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LIFESTYLE FACTORS INFLUENCING MENTAL HEALTH AMONG UNIVERSITY STUDENTS: A LITERATURE REVIEW

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Abstract

Background.

Mental health among university students has become a significant public health concern, with an increasing prevalence of mental disorders observed in recent years. Lifestyle factors such as physical activity, sleep, diet, and stress are recognized as important determinants of mental well-being in this population.

Aim.

The aim of this review was to synthesize current evidence on the relationship between selected lifestyle factors and mental health among university students.

Material and methods.

A narrative review of the literature was conducted using PubMed and Scopus databases. Studies published between 2020 and 2026 were included. The search strategy involved keywords such as “mental health”, “students”, “diet”, “physical activity”, and “lifestyle”. Only English-language articles meeting predefined inclusion criteria were analyzed. A total of 25 studies were included in the final analysis.

Results.

The findings indicate that regular physical activity is associated with reduced symptoms of depression, anxiety, and stress, whereas low activity levels are linked to poorer mental health outcomes. Both insufficient and excessive sleep are associated with an increased risk of mental disorders. A healthy diet is associated with better psychological health, while poor dietary habits may exacerbate symptoms. Additionally, the COVID-19 pandemic negatively affected students’ mental well-being, whereas social support demonstrated a protective effect.

Conclusions.

Lifestyle factors play a significant role in shaping mental health among university students. Promoting healthy behaviors may improve well-being in this population; however, further longitudinal and intervention-based research is needed to better understand these relationships. These findings highlight the need for university-based prevention and mental well-being promotion programs.

Key words: mental health; students; diet; physical activity; lifestyle.

1. Introduction

Mental health is a significant public health concern among university students worldwide. According to the World Health Organization (WHO), “mental health is a state of psychological well-being that enables people to cope with life’s stresses, realize their potential, learn and work effectively, and contribute to the development of their communities” [3]. Early adulthood, particularly up to the age of 25, is a critical stage during which mental disorders most often emerge [2].

In recent years, an increase in mental health issues among students has been observed, leading to many adverse consequences such as poorer academic performance, reduced concentration, and a decline in overall well-being [1]. The authors of numerous studies, including original and review articles, have demonstrated a significant association between stress, diet, physical activity, and sleep and mental health. Given that students constitute a significant portion of the young population, their mental health represents a major public health issue with the potential for long-term consequences. Despite the growing body of research, the relationships between specific lifestyle factors and mental health remain inconclusive, and their complex interactions remain insufficiently understood [5,8,12].

Therefore, the aim of this study was to review and synthesize current evidence on the relationship between lifestyle factors and mental health among university students.

Furthermore, the transition to university life is often associated with significant changes in daily routines, increased academic demands, and reduced parental supervision. These factors may contribute to the adoption of unhealthy lifestyle behaviors, including irregular sleep patterns, poor dietary habits, and decreased physical activity. Consequently, understanding the role of modifiable lifestyle factors in this population is essential for developing effective prevention strategies and improving long-term mental health outcomes.

Research Objective.

The objective of this study was to synthesize and critically analyze current evidence on the relationship between lifestyle factors such as physical activity, sleep, diet, and stress—and mental health among university students.

Research Problems.

What is the relationship between physical activity and mental health among university students?

How do sleep patterns influence mental well-being in this population?

What is the association between dietary habits and mental health outcomes?

How did the COVID-19 pandemic affect students' mental health?

Research Hypotheses.

It is hypothesized that lifestyle factors, including physical activity, sleep, and diet, are significantly associated with mental health outcomes among university students, with healthy behaviors exerting a protective effect and unhealthy patterns contributing to an increased risk of depression, anxiety, and stress. Additionally, external factors such as the COVID-19 pandemic are assumed to negatively influence mental well-being, whereas social support may mitigate these adverse effects.

2. Research materials and methods

2.1. Participants.

The study did not involve direct human participation, as it was based on a narrative review of previously published scientific literature. The analysis focused on studies conducted among university students.

2.2. Procedure / Test protocol / Skill test trial / Measure / Instruments.

A narrative literature review was conducted to identify and synthesize relevant studies. The search was performed using electronic databases, including PubMed and Scopus. The search

strategy incorporated keywords such as “mental health”, “students”, “diet”, “physical activity”, and “lifestyle”, along with their synonyms.

Inclusion and exclusion criteria were defined prior to the literature search. The review included studies published between 2020 and 2026, focusing on university student populations. Only full-text articles published in English were considered. Studies not involving student populations or lacking full-text availability were excluded. Additionally, citation chaining was applied to identify further relevant publications.

2.3. Data collection and analysis / Statistical analysis.

2.3.1. Statistical Software.

No statistical software was used, as the study was based on qualitative analysis and narrative synthesis rather than quantitative methods.

2.3.2. AI.

AI was utilized for two specific purposes in this research. AI tools were used exclusively for linguistic refinement of the manuscript, including grammar correction, stylistic improvement, and enhancement of clarity. No AI tools were used for data analysis or interpretation of scientific findings. Assistance in refining the academic English language of the manuscript, ensuring clarity, consistency, and adherence to scientific writing standards. AI were used for additional linguistic refinement of the research manuscript, ensuring proper English grammar, style, and clarity in the presentation of results. It is important to emphasize that all AI tools were used strictly as assistive instruments under human supervision. The AI tools served primarily to enhance efficiency in data processing, pattern recognition, and linguistic refinement, rather than replacing human judgment in the analytical process.

2.3.3. Statistical Methods.

No formal statistical analyses were performed due to the narrative design of the study. Instead, a qualitative and descriptive synthesis approach was applied to integrate findings from the included studies. The analysis focused on identifying recurring patterns and evaluating the consistency of reported associations between lifestyle factors and mental health outcomes.

3. Research results

3.1. Physical activity

Physical activity is significantly linked to students' mental health, helping to reduce stress levels and alleviate symptoms of depression and anxiety. Research findings indicate that the greatest benefits are observed with regular low- or moderate-intensity exercise. Furthermore, even single sessions of physical activity can result in immediate improvements in mood and support emotional regulation [5,6].

Exercise undertaken during leisure time may serve as a protective factor against mental health decline. Higher activity levels, including during commuting, are associated with improved well-being and better mental functioning. In the context of occupational activity, moderate-intensity activity appears to be most beneficial, particularly when accounting for confounding factors. Overall, the results suggest that combining regular leisure-time activity with moderate physical exertion at work may be the most effective way to reduce the risk of mental health problems [11].

Conversely, low levels of physical activity are associated with an increased risk of mental health disorders and self-destructive behaviors, such as self-harm or suicide attempts. Physically inactive individuals are significantly more likely to experience psychological difficulties compared to those who engage in regular physical exercise [14].

Overall, the available evidence consistently supports the beneficial role of physical activity in maintaining mental well-being among students. However, differences in intensity,

frequency, and type of exercise may influence the magnitude of these effects, suggesting the need for individualized approaches.

3.2. Sleep patterns

Sleep quality plays a key role in shaping students' mental and physical health. Poor sleep quality is associated with lower well-being, decreased quality of life, and increased symptoms of insomnia, depression, and anxiety, as well as impaired emotional regulation and elevated stress levels. Available data suggest that early identification of sleep problems may contribute to improved health outcomes, and the resulting mental health benefits may persist beyond the duration of the intervention. Improving sleep habits may constitute an important component of mental well-being; however, its effectiveness depends on the type and quality of the interventions applied [12,13,16].

Evidence indicates a relationship between adequate sleep duration and students' mental health, with both insufficient and excessive sleep associated with a higher risk of mental health problems. Interventions aimed at improving sleep quality and duration, particularly those of a structural and therapeutic nature, may represent an important element of mental health prevention and support [15].

Better sleep quality and appropriate sleep duration have been shown to mitigate the adverse effects of stress, particularly emotional exhaustion associated with burnout. This suggests that sleep is a modifiable lifestyle factor that may help postgraduate students reduce the negative impact of academic demands. Improvements in sleep-related behaviours may further contribute to alleviating the detrimental effects of stress on students' functioning [17].

3.3. Diet and nutrition

Students' dietary habits tend to decline in quality during the transition from home to university. Evidence suggests a significant association between diet quality and mental health outcomes among students. Healthier dietary patterns rich in fruits, vegetables, and

unprocessed foods are associated with lower levels of depression, anxiety, and stress. No adverse association has been identified between predominantly plant-based diets and mental health status or overall well-being. Studies also indicate that both diet quality and composition are related to mental health outcomes [4,6,8,10].

Higher consumption of sugar-sweetened beverages is associated with symptoms of depression and anxiety [9].

Furthermore, evidence suggests a bidirectional relationship between diet and mental health, as poorer psychological well-being may lead to unhealthy eating behaviors, including reduced intake of fruits and vegetables and increased consumption of sweets and fast food [7].

3.4. COVID-19

Previous literature reviews and meta-analyses indicate that the COVID-19 pandemic coincided with a deterioration in students' mental health. Factors related to isolation, changes in educational organization, and social functioning have contributed to reduced sleep quality, lifestyle changes, and difficulties in emotional functioning [18,19,22].

Lifestyle changes during this period, such as reduced physical activity, poorer sleep quality, and increased sedentary behavior, were also associated with a decline in psychological well-being. An increase in mental health problems was observed at the population level, particularly in terms of symptoms of depression, anxiety, and feelings of loneliness [25].

Increased stress levels and feelings of loneliness during the study period were linked to poorer psychological outcomes, including higher levels of depressive and anxiety symptoms, while social and emotional support was correlated with lower severity of these symptoms. Furthermore, stress related to the COVID-19 pandemic predicted a deterioration in mental health in terms of depression and anxiety. Students represented a particularly vulnerable group in terms of mental health deterioration during this period [21].

4. Discussion

The findings of this review highlight the significant role of lifestyle factors in shaping mental health outcomes among university students. Among the analyzed variables, sleep quality appears to be particularly important, as its improvement is consistently associated with better psychological well-being. The greatest benefits are observed among students experiencing sleep disturbances, including insomnia. This can be explained by the fundamental role of sleep in emotional regulation, cognitive functioning, and stress reduction, as well as its interaction with other lifestyle behaviors. Therefore, both systematic assessment of sleep quality and the implementation of targeted sleep-focused interventions within academic settings may significantly support students' well-being. Universities provide a suitable environment for the implementation of preventive and therapeutic strategies addressing sleep disturbances and related mental health problems [12,13,16].

In addition to sleep, physical activity and diet also play an important role in mental health. Regular physical activity has been shown to reduce symptoms of depression and anxiety, potentially through both neurobiological mechanisms, such as increased endorphin release, and psychosocial pathways, including improved self-esteem and social interaction. Similarly, dietary patterns are likely influenced by mental health through nutritional and metabolic pathways, as well as behavioral factors. However, the effects of these lifestyle components are not independent; rather, they interact with one another, creating complex and multidirectional relationships that influence overall psychological well-being. Despite the generally consistent findings, not all studies report uniform results. Variability in outcomes may be attributed to differences in study design, population characteristics, measurement tools, and cultural contexts. In particular, while most studies indicate a positive association between physical activity and mental health, some report only moderate or non-significant effects, suggesting that additional moderating factors may influence these relationships. These findings suggest that lifestyle factors interact with one another and should be considered collectively rather than in isolation.

The impact of the COVID-19 pandemic on students' mental health remains inconclusive. Although many studies report a deterioration in mental well-being, some comparative analyses do not demonstrate a significant difference compared to the pre-pandemic period. This may indicate that the pandemic exacerbated pre-existing trends rather than introducing entirely new patterns. Discrepancies between studies may also result from methodological differences and variations in the timing of data collection [20,23].

Importantly, the findings emphasize the protective role of social and emotional support, which may buffer the negative effects of stress and adverse life circumstances. These results underline the importance of providing students with comprehensive support systems aimed at strengthening coping strategies, resilience, and adaptive behaviors, both during and after their academic education [18,24].

This review has several limitations. It was restricted to English-language publications and selected databases, which may have introduced selection bias. Additionally, the heterogeneity of study designs and measurement tools limits the comparability of findings. The predominance of observational studies also restricts the ability to draw causal conclusions. Therefore, future research should focus on longitudinal and intervention-based designs to better understand causal mechanisms and to develop effective prevention strategies.

This highlights the need for comprehensive, multidisciplinary approaches to student mental health. Universities should consider implementing structured, evidence-based programs focusing on sleep hygiene, physical activity promotion, nutritional education, and stress management to effectively support students' well-being. as they represent a key setting for the implementation of preventive and supportive strategies aimed at improving long-term mental health outcomes. From a clinical and physiological perspective, the relationship between lifestyle factors and mental health among university students may be explained by several underlying mechanisms. Physical activity has been shown to influence neurotransmitter systems, including serotonin and dopamine pathways, which are directly associated with mood regulation. Moreover, regular exercise contributes to the reduction of systemic inflammation and oxidative stress, both of which have been implicated in the pathophysiology of depression and anxiety disorders.

Sleep disturbances, on the other hand, may lead to dysregulation of the hypothalamic–pituitary–adrenal (HPA) axis, resulting in elevated cortisol levels and impaired stress response. Chronic sleep deprivation has also been associated with cognitive impairments, emotional instability, and reduced coping capacity, which may further exacerbate mental health problems in students exposed to academic pressure.

Dietary patterns may influence mental health through the gut–brain axis, which involves bidirectional communication between the gastrointestinal tract and the central nervous system. Nutritional deficiencies, particularly in omega-3 fatty acids, B vitamins, and minerals, may

contribute to the development or worsening of depressive and anxiety symptoms. Additionally, high consumption of ultra-processed foods may negatively affect microbiota composition, further influencing psychological well-being.

These biological mechanisms highlight the importance of adopting a holistic approach to mental health, recognizing that behavioral, physiological, and environmental factors are closely interconnected.

Given the identified limitations and inconsistencies in the current literature, it is essential to outline potential directions for future research.

However, it should be noted that a significant proportion of the available evidence is based on self-reported data, which may introduce reporting bias and limit the reliability of the findings. Additionally, many studies are cross-sectional in design, which precludes the establishment of causal relationships between lifestyle factors and mental health outcomes.

Furthermore, variability in the assessment tools used to measure both lifestyle behaviors and psychological outcomes may contribute to inconsistencies across studies. These methodological limitations should be considered when interpreting the results.

4.1. Future research directions

Despite the growing body of evidence, several gaps remain in the current understanding of the relationship between lifestyle factors and mental health among university students. Future research should focus on longitudinal studies to better establish causal relationships between lifestyle behaviors and psychological outcomes.

In particular, there is a need for intervention-based studies assessing the effectiveness of targeted programs aimed at improving sleep quality, physical activity levels, and dietary habits. Additionally, future studies should explore the role of emerging factors such as digital media use, screen time, and online learning environments, which increasingly influence students' daily functioning and mental health.

Moreover, further research should consider cultural, socioeconomic, and environmental differences, which may moderate the observed relationships. A more personalized approach to

mental health interventions may be necessary to effectively address the diverse needs of student populations.

4.2. Public health implications

The findings of this review highlight the importance of addressing lifestyle factors as part of broader public health strategies targeting young adults. University students represent a unique population group undergoing significant life transitions, making them particularly vulnerable to the development of mental health problems.

Implementing preventive interventions at the university level may not only improve short-term well-being but also reduce the long-term burden of mental health disorders. Public health policies should prioritize early intervention, health education, and the promotion of healthy behaviors in academic environments.

Furthermore, integrating mental health promotion into university curricula and support services may enhance students' awareness and engagement in health-promoting behaviors. Such approaches may contribute to improved academic performance, reduced dropout rates, and better overall quality of life.

5. Conclusions

The findings of this review have important practical implications for public health and academic institutions. Universities should consider implementing comprehensive health promotion strategies targeting modifiable lifestyle factors. These may include structured physical activity programs, sleep hygiene education, and access to nutritional counseling.

In addition, early screening for mental health problems combined with lifestyle assessment may improve the identification of at-risk students. Interventions should be multidisciplinary, involving collaboration between healthcare professionals, psychologists, and academic staff.

Digital health interventions, including mobile applications and online support platforms, may also represent a promising approach to improving students' mental well-being, particularly in populations with limited access to traditional healthcare services.

Lifestyle factors, including physical activity, sleep, diet, and stress, play a crucial role in shaping mental health outcomes among university students. The findings of this review indicate that regular physical activity and adequate sleep are consistently linked to lower levels of depression, anxiety, and stress, whereas insufficient activity, poor sleep quality, and unhealthy dietary patterns are associated with poorer psychological outcomes.

The relationship between lifestyle behaviors and mental health appears to be complex, multidirectional, and interdependent, with individual factors influencing one another and jointly contributing to overall well-being. In particular, sleep quality and physical activity emerge as key modifiable factors with a strong potential to mitigate the negative effects of stress and improve emotional functioning.

The COVID-19 pandemic further emphasized the vulnerability of students' mental health and highlighted the importance of social and emotional support as a protective factor against psychological distress. Changes in lifestyle behaviors during this period, including reduced physical activity, poorer sleep, and increased sedentary behavior, were consistently associated with worse mental health outcomes.

These findings underscore the importance of implementing comprehensive, university-based strategies aimed at promoting healthy lifestyle behaviors and supporting students' mental well-being. Such interventions should integrate physical activity promotion, sleep hygiene education, nutritional guidance, and stress management programs.

However, due to the heterogeneity of the included studies and the predominance of observational research, causal relationships cannot be fully established. Therefore, future research should focus on longitudinal and intervention-based studies to better understand the mechanisms underlying these associations and to develop effective, evidence-based prevention strategies.

Importantly, promoting healthy lifestyle behaviors during early adulthood may have long-term benefits extending beyond the academic period, potentially reducing the risk of chronic mental health disorders in later life. Therefore, targeted interventions at the university level may represent a key element of broader public health strategies.

Disclosure

The authors declare no relevant affiliations or financial involvement with any organization or entity with a financial interest in the subject matter discussed in this manuscript.

Supplementary Materials

No supplementary materials are available.

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Conflicts of Interest

The authors declare no conflict of interest.

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