

Recreational and rehabilitation aspects of psychological health and well-being of students: a systematic review

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Abstract

Background and Study Aim Given the increasing attention to the psychological health and well-being of students, it is important to consider the impact of recreational and rehabilitation aspects. The purpose of this study is to analyze documents from the Web of Science (WoS) database from 2014 to 2024, focusing on the recreational and rehabilitation aspects of students' psychological health and well-being.

Material and Methods A systematic search was conducted in the Web of Science (WoS) database using keywords related to psychological health, well-being, recreation, and rehabilitation of students. A total of 318 documents (articles) were retrieved. The extracted documents were processed using the PYCharm Community Edition (CE) development environment and special codes in the Python programming language. The K-means method was used for clustering the articles based on the presence of keywords. A total of 294 documents (out of 318) were identified that met the criteria of this study. Cluster analysis was used to group the retrieved articles by topic. Content analysis was applied to identify the main directions and trends in the research.

Results The review identified a significant number of studies dedicated to various aspects of students' psychological health and well-being. These aspects include the impact of physical activity, social support, mindfulness programs, and nutrition. Key factors contributing to the improvement of students' psychological state, as well as the main barriers and problems they face, were identified. The study results showed that physical activity and psychological strategies play a key role in improving students' mental health. Significant differences were found in the levels of stress and well-being depending on participation in recreational and rehabilitation activities.

Conclusions Recreational and rehabilitation activities play an important role in maintaining and improving the psychological health and well-being of students. Students face a complex set of barriers that negatively impact their mental and physical health. These barriers include high levels of stress, lack of physical activity, sleep disturbances, financial difficulties, and social isolation. The war in Ukraine adds another level of stress and trauma, requiring special attention.

Keywords: psychological health, student well-being, physical activity, sport

Introduction

The mental health and well-being of students are crucial aspects that influence their academic performance and overall quality of life. Contemporary research identifies numerous factors that contribute to the improvement of students' psychological state, including recreational and rehabilitation activities. Physical activity, mindfulness programs, social support, and healthy nutrition play a key role in maintaining psychological health. A distinct area of study examines the impact of the war in Ukraine on the psychological well-being of students and the role of recreational and rehabilitation interventions in mitigating the negative effects of stress on their

health. In recent years, there has been an increase in research focused on these factors and their impact on students.

Research shows that mindfulness training significantly reduces levels of stress, anxiety, and depression among medical students. It also improves their mood, self-confidence, and empathy [1, 2, 3]. Social support and the use of social networks play a significant role in the psychological well-being of students. The use of social networks for social and informational purposes increases life satisfaction and social capital, whereas use for entertainment purposes is associated with higher levels of loneliness and dependency [4, 5, 6]. Physical activity helps mitigate the negative effects of stress and prevents dependency on social networks [7, 8].

Unhealthy eating habits among students are

associated with increased anxiety, depression, and stress. The consumption of fruits and vegetables positively impacts students' psychological well-being [3, 9, 10]. Studies have shown that following dietary recommendations, such as the DASH diet, reduces levels of depression and aggression [11]. Conversely, strict calorie control can lead to weight gain and mental health problems [12]. Besides nutrition, social connections and participation in sports teams play an important role. Social ties and group structure in sports teams are linked to students' psychological health and social identification. Participation in team sports and a high density of social connections contribute to strengthening social identity and psychological well-being [13, 14, 15].

Self-care practices, such as mindfulness, seeking social support, and maintaining sleep hygiene, contribute to the improvement of students' psychological well-being [16, 17, 18]. These findings emphasize the importance of a comprehensive approach to supporting students' psychological health, which includes mindfulness, healthy eating, social connections, and self-care.

Thus, various strategies and factors such as mindfulness, the use of social networks, nutrition, participation in sports teams, and self-care practices significantly impact the psychological health and well-being of students.

Research on the impact of the COVID-19 pandemic on students' psychological health and well-being has shown a significant deterioration in mental health due to restrictions, isolation, and lifestyle changes. Maintaining social connections with peers helped students preserve their identity and improve psychological well-being [19, 20, 21]. Green spaces and parks contributed to reducing emotional stress among students, and regular visits helped improve their psychological state [21, 22, 23]. Other studies identified economic difficulties and financial anxiety caused by the pandemic, which negatively affected the psychological well-being of hospitality industry workers [24, 25]. Research indicated that students who led an active lifestyle and avoided smoking had better mental health indicators [26, 27]. However, increased screen time and lack of physical activity were associated with heightened anxiety and depression [28, 29].

Additionally, restricted access to public spaces significantly worsened the quality of life and psychological well-being of students [22, 23, 30]. Many students reported increased levels of anxiety and depression, especially among medical students who faced changes in their curricula and practices [31, 32, 33]. Cognitive and emotional strategies, such as mindfulness, physical activity, and improved sleep, have shown a positive impact on students' mental state [23, 30, 34]. Studies have also identified a significant correlation between

behavior changes, such as increased alcohol consumption, and the deterioration of students' psychological health [35, 36].

These findings underscore the importance of a comprehensive approach to supporting students' mental health, which includes social connections, physical activity, and mindfulness strategies.

Engaging in physical activity and sports has proven essential for maintaining students' psychological health. Participation in physical exercises and sports classes contributed to improved self-esteem and reduced stress levels [37, 38, 39]. Mindful eating and regular physical exercise also contributed to lower anxiety levels and better overall health [40, 41, 42]. Physical activity has a significant positive impact on mental health, reducing anxiety and depression levels [7, 43]. The effectiveness of exercise programs such as WeActive and WeMindful has also been confirmed, as they improve participants' physical activity levels and psychological well-being [44, 45]. However, exercise dependence can negatively affect psychophysiological health, highlighting the importance of a balanced approach to physical activity [45]. Sports activities have shown significant improvements in depression and anxiety indicators among students, emphasizing the importance of physical activity for mental health [43, 47, 48]. Similarly, regular participation in Pilates and other forms of physical activity contributed to reduced anxiety levels and improved overall well-being [49, 50].

Psychological issues among students remain a significant concern, especially under conditions of high academic workload and stress. Research indicates that students in dentistry and medicine experience high levels of stress and anxiety [29]. Meanwhile, cognitive strategies such as rational self-affirmations can aid in improving mental health [51]. The motivational climate in sports and academics also plays a crucial role in students' mental health. Social-emotional intelligence skills contribute to students' academic and life success, enhancing their relationships and overall well-being [52]. A supportive environment in sports and academics, along with healthy habits, helps reduce burnout and improve mental health [53, 54].

Thus, the key factors in maintaining students' mental health are physical activity, healthy nutrition, stress management, and a supportive academic and sports environment.

War has a significant impact on the mental and physical health of young people, necessitating the development of effective protection and support strategies. The study by Kokun et al. [55] aimed to identify personal resources that contribute to resilience against military stress among Ukrainian students. A total of 498 students participated in the online survey. The results indicated that

emotional stability and resilience are most strongly associated with fewer symptoms of post-traumatic stress disorder (PTSD) and physical complaints, highlighting the importance of these resources for stress resistance. Lass-Hennemann et al. [56] found that global crises, such as climate change, the COVID-19 pandemic, and war, negatively affect the mental health of schoolchildren in Germany, increasing levels of depression and anxiety and decreasing quality of life.

Lazurenko et al. [57] discovered that during wartime, young people are prone to using defense mechanisms such as repression and projection, indicating the need for psychological support programs to improve time perception and motivation. Mytsyk et al. [58] emphasize the importance of social and psychological adaptation programs for adolescents forcibly displaced by war, suggesting the use of gamification to enhance adaptation. Osokina et al. [59] compared the psychological state of adolescents in combat zones and peaceful regions of Ukraine, finding significantly higher risks of post-traumatic stress disorder (PTSD), anxiety, and depression among adolescents in war zones. Pavlova et al. [60] investigated individual and contextual predictors of subjective well-being in Ukrainian youth, highlighting the importance of optimism, hope, and resilience. Rybinska et al. [61] stress the necessity of restoring the physical and mental health of Ukrainian youth, which is a crucial factor for the future of the nation in the context of war.

Despite numerous studies indicating the positive impact of physical activity, healthy nutrition, and social-emotional skills on students' mental health, the issue of deteriorating well-being remains pertinent. The COVID-19 pandemic exacerbated the situation, revealing a significant increase in anxiety and depression among students due to restrictions and lifestyle changes. Research shows that while regular physical activity and healthy habits improve mental health, many students still experience serious psychological problems due to insufficient activity, increased screen time, and stresses related to academic workload and social interactions. Additionally, the war in Ukraine has had a devastating impact on the physical and mental health of young people, necessitating the development of effective protection and support strategies. Thus, despite extensive data on ways to improve well-being, there is an evident need to identify current trends and challenges in supporting students' mental health amidst global crises and conflicts.

The purpose of this study is to analyze documents from the Web of Science (WoS) database from 2014 to 2024, focusing on the recreational and rehabilitation aspects of students' psychological health and well-being.

Materials and Methods

Data Sources

For this study, a search for scientific articles was conducted in the authoritative database Web of Science (WoS) over the last 10 years, from 2014 to 2024. The search was carried out using the keywords: «psychological health» OR «psychological well-being» OR «psychological assessment» (Topic). As a result of the first stage, 26,594 documents (articles) were identified. Subsequently, an additional search was conducted using the keywords: «students» NOT «schoolchildren» NOT «children» NOT «adolescents». This search revealed 2,956 articles in the database. Another refining search was performed using the keywords: «recreation» OR «leisure» OR «tourism» OR «sport» OR «physical activity» OR «physical exercises» OR «physical rehabilitation». A total of 318 documents were identified and retrieved.

Data from the Web of Science (WoS) were exported in Plain text file format with the main elements of the sources indicated, using the option: Export → Plain text file → Record Content → Custom selection (9) Edit. The resulting list was saved with the main elements of the sources indicated.

Inclusion (Exclusion) Criteria

Information about the articles was extracted based on the following conditions: the language of publication was English, and an abstract was available. Conference materials and articles marked as «RETRACTED» were excluded from the search.

Data Processing

The extracted documents were processed using the PYCharm Community Edition (CE) development environment and special codes in the Python programming language. This process included the following steps:

1. Data Import: The data from the exported text file were imported into the Python environment for data cleaning. This involved removing duplicates, extracting key information, and transforming it into a more convenient form for analysis, such as CSV tables.
2. Data Analysis: The cleaned data were analyzed to determine the key directions and themes represented in the selected articles.

Clustering

The K-means method was used for clustering the articles based on the presence of keywords. The most frequently occurring keywords in the articles were extracted and represented as binary features (0 or 1), indicating the presence or absence of each keyword in the article's text. A total of 294 documents (out of 318) met the criteria for this study.

The data processing was carried out in the following order:

1. Each article's text was represented as a vector of binary features, where each keyword had a value

- of 1 if it was present in the text and 0 if it was absent.
2. A feature matrix was created for each article, representing the presence of keywords.
 3. The K-means method was applied to the feature matrix to group the articles into five clusters based on the similarity of their thematic content.
 4. For each cluster, the total citations were calculated, and the five most cited articles were identified.

Statistical Analysis

Descriptive statistics methods were used for data synthesis and interpretation. The primary focus was on the quantitative and qualitative analysis of the selected articles, including the frequency count of keywords (topics) and their significance assessment. Cluster analysis was employed to group the retrieved articles by topic. Content analysis was applied to identify the main directions and trends in the research. Python software and its libraries were used for data processing and analysis, including pandas for data manipulation, matplotlib and seaborn for data visualization, and scikit-learn for performing cluster analysis.

Results

Figure 1 shows the most frequently occurring keywords in the extracted documents, including

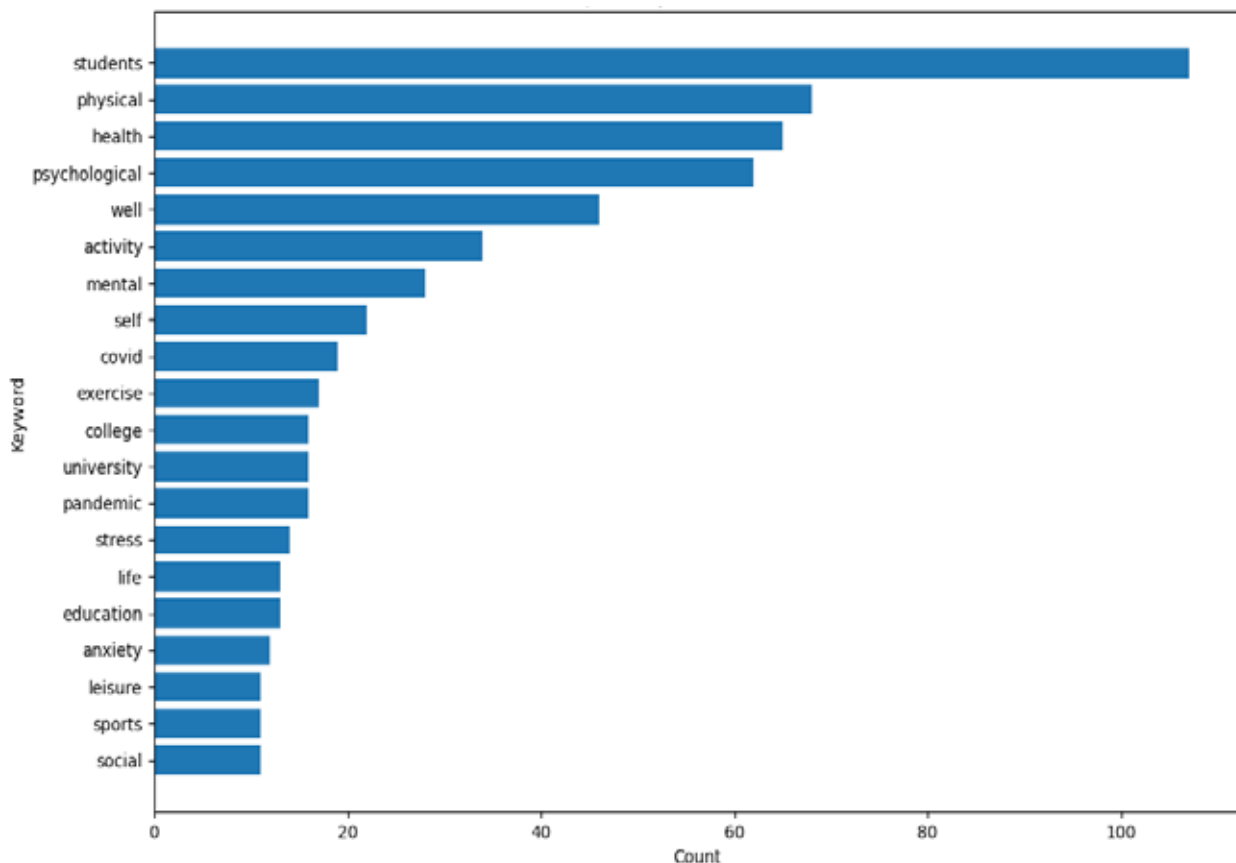


Figure 1. Frequency of Keywords in the Extracted Articles.

titles, abstracts, and keywords. These keywords were used for cluster analysis. Based on the clustering, the articles were divided into the following thematic groups, with the number of citations per cluster indicated (Figure 2):

- Cluster 0: Students and Mental Health;
- Cluster 1: Physical Activity and Health;
- Cluster 2: Psychological Aspects of Well-being;
- Cluster 3: Recreational / Rehabilitation Strategies and Stress;
- Cluster 4: Educational and Social Factors.

Figure 2 summarizes the key findings of the most cited articles, distributed across the five main clusters.

The table 1 presents brief results of the studies. Table 1 includes articles distributed across five different clusters based on the number of citations. Cluster 4 contains articles with a total of 479 citations, Cluster 0 with 401 citations, Cluster 3 with 323 citations, Cluster 1 with 289 citations, and Cluster 2 with 210 citations. The clusters are ranked by the total number of citations, highlighting the most significant and discussed studies in each thematic group.

Characteristics of Studies - Cluster 0 (Students and Mental Health):

1. Mindfulness Training and Psychological Well-being of Students: Includes studies examining

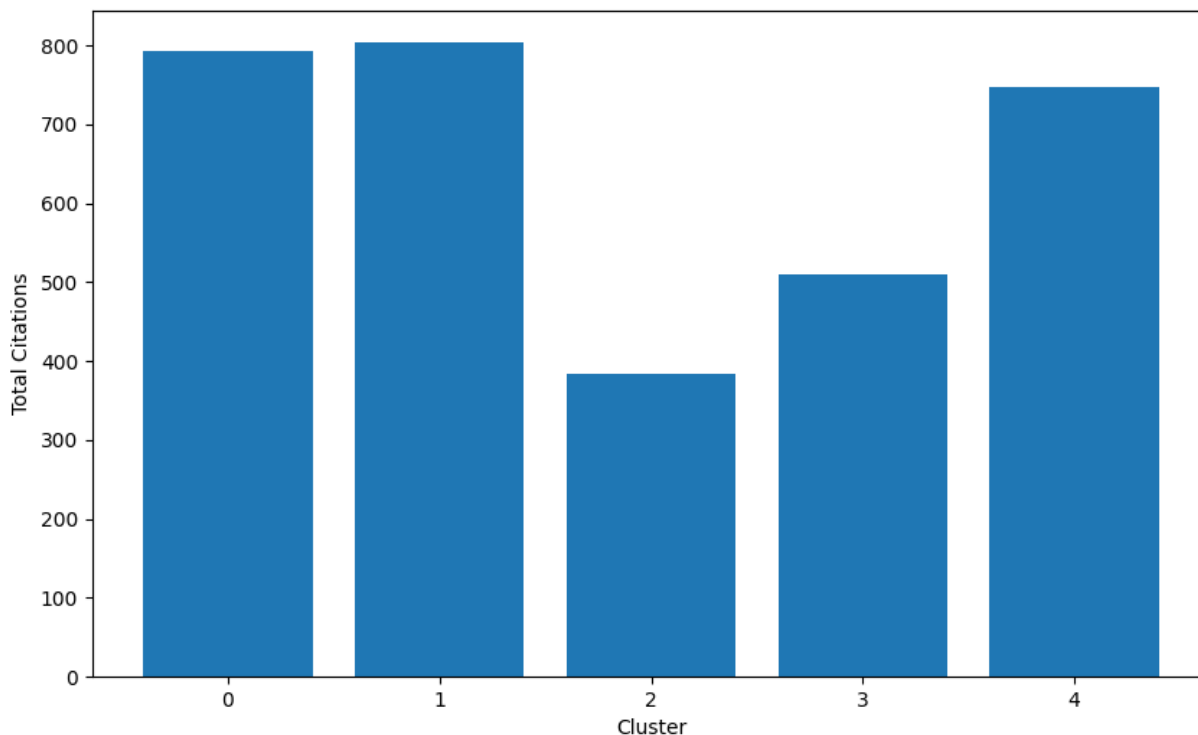


Figure 2. Distribution of Citations by Clusters.

Table 1. Information on the Most Cited Articles by Cluster

Source	Citations	Cluster Number	Results
[1]	188	0	Mindfulness training, analyzed in 19 studies (n=1815), reduces stress, anxiety, and depression, and improves mood, well-being, and empathy. These training programs can be easily integrated into medical curricula to enhance the psychological well-being of students.
[4]	84	0	In a sample of 142 students, the use of social networks for social and informational purposes increased perceived social capital and life satisfaction, whereas use for entertainment purposes increased loneliness. While no direct relationship between social network use and acculturation stress was identified, social capital was found to reduce stress, whereas loneliness increased it.
[2]	74	0	In a study of 364 students, it was found that social needs and the need for recognition contribute to Instagram dependency, whereas informational and entertainment needs do not affect it. Instagram dependency negatively impacts academic performance and increases levels of shyness and loneliness.
[9]	28	0	In a study of 1055 students, unhealthy eating was found to be associated with increased levels of anxiety, depression, and stress. Educational programs aimed at reducing the consumption of unhealthy food can improve students' psychological health.
[3]	27	0	In a study involving 1270 students, it was found that the number of positive emotions increases linearly with the number of daily servings of fruits and vegetables. This confirms that regular consumption of fruits and vegetables is associated with improved psychological well-being in students.
[19]	124	1	In a study involving 234 student-athletes, it was found that those who maintained social connections with their teammates were less likely to experience a decline in sports identity and reported better mental health. Teammate support and maintaining connections contributed to better psychological well-being and reduced symptoms of depression.
[20]	117	1	In a survey conducted among 501 students, it was found that 35.33% experienced anxiety and 72.93% experienced depression. Physical activity reduced the likelihood of anxiety, while the inability to see friends and partners worsened psychological well-being.

Table 1. Continued

Source	Citations	Cluster Numbe	Results
[21]	61	1	In a study involving 1280 students from four major universities in the United States, it was found that restricting access to parks and green spaces increased emotional distress. Students who continued to visit parks reported improvements in their mental and physical health.
[22]	44	1	In a study involving 132 students aged 19 to 26, it was found that restrictions on access to public places led to a deterioration in their physical and psychological condition, as well as overall quality of life. Students noted that the lack of direct social interactions could not be fully compensated by remote communication.
[33]	43	1	In a study involving 1910 students from over 80 universities, it was found that cognitive strategies helped them cope with the effects of the pandemic and isolation, maintaining a positive perception of the new learning situation. Students noted the insufficient preparedness of the teaching staff for online education but rated their own digital competencies and ability for interactive online communication highly.
[40]	127	2	A systematic review of 24 studies found that intuitive eating is associated with fewer eating disorders, a more positive body image, and better emotional well-being. However, since all studies were conducted using cross-sectional designs, no conclusions can be drawn about the direction of the relationship between intuitive eating and psychosocial correlates. Prospective studies are needed to confirm these findings.
[41]	26	2	In a study using the conceptual mapping methodology, a taxonomic list of self-care strategies proposed by medical students was created, encompassing 10 clusters of activities such as nutrition, hygiene, physical activity, and spiritual care. This list can serve as a basis for enhancing programs and counseling students on self-care practices.
[38]	24	2	In a survey of 661 students, it was found that planning and prioritization skills positively influence physical activity, while constraints such as lack of time and financial resources have a negative impact. The findings of the study can contribute to the development of university programs aimed at promoting student health through physical activity.
[37]	17	2	The main findings of the study include the levels of moderate to vigorous physical activity (MVPA) among students during physical education classes, their motivation, psychological well-being, and physical fitness.
[42]	16	2	Most students were mentally healthy, and those with better mental health were less likely to engage in unhealthy behaviors. The study's findings highlight the importance of supporting mental health to prevent unhealthy behaviors among students.
[62]	155	3	The COVID-19 pandemic and misleading media reports about the «Chinese virus» negatively affected the mental health of Chinese tourists. Some world leaders perpetuated this sensationalism, increasing anxiety and stress among travelers from China. This underscores the importance of responsible media coverage to prevent psychological issues during crisis periods.
[7]	63	3	In a study conducted among German students, it was found that physical activity reduces the impact of daily stress on the development of Facebook Addiction Disorder (FAD) over the course of a year. These results highlight the importance of physical activity in preventing internet addictions in stressful situations.
[63]	35	3	The study assessed the factor structure, internal consistency, reliability, gender invariance, and discriminant validity of the French version of the Mental Health Continuum-Short Form (MHC-SF). A survey of 1485 French-speaking post-secondary students in Quebec confirmed the reliability and validity of the MHC-SF for assessing mental health among young adults in Canada.
[64]	33	3	The psychometric properties of the Brazilian-Portuguese translation of the Body Appreciation Scale-2 (BAS-2) were studied. The instrument demonstrated good internal consistency and construct validity, making it useful for assessing body satisfaction in the Brazilian context.

Table 1. Continued

Source	Citations	Cluster Number	Results
[65]	27	3	The study examined the impact of perceived stress and specialization on the relationship between perfectionism and burnout among student athletes. The results showed that perfectionists with high levels of stress and narrow specialization are more prone to burnout. This highlights the need to consider personal characteristics and stress in developing burnout prevention strategies for athletes.
[66]	138	4	Two studies demonstrated that the satisfaction of the need for novelty predicts life satisfaction (study 1, n=399) and intrinsic motivation in physical education classes (study 2, n=1035), independently of other psychological needs. These findings provide preliminary evidence that the need for novelty may be a unique addition to the existing needs in self-determination theory.
[26]	120	4	A longitudinal study showed that better baseline and one-year mental health predicted a lower body mass index, higher frequency of physical and mental activities, smoking cessation, a non-vegetarian diet, and a more regular social rhythm. The sample included German (n=2991) and Chinese (n=12405) students. These results confirm the importance of a healthy lifestyle in improving psychological well-being and reducing mental health issues.
[67]	112	4	A systematic review and meta-analysis demonstrated that mindfulness-based programs (MBPs), including Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT), significantly reduced symptoms of stress, depression, and anxiety, and improved quality of life and well-being in non-clinical samples (n=4,733). These findings suggest that MBPs can be effective approaches for enhancing psychological health within the public healthcare system.
[28]	64	4	In a 15-month study involving 1140 students from universities in Dhaka, Bangladesh, the prevalence of depression increased by 22.5% and anxiety by 27.1%. Students who were dissatisfied with university culture, as well as those with high screen time and low physical activity, were more prone to depression and anxiety.
[68]	45	4	In a sample of 380 students, a study assessed fanaticism, identification with the university basketball team, sense of belonging, and meaning in life. The results showed that the sense of belonging mediates the relationship between team identification and meaning in life, as well as between fanaticism and meaning in life. These findings highlight the significance of social connections formed through sports fanaticism and their impact on well-being.

Note: Cluster 0 - Students and Mental Health; Cluster 1 - Physical Activity and Health; Cluster 2 - Psychological Aspects of Well-being; Cluster 3 - Recreational/Rehabilitation Strategies and Stress; Cluster 4 - Educational and Social Factors.

- the impact of mindfulness training on the psychological well-being, learning, and clinical performance of medical students. [1, 18].
2. Social Media Use and Its Impact on Psychological Well-being: Studies focused on the influence of social media use, such as Instagram, on perceived social capital, psychological well-being, and social media dependency. [2, 4, 5, 69].
 3. Nutrition, Self-care, and Mental Health: Includes studies exploring the relationship between eating behavior, stress, anxiety, depression, insomnia, and self-care practices and their impact on student well-being. [3, 9, 16].
 4. Physical Activity, Sports, and Social Aspects: Studies examining differences between types of sports, the impact of physical activity on psychological well-being, social identification, and networks in sports teams. [6, 13, 14, 15].
 5. Stigma, Self-help, and Psychometric Studies: Reviews and studies related to overcoming

stigma and self-stigma, development of cynicism among medical students, as well as the psychometric properties of various psychological scales and their application. [5, 6, 17, 69, 70].

Characteristics of Studies - Cluster 1 (Physical Activity and Health):

1. Psychological Well-being of Students During the COVID-19 Pandemic: Includes studies focusing on the impact of the pandemic on students' psychological well-being, including web surveys and cross-sectional studies in universities in Italy and Poland, as well as among medical students worldwide. [20, 22, 31].
2. Use of Green Spaces and Public Areas During the Pandemic: Studies regarding the use of parks and green spaces by students during the pandemic and their effects on emotional well-being. [21, 71].

3. **Stress and Mental Health of Medical Students and Interns:** Includes studies focused on mental stress and changes in the mental health of medical students and interns during the pandemic. [32, 34].
4. **Physical Activity, Nutrition, and Mental Health:** The impact of the pandemic on changes in physical activity, symptoms of eating disorders, pain, and overall psychological well-being. [23, 30, 72].
5. **Coping Strategies and Mental Well-being:** Studies on stress coping strategies such as mindfulness and self-compassion and their impact on mental health during the pandemic, as well as specific studies among hospitality and tourism students. [24, 25, 36, 73].

Characteristics of Studies - Cluster 2 (Psychological Aspects of Well-being):

1. **Psychosocial Aspects of Intuitive Eating and Self-care:** Includes systematic reviews and studies aimed at examining the psychosocial correlates of intuitive eating among women and self-care practices among medical students. [40, 41]
2. **Physical Activity and Well-being:** Studies focusing on the impact of physical activity on mental well-being, including the effects of exercise programs on the well-being of students and university staff during the COVID-19 pandemic. [38, 39, 48, 74, 75, 76].
3. **Effectiveness of Educational Interventions and Exercises:** Includes studies on the effectiveness of various exercise programs, such as cluster randomized controlled trials and web interventions aimed at increasing physical activity and well-being. [37, 44, 45].
4. **Mental Health and Behavior:** Studies aimed at exploring mental health profiles and related behavioral factors among students, including research on dental procedure anxiety and the impact of physical activity on mental health. [42, 47, 48, 77].
5. **Various Aspects of Physical Activity:** Studies exploring different aspects of physical activity and their impact on well-being, such as the effects of tennis on student well-being and the influence of exercise on sleep and mental health. [43, 48, 49, 50].

Characteristics of Studies - Cluster 3 (Recreational/ Rehabilitation Strategies and Stress):

1. **Impact of the COVID-19 Pandemic on Mental Health and Physical Activity:** Includes studies aimed at examining the impact of the COVID-19 pandemic on students' mental health and physical activity, including the effect of misleading media information on the mental health of Chinese tourists. [7, 62].
2. **Psychometric Assessments and Scale**

Translations: Includes studies related to the psychometric evaluation of various instruments and their adaptation for different cultural contexts, such as the translation and validation of the Brazilian version of the Body Appreciation Scale-2. [63, 64].

3. **Psychological Aspects of Stress and Burnout:** Studies focused on the impact of stress, perfectionism, and specialization on burnout among student-athletes and other groups, as well as the relationships between depression and various aspects of leisure. [8, 11, 12, 65, 78, 79].
4. **Psychological Effects of Nature and Motivational Factors:** Research on the influence of nature on the physiological and psychological state of young people, the role of the motivational climate in sports, and the impact of avatars on user behavior in virtual contexts. [53, 80, 81, 82, 83].
5. **Mental Health Issues and Their Impact on Behavior:** Includes studies examining mental health problems among students, such as sleep and emotional issues, self-reports of psychological problems among dental students, and the influence of physical exercises on students' psychophysiological health. [29, 45, 51, 54, 84].

Characteristics of Studies - Cluster 4 (Educational and Social Factors):

1. **Novelty and Self-Determination:** Research aimed at understanding the need for novelty and its role in self-determination theory, as well as the impact of novelty on the psychological health and well-being of students. [66].
2. **Lifestyle Choices and Mental Health:** Longitudinal studies focusing on lifestyle choices such as physical activity, mindfulness, sleep patterns, and their impact on the mental health of students from different countries. [26, 27, 28, 52, 67, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96].
3. **Sociocultural and Emotional Aspects:** The influence of the sociocultural environment and emotional factors on students' psychological health, including team identification models and socio-psychological health, interpersonal skills, and success in academic and personal life. [68, 97].

Discussion

The aim of this study is to analyze documents from the Web of Science (WoS) database from 2014 to 2024, focusing on recreational and rehabilitation aspects of students' psychological health and well-being. The analysis of current research shows that improving students' mental health requires a comprehensive approach that includes physical

activity, psychological strategies, recreational and rehabilitation activities, as well as social and educational support. In the context of global crises such as the pandemic and war, it is particularly important to emphasize effective interventions to support students' psychological well-being.

The analysis of studies by clusters has identified the most effective approaches to maintaining and enhancing students' psychological health and well-being. These approaches are primarily based on recreational and rehabilitation activities conducted in various environmental settings.

1. Students and Mental Health

Mental health issues among students have become particularly relevant in recent years, especially in connection with the COVID-19 pandemic and military conflicts. The study by Gruba et al. [98] showed that the pandemic led to an increase in anxiety and depression among students. These findings are consistent with the research by Schmits et al. [99] and Xiao et al. [100], which revealed a rise in psychological stress due to lifestyle changes and increased screen time. The COVID-19 pandemic exacerbated existing mental health issues, as confirmed by Lass-Hennemann et al. [56], who found a significant increase in depression and anxiety among schoolchildren in Germany. Other studies indicate that students facing war experience significant psychological difficulties [55, 57, 59, 60]. The results highlight the critical importance of personal resources such as emotional stability and resilience in protecting students from the negative effects of military stress. This is supported by the research of Kokun et al. [55], which showed that these resources significantly reduce symptoms of post-traumatic stress disorder (PTSD) and physical complaints among students in Ukraine.

In this context, the following conclusions can be drawn:

- Mental health issues among students remain pressing, despite numerous studies and interventions. The COVID-19 pandemic and the war in Ukraine have intensified psychological stress, significantly affecting students. Research shows that emotional stability and resilience play key roles in mitigating the negative effects of stress.
- There is a growing trend of mental health disorders among students during crises, highlighting the increasing need for the development of psychological support programs and resilience-building initiatives.

2. Physical Activity and Health

Physical activity plays a crucial role in maintaining the mental and physical health of students. Studies by Isabella et al. [71] and Tran et al. [73] emphasize the positive impact of physical

activity on mental health, including reduced levels of anxiety and depression. Additionally, the study by Mensah et al. [24] demonstrated that engaging in sports and physical exercises can improve overall well-being and the psychological state of students. As noted in the research by Lazurenko et al. [57], students' defense mechanisms and time perspectives change in wartime conditions, necessitating the development of specialized psychological support programs.

In this context, the following conclusions can be drawn:

- Regular physical activity has a significant positive impact on students' mental health, helping to reduce levels of anxiety and depression and improve overall well-being. Engaging in sports and utilizing green spaces contribute to these benefits.
- There is a growing interest in studying various types of physical activity and their effects on mental health. This has led to an increase in programs aimed at promoting physical activity among students.
- Specialized psychological support programs are needed to address changes in students' defense mechanisms and time perspectives in conditions of war, highlighting the importance of tailored interventions for students in crisis situations.

3. Psychological Aspects of Well-being

The psychological aspects of students' well-being include factors such as self-compassion, stress coping strategies, and emotional regulation. Studies by Tran et al. [73] and Mensah et al. [24] demonstrate that using coping strategies and self-compassion helps reduce anxiety and depression levels. These findings are supported by the results of Kokun et al. [55], which show that emotional stability and resilience play key roles in mitigating the negative effects of stress. Data from Mytsyk et al. [58] confirm the importance of social and psychological adaptation, especially for displaced persons. The use of gamification to improve the adaptation of Ukrainian adolescents in German schools appears to be a promising approach that could be extended to other student groups. Pavlova et al. [60] note that personal qualities such as optimism, hope, resilience, and post-traumatic growth play crucial roles in the subjective well-being of youth.

In this context, the following conclusions can be drawn:

- Self-compassion and coping strategies significantly contribute to reducing anxiety and depression among students. Emotional stability and resilience are key in lessening the negative impact of stress.
- Social and psychological adaptation is critical for students, especially for those displaced

by conflicts. Innovative approaches like gamification can enhance adaptation and well-being.

- Personal qualities such as optimism, hope, and resilience are essential for the subjective well-being and mental health of students.

4. *Recreational/Rehabilitation Strategies and Stress*

Recreational and rehabilitation strategies can significantly reduce stress levels among students. The study by Isabella et al. [71] found that the use of green spaces in cities positively impacts citizens' mental health. This underscores the need for creating conducive environments for physical activity in urban settings, which can enhance students' mental health. Another study [73] also showed that engaging in sports and physical exercises can help students cope with stress and improve their overall well-being. An important direction for future research is examining the long-term consequences of war on students' mental health. The study by Osokina et al. [59] revealed that adolescents from war-torn regions of Ukraine have significantly higher risks of post-traumatic stress disorder (PTSD), anxiety, and depression. This highlights the necessity for developing long-term support and mental health recovery strategies.

In this context, the following conclusions can be drawn:

- Utilization of green spaces and urban environments for physical activity can significantly enhance students' mental health, highlighting the importance of accessible and well-maintained recreational areas.
- Engagement in sports and physical exercises is effective in helping students manage stress and improve overall well-being.
- Long-term impacts of war on students' mental health necessitate the development of comprehensive strategies for long-term support and recovery, addressing the elevated risks of PTSD, anxiety, and depression among students from conflict regions.

5. *Educational and Social Factors*

Educational and social factors also play a crucial role in students' mental health. The study by Dore et al. [63] emphasizes the importance of social support and a stable environment for improving mental health. Other studies [24, 73] highlight the significance of social-emotional skills for student well-being. The authors demonstrated that stress coping strategies and the use of self-compassion can significantly reduce levels of anxiety and depression. Additionally, the war in Ukraine and the related displacement of students have shown the necessity of adaptive programs to support their psychological well-being [58]. Implementing such programs, like the use of gamification in education,

can help improve the social and psychological adaptation of students [58].

In this context, the following conclusions can be drawn:

- Social support and a stable environment are critical for improving students' mental health. Strategies that foster social-emotional skills are essential for student well-being.
- Stress coping strategies and self-compassion are effective in reducing anxiety and depression, emphasizing the need for their inclusion in student support programs.
- Adaptive programs are necessary to support the psychological well-being of displaced students, with innovative approaches like gamification showing promise in enhancing social and psychological adaptation.

Thus, despite the significant amount of research, the issue of students' mental health in the context of global crises and conflicts remains relevant. This underscores the importance of developing qualities that enhance students' resilience to stress. However, students face numerous barriers that negatively affect their mental and physical health. High levels of stress and anxiety due to academic workload and exams often lead to significant psychological problems such as depression and anxiety [21, 40]. The lack of physical activity, exacerbated by the COVID-19 pandemic and remote learning, negatively impacts students' overall well-being [53, 62]. Disrupted sleep patterns, caused by late-night studying and exam preparation, impair cognitive functions and overall health [19]. Financial difficulties, such as paying for tuition and housing, create additional stress, affecting mental health and academic performance [20, 101]. Social isolation and lack of support, brought about by the pandemic and other factors, exacerbate feelings of loneliness and increase the risk of developing depression and anxiety disorders [22]. The war in Ukraine has also had a severe impact on students, causing post-traumatic stress disorder (PTSD), anxiety, and depression, especially among those who have experienced violence or been forced to flee their homes [62].

Limitations of the Review Processes

The review process also has its limitations. Despite the careful selection of keywords and inclusion criteria, there is a possibility of missing some relevant studies. The analysis was limited to publications in English, which may exclude important research published in other languages. The use of only certain databases, such as WoS, may restrict the scope of available information and affect the completeness of the review.

Implications of the Results for Practice, Policy, and Future Research

The findings of this study have significant

implications for practice and policy in the field of student mental health preservation. The necessity of developing and implementing targeted interventions to support students' mental health becomes evident. This is particularly important in light of the consequences of the COVID-19 pandemic and the war in Ukraine, which have significantly impacted students' psychological well-being. Future research should focus on developing effective support programs that consider the specific conditions and needs of students. It is also crucial to continue studying the impact of physical activity and other healthy habits on students' mental and physical health in order to develop comprehensive strategies for improving their well-being.

Conclusions

This study identified key factors influencing students' mental and physical health, such as physical activity, psychological resilience, and social support. The analysis of documents extracted from the WoS database showed that regular physical activity and the use of various strategies contribute to reducing stress levels and improving overall student well-being. In the context of global crises such as the COVID-19 pandemic and the war in Ukraine, comprehensive approaches to supporting mental health, including hybrid intervention models, are of particular importance. Future research should focus on developing and testing new methods aimed at sustainably improving the mental and physical well-being of students, taking into account regional and cultural specificities.

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