ISSN: 2753-7919
British Journal of Healthcare and Medical Research; Vol. 13 No. 01 (2026) (335-351)
https://doi.org/10.14738/bjhr.1301.19941

Pattern of Screen Time Usage and Association with Academic Productivity Among Medical Students in University of Ilorin: A Cross Sectional Study

Ojo-Rowland, O. T.[1,2], Adeoti, S. G.[1,2], Abdulaziz, A. A.[1,2], Nwankwor, G. D.[1,2], Ibrahim, H.[1,2], Yusuf, T. O.[1,2], Owolabi, O. O.[1,2], Osborn, G. K.[1,2], Malomo, V. A.[1,2] , Adetokunbo, H. K.[1,2], Salawu, O. V.[1,2] , Ekunnrin, O. A.[1,2],Oyewopo, T. G.[1,2], Orenaike, O. C.[1,2]

1. Ilorin University Medical Student Association, Research Journal Club, University of Ilorin, Kwara state, Nigeria
2. Faculty of Clinical sciences, University of Ilorin, Kwara state, Nigeria

Abstract: The increasing integration of digital technologies into higher education has led to a substantial rise in digital screen time among university students, particularly those in demanding academic programs such as medicine. This study assessed the pattern and association between digital screen time and academic productivity among medical students at the University of Ilorin, Nigeria. An institutional based descriptive cross-sectional design was employed, involving 360 medical students selected through multistage sampling. Data were collected using a semi-structured, self-administered questionnaire assessing demographic characteristics, screen time exposure, purposes of screen use, academic productivity, and perceived academic impact. Descriptive and inferential analyses were conducted using SPSS version 25, with statistical significance set at $p < 0.05$. The findings revealed a high prevalence of excessive screen time (73.1%), with over two-thirds of respondents (58.1%) engaging in prolonged daily screen exposure, predominantly during nighttime and before bedtime. Smartphones were the most commonly used devices, mainly for academic activities, social media, and communication. Most respondents demonstrated moderate academic productivity, while a smaller proportion showed high productivity. A significant association was identified between screen time exposure and academic productivity, and regression analysis indicated that average daily screen time was a significant predictor of productivity, although the overall explanatory power of the model was minimal These findings suggest that while excessive screen time is widespread among medical students, its impact on academic productivity is complex and influenced by the purpose and pattern of use. The study highlights the need for targeted interventions that promote balanced and purposeful digital engagement to optimize academic outcomes among medical students.

Keywords: Digital screen time, Excessive screen use, Academic productivity, Medical students, Smartphone use, University of Ilorin.

BACKGROUND

The digital revolution has fundamentally transformed educational landscapes worldwide, with screen-based technologies becoming integral to modern learning environments [1]. Digital screen time (DST), defined as the time spent in front of electronic device screens, has emerged as a significant aspect of daily life across all age groups [1]. In 2023, the global average DST was recorded at 6 hours and 37 minutes per day, with mobile phones accounting

for more than 5 hours [2]. While screens can improve education and learning, excessive time spent in front of a screen and multitasking with other media has been related to worse executive functioning, poor sleep, cardiovascular risks, and academic performance [3]. A recent study demonstrated that the prevalence of excessive digital screen time (EDST) among university students reached 48.4%, including 29.4% on tablets, 22.9% on smartphones, and 7.6% on computers, indicating that nearly half of the student population may be at risk for the negative consequences associated with excessive digital engagement [1].

In a systematic review and meta-analysis, researchers found that the amount of time spent on overall screen media use was not significantly associated with academic performance (ES = −0.29; 95% CI −0.65 to 0.08), suggesting that the total duration of screen exposure may not be the primary determinant of academic outcomes [5]. However, the type and purpose of screen use appear to be critical factors, as television viewing was inversely associated with composite academic performance scores (ES = −0.19; 95% CI -0.29 to -0.09) [4]. Similarly, a large-scale Canadian study involving over 28,000 adolescents reported a non-linear, dose-response relationship; those who used screens for 2 to 4 hours per day had 1.23 times higher odds of attaining top grades compared to those with less than 2 hours of screen use daily, while those spending more than 7 hours per day were 40% less likely to achieve excellent academic performance [5]. Beyond immediate cognitive impacts, physiological effects such as compromised sleep quality - resulting from excessive screen exposure before bedtime - can lead to fatigue, mood disturbances, and poor academic performance [6].

The adoption of smartphones, e-learning platforms, and internet connectivity is increasingly prevalent among medical students at the University of Ilorin. The demanding nature of medical education, which requires extensive information processing, critical thinking, and sustained attention, makes this population particularly vulnerable to the negative effects of excessive screen exposure. Emerging research has identified that EDST was significantly associated with younger age (AOR 0.79; 95% CI 0.66–0.94) and enrolment in health science faculties (AOR 1.7; 95% CI 1.01–2.86), suggesting that medical and health science students may be at particularly high risk for problematic screen use [7]. Additionally, excessive DST has been associated with various psychological challenges, including depression, stress, anxiety, reduced self-esteem, and loneliness [8]. Despite the high reliance on digital resources for studying and research, empirical data on how digital screen time influences the academic productivity of medical students in this specific context is lacking [1].

This study therefore aims to investigate the pattern and association between screen time and academic productivity among medical students at the University of Ilorin to inform evidence-based strategies for promoting balanced digital habits.

OBJECTIVES

1. To assess the pattern of screen time usage among medical students at the University of Ilorin.
2. To assess the association between screen time usage and academic productivity among medical students in University of Ilorin

3. To determine the association between sociodemographics and level of screen time exposure
4. To determine the factors that influence screen time exposure and academic productivity.

METHODOLOGY

This was an institutional-based descriptive cross-sectional study. The study was carried out at the University of Ilorin, Ilorin, Kwara State, Nigeria. University of Ilorin is a Federal University located in Ilorin, Kwara state. It has a college of Health Sciences which includes the Faculty of Clinical Sciences, Faculty of Basic Medical Sciences and other departments like Nursing and Allied Health Sciences. This study focused specifically on medical students enrolled in the MB;BS program.

POPULATION

Students from the 200 level to 600 level class studying Medicine and Surgery at the University of Ilorin were the target population for this study. The minimum sample size of 335 was determined using the Fischers formula for cross sectional studies keeping confidence level at 95%, margin of error at 5% and prevalence of 50% taking account of a limited population of 1400 students and also correcting for non-response. However, to increase the power of study and account for potential incomplete responses, a total of 360 respondents were recruited and included in the final analysis.

$$n = (Z^2 \times p \times (1 - p)) / d^2$$

To assess prevalence, pattern, and motivational factors associated with stimulant usage among medical students in University of Ilorin, Kwara State, the subjects were enrolled using a multi-stage sampling technique. Participation was voluntary and students who were available and willing to respond during the data collection period were included in the study.

Questionnaire (Instrument and Method)

A semi-structured, self-administered, likert scale questionnaire was used to collect data from respondents. The questionnaire comprised of five sections: (i) demographic Information; (ii) screen time exposure, (iii) purpose of screen usage, (iv) academic productivity and study habits, and (v) perceived impact of screen time on academics.

Data Analysis

Data analysis was performed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics such as mean, frequencies and percentages were used to summarise demographic and response data. Inferential techniques, including chi-square and logistic regression, were used to determine relationships between variables. Results were presented using tables, charts, and graphs for clarity. A probability value of $P < 0.05$ was considered statistically significant.

Ethical Approval

Ethical approval for this study was obtained from the University of Ilorin Teaching Hospital Ethical board. Participants were informed about the study objectives, and informed consent was obtained from all respondents. Confidentiality and anonymity of the data were ensured throughout the study.

Validity and Reliability

The questionnaire was pretested using 10 students from other university to check for validity and reliability of the instrument.

RESULTS

The majority of respondents were female (58.9%) and aged between 20–23 years (44.7%), followed by 24–27 years (30.0%). Most participants were single (96.4%) and resided in off-campus accommodation (50.0%), with nearly equal proportions in university hostels (49.7%) and minimal representation living with family (0.3%). Year of study distribution showed highest representation among 4th-year students (25.6%), followed by 5th-year (25.3%), 2nd-year (21.7%), 6th-year (17.5%), 3rd-year (9.9%). Almost all respondents owned or regularly used smartphones (99.4%), with laptop/desktop computer usage at 64.2%, tablet use at 19.4%, Smart TV at 3.6%, and e-reader at 0.3%.

The majority of respondents (73.1%) were classified as having excessive screen time usage, while 23.9% had moderate usage and only 3.1% had low usage. Screen use was most common at night between 9-11:59 pm (58.1%), followed by evening use from 5-9 pm (43.6%), afternoon use from 12-5 pm (32.2%), early morning use (24.4%), and after-midnight usage (16.9%). Most respondents used screens before bedtime either most nights (47.8%) or every night (38.9%), with only 0.6% never using screens before bed. Regarding daily screen time, 35.0% spent 7-9 hours per day on screens, 23.9% spent 4-6 hours, 23.6% spent 10-12 hours, 14.4% spent more than 12 hours, and only 3.1% spent 1-3 hours.

The majority of respondents (56.9%) reported very frequent use of screens for academic learning activities such as online lectures, e-books, and research, while 29.4% indicated often using screens for academic purposes. Key factors influencing screen time exposure included average number of hours spent on digital screens per day ($p < 0.001$), gender ($p = 0.012$), and use of screen time tracking or limiting applications ($p = 0.003$). Social media use was prominent, with 30.0% reporting frequent use and 28.3% reporting very frequent use. Communication with friends and family was a major reason for screen use, as 35.3% reported very frequent use and 34.4% reported frequent use.

The majority of respondents (74.2%) demonstrated moderate academic productivity, while 25.8% showed high productivity. Notably, none of the respondents were classified as having low academic productivity. Academic performance varied, with 35.6% scoring between 60-69%, 27.2% scoring 70-100%, 26.9% scoring 50-59%, 3.1% scoring 45-49%, and 0.6% scoring below 45%. Nearly half of the respondents (47.8%) spent 3-4 hours studying per day, while 25.0% studied for 5-6 hours, 13.3% studied for 1-2 hours, 11.4% studied for more than 6 hours, and 2.5% spent less than one hour studying per day.

The chi-square analysis revealed a significant association between screen time exposure and academic productivity among medical students ($x^2 = 6.772$, df = 2, p = 0.034). With a p-value below the 0.05 threshold, the null hypothesis was rejected in favour of the alternative hypothesis. Cross-tabulation showed that 73.1% of respondents had excessive screen time exposure, while 74.2% demonstrated moderate academic productivity. The statistical analysis highlights the influence of screen time and related factors on academic productivity. The regression model shows significance ($p < 0.001$), indicating that multiple factors affect academic productivity. However, the model's explanatory power is moderate ($R^2 = 0.193$), meaning only 19.3% of the variance in academic productivity is explained by these factors. Average daily screen time is a significant predictor (p = 0.023), with a positive coefficient (0.075), suggesting that increased screen time is associated with higher academic productivity among the respondents.

Table 1: Demographic Information of Respondents

Variables	Options	Frequency	Percentage
Age	16-19 years	81	22.5%
	20-23 years	161	44.7%
	24-27 years	108	30%
	≥28 years	10	2.8%
Gender	Male	148	41.1%
	Female	212	58.9%
Year of Study in Medical School	2nd year	78	21.7%
	3rd year	46	9.9%
	4th year	92	25.6%
	5th year	91	25.3%
	6th year	63	17.5%
Accommodation Type	University Hostel	179	49.7%
	Off Campus accommodation	180	50%
	With Family	1	0.3%
Marital Status	Single	347	96.4%
	Married	12	3.3%
	In a relationship	1	0.3%

Table 2a: Screen Time Exposure

Variables	Options	Frequency	Percentage
Frequency of digital devices used or owed (Multiple responses)	Smartphone	358	99.4%
	Laptop/Desktop Computer	231	64.2%
	Tablet	70	19.4%
	Smart TV	13	3.6%
	E-Reader (Kindle, etc.)	1	0.3%
On average, how many hours per day do you spend on digital screens (all devices combined)	<1 hour	0	0.0%
	1-3 hours	11	3.1%
	4-6 hours	86	23.9%
	7-9 hours	126	35%

	10-12 hours	85	23.6%
	>12 hours	52	14.4%
Hours spent on each device daily			
Smartphone	<1 hour	3	0.8%
	1-3 hours	39	10.8%
	4-6 hours	113	31.4%
	>6 hours	203	56.4%
	No Usage	2	0.6%
Laptop/Computer	<1 hour	72	20%
	1-3 hours	97	26.9%
	4-6 hours	36	10%
	>6 hours	14	3.9%
	No Usage	141	39.2%
Tablet	<1 hour	25	6.9%
	1-3 hours	29	8.1%
	4-6 hours	11	3.1%
	>6 hours	9	2.5%
	No Usage	286	79.4%
TV	<1 hour	14	3.9%
	1-3 hours	4	1.1%
	4-6 hours	1	0.3%
	>6 hours	3	0.8%
	No Usage	338	93.9%

Table 2b: Screen Time Exposure

Variables	Options	Frequency	Percentage
Times they typically use digital screens the most (two or more options)	Early Morning (5-9 am)	88	24.4%
	Late Morning (9-11:59pm)	74	20.6%
	Afternoon (12-5 pm)	116	32.2%
	Evening (5-9 pm)	157	43.6%
	Night (9-11:59 pm)	209	58.1%
	After Midnight (12-5 am)	61	16.9%
Usage of screens right before going to bed.	Never	2	0.6%
	Rarely	4	1.1%
	Sometimes	42	11.7%
	Yes, most nights	172	47.8%
	Yes, every night	140	38.9%
Frequency of breaks when using digital screens for extended periods.	Every 2 hours	47	13.1%
	Every 1 hour	59	16.4%
	Every 30 minutes or less	108	30%
	Only when I feel discomfort	118	32.8%
	I don't take breaks	28	7.8%

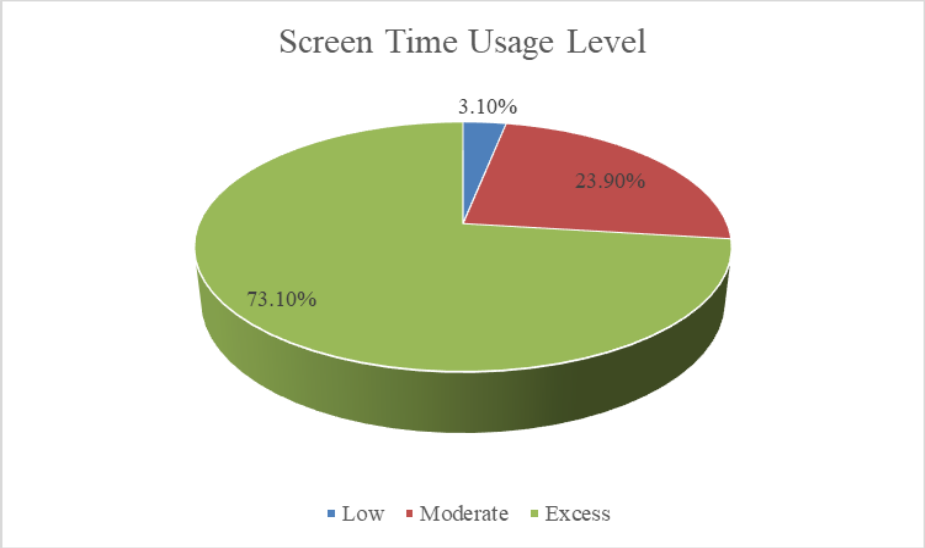

Fig 1: Overall level of Screen time exposure

Table 3: Purpose of Screen Usage

Variables	Options	Frequency	Percentage
Primary reasons for using digital screens			
Academic learning (online lectures, e-books, research)	Never	5	1.4%
	Rarely	8	2.2%
	Sometimes	36	10%
	Often	106	29.4%
	Very frequently	205	56.9%
Social media (Instagram, Twitter, Facebook, etc)	Never	12	3.3%
	Rarely	35	9.7%
	Sometimes	103	28.6%
	Often	108	30%
	Very frequently	102	28.3%
Entertainment (movies, TV shows, YouTube)	Never	23	6.4%
	Rarely	69	19.2%
	Sometimes	103	28.6%
	Often	82	22.8%
	Very frequently	83	23.1%
Communication with friends and family	Never	5	1.4%
	Rarely	35	9.7%
	Sometimes	69	19.2%
	Often	124	34.4%
	Very frequently	127	35.3%
Communication with classmates about academics online	Never	20	5.6%
	Rarely	64	17.8%
	Sometimes	106	29.4%
	Often	98	27.2%
	Very frequently	72	20%

Online gaming	Never	177	49.2%
	Rarely	71	19.7%
	Sometimes	48	13.3%
	Often	42	11.7%
	Very frequently	22	6.1%
News and Current events	Never	54	15%
	Rarely	123	34.2%
	Sometimes	104	28.9%
	Often	53	14.7%
	Very frequently	26	7.2%
Usage of digital tools/apps specifically for medical studies	Yes	52	14.4%
	No	308	85.6%
Usage of screen time tracking or limiting apps	Yes	196	54.4%
	No	164	45.6%
Frequency of social media app usage for online classes?	Never	8	2.2%
	Rarely	29	8.1%
	Sometimes	176	48.9%
	Often	127	35.3%
	Always	20	5.6%

Table 4a: Academic Productivity and Study Habits

Variables	Options	Frequency	Percentage
Average score (%) in your most recent academic examinations over the past one year	Prefer not to say	24	6.7%
	Below 45	2	0.6%
	45-49	11	3.1%
	50-59	97	26.9%
	60-69	128	35.6%
	70-100	98	27.2%
Average hours spent per day studying (both with and without screens)	<1 hour	9	2.5%
	1-2 hours	48	13.3%
	3-4 hours	172	47.8%
	5-6 hours	90	25%
	>6 hours	41	11.4%
Percentage of total study time involving the use of digital screens	0-20%	16	4.4%
	21-40%	56	15.6%
	41-60%	82	22.8%
	61-80%	122	33.9%
	81-100%	84	23.3%
Frequency of multitasking (e.g., checking social media while studying) during academic screen time	Very Frequently	51	14.2%
	Frequently	142	39.4%
	Sometimes	134	37.2%
	Rarely	30	8.3%
	Never	3	0.8%
Frequency of the Extra Actions while studying with digital devices			

Losing track of time	Never	26	7.2%
	Rarely	76	21.1%
	Sometimes	120	33.3%
	Often	97	26.9%
	Very Frequently	41	11.4%
Getting distracted by notifications	Never	28	7.8%
	Rarely	86	23.9%
	Sometimes	113	31.4%
	Often	94	26.1%
	Very Frequently	39	10.8%
Opening non-academic website/apps	Never	13	3.6%
	Rarely	74	20.6%
	Sometimes	129	35.8%
	Often	97	26.9%
	Very Frequently	47	13.1%
Difficulty concentrating	Never	47	13.1%
	Rarely	106	29.4%
	Sometimes	122	33.9%
	Often	62	17.2%
	Very Frequently	23	6.4%

Table 4b: Academic Productivity and Study Habits

Variables	Options	Frequency	Percentage
Effective study method for retaining information?	Digital	39	10.8%
	Traditional (physical textbooks, handwritten notes)	108	30.1%
	Both	165	45.8%
	Depends on the course	48	13.3%
Frequency of completing assigned academic tasks on time	Never	2	0.6%
	Rarely	14	3.9%
	Sometimes	128	35.5%
	Most of the time	180	50%
	Always	36	10%
Do you find it easier to concentrate on academic task			
With digital device	Yes	214	59.4%
	No	146	40.6%
Without digital device	Yes	290	80.6%
	No	70	19.4%
How often do you experience academic burnout when using devices?	Always	10	2.8%
	Often	63	17.5%
	Sometimes	178	49.4%
	Rarely	100	27.8%
	Never	9	2.5%

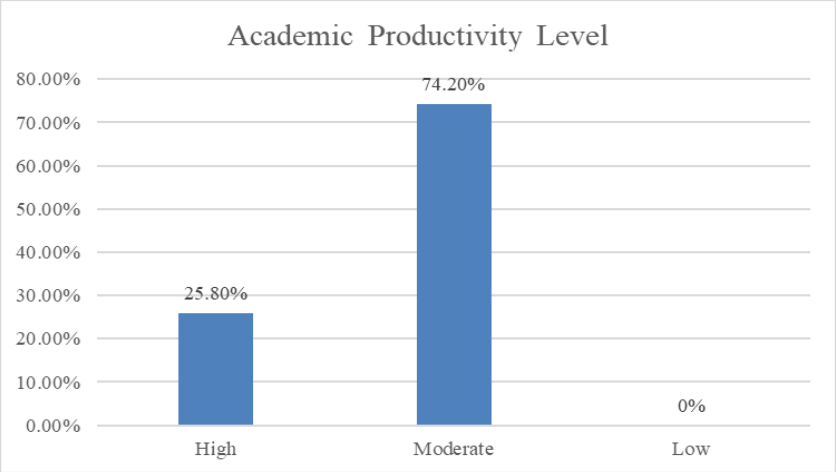

Fig 2: Overall academic productivity level

Table 5a: Perceived Impact of Screen Time on Academics

Variables	Options	Frequency	Percentage
Feeling about current screen time usage	Enhances your academic productivity	120	33.3%
	Has no effect on your academic productivity	39	10.8%
	Slightly reduces your academic productivity	158	43.9%
	Significantly reduces your academic productivity	43	11.9%
Strategies used to manage your screen time (Multiple response)	Setting specific time limits	164	46.2%
	Using apps to block distracting websites/applications	94	26.5%
	Scheduled digital detox periods	41	11.5%
	Turning off notifications during study time	196	55.2%
	Physical activity breaks	139	39.2%
	None	28	7.9%
Screen time help to stay better organized after planning activities and setting reminders for devices	Yes	243	67.5%
	No	117	32.5%
Reducing your screen time will improve your academic productivity	Yes	260	72.2%
	No	100	27.8%

Table 5b: Perceived Impact of Screen Time on Academics

Variables	Options	Frequency	Percentage
Frequency of how Screen Time affected academic work	All of the above	2	0.6%
	No effect	12	3.3%
	It has improved communication with peers	30	8.3%
	It has reduced sleep and study time	57	15.8%
	It has caused distraction and procrastination	97	26.9%
	It has helped with research and learning	162	45.0%

Recommendations on how to balance screen time and academic productivity (Multiple Response)	University-provided time management workshops	78	21.8%
	Screen-free study zones in the library/campus	125	35.0%
	Integration of Digital wellness into the medical curriculum	183	51.3%
	Promotion of paper-based learning materials alongside digital resources	193	54.1%
	Regular physical activity breaks between lectures	191	53.5%
	Mental health support specific to digital addiction	150	42.0%
	Peer support groups for maintaining healthy screen habits	165	46.2%
Impact of Screen Time on Academics	Negative Impact	112	31.1%
	Positive Impact	248	68.9%

Fig. 3: Overall perceived impact of screen time on academics

Table 6: Chi-Square Analysis to determine Association between Sociodemographic Variables and Levels of Screen Time Exposure

Variables	Levels of Screen Time Exposure				X^2	df	p-value	Remarks
	Low	Moderate	Excess	Total				
Age (years)								
16-19	4(1.1%)	15(4.2%)	62(17.2%)	81(22.5%)	7.791	6	0.254	NS
20-23	3(0.8%)	43(11.9%)	115(31.9%)	161(44.7%)				
24-27	4(1.1%)	23(6.4%)	81(22.5%)	108(30.0%)				
>28 years	0(0.0%)	5(1.4%)	5(1.4%)	10(2.8%)				
Gender								
Male	6(1.7%)	24(6.7%)	118(32.8%)	148(41.1%)	8.546	2	0.014	S
Female	5(1.4%)	62(17.2%)	145(40.3%)	212(58.9%)				
Year of Study								
2nd year	2(0.6%)	20(5.6%)	56(15.6%)	78(21.7%)	21.271	10	0.019	S
3rd year	2(0.6%)	8(2.2%)	26(7.3%)	36(10%)				
4th year	4(1.1%)	13(3.6%)	75(20.8%)	92(25.6%)				
5th year	2(0.6%)	30(8.3%)	59(16.4%)	91(25.3%)				
6th year	1(0.3%)	15(4.2%)	47(13.1%)	63(17.5%)				
Accommodation Type								
University Hostel	6(1.7%)	45(12.5%)	128(35.6%)	179(49.7%)				
Off-Campus	5(1.4%)	41(11.4%)	134(37.2%)	180(50%)	0.782	4	0.941	NS
With family	0(0%)	0(0%)	1(0.3%)	1(0.3%)				
Marital Status								
Single	11(3.1%)	83(23.1%)	253(70.3%)	347(96.4%)	0.764	4	0.943	NS
Married	0(0%)	3(0.8%)	9(2.5%)	12(3.3%)				
In a relationship	0(0%)	0(0%)	1(0.3%)	1(0.3%)				

NS- Not Significant

Table 7: Chi-Square Analysis to determine Association between Levels of Screen Time Exposure and Levels of Academic Productivity

Screen Time Exposure	Academic Productivity				Chi-Square (X^2) Value	Df	p-value
	Low	Moderate	High	Total			
Low	0(0%)	11(3.1%)	0(0%)	11(3.1%)	6.772	2	0.034
Moderate	0(0%)	69(19.2%)	17(4.7%)	86(23.9%)			
Excess	0(0%)	187(51.9%)	76(21.1%)	263(73.1%)			
Total	0(0%)	267(74.2%)	93(25.8%)	360(100%)			

Table 8: Regression Analysis to determine factors that influence or predict Screen Time Exposure

Model	Unstandardized Coefficients		p-value	ANOVA value	Adjusted R-Square Value	Remarks
	B	Std. Error				
(Constant)	1.122	0.213	<0.001	<0.001	0.610	
Age	-0.048	0.034	0.160			NS
Gender	-0.094	0.037	0.012			S
Year of Study in Medical School	0.010	0.019	0.600			NS
Accommodation Type	-0.007	0.042	0.868			NS
Marital Status	0.143	0.084	0.091			NS
Total hours spent on digital screens	0.388	0.017	<0.001			S
Primary Reasons for Using digital screens:						
Academic learning	0.003	0.022	0.882			NS
Social media	0.002	0.020	0.917			NS
Entertainment	0.001	0.016	0.929			NS
Communication with friends and family	0.007	0.021	0.733			NS
Communication with classmates about academics online	-0.023	0.019	0.217			NS
Online gaming	-0.003	0.015	0.833			NS
News and Current events	-0.017	0.018	0.332			NS
Usage of medical apps for studies	0.021	0.050	0.670			NS
Usage of screen time tracking or limiting apps	0.111	0.037	0.003			S
Average hours spent studying (both with and without screens)?	-0.016	0.021	0.461			NS
Adequate concentration with digital device	-0.021	0.037	0.566			NS
Do you think screen time help to stay better organized after planning activities and setting reminders for devices?	-0.030	0.039	0.439			NS

NS- Not Significant; S- Significant

Table 9: Regression Analysis to determine factors that influence or predict Academic Productivity

Model	Unstandardized Coefficients		p-value	ANOVA value	Adjusted R-Square Value	Remarks
	B	Std. Error				
(Constant)	0.783	0.268	0.004	<0.001	0.193	
Age	-0.065	0.041	0.115			NS
Gender	0.119	0.045	0.009			S
Year of Study in Medical School	0.003	0.024	0.885			NS
Accommodation Type	-0.065	0.051	0.201			NS
Marital Status	0.207	0.102	0.044			S
Total hours spent on digital screens daily (all devices combined)	0.075	0.033	0.023			S
Primary Reasons for Using digital screens:						
Academic learning	0.055	0.027	0.040			S
Social media	0.060	0.024	0.012			S
Entertainment	0.024	0.020	0.223			NS
Communication with friends and family	0.015	0.026	0.571			NS
Communication with classmates about academics online	0.078	0.023	<0.001			S
Online gaming	-0.021	0.018	0.225			NS
g News and Current events	-0.055	0.021	0.010			S
Usage of medical apps for studies	-0.007	0.061	0.912			NS
Usage of screen time tracking or limiting apps	0.056	0.045	0.217			NS
Average hours spent studying (both with and without screens)?	0.076	0.026	0.004			S
Adequate concentration with digital device	-0.039	0.045	0.387			NS
Do you think screen time help to stay better organized after planning activities and setting reminders for devices?	0.034	0.047	0.471			NS
Screen time usage levels	-0.020	0.066	0.766			NS

NS- Not Significant; S- Significant

DISCUSSION

This study offers a comprehensive overview of screen time exposure patterns and their association with academic productivity among medical students, a population increasingly reliant on digital technologies for learning, communication, and clinical education. The demographic profile of respondents, with a female majority (58.9%) and a predominance of students aged 20–23 years, reflects global trends in medical education where younger cohorts and female enrolment continue to rise [9]. This demographic distribution is relevant, as age and gender have been shown to influence digital behaviour, learning styles, and screen engagement intensity [10].

The near-universal ownership and use of smartphones (99.4%) underscores the central role of mobile technology in contemporary medical training. Similar findings have been reported across diverse settings, including Africa, Asia, and Europe, where smartphones serve as primary tools for accessing lecture materials, clinical guidelines, and academic resources [11]. Compared with laptops and tablets, smartphones offer greater portability and constant connectivity, which may partly explain the high prevalence of excessive screen time observed in this study (73.1%). This aligns with prior research indicating that mobile-first learning environments tend to encourage prolonged and frequent screen engagement [12]. A notable finding was the predominance of evening and night-time screen use, particularly between 9 pm and midnight, with most students reporting routine screen exposure before bedtime. Similar patterns have been documented among university students globally, especially in academically demanding disciplines [13]. While this study did not assess sleep quality directly, extensive literature suggests that late-night screen use may negatively affect sleep duration, circadian rhythm regulation, and next-day cognitive performance [14]. These effects may have important implications for medical students, whose academic success depends not only on study duration but also on cognitive alertness, memory consolidation, and mental wellbeing.

Importantly, the findings suggest that screen time among respondents was largely purposeful and academically oriented. Over half of the students reported very frequent use of screens for learning activities such as online lectures, e-books, and research, reflecting the growing integration of digital platforms into medical curricula. This supports earlier studies demonstrating that digital learning tools, when used effectively, can enhance access to information, promote self-directed learning, and support academic achievement [15]. The widespread use of screens for communication with peers and family also reflects the social and collaborative dimensions of learning, which are increasingly mediated through digital platforms. The observed significant association between screen time exposure and academic productivity challenges the traditional assumption that increased screen time is inherently detrimental to academic outcomes. While earlier studies reported negative correlations between excessive screen use and academic performance [16], more recent evidence suggests that the type and purpose of screen use are critical determinants of its academic impact [17]. In this study, increased daily screen time was positively associated with academic productivity, as demonstrated by the regression analysis. This finding may be explained by the heavy reliance on digital resources in medical education, where screen engagement often extended reflects active studying, revision, and research rather than passive entertainment.

Social media has emerged as a significant factor influencing academic productivity among medical students, offering both advantages and challenges. On the positive side, social media platforms facilitate rapid information sharing, peer collaboration, academic networking, and access to educational content, discussion forums, and professional communities that support learning and revision. However, excessive or poorly regulated social media use can contribute to distraction, reduced concentration, time mismanagement, and cognitive overload, which may adversely affect study efficiency and academic focus [15]. The impact of social media on academic productivity therefore depends largely on patterns of use, purpose, and individual self-regulation, highlighting the importance of responsible digital engagement among medical students [17].

Nevertheless, the moderate explanatory power of the regression model ($R^2 = 0.193$) indicates that screen time accounts for only a portion of the variability in academic productivity. This is consistent with multidimensional models of academic performance, which highlight the influence of additional factors such as learning strategies, motivation, mental health, sleep quality, assessment methods, and institutional support systems [18]. The absence of students classified as having low academic productivity further suggests that medical students may adopt compensatory strategies such as increased screen-based studying to meet academic demands despite heavy workloads.

Overall, these findings emphasize the evolving role of digital technology in medical education. Rather than viewing screen time solely as a risk factor, it should be understood as a complex and context-dependent exposure. When aligned with educational goals and supported by appropriate digital literacy and wellbeing strategies, screen use may enhance academic productivity. However, unregulated or poorly structured screen engagement, particularly late at night, may still pose risks to health and learning efficiency. Balancing the academic benefits of screen use with strategies to mitigate its potential adverse effects remains essential for sustainable medical training.

CONCLUSION AND RECOMMENDATION

This study demonstrates that digital screen time is a pervasive and integral component of medical education, with most students engaging in prolonged and predominantly smartphone-based screen use. While excessive screen time was highly prevalent, it was largely purposeful and academically oriented, reflecting the increasing reliance on digital platforms for learning, communication, and academic collaboration. Importantly, increased daily screen time showed a positive association with academic productivity, challenging the notion that greater screen exposure is inherently detrimental to academic outcomes. However, the moderate explanatory power of screen time highlights that academic productivity is influenced by multiple interacting factors beyond digital engagement alone. Patterns of late-night screen use raise concerns about potential impacts on sleep, cognitive functioning, and wellbeing, which may indirectly affect learning efficiency.

Increasing productivity of medical students in University of Ilorin requires holistic and systems-based strategies. Integration of digital wellness in the curriculum of the College of Health Sciences, incorporating formal modules or workshops on digital literacy and ergonomic safety. Implementation of brief, structured "active breaks" during extended lecture blocks to combat the sedentary nature of prolonged screen time. While digital resources are central to contemporary medical education, university library administrations should establish designated screen-free study zones that promote healthy digital hygiene practices. Such spaces would support focused, distraction-free learning and accommodate students who benefit from low-stimulus, non-digital environments to enhance concentration and information retention. In addition, the implementation of targeted awareness campaigns on digital and sleep hygiene is recommended. These initiatives should highlight how unmanaged digital exposure particularly blue light emission can disrupt circadian rhythms and sleep quality, while encouraging responsible device use through features such as night-mode settings and structured pre-sleep digital routines that align technology use with physiological well-being. Facilitating the formation of student-led accountability groups that can leverage the finding that communication with classmates about academics

online is a significant factor associated with academic productivity. Such groups would serve to channel social screen interactions toward constructive academic collaboration rather than leisure-based distraction.

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