Relationship Of Burnout with Screen Time In Under Graduate Medical Students

[1]Khurram Irshad, [2]Fahad Azam, [3]Ifra Ashraf, [4]Abida Shaheen, [5]Nosheen Kazmi, [6]Arsalan Ahmed, [6]Danish Iltaf Satti, [6]Adil Baloch

ABSTRACT

Introduction: Burnout, in the context of medical education, is a state of physical, emotional, and mental exhaustion, often accompanied by a diminished sense of personal accomplishment. Burnout may adversely affect the well-being and motivation of medical students consequently resulting in compromised academic performance.

Aim and Objectives: The present study aims to explore the correlation of screen time with burnout and its subtypes including overload, neglect and lack of development.

Place and Duration of Study: The present cross-sectional study was conducted at Shifa College of Medicine from September 2019-February 2021.

Material & Methods: The present study included a total of 284 students from the first year to the final year using convenience purposive sampling. The students who provided written informed consent were enrolled in the study.These participants completed a structured questionnaire, which included various demographic variables and information regarding students' screen time, specifically for academic purposes and leisure activities. To evaluate burnout, the study utilized the "Burnout Clinical Subtype Questionnaire" (BCSQ), which has been adapted for student use (BCSQ-12-SS).The data was entered & analyzed using SPSS version 23, a p-value of ≤0.05 was considered significant.

Results: The mean age of participants of the study was 20.56±1.73 years. The correlation analysis showed a significant correlation of neglect, lack of development and total burnout score with screen time for non-educational purposes in medical students with a p-value of 0.022, 0.009 and 0.009 respectively. Screen time for educational purposes hada significant correlation with the overload domain of burnout; r=0.157 (p=0.039). Students with self-perception of bad health had a significant correlation of screen time for non-educational purposes with total burnout score; r=0.234(p=0.04). Scores of total burnout and subtypes of overload, neglect and lack of development were significantly lower in students with self-perception of good health.

Conclusion: The present study reveals a significant correlation between screen time among medical students and burnout, highlighting the potential impact on both physical and mental health.

Keywords: Burnout, screen-time, BCSQ-12-SS

INTRODUCTION

Burnout is defined as the decline in motivation ordrive when desired outcomes are not achieved despite dedicated pursuit of specific objectives[1].It is

1.[1]Department of Physiology, Shifa College of Dentistry, STMU, Islamabad
2.[2]Department of Pharmacology, Shifa College of Dentistry, STMU, Islamabad
3.[3]Department of Physiology, Shifa College of Medicine, STMU, Islamabad
4.[4]Department of Pharmacology, Shifa College of Medicine, STMU, Islamabad
5.[5]Department of Psychiatry, Shifa College of Medicine, STMU, Islamabad
6.[6]Medical Students, Shifa College of Medicine, STMU, Islamabad

Correspondance:
Dr. Fahad Azam, *Professor, Department of Pharmacology & Therapeutics, Shifa College of Dentistry, Shifa Tameer-e-Millat University, Islamabad.*
Email: fahad.scm@stmu.edu.pk

a condition of emotional, physical, and mental exhaustion resulting from prolonged periods of stress.Symptoms of burnout may include feelings ofemotional exhaustion and detachment from work or other activities, decrease in job satisfaction and motivation, loss of energy, changes in sleep patterns and physical symptoms in extreme cases[2].

Burnout can cause serious consequences related to mental and physical health and can negatively affect personal and work relationships. Given the aforementioned consequences, its is imperative that indicators of burnout be proactively identified and addressed in a timely manner utilizing various approaches such as taking time off, implementing self-care strategies and seeking professional assistance[3].A variety of factors can contribute towards burnout such as lack of control, unclear expectations and lack of social support[4,5]. Individuals exposed to prolonged high-pressure environments are susceptible to burnout, and healthcare professionals are particularly vulnerable

due to their sustained exposure to demanding situations[2].

Besides medical professionals, medical students are also considered a vulnerable group for developing burnout because of intensive coursework requirements in addition to the constant social interaction with patients in high-pressure hospital environments[2].In recent times, excessive screen time and consequently social isolation is becoming a significant factor contributing to burnout which has made medical students even more vulnerable to burnout[6,7].

Burnout syndrome encompasses two significant elements of emotional exhaustion and depersonalization. Emotional exhaustion indicates a state of diminished emotional sensitivity which is often accompanied by a perception of reduced personal accomplishment. On the other hand, depersonalization is characterized by reduced empathy and motivation and a heightened sense of isolation[8].

The are various tools to identify and measure burnout in different situations such as the Maslach Burnout Inventory (MBI) and the Burnout Assessment Tool (BAT)[9]. One limitation of the MBI tool is its reliance on scores of subtypes of burnout and inability to provide total burnout score. Similarly, the validity and reliability of the shortened version of the BAT tool have not been fully explored[10].

The Burnout Clinical Subtype Questionnaire (BSCQ) delineates three distinct domains of burnout including frenetic subtype, the under-challenged subtype, and the worn-out subtype. Each subtype represents a unique manifestation of burnout with its own set of characteristics and implications. These subtypes arise from factors such as work enthusiasm, motivation levels, lack of appreciation, and the overall work environment. The BSCQ aims to capture and assess burnout within these specific domains[11].Multiple studies have reported an unprecedently high levels of burnout among medical students in the UK, Australia, and Pakistan[12-14]. This concerning trend continues to escalate despite the implementation of numerous student-centred learning approaches. Moreover, emerging factors, including the pervasive rise in screen time, have contributed to the increasing prevalence of burnout among medical students.

The increasing prevalence of burnout has a high probability of leading to physical and mental ailments such as emotional instability, fatigue and eating disorders as well as affecting their learning abilities[15]. With this background, the present study aims to explore the correlation of screen time with burnout and its subtypes including overload, neglect and lack of development in undergraduate medical students.

MATERIAL AND METHODS

The present cross-sectional survey was conducted at Shifa College of Medicine (SCM) from September 2019-February 2021 with 284 medical students after obtaining approval from the Institutional Review Board and Ethics Committee (IRB& EC #002-492-2019). The data was collected after getting informed consent from the study participants. SCM follows an integrated modular system and curricular contents are delivered utilizing problem-based learning (PBL), small-group discussions (SGD),large group interactive sessions (LGIS), self-directed learning (SDL), junior clerkships in year fourth and senior clerkships in the final year.The present study included 284 medical students from all five years using convenience sampling after obtaining written informed consent. A single proportion formula was utilized to calculate the sample size, assuming a 50% prevalence of burnout, a 95% confidence level, 5% margin of error, and accounting for a 10% non-response rate. To maximize the sample size, a prevalence of 0.5 was used because there had been no prior research at Shifa College of Medicine on burnout prevalence. Additionally, the modified Kish-Leslie formula was employed to calculate the estimated sample size from the overall study population. A structured questionnaire including demographic variables such as gender, academic year, marital status and place of residence was provided to all participants. The screen time of students for academic purposes and leisure activities was also assessed by the questionnaire.The study utilized avail dated Burnout Clinical Subtype Questionnaire" (BCSQ) to evaluate burnout, which has been adapted for student use (BCSQ-12-SS)[16]. This questionnaire encompasses a comprehensive exploration of burnout, encompassing various dimensions and subtypes. Specifically, it examines the frenetic subtype, characterized by stress in ambitious and overworked individuals; the under-challenged subtype, which pertains to stress arising from tasks lacking intellectual stimulation and a sense of personal growth; and the worn-out subtype, associated with feelings of under-appreciation and perception of decreased control influencing outcomes, resulting in a diminished focus on work responsibilities.[11]By utilizing the BCSQ-12-SS, the study aimed to explore the prevalence of burnout across these different subtypes among medical students.

The data was stored on the software MS-Excel software and was later analyzed by SPSS version 23. Categorical variables were presented by frequencies and percentages whereas mean ± SD were used to express continuous variables. The Shapiro-Wilk test was used to check the normality of data. Student's t-test was used to compare different groups for quantitative variables; the correlation of academic and leisure screen time with burnout and its subtypes of overload, neglect and lack of development was analyzed using the Pearson correlation statistical test. The reference point of P<0.05 was used to determine significance.

RESULTS

Two hundred and eighty-four medical students participated in the study. The mean age of the study participants was 20.56 ± 1.73 with a maximum age of 25 years and minimum age of 17 years. The demographic data of study participants is provided in Table-1.

Variables	N (%)	Total Burnout Scores	P-Value
Gender			
Male	122(43%)	40.96	0.519
Female	162(57%)	41.66	
Marital status			
Single	277(97.5%)	41.37	0.916
Married	7(2.5%)	41.01	
Year of Study			
Year-1	74(26.1%)	40.22 ± 8.06	
Year-2	93(32.7%)	41.91 ± 10.64	
Year-3	62(21.8%)	42.21 ± 7.27	0.435
Year-4	17(6%)	43.41 ± 8.71	
Year-5	38(13.4%)	39.95 ± 10.01	
Residence			
Day Scholar	201(71%)	41.66 ± 9.01	0.335
Hostelites	81(29%)	40.49 ± 9.50	
Financial status			
Monthly household income less than Rs. 50,000	9(3.4%)	45.67 ± 11.89	
Monthly household income from Rs. 50,000 - 100,000	43(16%)	44.16 ± 8.04	0.025*
Monthly house hold income of more than Rs. 100,000 per month	216(80.6%)	40.67 ± 9.06	

Table-1: Demographic data of study participants

The following correlation analysis showed neglect, lack of development and total burnout score having a significant correlation with screen time for non-educational purposes in medical students with a p-value of 0.022, 0.009 and 0.009 respectively. Screen time for educational purposes showed a significant correlation with the overload domain of burnout; r=0.157 (p=0.039). Students with self-perception of bad health had a significant correlation of screen time for non-educational purposes with total burnout score; r=0.234(p=0.04). The results of the correlation analysis are provided in Table-2.

The comparison of mean scores of subtypes of overload, neglect, lack of development and total burnout in students having self-perception of good health with students having self-perception of bad health indicated significant results. Scores of total burnout and subtypes of overload, neglect and lack of development were significantly lower in students with self-perception of good health. The results have been summarized in Table-3.

Student Detail	Screen Time	Overload		Neglect		Lack of Development		Total Burnout Score	
		R	p-value	R	p-value	R	p-value	R	p-value
All Student (N=284)	Screen Time For Non-Educational Purposes	0.06	0.43	0.17	0.02	0.19	0.01	0.19	0.01
	Screen Time For Educational Purposes	0.16	0.04	-0.05	0.49	-0.07	0.36	0.03	0.73
Student With Self-Perception Of Good Health (N=163)	Screen Time For Non-Educational Purposes	-0.07	0.46	0.22	0.04	0.22	0.03	0.16	0.14
	Screen Time For Educational Purposes	0.22	0.04	-0.02	0.83	-0.16	0.13	0.02	0.88
Student With Self-Perception Of Bad Health (N=110)	Screen Time For Non-Educational Purposes	0.10	0.38	0.14	0.24	0.22	0.06	0.24	0.04
	Screen Time For Educational Purposes	0.12	0.32	-0.07	0.52	0.09	0.43	0.04	0.53

Table-2: Correlation of screen time with subtypes of burnout

Things	Students with self-perception of good health (n=163)	Students with self-perception of bad health (n=110)	p-value
Total Burnout (Mean ± SD)	39.61±9.63	43.91±8.15	<0.001
Overload	13.78±4.58	15.20±5.12	0.017
Neglect	11.69±4.11	13.34±4.18	0.001
Lack Of Development	14.15±4.47	15.37±4.00	0.021

Table-3: Comparison of burnout scores between students with self-perception of good health and self-perception of bad health

DISCUSSION

The increasing prevalence of burnout and its potentially serious consequences in medical students

necessitate the identification of risk factors and the development of coping strategies to mitigate the burnout rate.

In the present study, we correlated the scores of subtypes and total burnout scores of medical students with their screen time and students' self-perception of good and bad health. The burnout scores showed a strong correlation with the screen time of medical students. The comparison of burnout scores did not reveal significant resultsin terms of gender, academic year and between day scholars and hostilites. However, students with less monthly household income had significantly higher burnout scores. These results agree with previous findings that the financial status of medical students does contribute to their stress[17].

According to our results, screen time for non-educational purposes did show a weak but significant correlation with the neglect and lack of development subtypes of burnout and the total burnout score. To our knowledge, the effect of screen time on burnout and its subtypes in medical students has not been extensively explored. The findings of a review of several research studies agree with our results showing moderately high burnout levels in students with high screen time[18]. Our results show a significant correlation of overload, neglect and lack of development with screen time in students with self-perception of good health; the results also reveal a significant association of screen time with total burnout score in students with self-perception of bad health.The results of a systematic review provide support for a positive correlation between screen time and a lower perceived quality of life in 11 out of 15 studies[19].Another study reported a significant association between recreational screen time and self-rated health in the adult population after adjustment by age, socioeconomic status and physical activity[20]. These studies support our findings of a significant correlation of screen time for non-academic purposes with total burnout score and hint towards the association of excessive screen time leading students to engage in online self-diagnosis, potentially fostering a negative perception of their health status.

An important aspect of our results is that a significant correlation of screen time for education purposes was only found with the overload subtype of burnout and was not found to be significantly correlated with the other two subtypes and the total burnout score. This finding indicates that students who take their studies more seriously tend to use digital tools for educational purposes. This finding necessitates the need for further research to explore

the academic performance of medical students with excessive screen time. Despite the intentions and dedication of students to achieve their academic outcomes, excessive screen exposure could potentially lead to burnout thus adversely affecting their academic performance.

Educationists are increasingly emphasizing digital classrooms and the use of technology, but caution should be exercised in implementing these approaches. Teachers must be mindful of the potential drawbacks associated with excessive online proctoring, synchronous and asynchronous teaching and learning, as well as the design of blended and hybrid programs. Maintaining a delicate balance is crucial, as prolonged educational screen time and online advertisements can lead to distractions and a loss of focus for medical students. Therefore, it is imperative to provide teachers with training on how to develop effective online courses that mitigate these challenges.

The findings of our study highlighted the prevalence of burnout scores along with its three subtypes among the students with self-perception of bad health suggesting negative influence of higher screen time on the physical and mental health of medical students. These findings also suggest that strategies should be developed to explore and minimize the underlying factors contributing towards burnout in medical students.

The findings of our study were corroborated by the results of several studies reporting an association of lack of well-being with burnout in medical students with high screen time in students.[21-23]We propose that medical institutions establish mechanisms to assess the self-perception of health among medical students to identify medical students who may have suboptimal well-being. Potential initiatives to implement such mechanisms include the strengthening of existing mentoring and counselling programs, as well as the development of new programs focused on supporting students' stress management, work-life balance and overall well-being. Furthermore, the development of new programs should be tailored to promote the overall well-being of medical students. These initiatives could encompass workshops or seminars on stress management techniques, mindfulness practices, healthy lifestyle habits, and effective coping strategies.

In addressing burnout among medical students, fostering collaboration with external resources like mental health professionals and support groups is crucial. Simultaneously, acknowledging the issue, cultivating a culture of open communication and destigmatizing mental health concerns within the

medical community may play a significant role. Given the current trend of increased utilization of digital learning resources among medical students, screen time has the potential to become a significant contributing factor to burnout.

Furthermore, the emerging trend of online classes and assignments could potentially lead to distractions and non-educational web use, consequently exacerbating burnout in medical students. The findings of the present study are significant for medical educationists and curriculum planners to formulate appropriate strategies to cope with academic burnout.

Limitations of the Study

One limitation of the present study is that the effect of burnout resulting from increased screen time of medical students on their academic performance in summative and formative assessments was not analyzed. It is proposed that the effect of burnout and screen time on the academic performance of medical studentsshould be explored in future studies.

CONCLUSION

We conclude that screen time of medical students has a significant correlation with burnout and has the potential to cause physical and mental health ailments. The findings of the study inform medical educationists to develop strategies and support systems to reduce burnout and promote the well-being of medical students.

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The Authors:

Dr. Khurram Irshad,
Associate Professor,
Department of Physiology,
Shifa College of Dentistry,
Shifa Tameer-e-Millat University,Islamabad.

Dr. Fahad Azam,
Professor,
Department of Pharmacology & Therapeutics,
Shifa College of Dentistry,
Shifa Tameer-e-Millat University, Islamabad.

Dr. Ifra Ashraf,
Assistant Professor,
Department of Physiology,
Shifa College of Medicine,
Shifa Tameer-e-Millat University, Islamabad.

Dr. Abida Shaheen,
Professor,
Department of Pharmacology& Therapeutics,
Shifa College of Medicine,
Shifa Tameer-e-Millat University, Islamabad.

Dr. Nosheen Kazmi,
Assistant Professor,
Department of Psychiatry,
Shifa College of Medicine,
Shifa Tameer-e-Millat University,Islamabad.

Dr. Arsalan Ahmed,
Final Year Medical Student,
Shifa College of Medicine,
Shifa Tameer-e-Millat University, Islamabad.

Dr. Danish Iltaf Satti,
4th Year Medical Student,
Shifa College of Medicine,
Shifa Tameer-e-Millat University, Islamabad.

Dr. Adil Baloch,
4th Year Medical Student,
Shifa College of Medicine,
Shifa Tameer-e-Millat University, Islamabad.

Authorship:

KI:	Conceived idea and analyzed Data
FA:	Data Analysis and Manuscript writing
IA:	Designed Study and analyzed data
AS:	Designed Study and analyzed data
NK:	Data Interpretation and Manuscript writing
AA:	Collected Analyzed Data
DIS:	Collected Analyzed Data
AB:	Collected Analyzed Data