Original Article

Association between Self-rated Physical Activity and Academic Performance among Medical Students of Bangladesh

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Abstract

Background: *Physical activity has many positive benefits not only in the physical state but also stimulates brain activity and influences cognitive function leading to better academic performance.* ***Aims and Objectives:*** *To find out the association between self-rated physical activity and academic performance among medical students of Bangladesh.* ***Materials and Methods:*** *This cross-sectional study was conducted among 200 medical students from a selected medical college in Bangladesh, during a period of one year from January 2022 to December 2022. A semi-structured questionnaire, checklist, and International Physical Activity Questionnaire Short Form (IPAQ-SF) were used to collect the data.* ***Results:*** *50%, rated their physical activity levels as "Sedentary". A further 43% rated their physical activity levels as "Low", while only 7% rated their physical activity levels as "Moderate" levels of physical activity & self-rated academic performance of the 200 participants in this study, the majority rated their performance as "good" 56.5%, followed by "average" 41.0% & 2.5% rated their performance as "excellent". However, overall stastical findings suggest that self-rated physical activity and academic performance were linked.*

Keywords: Self- rated physical activity, Academic performance, Medical student.

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Introduction

Self-rated physical activity refers to an individual's subjective assessment of his or her own level of physical activity & self-rated academic performance refers to an individual's subjective assessment of their own academic abilities, achievements, and overall performance. Regular physical exercise is crucial for not only conditioning various parts of the body but also for promoting better health and sustaining fitness, especially during the process of physical rehabilitation. Engaging in physical activity on a regular basis offers a wide range of benefits that can positively affect one's overall well-being.[1] Regular physical activity is proven to help prevent and manage non-communicable diseases such as heart disease, stroke, diabetes and several cancers. It also helps prevent hypertension, maintain healthy body weight and can improve mental health, quality of life and well-being.[2] The academic performance of students is the key feature [3] and one of the important goals[4] of education, which can be defined as the knowledge gained by the student which is assessed by marks by a teacher and/or educational goals set by students and teachers to be achieved over a specific period of time. Studies have shown that medical students experience a high level of stress during their undergraduate course.[5] High levels of stress may have a negative effect on the cognitive functioning and learning of students in medical school.[6] A medical student's academic performance attracts the attention of all those involved in medical education. Many medi-

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cal education stakeholders are concerned about students' performances as it reflects their various areas of interest. According to [7] those stakeholders are not only faculty members but also medical school selection committees, curriculum planners, and instructional designers. Physical activity has a direct impact on the behavior and development of the brain. Physical activity can improve brain function. It increases the flow of oxygen to the brain. The number of brain neurotransmitters is increased, which assists one's ability to focus, concentrate, learn, remember, and handle stress. The number of brain-derived neurotrophins is increased, which assures the survival of brain neurons that are essential for learning, memory, and higher thinking.[8] There was substantial evidence that physical activity can help improve academic performance, including grades and standardized test scores. Physical activity can have an impact on cognitive skills and attitudes and academic behavior, all of which are important components of improved academic performance. These include enhanced concentration and attention as well as improved classroom behavior. Increasing or maintaining time dedicated to physical education may help, and does not appear to adversely impact, academic performance.[9] This study aimed to explore the physical activity level among undergraduate medical students and to determine the relationship of this health status to their academic achievement. The findings of this study will contribute to the existing literature on the relationship between self- rated physical activity and academic performance among medical students in Bangladesh.

Materials & Methods

This cross-sectional descriptive study was conducted to assess the association between self-rated physical activity and academic performances among the medical students of Bangladesh. A total of 200 students participated in this study from a selected medical college of Bangladesh from January 2022 to December 2022 using a pretested semi-structured self-administered questionnaire. Informed written consent was taken before taking any interview. After collection of the questionnaires were checked for any inconsistency of data and corrected manually . Then the data were entered into SPSS version 19. Descriptive analysis was performed to calculate mean, standard deviations, frequencies and percentages using the SPSS software. A P-value of < 0.05 considered statistically significant. The data were presented by tables with necessary descriptions and statistical analysis for easy understanding and comparisons.

Results

The cross-sectional study was conducted among 200 medical students to assess their physical activity regarding age, the majority of the respondents fell within the age range of 22-24 years old, accounting for 60% of the respondents, followed by 36.5% who were aged between 19-21 years old, and only 3.5% who were aged between 25-27 years old. Mean± SD age in years was 22.04 ± 1.37, as shown in **Table 1.**

Table:I Distribution of the respondents by age. n=200

Age (In years)	Age of the respondents	
	Frequency	Percent
19 – 21	73	36.5
22 – 24	120	60.0
25 – 27	7	3.5
Total	200	100.0
Statistics	Mean ± SD = 22.04± 1.37, Minimum age=19 years, Maximum age = 27 years,	

Table: II Self-rated physical activity of the respondents. n=200

Self-rated physical activity	Frequency	Percent
Sedentary	100	50.0
Low	86	43.0
Moderate	14	7.0
Total	200	100.0

Among the all respondents (200), the majority of respondents, 50%, rated their physical activity levels as "Sedentary". A further 43% rated their physical activity levels as "Low", while only 7% rated their physical activity levels as "Moderate" which is shown in Table 2.

Table: III Self-rated academic performance of the respondents. n=200

Self-rated academic performance	Frequency	Percent
Excellent	5	2.5
Good	113	56.5
Average	82	41.0
Total	200	100.0

Table 3 shows the self-rated academic performance of the 200 participants in this study, the majority rated their performance as "good" (56.5%), followed by "average" (41.0%). A small proportion of participants (2.5%) rated their performance as "excellent."

Table 4 shows the distribution of self-rated physical fitness among 200 medical students who participated in the study. The majority of medical students (52.5%) rated their physical fitness level as good, followed by 30.5% rating it as fair, and 16.0% rating it as poor. Only 1.0% of medical students rated their physical fitness level as very good.

Table: IV Self-rated physical fitness level of the medical students. n=200

Self-rated physical activity	Frequency	Percent
Poor	32	16.0
Fair	61	30.5
Good	105	52.5
Very good	2	1.0
Total	200	100.0

Table: V Perception of physical activity's impact on academic performance among medical students.

Perception of physical activity's impact on academic performance	Frequency	Percent
Yes	146	73.0
No	23	11.5
Not sure	31	15.5
Total	200	100.0

Table 5 shows medical students' perception of the impact of their physical activity routine on their academic performance. Out of the 200 medical students surveyed, 146 (73.0%) believed that their physical activity routine has a positive impact on their academic performance. 23 (11.5%) did not believe that physical activity has any impact on their academic performance, while 31 (15.5%) were not sure.

Table: VI Distribution of the medical students by self-rated physical activity and self-rated academic performances.

Self-rated physical activity	Self-rated academic performance			Statistical inference
	Excellent	Good	Average	
Sedentary	3 (3.0%)	45 (45%)	52 (52%)	Pearson Chi-square value = 11.02 *p* value = .017
Low	2 (2.3%)	59 (68.6%)	25 (29.1%)	
Moderate	0 (0.0%)	9 (64.3%)	5(35.7%)	
Total	5 (2.5%)	113 (56.5%)	82 (41%)	
Fisher's Exact test p-value was taken to see the level of significance as cells of 2 by 2 table have expected value < 5.				

Table 6 shows there was a significant association between self-rated physical activity levels and self-rated academic performance (p=.017). Specifically, sedentary participants were more likely to have an average academic performance (52%), followed by the good academic performance (45%), and excellent academic performance (3%). In contrast, low physical activity participants had a higher likelihood of good academic performance (68.6%), followed by the average academic performance (29.1%), and a very low likelihood of excellent academic performance (2.3%). Similarly, moderate physical activity participants had a higher likelihood of good academic performance (64.3%), followed by the average academic performance (35.7%), and no participant reported excellent academic performance.Table 6 shows there was a significant association between self-rated physical activity levels and self-rated academic performance (p = .017). Specifically, sedentary participants were more likely to have an average academic performance (52%), followed by the good academic performance (45%), and excellent academic performance (3%). In contrast, low physical activity participants had a higher likelihood of good academic performance (68.6%), followed by the average academic performance (29.1%), and a very low likelihood of excellent academic performance (2.3%). Similarly, moderate physical activity participants had a higher likelihood of good academic performance (64.3%), followed by the average academic performance (35.7%), and no participant reported excellent academic performance.

Discussion

This cross-sectional study was carried out at Ad-din Sakina Women's Medical College Jashore to assess the association between self- rated physical activity and academic performance among medical students in Bangladesh among 200 respondents. The research results indicated that most (60%) of the participants were between the ages of 22 to 24 years old. Regarding self-rated physical activity, it was found that 50% respondents rated their physical activity levels as "Sedentary". Where 43% and 7% rated their physical activity levels as "Low", and "Moderate" respectively. This highlights the need for interventions to promote physical activity, as low levels of physical activity are associated with an increased risk for chronic diseases. In another study it was showed that sedentary behavior was associated with a range of negative health outcomes, including increased risk of chronic diseases such as cardiovascular disease, type 2 diabetes, and some cancers.[10] Regarding self-rated academic performance, it was found that majority rated their performance as "good" (56.5%), followed by "average" (41.0%). Only a small proportion of participants (2.5%) rated their performance as "excellent. It is important to note that self-rated performance is subjective and may not always reflect objective measures of academic achievement. Overall, the data on self-rated academic performance suggests that most participants are confident in their abilities and are performing at a level that they consider satisfactory or better. The study found that a majority of medical students rated their physical fitness level

as good (52.5%). However, a significant proportion rated their fitness level as fair (30.5%) or poor (16.0%), suggesting that there is room for improvement in terms of physical activity levels among medical students. Only a small percentage of students rated their fitness level as very good (1.0%), indicating the need for interventions to promote physical activity and improve overall fitness levels among this population. Regarding perception of the relationship between physical activity and academic performance, the study found that a majority of the participants (73.0%) believed that physical activity had a positive impact on their academic performance, indicating a positive attitude towards the benefits of exercise. On the other hand, a small proportion (11.5%) did not believe that physical activity had any impact on their academic performance, and a larger percentage (15.5%) were uncertain, suggesting a lack of knowledge or awareness of the potential benefits of physical activity on academic performance. But in terms of self-rated physical activity levels and self-rated academic performance, there was a significant association with higher levels of physical activity being associated with better academic performance. Another study found that there was positive association between fitness level and academic performance.[11]

Conclusion

This study finds significant association between self-rated physical activity and academic performances of the medical students of Bangladesh. Medical colleges in Bangladesh should include physical activity programs into their curricula and provide facilities to support increased physical activity among students. Further research should also be conducted to explore the factors that contribute to low physical activity levels among this population.

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