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Difficulties faced by Medical Students of Southern Punjab in E-Learning: A Cross-Sectional Study Amidst COVID-19

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ABSTRACT

Introduction: Amidst the challenges imposed by the COVID-19 pandemic, this cross-sectional study investigates the specific difficulties encountered by medical students in southern Punjab while navigating the realm of e-learning in their academic pursuits

Objective: The primary objective of this study was to ascertain the challenges faced by MBBS students in southern Punjab while participating in e-learning throughout the COVID-19 pandemic.

Methods: In May 2020, a cross-sectional study was undertaken during the first wave of COVID-19 lockdown among third and final-year MBBS students attending E-learning sessions. The sample comprised 32 male and 43 female students, totaling 85 in the third year and 18 in the final year, with a targeted response rate of 75 to achieve a 95% confidence interval.

Results: The study findings reveal that a significant proportion of participants, comprising 66%, faced challenges in online classes owing to connectivity issues arising from their residency in less developed regions of southern Punjab. Forty percent of students did not face any difficulties during E-learning. These findings indicate that a noteworthy percentage of students, accounting for 60%, possess a negative perspective concerning online classes. The research further unveiled that 52% of students identified reading as the most productive learning method, while 40% indicated their capability to disregard distractions while studying. Lastly, 40% of students affirmed their possession of headphones for utilization during online lectures.

Conclusion: Our study participants didnot prefer E-learning, with many reporting internet connectivity issues, particularly those from southern Punjab. We thus recommend that the administration and faculty consider implementing asynchronous e-learning activities to enable students in less-developed areas with poor internet connectivity to benefit from online learning.

Keywords: Distance Education, Online Learning, COVID-19, Medical Students

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INTRODUCTION

COVID-19, an infectious disease stemming from a novel coronavirus (WHO, 2020; Lipsitch, Swerdlow, and Finelli, 2020), originated in Wuhan, China in 2019 and swiftly disseminated across the globe (Das and Das, 2020).The impact of the epidemic is determined by factors such as the number of infected individuals, transmissibility, and clinical severity (WHO, 2020). The transmission of the virus transpires through either direct contact or droplets, with the incubation period spanning from 2 to 14 days (Bhagavathula et al., 2020).

A lockdown was imposed by authorities, resulting in the closure of all non-essential services, including educational institutions and offices. Higher Education Commission mandated the transition of all educational institutions to online teaching (Nash, 2020).

In adherence to governmental directives and prompted by health apprehensions arising from the COVID-19 pandemic, educational institutions swiftly shifted to online learning, ensuring the continuous education of students (Abbasi, Ayoob, Malik, and Memon, 2020). Nonetheless, the pandemic has significantly influenced the social aspects of students' lives, restricting interactions with friends and family members (Cao et al., 2020). Moreover, it has yielded detrimental repercussions on their economic status and emotional welfare, resulting in feelings of exasperation, despondency, anxiousness, and monotony (Chan et al., 2020). There is a growing apprehension among students regarding their forthcoming educational journey and career opportunities (Cao et al., 2020).

In light of the immediate shift from conventional in-person educational models to online platforms amid the COVID-19 pandemic, students have encountered unease and uneasiness (Al-Tammemi, Akour, and Alfalah, 2020). They have grappled with difficulties in acclimating to novel assessment approaches, increased academic demands, and interactions with instructors. Moreover, they have contended with challenges linked to technology availability and financial considerations (Owusu-Fordjour, Koomson, and Hanson, 2020). Scientific research has also shifted online, limiting networking opportunities and job-seeking prospects for students, and practice-based medical students have been affected in developing direct patient interaction and physical examination skills (Sarfraz et al., 2022).

In the landscape of information technology, the mode of instruction known as E-learning, encompassing internet-based or web-based learning, introduces unique challenges to medical education (Raghunandana, Bhuvanendranath, Shilpa, and Narayana, 2021). Both in higher education settings, both online and offline teaching methods have seen extensive utilization (Pei and Wu, 2019). Nonetheless, the growing need for competency in informatics within healthcare technology, encompassing electronic health records, learning systems, and diagnostic aids, introduces a fresh hurdle for medical students (Pei and Wu, 2019). Face-to-face courses demonstrate greater efficacy in fostering students' academic achievement

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and advancement compared to online courses (Bettinger, Fox, Loeb, and Taylor, 2017). Moreover, there has been scant exploration into the repercussions of the COVID-19 pandemic on established distance learning institutions (Aristeidou and Cross, 2021). E-learning, which uses electronic resources and computer technology, has become the main mode of teaching during the pandemic due to the risk of virus transmission in traditional educational settings (Lizcano, Lara, White, and Aljawarneh, 2020). E-learning is assuming a progressively vital role in reshaping the entire educational landscape, as numerous students exhibit a preference for pursuing their studies and completing their degrees through online platforms at universities and colleges (Maatuk, Elberkawi, Aljawarneh, Rashaideh, and Alharbi, 2021).

In the context of Pakistan, the implementation of E-learning encounters challenges related to technological issues within Higher Education Institutions (Nawaz and Khan, 2012). This situation necessitates the involvement of technology experts to facilitate effective virtual teaching (Nasir u et al., 2023). E-learning relies on electronic devices such as computers or smartphones connected to the internet (Ruiz, Mintzer, and Leipzig, 2006), and offers distinct advantages for medical students (Barteit et al., 2020). In response to the COVID-19 pandemic, numerous educational institutions in Pakistan, including schools, colleges, and medical and dental institutes, have embraced e-learning as a solution. Educators are now exploring various e-teaching software to enhance student learning outcomes (Abbasi et al., 2020; Kwary and Fauzie, 2017). The repercussions of the COVID-19 pandemic on student performance are likely to manifest in lowered pass rates for national exams (Sintema and Education, 2020). In response to the COVID-19 outbreak, educational institutions in Pakistan were compelled to temporarily close. To ensure the continuity of education, the Higher Education Commission mandated universities to establish learning management systems for conducting online classes. In this context, educators have utilized e-teaching tools such as Zoom, Google Meet, Microsoft Teams and webinars to facilitate students' learning experience. The efficacy of the e-learning approach during the pandemic has been underscored in several studies (Afzal et al., 2020; S. Shah et al., 2020).The aim of this study was to pinpoint the challenges encountered by medical students in southern Punjab in relation to E-learning amid the COVID-19 pandemic.

METHODS

In May 2020, a cross-sectional survey was undertaken involving third and final-year MBBS students who were participating in an E-learning program amid the COVID-19 pandemic. The survey questionnaire comprised 29 closed-ended questions and was administered through an online distribution method. A non-probability cross-sectional sampling approach was employed to recruit a sample of 75 participants from Pak Red Crescent Medical and Dental Teaching Hospital, Dina Nath. The collected responses were encoded using a 3-point scale, where 1 denoted agreement and 3 denoted disagreement. The selection of the sample was guided by well-defined inclusion and exclusion criteria. Male and female MBBS students aged 18 years or above, studying in private settings, were encompassed in the study. Participants with concurrent health issues or anatomical irregularities, like hearing impairments or medical disorders, were excluded. Furthermore, first-, second-, and fourth-year students were omitted from the study due to the absence of online classes during the data collection phase.

The data analysis was conducted using IBM SPSS version 24, employing descriptive analysis to compute the frequencies and percentages of MBBS students engaged in E-learning during the COVID-19 pandemic.Participants' personal information was kept confidential, and responses were made anonymous. Participation in the survey was entirely voluntary and without compensation. Electronic informed consent was procured, and the study adhered to the Checklist for Reporting Results of Internet E-Surveys during the Covid-19 pandemic.

RESULTS

Among the 73 students surveyed, a total of 70 participants provided responses. It was observed that 4.3% of the respondents were 19 years old, while the majority, comprising 32.9%, fell within the age of 21 years. Online teaching is met with dissatisfaction by 38% of students, and a majority of 60% disagree that it offers the same advantages as in-person lectures. Additionally, 52% agree that COVID-19 has affected student learning, while 33% somewhat agree that online learning is an option to avoid academic loss during the pandemic.

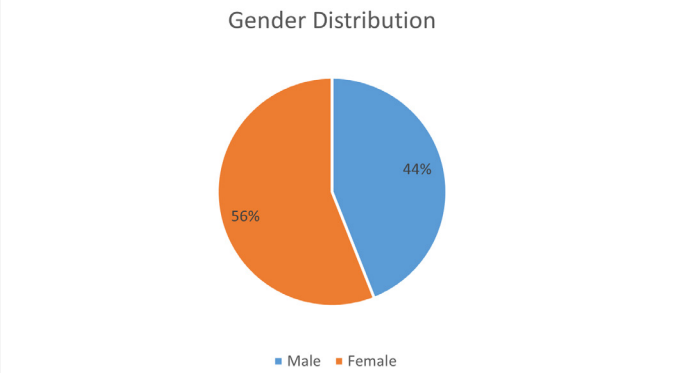

Fig. 1: Social Demographics: Gender Distribution among Medical Students in the Context of E-Learning during the Covid-19 Pandemic (N= 73) Females had a higher response rate at 56% compared to males at 44%.

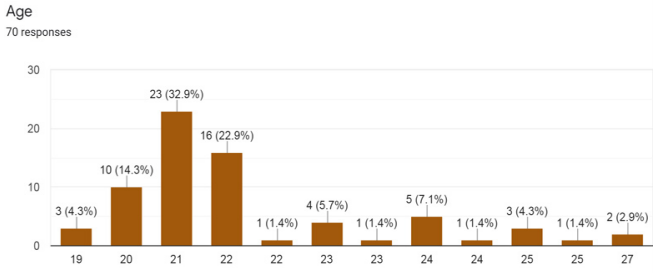

Fig. 2: Social Demographics: Age Distribution of Medical Students in the Context of E-Learning during the Covid-19 Pandemic (N= 73)

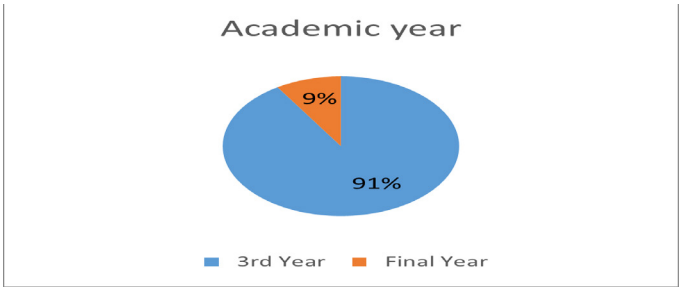

Figure 3: Academic Year Distribution of Medical Students Engaged in E-Learning during Covid-19 (N= 73)

Table 2: Shows the responses about the Impact of Covid-19.

Impact of COVID-19	Agree	Somewhat agree	Disagree
Are you dissatisfied with the online teaching system during the COVID-19 pandemic?	38%	24%	11%
Online teaching offers the same advantages as in-person lectures?	1 %	12%	60%
COVID-19 pandemic as significantly influencing student learning?	52%	15%	6%
Online learning during the COVID-19 pandemic is a preferable choice to mitigate academic setbacks?	24%	33%	16%

Table 3: Shows the responses about the Self-direction(N=73)

Self-Direction	Agree	Somewhat agree	Disagree
I have expertise in establishing personal goals and deadlines.	24%	39%	10%
I have a valid rationale for enrolling in an online course.	16%	31%	26%
I consistently complete the projects I initiate.	34%	25%	14%
I persevere through challenges rather than giving up when things become difficult.	40%	24%	9%
I am capable of staying focused and adhering to schedules.	34%	26%	13%

Table 3: Regarding Self-direction, 24% of students are proficient at setting goals and deadlines, 16% have a clear motivation for taking an online course, and 34% complete the projects they begin. However, 9% of students encounter difficulties and 13% find it challenging to remain on course and meet set deadlines.

Table 4: Shows the Learning Preferences of Medical Students (N=73)

Learning Preferences	Agree	Somewhat agree	Disagree
I am quick to grasp new concepts.	25%	35%	13%
I am capable of gaining knowledge from auditory sources such as lectures, audio recordings, or podcasts.	37%	27%	9%
My optimal learning method involves reading the material.	52%	16%	5%
I have cultivated effective strategies for resolving challenges I encounter.	28%	39%	6%
I am open to engaging in email communication or discussions with individuals I may never meet in person.	22%	17%	34%

Table 4: 25% of students reported having an easy time learning, while 37% agreed that they learn well from lectures, audio recordings, or podcasts. The majority of students (52%) agreed that reading is the best way for them to learn, and 28% reported developing effective problem-solving strategies. Regarding social interaction, 22% of students reported feeling comfortable interacting with peers online for academic purposes.

Table 5: Shows the study Habits of Medical students (N=73).

Study Habits	Agree	Somewhat agree	Disagree
I typically choose a study environment where I can engage in reading and work on assignments without being disrupted by distractions.	44%	15%	14%
I am prepared to allocate 10-20 hours per week for online lecture sessions.	14%	28%	31%
I am capable of ignoring distractions in my surroundings while studying.	6%	20%	47%
I maintain a record of my assignments along with their respective due dates.	38%	27%	8%
I am open to utilizing email and other online tools to communicate with my peers and instructors and ask questions.	23%	29%	21%

Regarding Study Habits, 44% of students study in a distraction-free environment, 31% expressed their unwillingness to dedicate 10-20 hours per week to online lectures, and 47% can't ignore distractions when studying. Additionally, 38% keep records of their assignments and due dates, and 23% of respondents indicated their willingness to utilize email and other online tools for communication with both peers and instructors.

Table 6: Responses shows the Technology Skills (N=73).

Technology Skills	Agree	Somewhat agree	Disagree
I possess a reasonable proficiency in using computers.	34%	21%	18%
I am at ease navigating the Internet.	32%	24%	17%
I am at ease performing searches, bookmarking websites, and downloading files.	28%	25%	20%
I am at ease with installing software and making configuration changes on my computer.	20%	20%	33%
I have access to someone who can assist me in case I encounter computer-related issues.	27%	23%	23%

Regarding Technology Skills, 34% of students reported proficiency in computer use, and 32% are comfortable with Internet surfing. Only 28% are familiar with searching, setting bookmarks, and downloading files. Conversely, 33% expressed discomfort with the task of installing software and modifying configuration settings on their computer. Additionally, 27% of students indicated they possess the skill to troubleshoot computer issues or have access to assistance for troubleshooting such problems.

Table 7: The percentage (%) of Computer / Mobile Equipment Capabilities who agree, somewhat agree, or disagree (N=73).

Computer / Mobile Equipment Capabilities	Agree	Somewhat agree	Disagree
I am comfortable using computer apps (Google Classroom /PowerPoint / Word etc.).	31%	18%	24%
I am comfortable using mobile apps (Google Classroom/ PowerPoint/ Word etc.).	31%	28%	14%
I have a reliable and reasonably fast internet connection, such as DSL or cable modem.	17%	21%	35%
I possess headphones, speakers, and a microphone to utilize in case a class involves video lectures.	40%	17%	16%
My web browser is capable of playing various prevalent multimedia formats, both video and audio.	31%	20%	22%

Table 7: In the section on Computer/Mobile Equipment Capabilities, 31% of students reported being comfortable using computer and mobile apps such as Google Classroom, PowerPoint, and Word. On the other hand, 35% disagreed with the statement that their internet connection was fast and reliable, such as DSL or cable modem. Out of the participants, 40% indicated possessing headphones or speakers along with a microphone for utilization during classes with video lectures. Additionally, 31% had web browsers capable of playing standard multimedia formats.

DISCUSSION

This study investigates the obstacles encountered by medical students enrolled in a private college situated beyond Lahore, Pakistan, amidst the COVID-19 pandemic. These students, predominantly hailing from less developed regions in southern Punjab, encountered challenges stemming from social distancing protocols that prompted the closure of educational institutions and a transition to virtual learning.

Abbasi, Ayoob et al. (2020) found that 70% of respondents experienced frequent internet connectivity issues during e-learning, and 63% found the software used for online classes difficult to use. Only 60.10% of students had access to broadband internet at home, and 25% of students wanted software improvements for better e-learning experiences. These results are similar to our findings, where 35% of participants had suboptimal internet connectivity for online classes. Dutta and Smita (2020) also reported that inadequate access to electronic devices, prohibitive cost of internet, slow internet connection, and challenges in navigating online platforms were major hindrances for students in online education.

Pei and Wu (2019) discovered that online learning offers benefits for enriching undergraduates' knowledge, even though the participants in our study displayed hesitancy towards engaging in online classes, despite recognizing their advantages. In a similar vein, Raghunandana et al. (2021) observed that a significant proportion of students considered online lectures and collaborative e-learning activities more advantageous than conventional lectures, aligning with the outcomes of our study.

In 2022, a study conducted at Shifa College of Medicine investigated the influence of COVID-19 on the performance of senior MBBS students during their clerkship examinations. The researchers compared the scores of these students with those of the previous year. The findings indicated that the pandemic did not exert a significant influence on the overall performance of the senior year students. These findings support our assertion that students can study effectively even without direct supervision and meet their deadlines (Aaraj, Farooqi, Saeed, and Khan, 2022).

In 2021, Aristeidou and Cross identified obstacles to online learning faced by medical students in a developing nation. These challenges were classified into five distinct groups: technological, individual, domestic, institutional, and community barriers. Among these, the most frequently encountered obstacles included challenges in adapting to different learning styles, managing domestic responsibilities, and addressing issues of ineffective communication between educators and learners. Our study found that students were reluctant to seek help during online sessions, leading to a communication gap and a poor learning experience. Likewise, Shah et al. (2021) investigated the difficulties associated with E-learning in Pakistan amid the COVID-19 pandemic and identified that universities in Sindh face inadequacies in e-learning due to challenges related to internet accessibility, electricity availability, student-teacher engagement, and the capability to actively participate and raise questions in online learning environments. These findings align

with our study, as students in our study faced similar issues due to the poor and underdeveloped areas of Southern Punjab and Sindh.

CONCLUSION

Although recognizing the influence of COVID-19 on their academic engagements, students in this research conveyed a certain hesitancy toward participating in online classes and engaging in discussions with peers and tutors from remote locations. They were capable of meeting deadlines and completing projects without direct teacher supervision but avoided attending online lectures due to potential distractions. While comfortable with computer and internet use, they struggled with installing software and changing computer settings. Although equipped with desktop and mobile applications, and audio and visual communication gadgets, students lacked reliable broadband internet connectivity, particularly in less developed areas.

DECLARATION OF INTEREST

The authors declares no conflict of interest.

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AUTHOR'S CONTRIBUTION

1. **M.I.:** substantial contributions to conception and design, and acquisition of data.

2. S.H.R.Z.: Analysis and interpretation of data; drafting the article and revising it critically for important intellectual content; and final approval of the version to be published.