

EXPLORING THE USE OF ONLINE TECHNOLOGY FOR PROFESSIONAL EXAMINATION PREPARATION AMONG MEDICAL COLLEGE STUDENTS IN SWAT, PAKISTAN

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ABSTRACT

Objectives: To explore the use of online technology for professional examination preparation among medical college students in Swat.

Material and methods: This cross-sectional survey was conducted on 194 students enrolled in two medical colleges present in Swat. Data was collected through an online questionnaire and analyzed through different computer databases. The descriptive analysis of continuous variables was represented using the median, while categorical variables were presented through frequency and proportion.

Results: It was observed that 37.1% of students use online technology for professional exam preparation very frequently, and 43.3% use it frequently. The different devices used by students for accessing online resources for exam preparation were reported as smartphones 83.4%, laptops 54.9%, tablets 12.4%, and computers 3.1%. 86.5% of the students reported that their exam performance improved with the use of online technology, 10.8% of students reported that their exam performance did not change with the use of online technology, and 1.5% reported that their exam performance declined with the use of online technology. Regarding the use of online technology for exam preparation effect on stress levels, 3% of the students reported that the use of online technology reduces stress significantly, 9.3% reported that it reduces stress moderately, 16% reported that it has no significant impact on stress, 45.9% reported that it increases stress moderately, while 25.8% reported that it increases stress significantly.

Conclusion: The majority of medical college students utilize online technology for examination preparation, reporting improved performance. They perceive that online methods are more effective than traditional teaching. However, challenges like digital distractions, stress, and sleep disturbances accompany this shift. Despite these issues, there is evident potential for further enhancing exam preparation through increased online technology utilization.

Keywords: Online technology, professional examination preparation, medical college students

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INTRODUCTION

The use of online technology has become increasingly prevalent in various educational settings, including medical colleges. Online technology refers to the use of digital tools and platforms that enable communication, collaboration, and access to information over the Internet. Medical students are utilizing online platforms and

resources for professional exam preparation to enhance their learning experience and improve their academic performance. This shift towards online technology in medical education has been influenced by various factors, including the COVID-19 pandemic and the need for remote learning options.^{1,2}

Several studies have investigated the impact of online learning on exam performance. A study found that Iranian dental students showed positive results in learning through online methods.³ Similarly, a study reported that medical laboratory science students participating in online video formats achieved better practical examination scores and final grades compared to the control group.⁴ However, a study cautioned that the findings could be influenced by confounding factors, such as exam structure

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and difficulty level, rather than the virtual teaching itself, highlighting the need for further research.⁵ Additionally, a retrospective study conducted at Dow International Medical College, Karachi found significantly higher scores achieved by the online learning group.⁶ In contrast, a study observed non-significantly lower scores on course tests and the final exam for online psychology students.⁷

Previous studies have shown that online exams provide students with the flexibility to complete exams at their convenience, potentially enhancing their performance.⁸ Research also highlighted the significance of online exams in contributing to degree outcomes, accreditation requirements, and workplace safety issues, underscoring the importance of maintaining the integrity of online assessments.⁹ Studies have also compared students' satisfaction with online versus traditional examinations at the postgraduate level.¹⁰

However, the use of online technology for exam preparation also presents challenges and concerns. One prominent issue of concern is the widespread occurrence of digital distraction, a factor that detracts students from their academic endeavors and negatively influences their educational achievements. Previous studies have elucidated that a subset of students encounters distractions when participating in online learning.¹¹

Furthermore, the shift towards online exam preparation has implications for students' mental health and well-being. The pressure and stress associated with exam preparation have a negative impact on the students. Research from Indonesia demonstrates a notable increase in the prevalence of moderate stress associated with the use of online learning.¹² Medical colleges need to provide support and counseling services to address the mental health needs of students during this period.

While there is existing research on the use of online technology for exam preparation in medical colleges, most of the studies have been conducted in different contexts and settings.¹ Therefore, there is a need to investigate the experiences and perspectives of medical college students in Swat regarding the use of online technology for exam preparation.

MATERIAL AND METHODS

A quantitative, cross-sectional survey design was used to explore the use of online technology for professional exam preparation among medical college students

in Swat. The study was conducted in two medical colleges present in Swat that are Saidu Medical College, a public medical college in Swat, and Swat Medical College, a private medical college in Swat. The sample size was calculated using the WHO sample size calculator, which estimated a required sample size of 194 participants based on population size and desired level of precision. The participants included in the study were students from the second year to final year from both medical colleges. The participants excluded from the study were students in their first year from both medical colleges. The duration of the study was four months, from August to November 2023.

The questionnaire was prepared with the help of literature using Google Forms (A web-based survey tool provided by Google). The questionnaire was initially pilot-tested for reliability with fifteen randomly selected students from the participating students. The study was approved by the Ethical review board of both medical colleges (reference number:160-ERB/023)

A written informed consent was taken after which a link to the questionnaire was sent to the students of both medical colleges. The questionnaire consisted of two sections. The first section was about demographic information, including the participant's name, age, gender, and year of study in medical college. The second section aimed to assess the student's use of online technology for their professional exam preparation with the main focus on (A) Finding how frequently students use online technology for exam preparation. (B) To find which type of online resource they use for their exam preparation. (C) To identify challenges students, face when using online technology for exam preparation. (D) To find any changes they have noticed in exam performance since using online technology for preparation. (F) To find the impact of online technology usage on student's stress levels and sleep disturbances.

The data from the filled-out questionnaires were inputted into the SSPS version 22 for analysis. The descriptive analysis of continuous variables was represented using the median, while categorical variables were presented through frequency and proportion.

RESULTS

A total of 194 students participated in the study. Among the participants, the majority were male 68.6% (133) while the remaining 31.4% (61) were female. Stu-

Table No 1. Frequency of use of online technology for exam preparation by the students

Variables	Frequency (n)	Percentage (%)
Use of online technology for exam preparation		
Very frequently	72	37.1%
Frequently	84	43.3%
Occasionally	22	11.3%
Rarely	15	7.7%
Never	1	0.6%
Exam preparation improvement with the use of online technology		
Significantly improved	98	50.5%
Improved	73	37.6%
No significant impact	22	11.3%
Hindered	1	0.5%
Exam performance improvement with the use of online technology		
Improved	170	87.6%
No change	21	10.8%
Declined	3	1.5%
Quality of online resources available for exam preparation		
Excellent quality	42	21.6%
Good quality	62	31.9%
Average quality	39	20.1%
Below average quality	37	19.1%
Poor quality	14	7.2%
Role of traditional teaching methods (lectures and textbooks) in comparison to online technology for exam preparation		
Traditional methods are more effective	51	26.3%
Online technology is more effective	118	60.8%
Both equally effective	25	12.9%
Digitally distracted while using online technology for exam preparation		
Yes	165	85%
No	29	15%
Management of digital distractions while using online technology for exam preparation		
Set specific study hours	42	21.6%
Use website blockers	20	10.3%
Turn off notifications	34	17.5%
Practice self-discipline	14	7.2%
I don't actively manage distractions	84	43.3%
The use of online technology for exam preparation affects your stress level		
Reduces stress significantly	06	3%
Reduces stress moderately	18	9.3%
Has no significant impact on stress	31	16%
Increases stress moderately	89	45.9%
Increases stress significantly	50	25.8%
The use of online technology contributes to sleep disturbances or irregular sleep patterns during exam preparation		
Significantly contributes	40	20.6%
Moderately contributes	65	33.5%
Has no significant impact	37	19.1%
Reduces sleep disturbances	15	7.7%
I am not sure	37	19.1%

Recommendations for improving the accessibility and quality of online resources for exam preparation		
Provide better internet infrastructure	40	20.6%
Distribute devices to students	35	18%
Offer more online courses	61	31.4%
Train instructors in digital pedagogy	38	19.6%
Others	20	10.3%

dents have a median age of 22.2 ± 1.2 years. Students from second year were 23.7% (46), third year 28.9% (56), fourth year 23.7% (46), and final year 23.7% (46). Students who participated from Saidu Medical College were 98(50.5%) and from Swat Medical College were 96(49.5%).

The different devices used by students for accessing online resources for exam preparation were reported as smartphones 83.4%(161), laptops 54.9%(106), tablets 12.4%(24), and computers 3.1%(6).

The most common places of study using online technology for professional exam preparation were reported as home 51.3%(99), library 28%(54), hostel 12.5%(24), and anywhere 8.2% (17).

The different online resources used by students for their professional exam preparation were reported as online lectures 90.7%(176), educational websites 54.6%(106), E-books 9.8%(19), medical forums or discussion groups 9.3%(18), flash card apps 16.5%(32), practice question websites 17.5%(34), social media study groups 21.6%(42), U world 1.5% (3), and Google 1.8%(4). See Table 1 for details.

DISCUSSION

This study has offered valuable insights into several aspects, including the frequency of students using online technology for exam preparation, the correlation between student’s exam performance and online technology usage, the variety of devices students employ for online technology in exam preparation, a comparison between traditional teaching and online technology for exam preparation, the presence of digital distractions associated with online technology, and the stress and sleep disturbances linked to the use of online technology in exam preparation.

The study findings reveal that a significant number of students utilize online technology for professional exam preparation, with most (88.1%) reporting improved exam readiness and performance. The study results are per the previous studies. A study conducted in Australia

also shows similar results with 75% of the students reporting that their performance improved with the use of online learning.¹³ Similarly, a study found that Iranian dental students showed positive results in learning through online methods.³ Hence, these findings indicate that utilizing online technology for exams leads to improved exam performance.

A majority of students, specifically 60.8%, expressed a preference for online technology as an effective method for exam preparation, while 26.3% reported that they found traditional teaching methods to be more effective. However, findings from a previous study indicate that students attending traditional classes generally attained slightly superior grades and assignment scores in comparison to their counterparts involved in online learning.^{14,15}

The increased preference among students for online technology over traditional teaching methods in our research can be attributed to the expanding range of learning platforms available through online technology and the heightened levels of engagement and enjoyment it provides for exam preparation.

According to our study, the smartphone (83.4%) was the most frequently used device for exam preparation on online technology followed by laptop (54.9%), tablet (12.4%), and computer (3.1%). A previous study observed that the most utilized gadget by the students was a laptop (90%), followed by a smartphone (60%), and a tablet (16%).¹⁴ Our study demonstrates a notable upswing in the adoption of smartphones for online technology, a trend closely linked to the increasing availability of these devices to a broad spectrum of users in recent times.

Our study findings unveil a substantial elevation in students’ stress levels, with 25.8% experiencing a significant increase and 45.9% reporting a moderate rise, attributed to their engagement with online technology. An earlier study carried out in Indonesia reported that a significant 48.9% of students encountered mild stress, with 4% experiencing severe stress during their engagement

in online learning.¹² Our study also brings to light the fact that a significant number of students, comprising 33.5% to a moderate degree and 20.6% to a significant extent, link the disruption of their sleep patterns to their engagement with online technology. Thus, these findings indicate that the use of online technology for exam preparation can contribute to heightened stress and disruption in sleep patterns among students.

Our research findings also unveil that a significant 85% of students grapple with digital distractions, while the remaining 15% manage to remain undistracted. A previous research study also demonstrated that a significant 20.9% of students engage with digital devices for non-academic activities.¹¹ Our research reveals a rise in digital distractions among students, which can be attributed to the increased prevalence of social media usage by students in recent years.

Our study compilation of suggestions for enhancing the accessibility and quality of online resources for exam preparation yielded significant insights. Notably, 20.6% of participants advocated for improvements in internet infrastructure, 18% emphasized the distribution of devices to students, 31.4% encouraged the expansion of online course offerings, and 19.6% stressed the importance of instructing educators in digital pedagogy.

CONCLUSION

A majority of medical college students utilize online technology for exam preparation, with a significant number reporting improved exam performance through its usage. The prevalent belief among students is that online technology is more effective than traditional teaching methods for their professional exam preparation. Despite these advantages, challenges such as digital distractions, increased stress, and sleep disturbances are associated with online technology use for exam preparation. Nonetheless, the potential for further utilization of online technology to enhance professional exam preparation remains evident.

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REFERENCES

- Ziehfrend S, Reifenrath J, Wijnen-Meijer M, Welzel J, Sauter F, Wecker H, et al. Considering medical students' perception, concerns and needs for e-exams during COVID-19: a promising approach to improve subject-specific e-exams. *Medical Education Online*. 2022 Aug 21;27(1). 2114131
- Younas A, Ashraf MN, Ashraf S, Malik RM, Pasha N, Naeem H. Online assessments during COVID-19 pandemic - A paradigm shift in educational strategy. *JRMC*. 2022 Jun 30;26(2):295-300.
- Moazami F, Bahrapour E, Azar MR, Jahedi F, Moattari M. Comparing two methods of education (virtual versus traditional) on learning of Iranian dental students: a post-test only design study. *BMC Medical Education*. 2014 Mar 5;14(1). 1-5
- Donkin R, Askew E, Stevenson H. Video feedback and e-learning enhance laboratory skills and engagement in medical laboratory science students. *BMC Medical Education*. 2019 Aug 14;19(1).1-12
- Ishak A, AlRawashdeh MM, Meletiou-Mavrotheris M, Nikas IP. Virtual Pathology Education in Medical Schools Worldwide during the COVID-19 Pandemic: Advantages, Challenges Faced, and Perspectives. *Diagnostics*. 2022 Jun 29;12(7):1578.
- Abbas U, Parveen M, Ashfaq A, Naz R, Zaheer S, Amjad Z. Online versus Traditional Learning: Outcomes of First Online Learning Experience. *Pakistan J Medical and Health Sciences [Internet]*. 2021 Sep 30 [cited 2021 Oct 30];15(9):2248-50. Available from: <https://pjmhsonline.com/2021/sep/2248.pdf>
- Waschull SB. The Online Delivery of Psychology Courses: Attrition, Performance, and Evaluation. *Teaching of Psychology*. 2001 Apr;28(2):143-7
- Schmidt SJ. Make It Stick: The Science of Successful Learning. *Journal of Food Science Education*. 2015 Sep 29;14(4):142-4
- Linden K, Gonzalez P. Zoom invigilated exams: A protocol for rapid adoption to remote examinations. *British J Educational Technology*. 2021 May 20;52(4):1323-37
- Ali IL, Iftikhar M. Comparative Analysis of Students' Satisfaction Regarding Online Vs Traditional Examination at Postgraduate Level in the University of Agriculture Faisalabad. *International J Social Studies*. 2021 Oct 15;1(1):09-13
- Mccooy BR. Digital distractions in the classroom phase II: Student classroom use of digital devices for non-class related purposes part of the communication commons, instructional media design commons, and the Scholarshi. *J Media Education*. 2016;7(1):5-32
- Wahyu A, Simanullang RH. Student stress due to online learning during the COVID-19 pandemic. *J Aisyah J Ilmu Kesehatan [Internet]*. 2020;5(2):153-7. Available from: <http://dx.doi.org/10.30604/jika.v5i2.346>
- Warnecke E, Pearson S. Medical students' perceptions of using e-learning to enhance the acquisition of consult-

ing skills. The Australasian Medical J [Internet]. 2011 Jun 30 [cited 2021 Jun 18];4(6):300–7. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3562947/>

14. Schulz P, Sagheb K, Affeldt H, Klumpp H, Taylor K, Walter C, et al. Acceptance of E-Learning Devices by Den-

tal Students. Medicine 20 [Internet]. 2013 Aug 14 [cited 2023 Jan 11];2(2):e6. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4084775/#_ffn_sectitle

15. Hurlbut AR. Online vs. traditional learning in teacher education: a comparison of student progress. American J Distance Education. 2018 Oct 2;32(4):248–66.

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Following authors have made substantial contributions to the manuscript as under

Authors	Conceived & designed the analysis	Collected the data	Contributed data or analysis tools	Performed the analysis	Wrote the paper	Other contribution
Syed R	✓	✗	✓	✗	✓	✗
Khan AA	✓	✓	✗	✓	✓	✗
Iqbal B	✗	✓	✗	✗	✓	✗

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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