

ORIGINAL ARTICLE:

Exploring the Relationship between Screen Time and Physical Activity Levels in Medical Students.

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ABSTRACT

OBJECTIVE

To explore the relationship between academic and recreational screen time and physical activity levels in medical students in Pakistan, taking into account demographic and lifestyle factors.

STUDY DESIGN

Cross-sectional study

PLACE & DURATION OF STUDY

The study was conducted at Liaquat National Hospital & Medical College and Nishtar Medical University from October 2024 to March 2025.

METHOD

A total of 374 medical students were recruited through stratified random sampling technique. The data were collected using a structured questionnaire that assessed screen time and physical activity by using the International Physical Activity Questionnaire (IPAQ). Statistical analyses comprising Chi-square tests and binary logistic regression were calculated using SPSS version 23, with a significance level at $p \leq 0.05$.

RESULTS

The participants reported an average academic screen time of 2.43 ± 1.39 hours per day and recreational screen time of 3.58 ± 1.48 hours per day. Recreational screen time negatively impacted academic performance for 59.9% of students, with only 5.6% engaging in physical activities concurrently. Physical activity levels were low among 65% of participants. Barriers to physical activity included a lack of motivation (47.9%) and academic commitments (35.6%). Male students and those over the age of 20 exhibited higher levels of physical activity. Excessive academic screen time was strongly associated with low physical activity ($p < 0.001$).

CONCLUSION

Medical students in Pakistan demonstrate low levels of physical activity, which are further exacerbated by excessive screen time, particularly for academic purposes. Interventions aimed at promoting balanced screen use and encouraging physical activity are essential.

KEYWORDS

Health Behavior, Exercise, Sedentary Behavior, Screen Time, Students, Public Health, Medical, Young Adults

INTRODUCTION

In recent years, the high prevalence of screen-based sedentary behaviour, has become a profound concern among undergraduate students worldwide.¹⁻³ Digital time includes academic activities, such as eLearning & virtual instruction as well as recreational pursuits like interactive media and social gaming. The upsurge in passive behavior among learners has raised alarms due to its potential fallout on physical

activity levels and fitness.^{4,5} The fact that these behaviors co-occur is critical to developing impactful programs that encourage better health outcomes in this group.⁶

Campus life involves distinct obstacles that can affect student behavioral health indicators.^{7,8} Surveys suggest that screen-based sedentary behaviour contribute to comorbidities.^{9,10} Contrarily, exercise offers extensive health gains such as improved heart health and reduced cognitive decline.^{11,12}

Nevertheless, the intricate link between academic and recreational screen time with physical activity is multifaceted.¹³

It is essential to develop focused approaches to encourage active alternatives (active play, reading) among campus students. There is a growing body of evidence regarding sedentary behavior & activity yet specifically targeted data on medical students in Pakistan is constrained, ignoring the unique academic pressures they face. Studies must separate educational from entertainment screen time, as many fail to differentiate between the two, which is particularly relevant in high-pressure academic environment. Furthermore, understanding the cultural context, including social norms and lifestyle practices, is essential for developing culturally appropriate interventions that promote balanced lifestyles among Pakistani medical students.

Research aims to

- To measure the amount of time medical students dedicate to academic and recreational screen activities.
- To assess the physical activity levels of college students.
- To examine the relationship between academic screen time, recreational screen time and levels of physical activity.

METHOD

Participants

This research was undertaken at Liaquat National Hospital & Medical College, Karachi and Nishtar Medical University, Multan, Pakistan, from October 2024 to March 2025 after Ethical Approval was obtained, and all participants gave written informed consent. Stratified random sampling was employed. Keeping percentage frequency of study outcome 41.8 %¹⁴ by keeping 95% confidence interval and precision at 5%. A sample size of 374 respondents was calculated using the formula:¹⁵

Sample size $n = [DEFF * Np(1-p)] / [(d^2 / Z^2_{1-\alpha/2} * (N-1) + p * (1-p))]$

The research involved 200 students from each institution who met the inclusion and exclusion criteria were included. Data confidentiality was upheld. The study included students who were currently enrolled in a medical program at the university and who provided informed consent to participate. Students with medical conditions, physical disabilities, or those who declined to give consent were excluded.

Instruments

A self-report questionnaire was used to collect the data, which comprised a demographic sheet and the International Physical Activity Questionnaire (IPAQ), a validated instrument employed to gauge physical activity. It captures both the total MET (Metabolic Equivalent Task) minutes per week of activity and the duration of sitting. Members stated their physical movements over the past seven days through seven exploratory questions. Physical activity was ordered into three categories: Low (1.5-3.0 METs), moderate (3.0-6.0 METs), and vigorous (>6.0 METs) or expressed as a continuous variable (MET minutes per week).

The IPAQ has high reliability, with a Cronbach's alpha of 0.80, indicating good internal consistency.¹⁶

Procedure

The research was initiated after ethical approval from the Institutional Review Board of the concerned institutional authorities (ref. 18938/NMU, dated: 2-10-2024), from October 2024 to March 2025. Participants were chosen through stratified random sampling. Data analysis was executed in SPSS v23. Ages were summarised using mean and standard deviation, and frequencies and percentages were determined for screen time and physical activity. Chi-square evaluated the link between physical activity and demographic factors. The predictors of physical activity were identified using binary logistic regression. Significance was established for the data when p was less than or equal to 0.05.

RESULTS

Among the 400 participants sampled, there was a marginally higher proportion of females 52.9% compared to male participants. The median age was 21.48 ± 1.36 years, with 73% being young adults. Members were mainly in their fourth year 34.8%, followed by final-year students 24.6%, while fewer participants were from the first, second, and third years. Among the participants, 60.2% were single, 96.8% slept six or more hours at night, and 13.1% consumed processed foods regularly.

Table 1 illustrates the association of physical activity levels with demographic factors. Males 65.7% demonstrated higher levels of moderate to high activity compared to females 34.3%. Participants over the age of 20 exhibited greater activity levels 61.5% than those aged 20 or younger 38.5%. Additionally, study year ($p < 0.001$), marital status ($p < 0.001$), fast food consumption ($p < 0.001$), and excessive screen time ($p < 0.001$) were significantly associated with physical activity levels. These findings underscore the demographic and lifestyle factors that influence physical activity.

Table 1
Association of Physical Activity Levels with Demographic and Lifestyle Factors Based on IPAQ (n=374).

	Physical activity		p-value
	Low	Moderate/High	
Gender			
Male	19(14.1)	157 (65.7)	<0.001*
Female	116 (85.9)	82 (34.3)	
Age Group			
≤20 years	9 (6.7)	92 (38.5)	<0.001*
>20 years	126 (93.3)	147 (61.5)	
University year			
1st year	4 (3)	47 (19.7)	<0.001*
2nd year	6 (4.4)	49 (20.5)	
3rd year	32 (23.7)	14 (5.9)	
4th year	9 (6.7)	121 (50.6)	
Final year	84 (62.2)	8 (3.3)	
Martial Status			
Single	133 (98.5)	92 (38.5)	<0.001*
Married	2 (1.5)	147(61.5)	
Sleeping Hours			
<6 hours	4 (3)	8(3.3)	1.000
≥6 hours	131 (97)	231(96.7)	
Consumption of fruits/vegetables per day			
Always	5 (3.7)	18(7.5)	0.284
Sometimes	123 (91.1)	212(88.7)	
Rarely	7 (5.2)	9(3.8)	
Consumption of fast-food/sugary snacks per week			
Often	31 (23)	18(7.5)	<0.001*
Sometimes	96 (71.1)	215(90)	
Rarely	8 (5.9)	6(2.5)	
Excessive screen time-Academic activities			
Yes	90 (66.7)	31(13)	<0.001*
No	45 (33.3)	208(87)	
Excessive screen time-Recreational activities			
Yes	108 (80)	218(91.2)	0.002*
No	27 (20)	21(8.8)	

The Chi-square/fisher exact test was applied. *p-values: ≤0.05 were considered significant.

Table 2 shows that males had significantly lower odds of active lifestyle than females (AOR 0.328, p=0.017). Learners in 1st to 4th years showed hypoactive compared to seniors. Single learners had markedly higher odds of being physically active than married students (AOR 60.52, p<0.001). Prolonged screen use for both academic and recreational purposes was not significantly associated with physical activity after adjustment.

Table 2
Association of Personal & behavioral characteristics with physical activity levels among participants (n=364).

	Un-Adjusted Odds ratio (95% CI)	p-value	Adjusted Odds ratio (95% CI)	p-value
Gender				
Male	0.086 (0.049-0.149)	<0.001*	0.328 (0.131-0.819)	0.017*
Female	REF		REF	
Age Group				
≤20 years	0.114 (0.055-0.236)	<0.001*	0.179 (0.026-1.248)	0.082
>20 years	REF		REF	
Study year				
1st year	0.008 (0.002-0.028)	<0.001*	0.076 (0.007-0.821)	0.034*
2nd year	0.012 (0.004-0.036)	<0.001*	0.027 (0.003-0.232)	0.001*
3rd year	0.218 (0.083-0.568)	0.002*	0.137 (0.026-0.710)	0.018*
4th year	0.007 (0.003-0.019)	<0.001*	0.025 (0.006-0.101)	<0.001*
Final year	REF		REF	
Martial Status				
Single	106.255 (25.673-439.762)	<0.001*	60.520 (11.296-324.253)	<0.001*
Married	REF		REF	
Sleeping Hours				
<6 hours	0.882 (0.261-2.984)	0.840		
≥6 hours	REF			
Consumption of fruits/vegetables per day				
Rarely	REF			
Sometimes	0.746 (0.271-2.053)	0.570		
Always	0.357 (0.088-1.447)	0.149		
Consumption of fast-food/sugary snacks per week				
Rarely	REF			
Sometimes	0.335 (0.113-0.992)	0.048*		
Often	1.292 (0.386-4.320)	0.678		
Excessive screen time-Academic activities				
Yes	13.419 (7.978-22.572)	<0.001*	0.528 (0.188-1.483)	0.226
No	REF		REF	
Excessive screen time-recreational activities				
Yes	0.385 (0.208-0.713)	0.002*	1.134 (0.351-3.663)	0.833
No	REF			

Note: CI: confidence interval, REF: Reference category. Binary logistic regression applied.
*p-value: ≤0.05 were considered significant.

Figure 1 explains a notable disparity in screen usage, revealing that only 32.4% of respondents use screens for study needs, while a considerable 87.2% involve in recreational activities. This fact shows a clear preference for leisure over educational engagement.

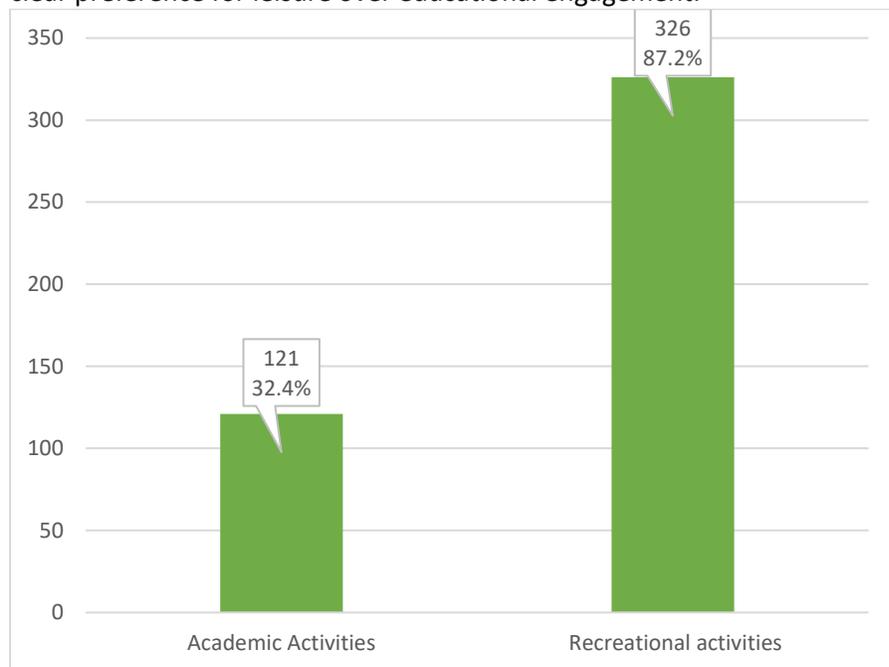


Figure 1: Digital consumption for academic and recreational activities.

DISCUSSION

Data suggest that higher engagement with digital media, resulting from academic demands, may affect the physical activity levels of many graduating medical students. Various studies have probed the linking between higher digital engagement and sedentary behavior. To illustrate, research carried out in Punjab found that teenagers' device usage escalated, leads to low activity levels.¹⁷ Likewise, Stiglic et al. (2019), found that digital dependency was correlated with suboptimal lifestyle among college students.¹⁸ Data shows a high prevalence of evening smartphone use (84%) among medical students, with 94.9% reporting 1–2 hours of daily screen time.

A study found that 59% reported a marked decrease in physical activity during lockdowns, which correlated with screen overuse¹⁹. Research conducted on medicos indicated that digital dependency adversely affects their wellness, which could derail their studies.²⁰ Equally, a survey showed a meaningful link among chronic screen time and digital burnout. It suggested that digital overload harmed well-being and also hinder learning.²¹

Analysis suggests that medical students in Pakistan were not engaging in adequate physical activity. specifically, 49.5% of these students demonstrated average workout, while 65% were ranked as having low levels. Nearly half (48.2%) of surveyed medical students did not participate in any physical training during the COVID-19 lockdown, which raises concerns for this population.²² In light of prior research, Academic obligations (35.6%) and disinterest (47.9%) represented two deterrents to engaging in

exercising. Educational studies in Pakistan revealed that the primary challenges to physical activity were time constraints and a lack of motivation.²³

A Karachi study uncovered that males exhibited higher levels of workouts than female counterparts. This evidence corroborates the observed gender disparities in exertion levels, where males (65.7%) exhibited a 61.5% accelerated active lifestyle as opposed to females (34.3%).²⁴

A case study of university students in Lahore revealed a predominantly sedentary lifestyle among the working population.²⁵ The substantial link between increased academic screen time and decreased bodily movement ($p < 0.001$) is validated by studies on medical trainees during the COVID-19 lockdown. This study revealed an inverse relationship between the students' levels of physical activity and their screen exposure.²²

Limitations

This study is limited by the cross-sectional design, which restricts the establishment of causality between screen time and physical activity patterns. Additionally, dependence on self-reported data may introduce recall bias, potentially affecting the accuracy of the responses.

CONCLUSION

Healthcare students devoted substantial time to sedentary screen-based activities late-night with more than half reporting insufficiently active. Attributes such as age, relationship status, academic year, gender, and processed food intake all influence the strong correlation between academic screen time and physical inactivity. The study encouraged reduced screen dependence to foster physical health.

Recommendations

These findings imply that excessive screen time, particularly in private institutions, poses risks to students' health and academic performance, necessitating targeted interventions like fitness programs and screen-time guidelines, especially for females and younger students.

CONFLICT OF INTEREST

None

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