

SCREEN TIME AND PHYSICAL ACTIVITY PATTERNS AMONG MEDICAL STUDENTS: A COMPARATIVE ANALYSIS OF PRIVATE AND PUBLIC INSTITUTIONS

Nimra Akhtar¹, Hamna Khan²

¹ Department of Community Medicine, Liaquat National Medical College, Karachi, Pakistan

² Department of Community Medicine, Nishtar Medical University, Multan, Pakistan

Copyrights: ©2026. The Author(s).

ABSTRACT

Objectives: This study aimed to compare academic and recreational screen time, as well as physical activity levels, among medical students enrolled in public and private institutions in Pakistan. Furthermore, it explored the association between screen exposure and physical activity patterns within this population.

Study Design: Cross-sectional study.

Place and Duration of Study: The study was carried out at two institutes, Liaquat National Medical College and Nishtar Medical University from 10th January 2025 till 30th April 2025.

Patients and Methods: A total of 374 MBBS students, 187 from each institution from first to final year were recruited using stratified random sampling. Data were collected through a structured questionnaire. Physical activity levels were assessed using the International Physical Activity Questionnaire (IPAQ). Statistical analyses were performed using SPSS version 27, with Binary Logistic regression employed to examine associations.

Results: This study showed the difference in screen time between private and public institution students is statistically significant based on the study's findings ($p < 0.001$ for related screen time comparisons). Most (65%) exhibited low physical activity, with males, older (>20 years), and married students more active; barriers were motivation (47.9%) and academics (35.6%). Academic screen time strongly reduced physical activity ($p < 0.001$), recreational screen time moderately ($OR = 0.385$, $p = 0.002$). Recreational screen use impacted academic performance negatively for 59.9%, linked to burnout. Interventions are critical to curb screen time and promote activity, especially in private colleges.

Conclusions: Medical students, particularly those in private colleges exhibit excessive screen time and low physical activity levels (65%), posing significant health risks. Academic screen use was strongly linked to reduced physical activity, with key barriers including lack of motivation (47.9%) and academic pressure (35.6%). These findings highlight the urgent need for targeted interventions, such as institutional screen-time guidelines, motivational workshops, and accessible fitness programs, to foster healthier digital habits and active lifestyles.

Keywords: Medical, Physical Inactivity, Public Health, Screen Time, Sedentary Lifestyle, Students

INTRODUCTION

Medical students experience significant academic pressure, requiring long hours of study, and often depend heavily on digital devices for learning, research, and

communication. This continuous exposure to screens can lead to increased sedentary behavior and reduced participation in physical activity.¹

According to World Health Organization (WHO) physical inactivity is now identified as the fourth leading risk factor for global mortality. Physical inactivity levels are rising in many countries with major implications for the prevalence of non-communicable diseases (NCDs) and the general health of the population worldwide.² Conversely, screen time has dramatically increased, with research indicating that adolescents spend a significant portion of their day using digital devices.³ This sedentary lifestyle is linked to a variety of health

Correspondence:

Dr. Nimra Akhtar

Department of Community Medicine

Liaquat National Medical College, Karachi, Pakistan

Email: nimraakhtar84@gmail.com

Received: 15 Apr 2025; revision received: 05 Sep 2025; accepted: 25 Sep 2025

DOI: <https://doi.org/10.33897/fumj.v8i1.201>

How to Cite: Screen time and physical activity patterns among medical students: a comparative analysis of private and public institutions. Foundation University Medical Journal. 2026; 8(1): 46-52

risks, including obesity, cardiovascular disease, type 2 diabetes, musculoskeletal disorders, and mental health issues such as anxiety and depression.^{4,5}

Globally, medical students have reported unprecedented levels of screen time, often surpassing academic requirements. According to Liebig et al., daily screen exposure among medical students worldwide has significantly increased, particularly in private institutions where the integration of digital resources is more advanced.⁶ Additionally, Deng et al. (GF) found that excessive screen time, combined with decreasing levels of physical activity, significantly affected students' overall well-being, adversely impacting their academic performance and mental health.⁷

In the context of Pakistan, recent studies highlight a concerning trend in screen time usage among medical students. According to Nisar et al., medical students in Pakistan spend an average of 7 to 9 hours daily on screens, which raises significant health concerns.⁸ This issue is particularly prevalent in private medical institutions, where Rahman S et al. reported various adverse effects on students' physical and mental health due to excessive screen exposure.⁹ Furthermore, a study conducted in Peshawar by Gul N et al. revealed a prevalence of 74.1% for Digital Eye Strain (DES) among medical students, highlighting the immediate physical effects of prolonged screen usage.¹⁰

While limited research has specifically focused on comparing screen time and physical activity levels between private and government medical students in Pakistan, Few studies offer valuable insights. Khidri FF et al. found that medical students in Sindh, Pakistan, typically engaged in 2 to 4 hours of screen time during regular academic periods, with students in private institutions reporting higher usage due to a greater reliance on digital resources.¹¹ Additionally, Roy et al. (2023) demonstrated that physical inactivity is an increasing concern among medical students, with those attending public institutions exhibiting relatively higher levels of physical activity, likely due to differences in campus infrastructure.¹² Nasir U et al. further highlighted that variations in screen time and lifestyle patterns among medical students are influenced by factors such as socioeconomic background, institutional resources, and academic schedules.¹³ The increasing reliance on digital devices among medical students, driven by academic demands, has been linked to increased sedentary behavior and reduced physical activity, posing significant risks to their physical and mental well-being.

This study aimed to address the gap by examining the association between academic and recreational screen time and physical activity levels among private and government medical students in Pakistan.

PARTICIPANTS AND METHODS

A cross-sectional study was conducted at Liaquat National Medical College and Nishtar Medical University from 10th January 2025 to 30th April 2025. Liaquat National Medical College (Karachi) and Nishtar Medical University (Multan) were chosen as representative private and public medical institutions, respectively, due to their contrasting digital resource availability, infrastructure, and student demographics. The study population consisted of individuals currently enrolled as first- to final-year medical students at these institutions. The inclusion criteria required participants to be within the specified age range 21.48 ± 1.36 years, actively enrolled in the medical program, and to have provided informed consent to participate. Conversely, students with mental health conditions or physical disabilities, as well as those who declined to give consent, were excluded from the study.

The sample size was determined using a previously reported 41.8% physical activity level¹⁴, resulting in a total sample size of 374 participants, with a 95% confidence interval and a 5% margin of error.¹⁵ The sample size was calculated using openEpi software.

A probability stratified random sampling technique was employed, selecting a total of 187 students from each institution. Each student was approached and provided with an explanation of the study. Written informed consent was obtained from every participant. Data were subsequently collected through interviews with the students using the study questionnaire. Each interview lasted approximately 15 minutes.

Approval of study was taken from Institutional Ethical Review Board (Ref. # 1503/NMU) dated 31st January, 2025.

The study questionnaire consisted of three sections; section-A for demographic information, section-B for screen time Academic (study-related) and recreational (social media, gaming, etc.) questions, and section-C for International Physical Activity Questionnaire (IPAQ). Screen time was measured in hours per day.

Section-A contained 9 questions about demographic profile of participants. Section-B contained screen time assessment (academic and recreational). Screen time

measured in hours per day. The questionnaire was piloted among 30 students to ensure clarity and reliability. Face validity was assessed through expert feedback, and internal consistency was measured using Cronbach's alpha ($\alpha = 0.82$). Section-C contained International Physical Activity Questionnaire (IPAQ),¹⁶ a validated tool that measures total physical activity in MET-minutes per week and the time spent sitting. It consists of seven open-ended questions that prompt individuals to recall their physical activity over the past seven days. The IPAQ has demonstrated high reliability, with a Cronbach's alpha of less than 0.80. Results were reported in categories (low activity levels, moderate activity levels or high activity levels) or as a continuous variable (MET minutes a week). MET minutes represent the amount of energy expended carrying out physical activity. Intensity levels are categorized based on metabolic equivalent tasks (METs): light (1.5-3.0 METs), moderate (3.0-6.0 METs), and vigorous (>6.0 METs).¹⁷

Data were entered and analyzed using SPSS version 27. Descriptive analyses, including frequencies and percentages, were conducted for categorical variables, while means and standard deviations were calculated for screen time and physical activity levels. Binary Logistic regression analysis was performed to examine associations between various categories of screen time and levels of physical activity. The significance level was set at 0.05.

RESULTS

Table I summarizes the demographics of 374 participants, mostly females (52.9%) with an average age of 21.48 years; the majority were over 20 years old, single, and in their fourth or final academic year. Most reported adequate sleep, occasional fruit and vegetable intake, frequent fast food consumption, and minimal tobacco use.

The figure 1 illustrates that 121 participants (32.4%) used screens for academic purposes, while 326 (87.2%) engaged in recreational screen activities (e.g., social media, gaming), highlighting a significant preference for recreational over academic screen use ($p < 0.001$).

In Table II Binary logistic regression analysis revealed significant associations between demographic/lifestyle factors and physical inactivity (low activity levels). Females (95% CI: 1.24-2.67, $p = 0.002$) and younger students (≤ 20 years 95% CI: 1.12-2.43, $p = 0.011$) had higher odds of inactivity compared to males and older

students. Single students (95% CI: 1.05-2.12, $p = 0.027$) and those in lower academic years (95% CI: 1.02-1.87, $p = 0.037$) were also more likely to be inactive. Excessive academic screen time was strongly associated with physical inactivity (95% CI: 0.12-0.39, $p < 0.001$), indicating that higher academic screen time significantly predicts lower physical activity. Recreational screen time showed a moderate association (95% CI: 0.21-0.71, $p = 0.002$).

DISCUSSION

This study demonstrates a significant association between elevated screen time and reduced physical activity among medical students in Pakistan, with private institution students reporting higher screen usage and lower physical activity levels (65% low activity) compared to public institution counterparts. A strong negative correlation was observed between academic screen time and physical activity, with recreational screen time showing a moderate effect. Key barriers to physical activity included lack of motivation (47.9%) and academic commitments (35.6%), while males (65.7%), older students (61.5%), and married individuals exhibited higher activity levels^{22,24}. Additionally, 59.9% of students reported recreational screen time negatively impacting academic performance, consistent with its association with burnout and diminished well-being.¹

These findings align with prior research, such as a Pakistani study during the COVID-19 lockdown noting increased screen time correlated with reduced physical activity in children¹⁸, and Stiglic et al. (2019), who reported similar trends among college students.¹⁹ In another study done by Irshad K et al., also found that screen time of medical students has a significant correlation with burnout and has the potential to cause physical and mental health ailments.²⁰

Studies on medical and dental students further corroborate the adverse effects of prolonged screen time on physical and mental health, potentially hindering academic success.^{21,22} Gender and age disparities in physical activity are consistent with Karachi-based research, where males and older students were more active.^{23,14} Sedentary behaviors linked to screen use, as observed in Lahore, reinforce the need for intervention.²⁴ However, some studies suggest educational screen time may not uniformly reduce physical activity, depending on motivation or context, contrasting with the significant barriers of academic pressure and disinterest identified

here.²² Gender disparities may also vary in settings with equitable resource access, indicating contextual influences. 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.

This study's strength lies in its comparative analysis of screen time and physical activity between private and public medical institutions, utilizing a validated tool (IPAQ) and employing stratified random sampling to ensure reliable results. This study is limited by its cross-sectional design, which prevents the establishment of causality between screen time and physical activity patterns. Additionally, reliance on self-reported data may introduce recall bias potentially affecting the accuracy of the responses.

CONCLUSION

The study found that medical students in Pakistan spend a significant amount of time on screens. excessive screen time related to academic work was strongly associated with reduced physical activity. Furthermore, students attending private institutions reported higher screen time and lower levels of physical activity compared to their counterparts in public institutions.

These findings underscore the urgent need for targeted interventions, such as institutional policies limiting non-essential academic screen time, integrating physical activity breaks into academic schedules, providing subsidized gym access, and implementing motivational workshops to address barriers.

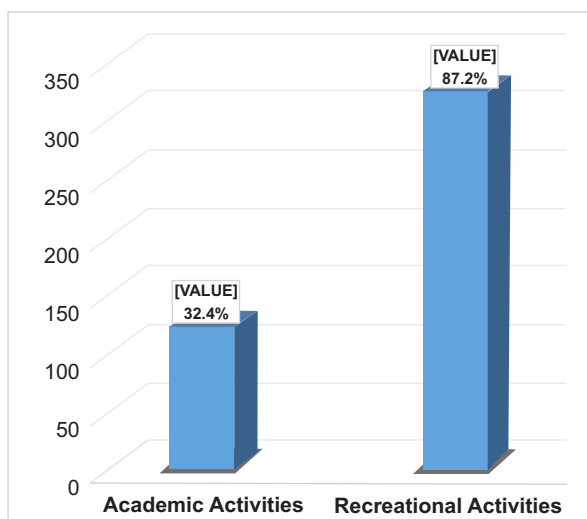


Fig 1: Proportion of Participants Engaging in Academic and Recreational Screen Time

Table I: Demographic characteristics of the study population (n=374)

Variables	Frequency (%)
Gender	
Male	176(47.1)
Female	198(52.9)
Age(years)	
mean± std. dev	21.48±1.36
Groups	
≤ 20 years	101(27)
>20 years	273(73)
Study year	
1st year	51(13.6)
2nd year	55(14.7)
3rd year	46(12.3)
4th year	130(34.8)
Final year	92(24.6)
Marital Status	
Single	225(60.2)
Married	149(39.8)
Sleeping Hours	
<6 hours	12(3.2)
≥ 6 hours	362(96.8)
Consumption of fruits/vegetables per day	
Always	23(6.1)
Sometimes	335(89.6)
Rarely	16(4.3)
Consumption of fast-food/sugary snacks per week	
Always	49(13.1)
Sometimes	311(83.2)
Rarely	14(3.7)
Current smoker/ tobacco user	
Yes	2(0.5)
No	372(99.5)

Acknowledgments

We are thankful to all the MBBS Students of LNHMC & Nishtar Medical University for their participation.

Disclaimer: None

Conflict of Interest: None

Ethical Statement: Approval of study was taken from Institutional Ethical Review Board (Ref. # 1503/NMU).

Source of funding: None

Table II: Association of demographic and lifestyle factors with physical activity levels among participants (n=364)

	Un-Adjusted		Adjusted	
	Odds ratio (95% CI)	p-value	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 (reference category)		REF	
Martial Status				
Single	106.255(25.673-439.762)	<0.001*	60.520(11.296-324.253)	<0.001*
Married	REF (reference category)		REF	
Sleeping Hours				
<6 hours	0.882(0.261-2.984)	0.840		
≥6 hours	REF (reference category)			
Consumption of fruits/vegetables per day				
Rarely	REF (reference category)			
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(reference category)			
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 (reference category)		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(reference category)			

CI: confidence interval, REF: Reference category

Binary logistic regression was applied.

*Significant at 0.05 level.

Authors' Contributions:

Nimra Akhtar: Conception of study/Designing/ Planning, Experimentation/Study Conduction, Analysis/ Interpretation/Discussion

Hamna Khan: Manuscript Writing, Critical Review, Analysis/ Interpretation/Discussion

REFERENCES

1. Rehman S, Ali H, Sami Z, Sarfraz MR, Ata M. Effects of excessive screen time during online teaching on the physical and mental health of medical and dental students. *J Pak Med Assoc.* 2023 ;73(10):2073-6. DOI: <http://doi.org/10.47391/JPMA.8124>.
2. Global recommendations on physical activity for health. World Health Organization. Available at: <https://www.who.int/publications/i/item/9789241599979> (Accessed: 08 May 2025).
3. Twenge JM, Martin GN, Campbell WK. Decreases in psychological well-being among American adolescents after 2012 and links to screen time during the rise of smartphone technology. *Emotion.* 2018 ;18(6):765. DOI: <https://doi.org/10.1037/emo0000403>
4. World Health Organization. Global action plan on physical activity 2018-2030: more active people for a healthier world. World Health Organization; 2019 Jan 21.
5. Mak YW, Wu CS, Hui DW, Lam SP, Tse HY, Yu WY et al. Association between screen viewing duration and sleep duration, sleep quality, and excessive daytime sleepiness among adolescents in Hong Kong. *Int J Environ Res Public Health.* 2014;11(11):11201-19. DOI: <https://doi.org/10.3390/ijerph11111201>
6. Liebig L, Bergmann A, Voigt K, Balogh E, Birkas B, Faubl N et al. Screen time and sleep among medical students in Germany. *Sci Rep.* 2023;13(1):15462. DOI: <https://doi.org/10.1038/s41598-023-42039-8>.
7. Deng GF, Wen Y, Cheng J, Huang B, Liu N. Analysis of the associations between moderate-to-vigorous physical activity and screen time on psychological symptoms among university students: a cross-sectional survey based on six geographic regions in China. *BMC psychiatry.* 2024 ;24(1):504. DOI: <https://doi.org/10.1186/s12888-024-05945-3>
8. Nisar N, Salman R, Farooq S. Screen Time and its Relation with Ophthalmic Problems among Medical Students. *Pakistan Journal of Medical & Health Sciences.* 2022;16(12):295. DOI: <https://doi.org/10.53350/pjmhs20221612295>
9. Dane F, Alamneh YM, Desta M. Computervisionsyndromeand predictors among computer users in Ethiopia: a systematic review and meta-analysis. *Trop Med Health* 2022;50(1):26. DOI: <https://doi.org/10.1186/s41182-022-00418-3>.
10. Gul N, Haider I, Osama M, Khattak AR. Impact of screen time on digital eye strain and visual acuity among medical students in Peshawar, Pakistan. *KMUJ.* 2023;15(4):229-33. DOI: <https://doi.org/10.35845/kmuj.2023.23402>
11. Khidri FF, Riaz H, Bhatti U, Shahani KA, Kamran Ali F, Effendi S. Physical activity, dietary habits and factors associated with depression among medical students of Sindh, Pakistan, during the COVID-19 pandemic. *Psychol Res Behav Manag.* 2022;15:1311-23. DOI: <https://doi.org/10.2147/PRBM.S364540>
12. Roy N, Tanveer M, Ardigo LP, and Badicu G. Effects of a College-Based Intervention to Increase Physical Activity and Decrease Screen Time Among Pakistani Students: A Randomized Controlled Trial. *Research Square.* 2025(1);1-19. DOI: <https://doi.org/10.21203/rs.3.rs-5875586/v1>
13. Nasir U, Butt AF, Choudry S. A study to evaluate the lifestyle of medical students in Lahore, Pakistan. *Cureus.* 2019;11(3):e4328. DOI: <https://doi.org/10.7759/cureus.4328>.
14. Zuhair HMU, Fatima K, Hussain U, Ayub A. Assessment of eating habits, lifestyle and physical activity among medical and dental students of Faisalabad Medical University. *Pak J Med Sci.* 2024;40(3Part-II):473-76. DOI: <https://doi.org/10.12669/pjms.40.3.7323>
15. Kevin M. Sullivan, A.G.D. Toolkit Shell for developing new applications, OpenEpi. Available at: <https://www.openepi.com/SampleSize/SSPropor.htm> (Accessed: 08 May 2025).

16. Hagströmer M, Oja P, Sjöström M. The International Physical Activity Questionnaire (IPAQ): A study of concurrent and construct validity. *Public Health Nutr.* 2006;9(6):755–62. <https://doi.org/10.1079/phn2005898> DOI: 10.1079/phn2005898
17. Gill A, Afzal F, Aamer H, Khan A, Khan AA, Khan AA et al. The Impact of exposure to screen during COVID-19 Lockdown on the General health of students in Punjab, Pakistan. *Medical & Clinical Research.* 2021; 6(7): 638 - 43. DOI: 10.33140/MCR.06.07.04
18. Stiglic N, Viner RM. Effects of screen time on the health and well-being of children and adolescents: a systematic review of reviews. *BMJ Open.* 2019;9(1):e023191. DOI: <https://doi.org/10.1136/bmjopen-2018-023191>
19. Tahir S, Imran N, Haider II, Mustafa AB, Rehman A ur, Azeem MW, et al. A study to evaluate the impact of COVID-19 on the Lifestyle of Medical Students. *Pak J Med Sci.* 2022;38(7):1730-37. DOI: <https://doi.org/10.12669/pjms.38.7.603>
20. Irshad K, Azam F, Ashraf I, Shaheen A, Kazmi N, Ahmed A et al. Relationship Of Burnout with Screen Time In Under Graduate Medical Students. *Proceedings.* 2023;37(4):15-20. DOI: <https://doi.org/10.47489/szm>
21. Ullah I, Islam MS, Ali S, Jamil H, Tahir MJ, Arsh A, et al. Insufficient Physical Activity and Sedentary Behaviors among Medical Students during the COVID-19 Lockdown: Findings from a Cross-Sectional Study in Pakistan. *Int J Environ Res Public Health.* 2021;18(19):10257. DOI: <https://doi.org/10.3390/ijerph181910257>
22. Ferreira SRM, Mendonça CR, Azevedo VD, Raoof MA, Noll PRES, Noll M. Barriers to high school and university students' physical activity: A systematic review. *PLoS One.* 2022;17(4):e0265913. DOI: <https://doi.org/10.1371/journal.pone.0265913>
23. Baig N, Baig MAM, Meah KMS. Physical Activity and Academic-Achievement of Medical Students: An Analytic Cross-sectional Study in Karachi. *Journal of Shalamar Medical & Dental College.* 2024 ;5(1):24–33. DOI: <https://doi.org/10.53685/jshmdc.v5i1.206>
24. Ali M, Alam MM, Akhtar MW, Perwaiz S, Munawar A, Shahid R. Physical Activity and its Correlates among University Students in Lahore. *Journal of Health and Rehabilitation Research.* 2024 ;4(1):461–5. DOI: <https://doi.org/10.61919/jhrr.v4i1.388>