

Staying Active, Minding Health: Does Exercise Influence Depression and Anxiety in Herat University's Education Students?

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ABSTRACT

Mental health issues are a major concern for public health worldwide, affecting a large segment of the global population. This study aims to investigate the association between physical activity, depression, and anxiety among students in the Faculty of Education at Herat University. A cross-sectional study was conducted during the fourth quarter of 2023 (October-December) encompassing a 204 sample of male students enrolled in the Faculty of Education at Herat University. We used a 13-item self-administered questionnaire to collect information on the participants' sociodemographic details and physical activities. We assessed depression and anxiety using the standardized Patient Health Questionnaire-9 (PHQ-9) and the Generalized Anxiety Disorder 7-item (GAD-7) questionnaire, respectively. The data was scored and categorized according to the guidelines set for each instrument. Statistical analyses were performed in IBM SPSS Statistics (version 27). Of all participants in this study, 86.3% suffered from various degrees of depression and 71.6% suffered from various degrees of anxiety. A lack of a regular and organized weekly plan involving sports activities was associated with depression ($p=0.009$) and anxiety ($p=0.024$). Lack of regular weekly exercise in the past due to physical problems was associated only with anxiety ($p=0.023$). This study explored how physical activity relates to depression and anxiety in students at Herat University's Faculty of Education. We found that being physically active was linked to both lower depression and anxiety levels. The higher rates of depression and anxiety in our study might be due to social and environmental factors that the other studies didn't account for.

Keywords: Mental Health, Physical Activity, Anxiety, Depression, Herat, Afghanistan

INTRODUCTION

Mental health disorders pose a significant global public health concern, impacting a substantial proportion of the world's population. As reported by the World Health Organization (2022), an estimated one in eight individuals globally was diagnosed with a mental disorder in 2019.

Mental disorders frequently take the form of anxiety or depression. The most prevalent of these, anxiety disorders, currently affect an estimated 4% of the world's population. These disorders manifest in excessive worry and heightened tension (Zaman et al., 2019). Depression, another common disorder, is characterized by a loss of interest and enjoyment, negative mood, and a broad spectrum of cognitive and behavioral symptoms, ultimately impacting an individual's emotional and cognitive functioning (NICE, 2023).

Engaging in muscular activity, regardless of its purpose, like recreation or transportation, which leads to energy expenditure, is termed physical exercise (Disdier et al., 1991; Satti et al., 2019). Research suggests a positive correlation between regular physical activity and improved mental well-being, potentially through its influence on optimal cognitive function and intellectual focus (Santana et al., 2017; Stubbs et al., 2018). However, evidence suggests an association between a lack of regular physical activity and negative mental health outcomes, such as depression, anxiety, and a lower quality of life (Abdollahi et al., 2020; Santana et al., 2017). Epidemiological studies conducted globally suggest a higher prevalence of anxiety, stress, and depression among university students compared to the general population (Brenneisen Mayer et al., 2016; Ibrahim et al., 2013; Mofatteh, 2021).

While the association between physical activity and mental health has been investigated extensively in various global contexts (Al-drees et al., 2016; Brenneisen Mayer et al., 2016; Chung et al., 2018; Mofatteh, 2021; Satti et al., 2019), this association remains largely unexamined among university students in Afghanistan, particularly those residing in Herat province. This study aims to bridge this gap in knowledge by investigating potential connections between physical activity levels and the prevalence of anxiety and depression amongst students in the Faculty of Education at Herat University.

MATERIALS AND METHODS

Design and Setting

A cross-sectional study was performed during the fourth quarter of 2023 (October-December) encompassing a sample of male students enrolled in the Faculty of Education at Herat University.

Target Population

The target population of this study included 518 male students from different departments within the Faculty of Education at Herat University.

Study Population and Sampling Strategies

To determine the appropriate sample size, a power analysis was conducted utilizing the Raosoft sample size calculator (<http://www.raosoft.com/samplesize.html>). Assuming a 95% confidence interval, a 90% confidence level, and an anticipated response distribution of 50%, the calculator recommended a minimum sample size of 178. To account for potential missing or incomplete data, an additional 15% buffer was added, resulting in a final target sample size of 204. A simple random sampling technique was employed to select participants for this study.

Data Collection

A self-administered questionnaire with 13 items was employed to gather data on participants' sociodemographic characteristics and physical activities. Depression and anxiety assessments were conducted using standardized instruments: The Patient Health Questionnaire-9 (PHQ-9) and the Generalized Anxiety Disorder 7-item (GAD-7) questionnaire, respectively. Scoring and categorization of the data adhered to the established guidelines for each instrument (Kroenke et al. 2001; Spitzer et al., 2006).

Statistical Analysis

Statistical analyses were performed using IBM SPSS Statistics (version 27). Continuous data exhibiting non-normal distributions were summarized using median and interquartile range (IQR). Categorical data were presented as frequencies and percentages. Chi-square tests or Fisher's exact tests assessed associations between categorical variables, while Pearson's correlation coefficients were utilized to evaluate correlations between continuous variables. A significance level of $p = 0.05$ was adopted for all statistical analyses.

Ethical Consideration

After undergoing a thorough review, the study protocol was granted approval by the Human Ethics Committee of Herat University's Faculty of Medicine (approval number #232109). Throughout the research process, meticulous measures were taken to safeguard participant confidentiality and data privacy.

RESULTS

Sociodemographic Characteristics

A total of 204 participants with an average age of 21.9 ± 1.8 (range = 18 - 27) years were included in the study. The sociodemographic and physical activity characteristics of participants are displayed in Table 1.

Table 1. Sociodemographic and physical activity characteristics of study participants

Items	No (%)
Employment	
Employed	66 (32.4)
Unemployed	138 (67.6)
Health status	
Good	120 (58.8)
Fair	74 (36.3)
Poor	10 (4.9)
Economic status	
Good	16 (7.8)
Fair	136 (66.7)
Poor	52 (25.5)
Nutrition status	
Good	60 (29.4)
Fair	130 (63.7)
Poor	14 (6.8)
Have you previously incorporated a consistent, weekly schedule for engaging in physical activities?	
Yes	103 (50.5)
No	101 (49.5)
What was the typical frequency of your physical activity per week?	
1 Day in a week	67 (32.8)
2 Day in a week	48 (23.5)
3 Day in a week	32 (15.7)
More than 3 days in a week	57 (27.9)
What was the typical duration of your daily physical activity sessions?	
Less than 1 hour	51 (25.0)
1-2 hour	102 (50.0)
2-3 hour	22 (10.8)
More than 3 hours	28 (13.7)
In your experience, how has consistent physical activity influenced your academic performance?	
Less	17 (8.3)
Medium	78 (38.2)
High	72 (35.3)
No opinion	37 (18.1)
What factors impeded your prior adoption of a regular exercise routine?	
Physical problems	26 (12.7)
Lack of awareness of the benefits of exercise	17 (8.3)
Lack of motivation	31 (15.2)
Lack of necessary facilities	86 (42.2)
Financial problems	22 (10.8)
Not having enough time	12 (5.9)
Other cases	10 (4.9)
Could you tell me about your preferred sports activities, starting with the ones you enjoy the most?	
General fitness exercises	94 (46.1)
Participating in a training class	44 (21.6)
Participating in training teams	66 (32.4)
Should physical activity be mandatory in all semesters?	
Yes	171 (83.8)
No	33 (16.2)

Mental Health Status of Study Participants

Of the 204 participants in this study, 86.3% suffered from various degrees of depression and 71.6% suffered from various degrees of anxiety. Table 2 and Table 3 display the frequencies and percentages of participants in each depression and anxiety severity category, respectively.

Table 2. Prevalence and severity of depression among study participants

Items	No (%)
No Depression	28 (13.7)
Mild Depression	51 (25.0)
Moderate Depression	61 (29.9)
Moderate Severe Depression	44 (21.6)
Severe Depression	20 (9.8)

Table 3. Prevalence and severity of anxiety among study participants

Item	No (%)
None Anxiety	58 (28.4)
Mild Anxiety	75 (36.8)
Moderate Anxiety	52 (25.5)
Severe Anxiety	19 (9.3)

Association Between Physical Activity, Depression, and Anxiety Among Study Participants

Table 4 shows the association between physical activity characteristics and depression/anxiety among study participants. A lack of a regular and organized weekly plan for doing sports activities was associated with depression ($p=0.009$) and anxiety ($p=0.024$). Not having regular weekly exercise in the past due to physical problems was associated only with anxiety ($p=0.023$). All other physical characteristics included in the study were not associated with either depression or anxiety among study participants.

Table 4. Association between physical activity characteristics and depression/anxiety among study participants

Item	Response	Depression No (%)	P-value	Response	Anxiety No (%)	P-value
Have you ever had a regular and organized weekly plan for doing sports activities?						
Yes	103	83 (80.6)	0.009	99	64 (64.6)	0.024
No	101	93 (93.0)		100	79 (79.0)	
How many days a week was your physical activity?						
1 Day in a week	67	60 (89.6)	0.796	66	51 (77.3)	0.594
2 Day in a week	48	42 (87.5)		46	33 (71.7)	
3 Days in a week	32	27(84.4)		31	22 (71.0)	
More Than 3 days in a week	57	47 (83.9)		56	37 (66.1)	
How many hours a day was your physical activity?						
Less than 1 hour	52	45 (88.2)	0.964*	50	37 (74.0)	0.963
1-2 hours	102	89 (87.3)		100	71 (71.0)	
2-3 hours	22	19 (86.4)		20	14 (70.0)	
More than 3 hours	28	23 (85.2)		28	21 (75.0)	
How do you evaluate the role of physical activity in your academic success?						
Less	17	17 (100)	0.357*	17	12 (70.6)	0.843
Medium	78	67 (87.0)		77	54 (70.1)	
High	72	60 (83.3)		70	53 (75.7)	
No opinion	37	32 (86.5)		35	24 (68.6)	
If you have never had a history of regular weekly exercise, what's the reason?						
Physical problems	26	23 (88.5)	0.760*	25	22 (88.0)	0.023*
Lack of awareness of the benefits of exercise	17	13 (81.3)		16	13 (81.3)	

Lack of motivation	31	24 (77.4)		31	19 (61.3)	
Lack of necessary facilities	86	76 (88.4)		83	59 (71.1)	
Financial problems	22	20 (90.9)		22	18 (81.8)	
Not having enough time	12	11 (91.7)			9 (75.0)	
Other cases	10	9 (90.0)		10	3 (30.0)	
Express your interest in sports activities in order?						
General fitness Exercises at least 3 days a week	94	79 (84.9)	0.219	92	62 (67.4)	0.073
Participating in training classes for basic and advanced skills at different levels	44	36 (81.8)		44	29 (65.9)	
Participating in the training of sports teams to participate in official competitions in various sports fields	66	61 (92.4)		63	52 (82.5)	
Do you agree to make sports mandatory in all semesters?						
Yes	171	148 (86.5)	0.780*	168	120 (71.4)	0.753
No	33	28 (84.8)		31	23 (74.2)	

DISCUSSION

This study, aimed to investigate the relationship between physical activity and the prevalence of depression and anxiety among students of the Faculty of Education at Herat University. We found that there was a significant association between physical activity and depression ($p=0.017$). This finding aligns with the results of studies reported by Abdollahi *et al.*, 2020, Al-Eisa E. *et al.*, 2014 and Alnofiey, *et al.* 2023. We also found a significant association between physical activity and anxiety ($p=0.024$), which is in line with the findings of Alnofiey *et al.* (2023). These accumulating evidence explain that physical activity has a positive relationship with people's mental state. Performing physical activity can play an important role in reducing the incidence of depression and anxiety, and on the contrary, lack of physical activity is associated with a higher risk of depression and anxiety (Alahmed & Lobelo, 2018; Alsulaiman & Abu-Saris, 2021).

This study did not reveal a significant association between physical problems and depression ($p=0.628$). However, the association between physical problems and the development of anxiety was significant ($p=0.023$). The latter finding is similar to the findings of Alnofiey *et al.* 2023, who also reported a significant association between the existence of chronic diseases and the emergence of anxiety.

We also found that the prevalence of depression was high among our participants (86.30%). This is not in accordance with the findings of Abdollahi *et al.*, 2020, Brenneisen *et al.*, 2016, Alnofiey *et al.* 2023 and Al-sulaiman and Abu-Saris, 2021, which revealed a considerably lower prevalence of depression in Iran, Brazil, Saudi Arabia 3.80%, 41.30%, 31.60%, 24%, respectively. It seems that the differences in the findings of this research compared to other studies are related to factors such as deficiencies and problems in the educational system and the prevailing socio-economic conditions in our society.

The prevalence of anxiety among our participants was 71.60%. This finding was not also in line with finding of Brenneisen *et al.*, 2016, Alnofiey *et al.* 2023 and Al-sulaiman and Abu-Saris, 2021, who reported a lower anxiety prevalence among their study participants.

The prevalence of anxiety according Brenneisen *et al.*, 2016, study was 81.70%, which is higher than the findings of this study (71.6%). While the prevalence of anxiety in the study participants of Alnofiey; Al-Sulaiman and Abu-Saris was 45.30% and 31%, respectively, which is lower than the findings of this study. The reasons for a higher prevalence of depression and anxiety among our participants in comparison to other studies may be due to socio-economic and environmental factors.

Limitations: This cross-sectional survey was conducted only among students of the Faculty of Education at Herat University. The results obtained in this study cannot be generalized to the general public. Moreover, the sample size employed in this study was relatively small, limiting the generalizability of results in very larger population.

Recommendations: To get a clearer and more accurate picture of the association between mental disorders and physical activity among university students, it is recommended that future research employ a more diverse and larger sample size.

CONCLUSION

This study explored how physical activity relates to depression and anxiety in students at Herat University's Faculty of Education. We found that being physically active was linked to both lower depression and anxiety levels. The higher rates of depression and anxiety in our study might be due to social and environmental factors that the other studies didn't account for. To reduce the prevalence of depression and anxiety, policymakers and university authorities should encourage students to perform extracurricular physical activities.

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Conflict of Interest: All authors have no conflict of interest to declare.

Authors Contributions

Marouf Noorzai: Conceptualization, methodology, original draft preparation, review, and editing; Shafiq Ahmad Joya: Conceptualization, methodology, original draft preparation, review, and editing; Rovaisa Mohseni: Conceptualization, methodology, original draft preparation, review, and editing; Aziz-ur-Rahman Niazi: Conceptualization, methodology, software, analysis, investigation, original draft preparation, review, and editing, supervision.

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