

E-Learning Impact on Medical Students during COVID-19 Pandemic: Students' Perspective

Qamar Yasmeen*

*Independent Medical College, Faisalabad

ABSTRACT

Objective

To determine the satisfaction level, barriers, benefits and challenges of medical students of Independent Medical College Faisalabad regarding online teaching during pandemic of COVID-19.

Methodology

This cross sectional study was carried out from April 2021 to May 2021. In order to measure the satisfaction levels, barriers, benefits and challenge of eLearning of Independent Medical College Faisalabad medical students a web-based questionnaire consisting of 23 questions was generated using google form. Through various digital online platforms (E-mailing/E-messaging) the questionnaire form was shared with the participants. SPSS was used to analyze calculated data; presentation of data is carried in term of percentages (%) and frequencies (N).

Results

A total of 302 medical students participated in the study. The mean age of participants was 21.3 years. Among them 70.2% (n= 212) consist of male and 29.8% (n=212) were female. The majority of the participants (28.1%) were studying in 2nd year MBBS. Among electronic device used for online study laptop was used as major electronic device (39.1%). The overall satisfaction index for respondents was 28.4%. Slow/weak internet connection was main challenge reported by 54% students.

Conclusion

Overall, there was dissatisfaction and negative comments regarding interaction among students, practical learning, focus on study and technological/infrastructural flaws.

Key words: COVID-19, online teaching, satisfaction levels, performance, medical student

*For Correspondence.

Dr. Qamar Yasmeen

Assistant Professor,
Independent Medical College
Faisalabad.

Email:
qammar_yasmeen@yahoo.com

INTRODUCTION

Corona virus disease (COVID-19) has been identified in Wuhan city of China in December 2019. Later it was declared a global pandemic in March 2020 by World Health Organization (WHO). This disease has spread all over the world. Due to its spreading and fatality this deadly virus has been declared as most the dangerous virus by WHO. Now a new virulent strain (delta) of this virus has also been identified.¹ Apart from human lives it has created trouble in many fields including education.^{2,3} Due to mutation in Covid-19 virus, unavailability of vaccine, uncertainty of pandemic, educational institutions remained closed all across the world including Pakistan. The only way to protect human lives especially young children and adults was social distancing to prevent infection from virus. In this situation traditional methods of teaching among student and teachers was neither possible nor feasible.⁴ On the contrary, closure of educational institutions had a negative impact on educational system especially in underdeveloped country like Pakistan, where the literacy rate is

already not that high. Therefore, online teaching system was adopted in order to continue the professional curriculum for undergraduate students of different universities and medical colleges.

Distance learning has emerged as a valuable didactic tool since the last decade or so.^{5,6} Due to advancement in telecommunication and system technology, online education system has surfaced as new method of teaching via different digital platforms^{7,8} which, during this pandemic situation appeared to be a viable choice. As, compared to conventional teaching system, online learning has some advantages which include, easy accessibility, time efficiency, student's flexibility and availability to widen number of students in different areas where face to face teaching is not feasible (villages, mountain areas, snowy climate areas etc.). A study in Canada has revealed that students had an increased interest in studies when online research articles and e-books were incorporated in the teaching sessions.⁹ Conflicting to that, online system also has disadvantages such as internet speed issues, no

This article may be cited as: Mariyum *et al.* Glycated Hemoglobin Level and Clinical Parameters of Periodontal Disease in Type 2 Diabetics
Adv Basic Med Sci. 2021; 5(2): 31-34

physical interaction with faculty, lack of motivation and communication among students, no immediate feedback response from instructor, social distancing and good class room environment which otherwise helps to maintain nervous and physical activities of students.¹⁰

In Covid-19 pandemic when accessibility to college and universities class rooms was not possible, online teaching system was the only option left. However, medical student's satisfaction level for virtual learning system via different digital and social platforms remains questionable.¹¹ The literature shows different type of responses from students concerning online/distance learning.¹² According to data some technical problems faced by students in virtual learning set up are, poor internet connection, poor video and audio transmission and electricity issues.^{13,14} Apart from technical problems medical students require professional, practical and clinical learning which are pretty much possible via distance learning. But due to covid-19 severe pandemic, fear of virus spreading and its dangerous effects on health of the students, online learning seems to be the only best option in the current scenario.^{15,16} Therefore, the present study is conducted to measure the satisfaction level and analysis of associate problems of undergraduate medical students during online teaching system.

METHODOLOGY

A cross sectional study was conducted on the undergraduate students from different years of Independent Medical College Faisalabad. These students were taking online lectures of their professional course, due to lock down imposed in Punjab (Pakistan) in view of 2nd wave of covid-19 pandemic. The period of conduction of study was from April 2021 till May 2021. A questionnaire of 23 questions was developed on google questionnaire form after a thorough literature search^{17,18} and disseminated to students via online platforms (emails, messaging applications). At the beginning of the study, consent was taken from the participants online. A total of 302 students participated in this study. Data was collected on microsoft excel data sheets and analyzed through SPSS version 22. The data validity and reliability were evaluated through Cronbach's alpha. Questions were in two formats, MCQ,s (multiple choice questions) and rating questions on a five-point Likert scale (1= strongly disagree, 2= disagree, 3= neutral, 4=agree, 5= strongly agree). For simplifying statistical analysis, the five categories were regrouped into three categories, and were labeled as agree, disagree and neutral. These questions included student's demographics (age, gender, medical years and electronic device), accessible internet/digital technologies, e-Learning (benefits, drawbacks and challenges), faculty role and influence, usefulness of digital learning in medical education, and students' insight about future of e-Learning in medical education.

RESULTS

The alpha coefficient for this study is 0.84% suggesting that the items in questionnaire have relatively high internal consistency. The demographic details of the participants is shown in table 1.

Sociodemographic Characteristics		Frequency (%)
Age	21.3 Years (Range: 18-26)	
Gender	Male	212 (70.2)
	Female	90 (29.8)
Medical year	1st	57 (18.9)
	2nd	85 (28.1)
	3rd	69 (22.9)
	4th	50 (16.6)
	5th	41 (13.5)
Type of electronic device	Android Phone	94 (31.1)
	Laptop	118 (39.1)
	Tablet	30 (9.9)
	Android phone & laptop	60 (19.9)

Table 1 Summary of Sociodemographic Profile of IMC medical Students participating in this study

Regarding the reported benefits, drawbacks, and challenges of distance learning, major advantages were time-saving, flexibility of class. More than half of the students (55. 3%) reported no benefits of e-learning in comparison to traditional learning. The main drawbacks were the poor communication via online platforms which was reported by (68.5%) of responders, while 66.5% reported the feeling of lost or confused during online lectures/discussions. Variation in digital platforms (YouTube, Zoom, Google classrooms, Skype, Microsoft Teams, Moodle, WhatsApp groups, Facebook, etc.), weak internet streaming, limitation in internet data packages especially in village and mountainy areas were the other main challenge that was reported by medical students of basic and clinical years. A summary of reported benefits, drawbacks, and challenges is summarized in Table 2.

Based on students' opinions regarding instructors' role and performance in distance learning, 34.3% of students had agreed that instructors were actively participating in their discussions and 45.4% of students acknowledged that to accomplish desired course objectives teachers used multimedia approach. Around 61% of the students agreed that support by faculty was there for them in any issue regarding studies, while 69.8% of the respondents reported that the response time by faculty was quick enough for their queries. On the other hand, 50.9% of respondents believes that the time devoted to virtual learning class room sessions was satisfactory.

Overall, students (28.4%) were satisfied with their experience in

medical e-Learning, while 44.04 % were unsatisfied with online teaching system (Fig.1). Faculty/instructor role and behavior, use of multimedia, teachers' response and devoted time for medical teaching sessions were mainly linked to the satisfaction level of medical students of basic and clinical years

	Frequency (%)
Benefits	
Time saving	202 (66.9%)
Flexibility of class time	137 (45.4%)
Better communication/Instruction	53 (17.6%)
Improved learning	74 (24.5%)
Better interaction with faculty	96 (31.7%)
Better interaction with class fellows	91 (30.2%)
No benefits	167 (55.3%)
Drawbacks	
Flexibility of class time	137 (45.4%)
Poor communication/Instruction	201 (68.5%)
Poor communication with faculty	153 (50.7%)
Poor interaction with class fellows	163 (54%)
Time management for studies	138 (45.7%)
Confusion/Lost	195 (66.5%)
Family distraction	143 (47.4%)
No drawbacks	77 (25.3%)
Challenges	
Weak internet connections	163 (54%)
Limitation in data internet packages	160 (52.9%)
Variation in digital platforms	175 (54.6%)
No challenges	80 (26.4%)

Table 2: showing benefits, drawbacks and challenges associated with distance e-learning as reported by the participants of the study

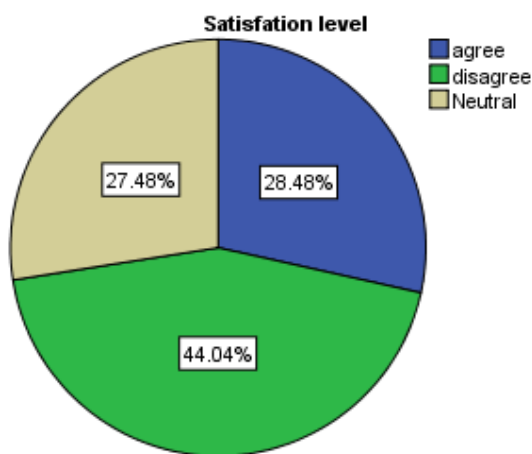


Figure 1 showing IMC students satisfaction level with digital e-learning

Future perceptions of medical student's concerning digital eLearning

Based on students' perspectives, implementing distance e-learning in medical education is challenging. Students' experience of online teaching has been ranked using a Linkert scale. As per the study results (table 3), medical students did not find online teaching enjoyable or engageable with some related issues during online lectures/discussions. But on the other hand, students seem to be satisfied by faculty behavior, their response and the teaching pattern. According to medical students of different years, poor communication with faculty members (50.7%), and class fellows (54%) in online setup as compared to traditional class room learning methods would be the main barriers. According to data, 13.8% of the respondents believed that distance e-learning can replace traditional class learning in delivering theoretical knowledge. According to 17.6% students blended approach i.e. a mix of traditional and eLearning classes should be the preferred way, but majority of students (68.4%) advocated for traditional class room methods of teaching.

DISCUSSION

The aim of this study was to analyze experience of medical students about a newly adopted approach, distance digital learning. Due to covid 19 pandemic when there was no option except E-learning has been emerged as new methodology to manage the medical education. In this study opinions of medical students of different years towards e-Learning, major challenges during online classes/ discussions, faculty behavior and their performance, satisfaction levels and future preferences were studied.

Face to face learning is traditional approach in medical education. But due to critical circumstances (COVID-19) when traditional class room teaching is not possible due to virulence and spread of corona virus, online learning set up has become a necessary step in order to continue medical studies.^{19,20} Although e-Learning has been in use since last decades in Europe, so far it has not been exclusively in use in under developed countries like Pakistan due to many reasons such as financial and technical issues. In order to continue medical education during the current circumstances, an essential reform such as virtual teaching is imminent, and it can also enhance the medical fields to a greater extent if applied with correct technology and resourcefully.²¹ Every student has a different learning style in conventional class room system, which only a teacher can observe via face-to-face interaction with students.²² So, we can say online/ digital learning system may not be applicable and feasible for every student according to their mental capability and lecture picking ability, and also it is not possible for faculty to assess and analyze the problem of students. In this regard opinion by students should be taken in order to improve every student confidence and performance during online setup.²³

Online setup of teaching and learning can be improved by removing objections and issues faced by students. There is need

Variables	Medical Year	Satisfied	Not Satisfied	Neutral
Medical Year	1st	23 (7.64%)	21 (6.95%)	13 (4.30%)
	2nd	22 (7.28%)	37 (12.25%)	26 (8.60%)
	3rd	17 (5.62%)	31 (10.26%)	21 (6.95%)
	4th	13 (4.30%)	28 (9.27%)	9 (2.98%)
	5th	11 (3.64%)	16 (5.29%)	14 (4.67%)
Instructors actively participate in discussion	Agree	37 (12.23%)	32 (10.70%)	35 (11.46%)
	Neutral	30 (10.13%)	29 (8.73%)	28 (9.35%)
	Disagree	40 (13.29%)	35 (11.65%)	36 (12.46%)
Multimedia use in eLearning sessions	Agree	61 (20.12%)	31 (10.16%)	46 (15.12%)
	Neutral	33 (11.01%)	17 (5.53%)	25 (8.26%)
	Disagree	40 (13.22%)	20 (6.66%)	30 (9.92%)
The time dedicated for the E-learning courses is adequate	Agree	70 (23.12%)	33 (10.88%)	51 (16.94%)
	Neutral	36 (12.01%)	17 (5.65%)	27 (8.82%)
	Disagree	31 (10.20%)	14 (4.79%)	23 (7.49%)
Support by Faculty	Agree	87 (29.12%)	55 (18.34%)	72 (23.73%)
	Neutral	23 (7.58%)	14 (4.74%)	19 (6.16%)
	Disagree	14 (4.24%)	8 (2.66%)	10 (3.43%)
More comfortable	Agree	63 (21.02%)	11 (3.48%)	37 (12.25%)
	Neutral	72 (23.86%)	12 (4%)	42 (13.93%)
	Disagree	37 (12.30%)	6 (2.02%)	22 (7.14%)
Response time by teachers	Agree	92 (30.57%)	48 (16.02%)	70 (23.29%)
	Neutral	31 (10.43%)	16 (5.43%)	24 (7.92%)
	Disagree	07 (2.75%)	06 (1.50%)	06 (2.09%)
I prefer online teaching as compared to face to face teaching	Agree	31 (10.3%)	11 (3.80%)	21 (7.05%)
	Neutral	46 (15.29%)	18 (6.1%)	30 (10.09%)
	Disagree	70 (23.02%)	27 (8.56%)	48 (15.79%)
Future course preference	Entirely E-learning	17 (5.62%)	11 (3.64%)	14 (4.63%)
	Blended approach	22 (7.29%)	14 (4.56%)	18 (5.82%)
	Traditional learning	84 (27.70%)	54 (17.93%)	68 (22.81%)

Table 3: showing the satisfaction level of students' belonging to different years of medical college in terms of different variables related to e-learning

of development training programs for students and faculty regarding this issue. Collaboration with telecommunication companies is mandatory in order to provide high quality internet with good speed, low cost, and high coverage areas. Also, there must be training programs, seminars and workshops for teachers to enhance their skills in use of internet technologies and modern internet software's. As web based or virtual teaching is sometime complementary in education system in certain ways like covid 19 pandemic when physical or conventional teaching is not possible. Development of supplementary e - resources for higher education medical students will enable them to focus on their studies. This can also establish the effectiveness of online learning system and classes.

As far as the limitations of the study are concerned, only students of single medical college have been included for this analysis. So, study findings may not be generalized for the students of other medical colleges in Pakistan.

CONCLUSION

Overall, there was dissatisfaction and negative attitude regarding interaction among students. Main issue were the practical and psychomotor learning, along with focus on study and technological/infrastructural flaws.

REFERENCES

1. Al-Balas, M. H. Al-Balas, H. M. Jaber, K. Obeidat, H. Al-Balas, E. A. Aborajoo, R. Al-Taher and B. Al-Balas.. Distance learning in clinical medical education amid COVID-19 pandemic in Jordan: current situation, challenges, and perspectives. *BMC Medical Education* 2020. 20:341
2. Moss P, Barlow G, Easom N. Lessons for managing high consequence infections from first COVID-19 cases in the UK. *Lancet*. 2020. 395: E4
3. World Health Organisation. WHO announces COVID-19 outbreak a pandemic. [Online] World Health Organisation.

Available: <http://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/news/news/2020/3/who-announces-covid-19-outbreak-apandemic> [Accessed 31 May 2020]

4. Pant A. Distance learning: history, problems and solutions. *Adv Comput Sci Inf Technol*. 2014;1(2):6
5. Walker SL, Fraser BJ. Development and validation of an instrument for assessing distance education learning environments in higher education: the distance education learning environments survey (DELES). *Learn Environ Res*. 2005;8(3):289–308.
6. Tabatabai S. COVID-19 impact and virtual medical education. *J Adv Med Educ Prof*. 2020;8(3):140–143
7. Alkhowailed MS, Rasheed Z, Shariq A. Digitalization plan in medical education during COVID-19 lockdown. *Inform Med Unlocked*. 2020; 20:100432.
8. Panchabakesan S. Problems and prospectives in distance education in india in the 21st century. *Probl Educ*. 2011; 30:113–122.
9. Bernard RM, Abrami PC, Lou Y, Borokhovski E, Wade A, Wozney L. How does distance education compare with classroom instruction? A meta-analysis of the empirical literature. *Rev Educ Res*. 2004;74(3):379–439
10. Wiecha JM, Chetty VK, Pollard T, Shaw PF. Web based versus face-to-face learning of diabetes management: the results of a comparative trial of educational methods. *FAMILY MEDICINE-KANSAS CITY-*. 2006 Oct 1;38(9):647.
11. Moran J, Briscoe G, Peglow S. Current technology in advancing medical education: perspectives for learning and providing care. *Acad Psychiatry* 2018;42:s40596-018-0946-y:796–9
12. Harden RM. Trends and the future of postgraduate medical education. *Emerg Med J* 2006;23:emj.2005.033738:798–802
13. Kay D, Pasarica M. Using technology to increase student (and faculty satisfaction with) engagement in medical education. *Adv Physiol Educ* 2019;43:408–13
14. Khalil MK, Abdel Meguid EM, Elkhider IA. Teaching of anatomical sciences: a blended learning approach. *Clin Anat* 2018;31:ca.23052:323–9
15. Huddart D, Hirniak J, Sethi R, et al. #MedStudentCovid: How social media is supporting students during COVID-19. *Med Educ* 2020:medu.14215.
16. Rose S. Medical student education in the time of COVID-19. *JAMA* 2020;323:2131–2.
17. Marinoni G, Van't Land H, Jensen T. The impact of Covid-19 on higher education around the world. IAU Global Survey Report. 2020. Available from: https://www.iauiau.net/IMG/pdf/iau_covid19_and_he_s_survey_report_final_may_2020.
18. Trelease RB. From chalkboard, slides, and paper to e-learning: how computing technologies have transformed anatomical sciences education. *Anat Sci Educ*.2016;9(6):583–602.
19. Queen Rania Foundation. *Educational Responses to COVID-19 From Jordan and Other Arab Countries*. (2020).
20. Shraim KH. Online examination practices in higher education institutions: learners' perspectives. *Turkish Online J Distance Educ*. (2019) 20:1302–6488. doi: 10.17718/tojde.640588
21. Baloran ET. Knowledge, attitudes, anxiety, and coping strategies of students during COVID-19 pandemic. *J Loss Trauma*. (2020) 25:635–42. doi: 10.1080/15325024.2020.1769300
22. Elhadi M, Buzreg A, Bouhuwaish A, Khaled A, Alhadi A, Msherghi A, et al. psychological impact of the civil war and COVID-19 on Libyan medical students: a cross-sectional study. 2020; 11:2575.
23. Dost., S. Hossain, A., Shehab, M. Abdelwahed., A. Al-Nusai L. 2020. Perceptions of medical students towards online teaching during the COVID-19 pandemic: a national cross-sectional survey of 2721 UK medical students. *BMJ* .378. doi:10.1136/bmjopen-2020-042378