
							Use of sleep-altering substances was significantly associated with all levels of anxiety.
							Anxiety levels were significantly associated with students who thought about dropping out of the degree

| Cassaño Arar et al (2023) | Quality of life and mental health of medical students in the Covid-19 pandemic | SciELO | Brazil | Portugu ese | Private | Cross-sectional, quantitative and analytical study/ WHOQOL-bref* and GHQ-12* | Common mental disorders (CMDs) are high among medical students during the period of social isolation due to the COVID-19 pandemic, although the perception of quality of life was good.

The domain that had the most negative impact on the students' lives was the physical domain that considers pain and discomfort, energy and fatigue, sleep and rest, work capacity and motor functions.

The support of family, friends, and classmates was the aspect with the greatest positive impact on the quality of life perceived by students during the COVID-19 pandemic. |
|---|---|---|---|---|---|---|---|

							66.9% of students had CMD during the COVID-19 pandemic, the most frequent being mental exhaustion, inability to concentrate, and dissatisfaction with normal activities.
							A below-average household income had a worse perception of their quality of life.
							In basic university cycles, a worse perception of quality of life and a higher probability of CMD are also observed compared to clinical and internship cycles.
							Those who consume psychiatric medication have a worse perception of quality of life in psychological and social domains, in

						addition to worse mental health.
Gonçalves Loureira et al (2021)	Evaluation of suicidal behavior in medical students	SciELO	Brazil	Portugu ese	Public	Estudio transversal/ SUPRE-MISS*, PHQ-9* y ASSIST*	Regarding autolytic intent throughout life: 27.7% ideation, 12.5% plan, 5.7% attempt. Regarding the autolytic attempt in the last 12 months: 18.9% ideation, 6.1% plan, 1.7% for attempt. 71.3% of students have been affected by the perceived academic impact on the career. 59.4% of the students have presented a major depressive episode. 51% of students report substance abuse. Psychological and psychiatric care and having a major depressive episode is significantly

							associated with suicidal behavior.
De Araujó Correia Teixeira (2021)	Mental health of medical students in Brazil during the coronavirus disease 2019 pandemic	SciELO	Brazil	Portugu ese	Private, Public	Cross-sectional, exploratory, and quantitative study/SRQ-20*	The students presented symptoms related to mental health disorders: stomach upset in 51.7%, headache in 49.2%, poor digestion in 36.4%, changes in appetite in 27%.
							Regarding mental disorders, it was distributed in: 19.7% anxiety disorder, 11.7% depressive disorder, 2.4% attention disorder, 1.7% obsessive-compulsive disorder (OCD), 1.5% borderline personality disorder, 1.1% bipolar disorder and 0.8% Others
							A 3.3% rate of anxiety disorder is reported in students who are in the first years of medical school.

						59.3% of students report fear of contracting the virus during the COVID-19 pandemic.
Fernandes Rivero et al (2020)	Prevalence and Factors Associated with Depression and Anxiety in Brazilian Medical Students	SciELO	Brazil	English, Portuguese	Private, Public	cross-sectional stud/HADS subescale*	The most relevant risk factors that show a significant association are: being a woman, feeling lonely, history of psychiatric illness/psychological treatment.
Piscoya-Tenorio et al (2023)	Prevalence and Factors Associated with Anxiety and Depression in Peruvian Medical Students	ProQuest	Peru	English	No mention	A cross-sectional multicenter study was conducted in medical students/escala Goldberg* y Zung*	Private universities had higher percentages of depression in relation to public universities (29.3% vs 14.6%) respectively and anxiety (71.1% vs 52.5%) respectively. Men presented lower levels of anxiety compared to women (56% vs 68.8%) respectively, contrary to depression values (25.8%

						vs 17.8%) respectively. Having family problems represents a 26% probability of developing anxiety disorders. Physical activity reduces the probability of developing depressive disorders by 47%.
Pierre Zila-Velasquez et al (2023)	Sociodemographic and educational factors associated with mental health disorders in medical students of clinical years: A multicenter study in Peru	ProQuest	Peru	English	Private, Public	Cross-sectional study/DREEM*, GAD-07* and PHQ-9*	A prevalence of severe anxiety was identified in 13.9% of the students and severe depression in 67.3%. 68.3% of students identify the negative educational environment as part of the increase in mental disorders. The factors with the most significant association for

							anxiety and depression are: being male, having a previous medical condition, the COVID-19 pandemic, being from the rural sector, belonging to a state university, and belonging to a bad educational environment.

Table 1.1: Summary Table of the Special Considerations of Each Accepted Article.

* Emotional Impact Profile (EIP): evaluates the emotional effects on people, such as overeating and behavioral changes derived from intense emotions. Morningness-Eveningness Questionnaire (MEQ): measures people's preferences for doing activities in the morning or afternoon hours. Alcohol Use Disorders Identification Test (AUDIT): detects the level of alcohol consumption and its impact on health, classifying the risk into categories. Self-Reporting Questionnaire-20 (SRQ-20): Identifies common mental disorders (CMDs), such as anxiety and depression, using 20 questions related to emotional and physical symptoms. Beck Anxiety Inventory (BAI): assesses the intensity of anxiety using a self-report scale based on specific symptoms. World Health Organization Quality of Life Instrument (WHOQOL-bref): assesses quality of life in four domains: physical, psychological, social, and environmental. General Health Questionnaire-12 (GHQ-12): Detects minor psychiatric problems in the general population, such as depression and anxiety. Suicide Prevention Multisite Intervention Study (SUPRE-MISS): Assesses suicidal behaviors, such as ideation, planning, and attempts. Patient Health Questionnaire-9 (PHQ-9): measures the severity of depression using nine questions based on DSM-IV criteria. Alcohol, Smoking and Substance Involvement Screening Test (ASSIST): identifies patterns of substance use and assesses the risk associated with use. Hospital Anxiety and Depression Scale (HADS): Measures levels of anxiety and depression in hospitalized patients or the general population. Goldberg Anxiety and Depression Scale: assesses symptoms of anxiety and depression in the general population using direct and specific questions. Zung Self-Rating Anxiety Scale (SAS): measures the intensity of anxiety in individuals through self-assessment. Dundee Ready Education Environment Measure (DREEM): Assesses students' perception of the educational environment, especially in medical settings. Generalized Anxiety Disorder-7 (GAD-7): Measures the severity of generalized anxiety disorder using seven questions.

The data reveal a high prevalence of mental disorders among medical students, mainly attributed to risk factors related to sex/gender, academic environment, and psychosocial factors.

In relation to sociodemographic factors, belonging to a private university reflects higher rates of

anxiety and depression compared to public universities, reaching up to 71.1% of anxiety in private administration. Specific conditions such as being a student residing in rural areas and having previous medical problems were also significantly associated.

The COVID-19 pandemic directly affected medical students. It had a significant association in all the studies that analyzed this factor, especially relating mandatory confinement and the virtual academic process as part of the increase in CCDs.

The risk factor that was identified in most studies was sex/gender, women/women are more likely to experience anxiety, depression and emotional eating compared to men/men, however, men/men are more prone to alcohol and substance use.

Academic factors reflected a reality in university students, being part of a medical career was identified as the main risk for the development of Common Mental Disorders (CMD) regardless of the type of university. Negative educational environments show in most studies a significant association for the increase in anxiety and depressive disorders. Students who attend the first levels of training have a poorer quality of life and an increase in the prevalence of CMD.

Regarding psychosocial factors, the lack of support from the family group increased the risk of anxiety and depression. Students who feel lonely or who report academic dissatisfaction are associated with increased depressive or suicidal symptoms. Social support from peers or friends was specified as a strong protective factor that improves quality of life and perception of well-being. Among the factors that are related to behaviors and habits, the consumption of substances or stimulants that can alter sleep are significantly associated with severe depression and anxiety disorders. Physical activity is a protective factor that shows high significance with the reduction of the risk of developing depressive disorders.

	Author/year	Sample	Prevalence of mental health disorders			
			Signs of mental disorder (%)	Signs of anxiety disorder (%)	Signs of depressive disorder (%)	Suicidal behavior (%)
Studio A	Zeladita Huaman et al (2024)	375	-	-	-	-
Studio B	Cavalcante Cardoso et al (2021)	388	39,70	-	83,1	55,8
Study C	Guimarães Nogueira et al (2020)	140	-	47,1	-	-
Study D	Cassaño Arar et al (2023)	567	66,90	-	-	-

Studio E	Loureira Sol et al (2021)	296	-	-	59,4	45,9
Study F	De Araujó Correia Teixeira (2021)	656	62,8	19,7	11,7	9,1
Studio G	Fernandes Rivero et al (2020)	355	-	41,4	8,2	-
Studio H	Piscoya-Tenorio et al (2023)	482	-	61,76	21,92	-
Study I	Pierre Zila-Velasquez et al (2023)	808	-	77,6	67,3	-
Weighted Average			58,68%	51,90%	42,00%	30,75%

Table 1.2: Summary Table of the Weighted Average Percentage Associating Accepted Articles and the Most Prevalent Mental Disorders.

Discussion

The risk factors that have presented the most analysis in the last five years are highly related to the COVID-19 pandemic. In December 2019, a severe, highly infectious acute respiratory syndrome that is caused by a coronavirus (SARS-CoV-2) emerged in Wuhan (China), it was declared a pandemic by the World Health Organization (WHO) in March 2020 (15–19).

It has been shown that sudden and life-threatening illnesses generate stress on health professionals. In this situation, medical students have also been involved, due to the COVID-19 pandemic, by suffering a deficit of protective material, being afraid of infecting their family and friends, feeling isolation and social discrimination, as well as knowing patients who are alone or die due to the disease (15,16,18).

Results in meta-analyses have reported a high symptomatology of mental disorders in professional groups, for example, nursing staff showed higher prevalence estimates for both anxiety and depression. More frequent and intense symptoms were also observed among women; By recognizing the health sector with a high prevalence of women, the psychological impact will decrease by including actions with gender perspectives (15,16,20).

Studies reveal a strong association with respect to the administrative status of university institutions, ensuring a complex reality of students from private institutions, maintain greater stress when trying to achieve a high score to access financial facilities (21–23).

Substance use, such as alcohol, illicit drugs or the misuse of prescription or over-the-counter medications It has been associated with high rates of common mental disorders, in addition to considering this factor as high consumption depending on gender, in this case sex/gender male/male had a great relationship with substance use, there was also a great association

depending on sexual orientation, homosexual or bisexual people reported greater substance use (24–27).

The sex-gender diverse approach has been manifested in research outside the university component, evidencing the situation of vulnerability that the sex-gender diverse population is subjected to, expanding the vulnerable state especially in the context of the COVID-19 pandemic, the need for physical distancing, aggravation of economic conditions, the difficulty in accessing procedures and medications for the gender affirmation process, in addition to exacerbating family conflicts. Generational studies have shown an improvement in issues of violence, discrimination and association of HIV/AIDS with the population, however, the degree of discrimination, internalized homophobia and its association with stress processes and common mental disorders is still maintained. For this reason, public policies should be considered as the main framework for taking actions in mental health in favor of populations with degrees of vulnerability (28–31).

Recommendations

Studies have reviewed protective factors as a fundamental part of intervention strategies, as it is important to evaluate all areas of mental health in university students. In addition, some research has been aimed at generating broader research involving all students of health careers, to obtain a wider margin of selection and to be able to determine on whom health care should be focused immediately. Reviews report programs and plans to intervene in the mental health of university students to improve the quality of life and general health of individuals.

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