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Original Article

Perceptions of Medical Students Concerning Online Education

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ABSTRACT

Background: The COVID-19 pandemic necessitated a rapid shift to online education systems worldwide, significantly affecting traditional learning environments. This study examines the perceptions and experiences of medical students at Liaquat University of Medical & Health Sciences (LUMHS) during the enforced online education period, exploring the efficacy and challenges of this sudden transition.

Objective: The main objective of this study was to assess medical students' perceptions of online education, their engagement with various digital tools, and the effectiveness of online learning during the COVID-19 lockdown.

Methods: A cross-sectional study was conducted using a non-probability convenience sampling method at LUMHS. The study spanned one month and included undergraduate medical students who consented to participate. A structured questionnaire was employed to collect data on students' demographics, their experiences with online classes, and the challenges faced. Ethical approval was obtained from the Institutional Ethical Review Committee of LUMHS. Data analysis was performed using SPSS version 25, employing descriptive statistics, frequency distributions, and Chi-square tests to assess the relationships between variables.

Results: The study comprised 328 participants with a gender distribution of 40.55% male and 59.45% female. Age groups were 18-20 (30.48%), 21-22 (33.55%), and 23-24 (35.97%). Most students preferred online sessions of 40-45 minutes, with significant dissatisfaction reported regarding the educational effectiveness of online learning compared to traditional methods. Technical issues, internet connectivity, and inadequate electrical supplies were significant barriers encountered.

Conclusion: The findings highlight the challenges and limitations of sudden transitions to online learning. Despite the proactive measures by educational institutions and government bodies, students faced significant hurdles that impacted their learning experiences. Future educational strategies should consider these insights to enhance the design and delivery of online education, ensuring it is more robust and effective.

Keywords: Online Education, Medical Students, COVID-19, E-learning Perceptions, Digital Learning Barriers, SPSS Analysis, Higher Education Adaptation.

INTRODUCTION

The COVID-19 pandemic has profoundly impacted higher education, compelling medical research institutes and other academic entities worldwide to adopt an online teaching modality (1, 2). This shift was necessitated by the global closure of educational institutions, which threatened the continuity of academic programs. By the end of April 2020, approximately 73.8% of all registered students in 186 countries were affected by nationwide closures as reported by UNESCO (3, 4). The necessity for social distancing and lockdown measures to curb the virus's spread made these drastic actions inevitable, affecting many students and disrupting educational routines (5).

The rapid shift to online platforms has placed a significant emphasis on the use of technology in education, reshaping perceptions and experiences of learning. The literature on higher education has increasingly focused on the dynamics of online learning during the pandemic, noting the substantial challenges faced by both students and educators (6, 7). These challenges stem largely from the

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swift transition to blended or hybrid learning models and the extensive deployment of digital tools for pedagogical innovation and course redesign (8-10).

In Pakistan, the government's response to the pandemic included the closure of all educational institutions, prompting an urgent pivot to online education (11). This global shift has led to an unprecedented reliance on digital solutions to ensure the continuity of education. The benefits of online learning during this period have included greater accessibility to educational resources, increased flexibility in learning schedules, enhanced communication channels, and stronger educational support systems (12-14).

Medical education, in particular, has had to adapt to these changes, moving away from traditional face-to-face interactions to virtual classrooms. This transition has not only included theoretical studies but also practical, clinical, and assessment components, which are crucial to medical training. The reliance on computer technology to facilitate this shift has been significant, underscoring the critical role of digital tools in maintaining the integrity and continuity of medical education during the pandemic (15).

The focus of this study is to explore how medical students have perceived these changes and adapted to the online learning environment implemented by higher education institutions during the COVID-19 crisis. This investigation is essential for understanding the effectiveness of online learning and for planning future educational strategies in the face of such global disruptions.

MATERIAL AND METHODS

A cross-sectional study was conducted at Liaquat University of Medical & Health Sciences, Jamshoro, utilizing a non-probability convenience sampling technique over a period of one month. The study received ethical approval from the Institutional Ethical Review Committee of LUMHS Jamshoro (No.LUMHS/REC/-179). The participants comprised undergraduate students, while residents, officers, and postgraduate students were excluded if they did not provide consent. This selection was guided by the scarcity of literature on students' perceptions of online education, which was hypothesized to be around 50% (17).

The sample size was determined using the WHO sample size calculator, taking into account a population of 2200 students, which includes 1800 MBBS and 400 BDS students. With a critical value set for a 95% confidence interval and a margin of error at 5%, the calculated sample size was 328 (6, 10).

Data collection was facilitated through a structured questionnaire that was distributed after obtaining written informed consent from each participant. This process adhered to the ethical guidelines set forth by the Declaration of Helsinki, ensuring that all participants were informed of the study's scope and their participation was voluntary (16).

For data analysis, SPSS version 25 was employed. The statistical analysis included simple descriptive statistics to calculate the age and gender distribution of the subjects. Categorical variables were analyzed using frequency and percentages. Additionally, relationships between variables were explored using the Chi-square test to determine statistical significance, which was established at a P-value of ≤ 0.05.

RESULTS

In the conducted study at Liaquat University of Medical & Health Sciences, Jamshoro, demographic data revealed a diverse age distribution among the participants, with the youngest group (18-20 years) comprising 30.48%, the middle group (21-22 years) 33.55%, and the oldest group (23-24 years) making up 35.97% of the study population (Table 1). Gender representation was skewed towards female participants, who accounted for 59.45% compared to 40.55% male participants. The discipline-wise breakdown showed a majority of 57.32% from the MBBS program and 42.68% from the BDS program, illustrating a balanced participation across the medical disciplines.

Table 1: Demographic Information of Subjects

Profile	Attributes	Frequency	Percentage
Age	18-20	100	30.48%
	21-22	110	33.55%
	23-24	118	35.97%
Gender	Male	133	40.55%
	Female	195	59.45%
Discipline	MBBS	188	57.32%
	BDS	140	42.68%

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Table 2: Perceptions about E-learning

Question	Response	Frequency	Percentage	p-value
What should be the time period for each online class?	30 minutes	25	7.62%	≤0.06
	40 minutes	123	37.51%	
	45 minutes	140	42.68%	
	60 minutes	40	12.19%	
E-learning is preferable to conventional learning?	Agree	53	16.15%	≤0.001
	Disagree	275	83.85%	
Which type of tool are you using during online classes?	Desktop	11	3.35%	≤0.002
	Laptop	217	66.15%	
	Mobile	76	23.18%	
	Tablet	24	7.32%	
What is your opinion regarding online examination?	Excellent	20	6.09%	≤0.002
	Good/Fine	145	44.22%	
	Acceptable	60	18.29%	
	Not acceptable	103	31.40%	
What is your mode of online learning?	Zoom	165	50.32%	≤0.001
	Webinar	20	6.09%	
	Google classroom	105	32.01%	
	Mix of all these	38	11.58%	
Are you agreed with the teaching skills of your institute educators during online classes?	Yes	295	89.93%	≤0.000
	No	33	10.07%	

Table 3: Obstacles Faced By Study Subjects

Question	Response	Frequency	Percentage	p-value
Are you proficient to use a computer or laptop?	Yes	296	90.24%	≤0.0001
	No	32	9.76%	
Do you have unrestricted electrical supply at your home?	Yes	96	29.26%	≤0.002
	No	41	12.50%	
	Sometimes	191	58.24%	
Are you getting disruption at home in attending online classes?	All the time	53	16.15%	≤0.006
	Not at all	32	9.75%	
	Mostly	134	40.85%	
	Sometimes	109	33.25%	
Do you have easy access to the internet?	Yes	170	51.82%	≤0.002
	No	65	19.83%	
	Sometimes	93	28.35%	
What type of difficulties have you faced during online examinations?	Technical	65	19.82%	≤0.001
	Internet connection	203	61.89%	
	Interrupted electricity	60	18.29%	

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Perceptions of e-learning among the students showed varied preferences for the duration of online classes. A plurality of 42.68% favored 45-minute sessions, while 37.51% preferred 40 minutes, and only 12.19% supported extending online class duration to 60 minutes. The smallest group, comprising 7.62%, was satisfied with 30-minute sessions, indicating a preference for moderately long teaching periods (Table 2). When assessing the general preference for e-learning over traditional learning methods, a significant majority (83.85%) disagreed with the preference for e-learning, underscoring substantial resistance to replacing conventional classroom settings with online formats.

The technological tools utilized for attending online classes were predominantly laptops (66.15%), followed by mobile phones (23.18%), tablets (7.32%), and desktops (3.35%). This highlights the importance of portable and accessible devices in facilitating e-learning (Table 2). Opinions on online examinations varied, with 44.22% rating them as good or fine and 31.40% finding them not acceptable. Only a small fraction (6.09%) rated the online examination experience as excellent, reflecting mixed feelings about the effectiveness of online assessments (Table 2).

In terms of the preferred online learning platforms, Zoom was the most popular, used by 50.32% of the participants. This was followed by Google Classroom (32.01%) and a mix of various platforms (11.58%), with Webinar being the least preferred at only 6.09% (Table 2). The satisfaction with the teaching skills of educators during online classes was high, with 89.93% of students agreeing that the teaching was effective, which might indicate a successful adaptation by faculty to the online teaching environment. Regarding the obstacles faced, a significant proportion of students (90.24%) reported proficiency in using a computer or laptop, which is crucial for successful online learning (Table 3). However, challenges related to infrastructure were evident as only 29.26% of students had an unrestricted electrical supply, and 58.24% sometimes faced electricity issues, which could hinder continuous learning (Table 3). Disruptions at home during online classes were reported as frequent by 40.85% of the participants, occasionally by 33.25%, indicating that home environments are not always conducive to learning. Internet accessibility remained a significant hurdle, with 51.82% having easy access, whereas 48.18% faced issues either sometimes or regularly (Table 3).

Technical issues were the most common difficulty faced during online examinations, as reported by 19.82% of participants, followed by problems with internet connection (61.89%) and interrupted electricity (18.29%). These factors collectively highlight the technical and infrastructural challenges that can impact the effectiveness of online learning and assessments (Table 3).

Overall, the study highlights both the potentials and limitations of the rapid shift to online learning environments in medical education, driven by the necessities imposed by the COVID-19 pandemic.

DISCUSSION

The COVID-19 pandemic has necessitated a profound transformation within the educational landscape globally, compelling institutions to pivot to virtual modes of teaching and learning. In Pakistan, universities, including Liaquat University of Medical & Health Sciences (LUMHS), leveraged existing resources to maintain their curricular agendas during the lockdown. This study aimed to explore students' perceptions of the online educational experience during this period. The use of various online platforms such as Zoom, Google Meet, and Google Classroom was adopted as per the situational demands (15).

Advancements in technology have enabled diverse approaches to internet content design, emphasizing the necessity of incorporating learners' preferences and readiness into the course development process. Such alignment enhances the efficacy and engagement of online learning (16). This transition to online formats posed significant challenges, marked by a stark shift from traditional, face-to-face interactions to digital interfaces, affecting student engagement and learning outcomes.

The rapid evolution of information and communication technology (ICT) has transformed academic discourse and instructional methodologies, significantly expanding the capabilities for remote and digital education (16). Yet, this shift raises critical questions about the long-term incorporation of these changes within higher education, particularly the integration of adaptive learning environments and digital networks in course design. The ability of academic institutions to continue adapting and reflecting on educational practices is crucial for shaping future learning landscapes (17).

The sudden transition to online learning due to the pandemic created a distinct educational experience for students, many of whom faced barriers due to the lack of high-speed or reliable internet services (18). Traditionally, student participation in academic activities benefits significantly from direct interactions with instructors and peers, an element that is challenging to replicate in virtual environments (19).

Recognizing these challenges, the Higher Education Commission (HEC) of Pakistan developed a six-point readiness plan to guide institutions in delivering effective online education. This plan included facets of university, faculty, course, library, technology, and student readiness, aimed at enhancing the overall quality and accessibility of online education (20). Despite these efforts, the study found that laptops were the most commonly used device for accessing online education, yet a significant number of students expressed dissatisfaction with the educational value of online classes compared to traditional face-to-face interactions.

The findings of this study underline the complexity of online education, highlighting both its potential and its limitations. The rapid adoption of online teaching methods, driven by urgent circumstances, has not only tested the flexibility of educational systems but also the adaptability of students and educators. While significant strides have been made under the guidance of HEC to advance digital learning, the experiences reported by students suggest that further enhancements are needed (20, 21).

To navigate the complexities of online education effectively, it is recommended that educational institutions develop a multi-modal strategy to achieve course objectives, thereby enriching learning outcomes. Future research should continue to explore the integration of digital tools and educational practices, focusing on developing robust models that cater to diverse learning preferences and needs.

CONCLUSION

In conclusion, the transition to online education prompted by the COVID-19 pandemic has revealed both opportunities and challenges within the medical education landscape. While advancements in technology have enabled the continuation of academic activities, disparities in internet access and the limitations of virtual interactions underscore the need for ongoing refinement and adaptation. The implications for human healthcare are significant, as the ability to effectively train medical professionals in virtual environments directly impacts patient care and healthcare outcomes. As such, it is imperative for medical institutions to prioritize the development of comprehensive and accessible online education strategies to ensure the continued excellence of healthcare delivery.

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