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Influence of sports, diet, exercise, and lifestyle practices on mental health among university students

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Abstract
University students today experience a wide range of emotional, academic, and social pressures that place them at heightened risk for mental health difficulties. Lifestyle behaviours—such as participation in sports, engagement in physical exercise, dietary habits, sleep patterns, and daily routine management—are increasingly recognized as significant contributors to psychological well-being. The present study investigates the influence of these lifestyle practices on mental health among university students. A purposive sample of 50 students was categorized into healthy and unhealthy lifestyle groups using the Lifestyle Assessment Questionnaire (Agarwal, 1982). Mental health was assessed using the Mental Health Inventory (Veit & Ware, 1983). Results indicated significantly higher mental health scores among students with healthier lifestyle practices. The findings highlight the importance of integrating lifestyle-based interventions into university mental health programs and suggest the need for holistic, preventive approaches to enhance student well-being.

Keywords: University students, mental health, lifestyle behaviors, physical exercise, dietary habits

Introduction

The university years constitute one of the most critical developmental phases in an individual's life. They mark a transition from adolescence to adulthood, accompanied by increased autonomy, academic responsibility, and social pressures. Students are required to adapt to new learning environments, manage increased academic workloads, negotiate peer relationships, and make foundational decisions regarding their future careers. As students attempt to balance academic, personal, and social demands, they often encounter stressors that significantly affect their mental health and overall well-being.

In recent years, universities across the world have reported increasing cases of psychological distress among students. Symptoms such as anxiety, depression, irritability, emotional exhaustion, sleep disturbances, reduced motivation, and concentration difficulties have become particularly common in higher education settings. These mental health concerns are not only detrimental to emotional well-being but also impair academic performance, interpersonal functioning, and students' overall quality of life.

A growing body of research identifies lifestyle practices as essential determinants of psychological well-being. Lifestyle refers to a set of habitual behaviours and patterns—including diet, physical activity, sports involvement, sleep routines, self-care practices, and daily time management—that shape an individual's physical and psychological functioning. University students, due to demanding schedules and transitional life circumstances, often develop lifestyle imbalances such as poor sleep hygiene, irregular meal patterns, reduced physical activity, and excessive screen exposure, all of which negatively impact mental health.

Physical activity plays a central role in emotional regulation. It promotes the release of neurotransmitters such as endorphins, serotonin, and dopamine, which enhance mood stability, reduce stress, and increase resilience. Exercise also improves cardiovascular health and cognitive clarity, enabling students to manage academic pressures more effectively. Research suggests that even moderate physical movement significantly reduces symptoms of anxiety and depression by regulating stress hormones and improving self-efficacy.

Sports participation offers cognitive, social, and emotional benefits. Team sports foster social connection, teamwork, communication skills, and mutual support, all of which contribute to reduced loneliness and enhanced emotional stability. Regular engagement in sports also develops discipline, routine, goal-orientation, and confidence—skills that transfer to

academic and personal domains.

Dietary habits profoundly influence mental and emotional functioning. Poor diets—high in refined sugars, trans fats, and processed foods—are linked with inflammation, cognitive dullness, irritability, and increased symptoms of anxiety and depression. Conversely, nutrient-rich diets containing whole grains, vegetables, fruits, lean proteins, and omega-3 fatty acids support healthy neurotransmitter functioning and emotional balance. The gut-brain axis, a major area of psychological and medical research, highlights how nutrition directly affects mood through biochemical pathways.

Sleep hygiene is another cornerstone of mental well-being. Sleep-deprived students experience impaired attention, memory deficits, slower cognitive processing, emotional instability, and diminished stress tolerance. Given modern academic pressures and digital stimulation, many students engage in late-night studying or excessive screen time, which disrupts circadian rhythms and contribute to chronic fatigue and psychological distress.

Daily routines and self-management skills significantly influence mental health. Students who follow structured routines tend to perform better academically, display higher motivation, manage stress effectively, and maintain emotional stability. In contrast, irregular routines contribute to disorganization, procrastination, anxiety, and emotional overload.

Despite strong global evidence linking lifestyle patterns with mental health, research in the Indian context remains comparatively limited. Much of the available work either focuses on isolated variables such as diet or exercise, or uses small, non-representative samples. Few studies examine lifestyle as a composite, multi-dimensional construct influencing psychological well-being. The present study attempts to bridge this gap by exploring how a combination of lifestyle factors—sports, exercise, diet, sleep patterns, and daily routines—relate to mental health among university students.

Theoretical framework

1. **Biopsychosocial Model (Engel, 1977) [8]:** This model explains health through biological, psychological, and social domains. Healthy lifestyle behaviours regulate neurotransmitters, improve hormonal balance, and enhance emotional resilience. Sports and social activity strengthen interpersonal support, reducing stress and depression.
2. **Self-Determination Theory (Ryan & Deci, 2000) [28]:** This theory states that well-being depends on autonomy, competence, and relatedness. Lifestyle activities like exercise and sports fulfil all three needs, improving motivation and emotional stability.
3. **Cognitive-Behavioral Model:** This model proposes that thoughts, emotions, and behaviours are interconnected. Healthy behaviours such as exercise, nutrition, and sleep improve cognitive functioning, reduce rumination, and enhance emotional control.
4. **Health Belief Model:** Students adopt healthy behaviours when they perceive benefits, feel vulnerable to illness, and receive cues to action (e.g., health awareness programs). Health beliefs influence lifestyle compliance.
5. **Lifestyle Medicine Framework:** This framework identifies six pillars essential for well-being: physical activity, balanced nutrition, restorative sleep, stress management, healthy relationships, and avoidance of harmful substances. These dimensions directly support mental health and cognitive functioning.

Review of Literature

Sports Participation and Mental Health

Sports participation has been consistently linked with improved psychological well-being. Fox (1999) [9] found that regular sports involvement enhances self-esteem, emotional stability, and confidence. Eime *et al*. (2013) [7] reported that team sports improve social connectedness, which reduces stress. In India, Singh and Shukla (2014) [31] demonstrated that college athletes showed lower anxiety and stronger emotional control than non-athletes. Mahoney and Cairns (1997) [19] further found that adolescents who engaged in extracurricular sports displayed higher resilience and fewer behavioural problems. Armstrong and Oomen-Early (2009) [3] observed that participation in team sports reduces depressive symptoms by increasing peer support. Hillman, Erickson, and Kramer (2008) [11] found that physical activity improves attention and executive functioning, which helps buffer stress.

Physical Exercise and Emotional Regulation

Salmon (2001) [29] established that exercise reduces anxiety, improves mood, and increases stress tolerance by increasing serotonin and endorphins. Reed and Buck (2009) [27] showed that aerobic exercise improves positive affect. Bernstein *et al*. (2002) [4] found that physically active university students experience lower stress and emotional exhaustion. Ahn and Fedewa (2011) [2] observed consistent reduction in depression due to physical activity. Ratey (2008) [26] noted that exercise increases brain-derived neurotrophic factor (BDNF), improving cognition, motivation, and focus.

Diet and Mental Health

Jacka *et al*. (2010) [13] found that unhealthy diets high in processed foods and sugars increase the risk of depression. In a later randomized controlled trial, Jacka *et al*. (2017) [14] demonstrated that improving diet significantly reduces depressive symptoms. Sanchez-Villegas and Martinez-Gonzalez (2013) [30] found that Mediterranean-style diets improve mental well-being. Mayer (2011) [20] showed that gut microbiota influence mood through the gut-brain axis. Logan and Katzman (2005) [17] linked micronutrient deficiencies to anxiety and fatigue. Panchal, Mukherjee, and Harshe (2021) [24] found that Indian students with poor diets showed more irritability, stress, and concentration problems.

Sleep Hygiene and Psychological Well-being:

Carskadon and Acebo (1993) [6] observed that inadequate sleep leads to attention deficits and emotional instability. Pilcher and Huffcutt (1996) [25] showed that sleep deprivation impairs cognitive performance. Hershner and Chervin (2014) [12] found that irregular sleep in college students reduces academic functioning and increases distress. In India, Gupta *et al*. (2016) [10] found that sleep deprivation correlates with high stress levels among students. Meerlo, Sgoifo, and Suchecki (2008) [21] showed that chronic sleep loss elevates cortisol, affecting emotional stability.

Daily Routines, Stress, and Academic Functioning
Misra and McKean (2000) [22] demonstrated that poor time management increases perceived stress. Macan *et al*. (1990) [18] found that structured routines reduce stress and improve performance. Tice and Baumeister (1997) [32] established that procrastination increases anxiety and depression. Kaur and Kumari (2018) [15] found that Indian students with regular routines show better emotional stability.

Integrated Lifestyle Patterns
Khalsa *et al*. (2015) [16] showed that combinations of healthy behaviours predict emotional well-being better than single factors. Owen *et al*. (2010) [23] found that sedentary behaviour combined with poor diet increases depressive symptoms. Bize, Johnson, and Plotnikoff (2007) [5] found that integrated lifestyle interventions significantly improve mental health.

Methodology

Research Design
The study used a comparative research design to examine differences in mental health between students with healthy versus unhealthy lifestyle patterns.

Sample
A purposive sample of 50 university students was selected.
25 students belonged to the healthy lifestyle group and 25 to the unhealthy lifestyle group.

Tools Used
1. Mental Health Inventory (MHI-38)
Developed by Veit and Ware (1983).
Measures anxiety, depression, behavioural control, positive affect, and emotional ties.

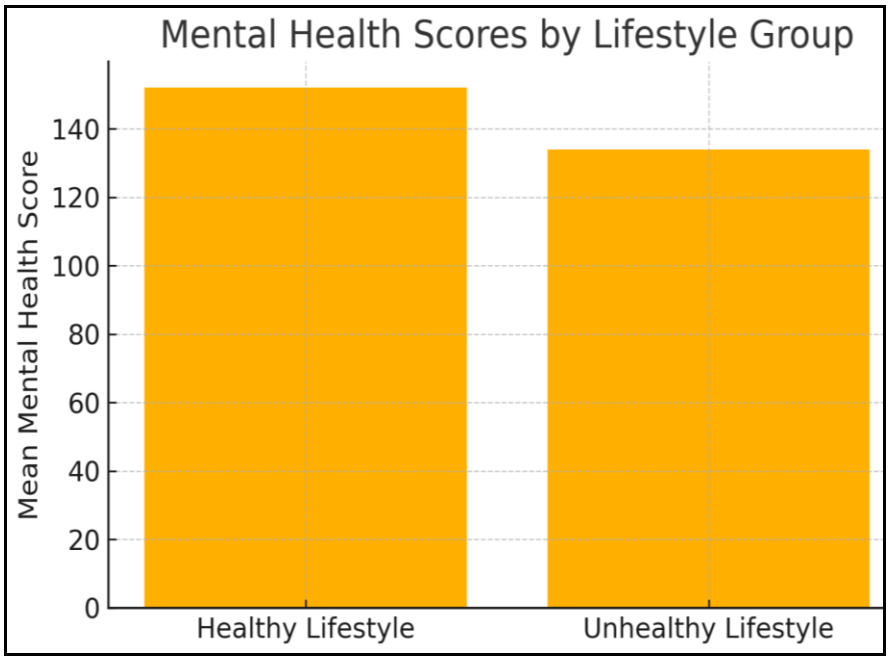
2. Lifestyle Assessment Questionnaire (LAQ)
Developed by N. K. Agarwal (1982).
Assesses diet, exercise, sleep, routine, stress management, and social habits.

Procedure
Students completed the LAQ to determine their classification into healthy and unhealthy lifestyle groups.
After classification, MHI-38 was administered.
Scores were tabulated and analysed using mean, SD, and t-test.

Table 1: Mean Mental Health Scores of Healthy vs. Unhealthy Lifestyle Groups

Group	N	Mean	SD
Healthy Lifestyle	25	152	18
Unhealthy Lifestyle	25	134	20

Graphical Representation



Title:
Mental Health Scores by Lifestyle Group
X-Axis:
Healthy Lifestyle Group
Unhealthy Lifestyle Group
Y-Axis:
Mean Mental Health Score
Scores:

- Healthy Lifestyle Group: 152
- Unhealthy Lifestyle Group: 134

Interpretation: The graph clearly shows that the Healthy Lifestyle group has a considerably higher mean mental health score compared to the Unhealthy Lifestyle group. The substantial gap between the two bars highlights the positive influence of lifestyle behaviours—such as regular exercise, good sleep, balanced diet, and sports involvement—on emotional stability and psychological well-being.

Discussion

The present study aimed to examine the influence of lifestyle practices—specifically diet, exercise, sports participation, sleep quality, and daily routine—on the mental health of university students. The comparison between healthy and unhealthy lifestyle groups revealed

clear and significant differences. Students who maintained healthier lifestyle patterns consistently demonstrated higher mental health scores on the Mental Health Inventory. These results strongly suggest that lifestyle behaviours play a major role in determining psychological well-being among university students.

The findings align with the Biopsychosocial Model (Engel, 1977) [8], which emphasizes the interconnectedness of biological, psychological, and social factors. Healthy lifestyle practices directly influence each of these domains. Biologically, regular exercise increases endorphins and serotonin, while adequate sleep enhances hormonal regulation and cognitive clarity. Psychologically, structured routines reduce chaos and unpredictability, thereby lowering stress levels. Socially, sports participation strengthens peer interactions, communication, and support systems.

The results also support Self-Determination Theory (Ryan & Deci, 2000) [28], which highlights autonomy, competence, and relatedness as fundamental psychological needs. Students who engage in exercise and sports experience a sense of mastery, accomplishment, and social integration—all key factors for emotional resilience. Those with unhealthy routines lack these forms of reinforcement, contributing to decreased motivation and emotional instability.

Dietary habits also emerged as an important factor affecting mental health. Research by Jacka *et al*. (2010, 2017) [13, 14] showed similar results, where unhealthy diets increased risks of anxiety and depression. In the present study, students with unhealthy eating patterns scored significantly lower in mental health, suggesting similar effects in Indian university contexts.

Sleep hygiene further differentiated the groups. Students with irregular sleep cycles displayed lower emotional stability and increased irritability, aligning with findings by Pilcher and Huffcutt (1996) [25] and Hershner and Chervin (2014) [12]. Sleep deprivation impairs cognitive functioning, decision-making, memory, and emotional regulation, which may explain the lower scores in the unhealthy lifestyle group.

In summary, the findings demonstrate that lifestyle practices collectively shape mental health. While each variable—diet, exercise, sleep, sports participation, and routines—individually influences well-being, their combined effect is more powerful. Students with healthier habits benefit from more stable emotions, stronger coping mechanisms, reduced stress, and improved cognitive abilities. This reinforces the need for universities to promote holistic lifestyle wellness programs.

Implications

1. **Need for Lifestyle-Based Mental Health Programs:** University counseling centers should integrate lifestyle assessments into their mental health services. Mental health professionals should consider diet, exercise, sleep patterns, and time management as part of therapeutic interventions.
2. **Promotion of Physical Activity and Sports:** Universities must encourage regular sports participation and physical exercise. This can include mandatory physical education credits, organized sports events, fitness clubs, and accessible gym facilities.
3. **Sleep Hygiene Education:** Workshops on managing digital exposure, maintaining consistent sleep routines, and time management can significantly reduce academic stress and fatigue.
4. **Nutritional Awareness:** Cafeterias should provide healthier meal options. Nutritional literacy programs can help students understand how food choices impact emotional well-being.
5. **Routine and Time-Management Training:** Programs that teach students how to structure their daily routines, prioritize tasks, and avoid procrastination can significantly improve both academic and emotional outcomes.
6. **Policy-Level Changes:** Institutions should consider balanced academic workloads, reducing assignment overload, and providing flexible deadlines to reduce pressure and promote healthier routines.

Limitations

1. **Sample Size:** The study involved only 50 participants, which limits generalizability. Larger studies are needed for stronger conclusions.
2. **Self-Report Bias:** Both tools (LAQ and MHI-38) rely on self-reporting, which may lead to exaggeration or underreporting.
3. **Cross-Sectional Design:** Because data was collected at one point in time, causal relationships cannot be established. Longitudinal studies would provide better insights.
4. **Lack of Control Over External Variables:** Factors like socioeconomic status, family stress, academic pressure, and personality traits were not controlled and may have influenced the results.
5. **Lifestyle Categorization:** Students were grouped based on questionnaire scores, which may not capture nuanced lifestyle behaviours.

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