Original Article

Physical Activity Patterns Among Adolescents: A Cross-Sectional Study

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Abstract

The crucial role of physical activity (PA) in public health has long been acknowledged. However, there is a lack of studies examining PA levels in Sylhet, Bangladesh. This study aimed to analyze the patterns of PA among adolescents in Sylhet. **Methods :** A descriptive cross-sectional study was conducted, assessing the PA levels of 250 students aged 14-17 years, attending grades 8, 9, and 10 from two high schools in Sylhet. Data were collected through face-to-face interviews using a semi-structured questionnaire. The study was conducted over a period of six months from September, 2024, to February, 2025. Data were entered and analyzed using SPSS version 25. **Results :** Physical education (PE) classes had the highest frequency of regular physical activity (52%). However, unstructured times, such as lunch breaks, saw minimal participation in physical exercise. Maximum (70%) students engaged in no exercise during breaks or only took short walks. Sports like football (117) and badminton (179) had relatively higher participation rates, whereas activities such as swimming and dancing were less common. **Conclusion :** The findings emphasize the need for structured school-based public health programs to promote consistent physical activity. This is particularly important for older students and females to support their overall health and well-being.

Key Words: Adolescents, physical activity, well-being, Sylhet

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Introduction

Physical activity is one of the most important components for the physical and psychosocial development of children and adolescents. World Health Organization (WHO) recommends children and adolescents aged five to seventeen engage in moderate to vigorous physical activities for at least one hour daily to promote overall health. This can include activities such as playing, gaming, sports, transportation, household chores, leisure activities, and organized exercises as part of family, school, and community activities.[1] Regular physical activity is essential for reducing the risk of chronic diseases such as hypertension, heart disease, stroke, diabetes, and certain cancers. Additionally, it contributes to better bone health, enhanced functional capacity, improved mental well-being, and academic performance. According to WHO guidelines, children and adolescents should prioritize aerobic activities while engaging in muscle- and bone-strengthening exercises at least three times per week, minimizing sedentary behaviors and screen time to optimize health outcomes.[2]

Adolescence is generally considered a healthy phase of life; however, modifiable risk factors such as smoking, poor diet, and low levels of physical activity can significantly increase the risk of developing non-communicable diseases (NCDs) later in life.[3,4] In terms of the rates of obesity in adolescents, there has been an upward trend, with some experts estimating that almost 18% (324 million) are currently suffering from obesity. Concurrently, mental health disorders such as depression and anxiety are becoming more common.[5,6] Alarmingly, over half of the global adolescent population—approximately 962.8 million (53%)—resides in "multi-burden" countries that grapple with a mix of health challenges, including infectious diseases, injury, violence, and NCDs. Addressing these concerns is crucial for improving adolescent health

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and well-being.[7,8] A lack of regular physical activity is a significant contributor to non-communicable diseases (NCDs) and is associated with approximately 5.3 million deaths worldwide each year. Additionally, the financial impact of physical inactivity is substantial, with direct healthcare expenditures exceeding $54 billion annually, of which approximately $31 billion is funded by public resources.[9,10] WHO's Global Action Plan on Physical Activity 2018-2030 highlights the need to advocate for exercise to aid multiple sustainable development needs (SDGs). Beyond SDG-3 (good health and well-being), physical activity also contributes to SDG-5 (gender equality) and SDG-4 (quality education), as research suggests a positive correlation between physical activity and academic performance.[2,11,12,13] Considering physical inactivity as a leading preventable risk factor for NCDs in Bangladesh, this study aimed to investigate the patterns of physical activity (PA) among adolescents in this area.

Methodology

This descriptive cross-sectional study was conducted among adolescents in classes 8, 9, and 10 from two high schools in Sylhet district over six months, from September, 2024, to February, 2025. A purposive sampling technique was employed to select participants meeting the study's eligibility criteria. A total of 250 participants were selected according to predefined inclusion and exclusion criteria. The study included male and female students aged 14–17 years who willingly provided consent. However, Students who refused to fill out the survey or who had health problems in the week before data collection were omitted. A semi-structured, pre-tested questionnaire was used to collect data.

The questionnaire consists of two sections: a socio-demographic section and the **Physical Activity Questionnaire for Adolescents (PAQ-A).** The PAQ-A, developed by Kowalski, Crocker, and Kowalski (1997), consists of nine items designed to assess adolescents' general physical activity levels over the past seven days.[17] This recall-based research instrument identifies the most active periods of the day and week, the frequency of activities performed, and provides an overall activity score. Each item (except item 9) is scored on a scale from 1 to 5, where a score of 1–2 indicates low physical activity, 3 represents moderate activity, and 4–5 signifies high activity. The total physical activity score is calculated by summing the responses and dividing by the number of items.[14] To simplify interpretation and classification, the 5-point Physical Activity Questionnaire for Adolescents (PAQ-A) scale was converted into a 3-point Likert scale.[15] Participants who originally scored 1 (no physical activity) or 2 (very little activity) were grouped into the **No or Mild Activity** category. Those with a score of 3 (moderate activity) were classified as **Moderate Activity**, while participants scoring 4 (frequent activity) or 5 (very frequent activity) were categorized as **Regular Activity**. Questionnaire was completed from the respondents by face to face interview. Collected data were entered and analyzed by SPSS version 25. Data were analyzed using descriptive statistics- frequency, percentage, and chi-square tests were done. A statistically significant level of p= <0.05 was set for all statistical tests in the study.

Result

Table I: Distribution of the sociodemographic variables and physical activity levels of the study participants (N=250)

Sociodemographic variables		Frequency (%)	Physical activity score F (%)			P value
			Little or no physical activity	moderate physical activity	Regular physical activity	
Grade	8	69 (27.6)	3 (1.2)	41 (16.4)	25 (10)	.001
	9	94 (37.6)	19(7.6)	61 (24.4)	14 (5.6)	
	10	87 (34.8)	22 (8.8)	58 (23.2)	7 (5.6)	
Age	14-15	127 (50.8)	15 (6)	83 (33.2)	29 (11.6)	.040
	15-16	87 (34.8)	18 (7.2)	55 (22)	14 (5.6)	
	16-17	36 (14.4)	11 (4.4)	22 (8.8)	3 (1.2)	
Sex	Male	152 (61)	19 (7.6)	94 (37.6)	39 (15.6)	.001
	Female	98 (39)	25 (10)	66 (26.4)	7 (2.8)	
BMI	Underweight	105 (42)	24 (9.6)	61 (24.4)	20 (8)	.571
	Normal	118 (47.2)	17 (6.8)	80 (32)	21 (8.4)	
	Overweight	21 (8.4)	3 (1.2)	14 (5.6)	4 (1.6)	
	Obese	6 (2.4)	0 (0.0)	5 (2)	1 (0.4)	

The table I presents the distribution of sociodemographic variables and physical activity levels among 250 participants. Significant associations were found between physical activity levels and grade (p=0.001), age (p=0.040), and sex (p=0.001). Grade 9 students showed the highest engagement in moderate activity

(24.4%), while grade 8 had the most regular activity (10%). Younger students (14-15 years) were more active than older groups. Males (15.6%) participated in regular physical activity more than females (2.8%). BMI did not show a significant association with physical activity (p=0.571).

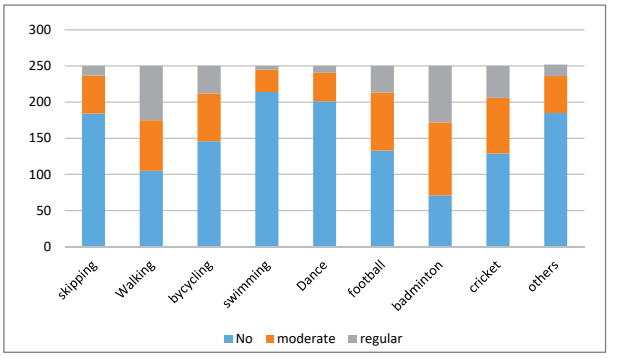

Fig: 1 The bar chart illustrates participation levels in various physical activities, categorized as "No," "Moderate," and "Regular." The data highlights that activities like **swimming (214) and dance (201)** have the highest non-participation rates, whereas **walking (75) and badminton** (78) show higher levels of regular engagement. **Football and cricket** display a balanced distribution across all levels. While many individuals engage in moderate activity, regular participation remains relatively low in most activities. The findings suggest a need to promote consistent physical activity, especially in sports with high non-participation rates, to encourage a healthier lifestyle.

Table 2. Distribution of the respondents according to their activity in last 7 days.

Physical Activity in last 7 days	No or mild Physical Activity	Moderate Physical Activity	Regular Physical Activity
Active in PE class	61 (24.4%)	59 (23.6%)	130 (52%)
Active at lunch time	175 (70%)	40 (16%)	35 (14%)
Active right after school	124 (49.6%)	49 (19.6%)	77 (30.8%)
Active in the evening	95 (38%)	55 (22%)	100 (40%)
Active in the last weekend	87 (34.8%)	80 (32%)	83 (33.2%)
Active in free time	118 (47.2%)	55 (22%)	77 (30.8%)

Table 2 shows that over the past week, more than half (52%) of the students engaged in regular physical activity during PE classes. A good number of students, 77 (30.8%) and 100 (40%), respectively, participate in after-school and evening activities regularly. However, respondents in the no/mild activity category were most prevalent at lunch and free time (175 (70%) and 118 (47.2%), respectively).

Discussion

The findings of this study indicate significant variations in physical activity levels among adolescents based on sociodemographic factors such as grade level, age, and sex. The results also showed that PA levels decline with an increase in BMI, although the result is not significant. .These results align with previous research emphasizing the decline in physical activity with increasing age and academic grade, the gender disparity in activity levels, and the influence of BMI on physical activity participation.[16]

In this observational study, we observed that grade 8 students had the highest participation rates, while Grade 10 students had the lowest. This decline in physical activity with increasing grade and age aligns with previous research, which suggests that older adolescents participate less in organized physical activities probably due to heavier academic workloads, shifting social priorities, and declining motivation. These trends highlight the importance of interventions aimed at sustaining physical activity engagement among older students.[17]

Males were significantly more active than females, with 15.6% of male students engaging in regular physical activity compared to 2.8% of females. This aligns with studies showing lower female participation due to self-efficacy, societal norms, and access barriers. Gender-specific programs, mentorship, and social support could help promote equitable participation.[18]

Students with normal BMI had the highest participation in regular physical activity (8.4%), while those classified as obese had the lowest (0.4%). Previous research has shown an inverse relationship between BMI and physical activity, where higher BMI is associated with decreased engagement in physical exercise.[19,20,21]

In this study sports like football and badminton had greater levels of regular participation, while swimming and dancing had the greatest rates of non-participation, according to the bar chart showing participation in various physical activities. Similar findings from other studies imply that participation in various physical activities may be influenced by cultural preferences, skill level, and accessibility.[22]

The distribution of physical activity levels across different time periods underscores the importance of structured programs. With 52% of students engaging in regular physical activity during PE classes, school-based interventions play a key role in promoting exercise). However, unstructured periods like lunchtime and free time saw the highest proportion of students in the no/mild activity category (70% and 47.2%, respectively), highlighting the need for school policies that encourage active play and participation during breaks.[21]

Additionally, participation rates in after-school (30.8%) and evening (40%) activities suggest that many students

stay active beyond school hours. Research indicates that extracurricular programs and community-based initiatives contribute to increased physical activity levels. Promoting after-school sports and ensuring access to recreational spaces may further enhance student engagement in physical activity.[23]

Conclusion

The results of the study reveal variations in adolescent physical activity levels, showing that older students and females tend to participate less in physical activities. Technological advances are making young people more sedentary and spend more time indoors. The decline in physical activity with age requires immediate attention. Schools can take the lead by incorporating outdoor activities and structured physical education programs that promote a supportive environment and encourage positive habits that persist into adulthood. Educational institutions can also launch awareness campaigns, implement active learning programs, and collaborate with parents and the local community to emphasize the importance of physical activity and promote healthier lifestyles.

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