

A Study on Hurdles Faced by Medical Students during e-Learning Amid COVID-19 Pandemic: An online questionnaire-based survey

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ABSTRACT

Introduction: In order to halt the progression of COVID-19, governments of many countries including India implemented national lockdown. In view of the sudden closure of educational institutions, remote teaching was implemented with the help of online learning or E-learning. Thus, the aim of the study was assessing the attitudes and perceptions of MBBS students regarding the effectiveness of e-learning and the impact of COVID-19 on the student's mental wellbeing and learning. **Methods:** The survey instrument was a self-administered questionnaire consisting of 17 close ended questions and 3 open ended question. It has 3 sociodemographic questions, 13 questions assessing their attitudes and perceptions regarding the effectiveness of e-learning and 4 questions investigating the impact of COVID-19 on the student's mental wellbeing and learning. The data obtained was analyzed using SPSS (version 20). **Results:** A total of 404 undergraduate students studying in FMHS, SGT University, Gurugram participated in the survey. A major part of the students (57.1%) was using their Mobile phones for e-learning followed by 24.6% using their Personal computer or Laptop, 12% were using combination of these devices and 6.3% using tablets. Due to inconsistent internet connection, most of the students (71.5%) were facing challenges. 64.9% of the respondents faced distraction during the class such as lack of audio clarity, internet connection problems, lack of environment, concentration issues, notifications and social media, student teacher interactions, practical aspect not covered and lack of physical interaction with the teacher. The continuous screen time posed a major problem for students who suffered from strain in the eyes (58.3%), headache (18.7%), neck pain (8.8%), back pain (6.3%) or all of the above problems (7.7%). Thus, 84.1% of the undergraduate students preferred conventional Classroom learning to e-learning. **Conclusions:** Implementation of strict social distancing and lockdown in COVID-19 era, has mandated the pedagogy of remote learning which remains the only viable option for teaching and learning in these difficult times. The students should be advised to follow good ergonomic practices to maintain their ocular health and should be motivated to enhance their mental well-being and learning amid COVID-19 pandemic.

Key words: E-learning, Medical students, Digital eye strain, COVID-19

Introduction

In the December of 2019, COVID-19 outbreak was reported in the city of Wuhan, China. The Coronavirus study group of the International committee on taxonomy of viruses named the etiological agent as SARS-COV-2 [1]. COVID-19 was declared as public health emergency of international concern on 30th January, 2020 by WHO [2]. The pandemic has spread to 219 countries, affected more than 141 million people worldwide and causing 3,015,043 deaths [3]. In order to halt the progression of COVID-19, governments of many countries including India implemented national lockdown.[4] The restriction in movement of people and social distancing were encouraged to break the chain of transmission of COVID-19. Under the circumstances of national lockdown, all educational institutions were closed until this public health concern was curbed and curve was flattened.

In view of the sudden closure of educational institutions, remote teaching was implemented with the help of online

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Received: 12 October 2021

Accepted: 12 December 2021

How to Cite this Article: Suri A, Singh N, Garg S, Hazarika K, Ammal P, Bansal SK, Yadav BB. A Study on Hurdles Faced by Medical Students during e-Learning Amid COVID-19 Pandemic: An online questionnaire-based survey. J Int Med Sci Acad. 2022 Jan -March;35(1): 62-66

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learning or E-learning. According to Sangra et al, E-learning is an approach for teaching and learning, representing all or part of the educational model applied, using electronic media and devices as tools for improving access to training, communication and interaction and that facilitates the adoption of new ways of understanding and learning [5]. The National medical commission approved the online teaching classes for MBBS students at the time of pandemic only. They further mandated that the practical classes or clinical trainings to be supplemented by the online theory classes when the colleges reopen [6]. Thus, the aim of the study was assessing the attitudes and perceptions of MBBS students regarding the effectiveness of e-learning and the impact of COVID-19 on the student's mental wellbeing and learning.

Material and Methods

This is a cross-sectional study conducted with the help of web based open survey prepared by using cloud based software called Survey Monkey. This survey was conducted at tertiary care hospital. The target population comprised of first year, second year, third year and fourth year MBBS students. A banner ad stating the aim, approximate time duration of survey, components of study population along with the URL link for the survey instrument was sent to potential responders through Whatsapp messenger on 25th April, 2020.

The survey instrument was a self-administered semi structured questionnaire of 1-page consisting of 17 close ended questions and 3 open ended questions. It has 3 sociodemographic questions, 13 questions assessing their attitudes and perceptions regarding the effectiveness of e-learning and 4 questions investigating the impact of COVID-19 on the student's mental wellbeing and learning.

The questionnaire was validated by using a pilot survey involving 50 medical students and then consistency of the response was evaluated by using cronbach's alpha which was 0.7 which is considered reliable and acceptable.

The responder's consent was taken before participation in the form of disclaimer mentioned in the beginning of the survey. It was also mentioned that their responses would be kept confidential and the participants can voluntarily withdraw from the survey anytime. The personal details of the participants were kept anonymous in order to avoid any bias.

Ethical Committee

The responder's consent was taken before participation in the form of disclaimer mentioned in the beginning of the survey. It was also mentioned that their responses would be kept confidential and the participants can voluntarily discontinue the survey anytime.

Statistical Analysis

The data obtained was analyzed using SPSS (version 20). The Descriptive statistics were calculated and p value < 0.05 was considered significant.

Results

A total of 404 undergraduate students studying in FMHS, SGT University, Gurugram participated in the survey. The majority (97.8%) of the respondents were above 18 years of age. Most (65.6%) of the participants were females as compared to males which were 34.4%. Furthermore, a major proportion (29.4%) of the undergraduate students participating in the survey, studied in third year followed by those in first year (26.6%), fourth year (22.6%) and second year (22.3%).

Majority of undergraduates (75.7%) who had enrolled in the survey had prior experience of e-learning and the e-learning portal was easily accessed by bulk of the participants (90.7%). On further analyzing the data, it was observed that students with experience of e-learning were more comfortable with accessing the portal as compared to those without any prior experience (94% vs 80.4%). In addition to this, 64.4% of the respondents were able to focus in the class and the content of e-learning class was understood by them (78.6%). But, only 47.1% of the participants were able to clear their doubts in the class. A major part of the students (57.1%) was using their Mobile phones for e-learning followed by 24.6% using their Personal computer or Laptop, 12% were using combination of these devices and 6.3% using tablets. Due to inconsistent internet connection, most of the students (71.5%) were facing challenges. 64.9% of the respondents faced distraction during the class such as lack of audio clarity, internet connection problems, lack of environment, concentration issues, notifications and social media, student teacher interactions, practical aspect not covered and lack of physical interaction with the teacher. In spite of the distractions, 82.3% of the students were able to complete their assignments on time. On further analysis, it was seen that higher percentage of students with prior experience were able to complete assignments on time as compared to those without the experience of e-learning (71.38% vs 61.86%). 77% of participants believed that physical interaction with the teacher helps in the process of learning.

There were various pitfalls associated with online learning which hampered the learning process of the students. The continuous screen time posed a major problem for students who suffered from strain in the eyes (58.3%), headache (18.7%), neck pain (8.8%), back pain (6.3%) or all of the above problems (7.7%). They tried to resolve them by using eye drops, taking rest, washing eyes, exercising and using medications such as painkillers. It is sad to note that 5.9% of

Table 1: Question wise responses obtained from undergraduate students

	Responses	
What is your Age? *		
less than 18 years	2.23%	9
more than 18 years	97.77%	394
What is your gender? *		
Male	34.41%	138
Female	65.59%	263
In which MBBS year are you studying?		
First year	26.57%	106
Second year	22.31%	89
Third year	28.57%	114
Fourth year	22.56%	90
Do you have any experience of e-learning? *		
Yes	75.69%	302
No	24.31%	97
Can you access the e-learning portal easily? *		
Yes	90.73%	362
No	9.27%	37
Can you concentrate on the online class? *		
Yes	64.41%	257
No	35.59%	142
Do you understand the content of e-learning class? *		
Yes	78.59%	312
No	21.41%	85
Are you able to clear your doubts in the online class? *		
Yes	47.10%	187
No	52.90%	210
Which device are you using for e-learning? *		
PC/Laptop	24.56%	98
Mobile phone	57.14%	228
Tablet	6.27%	25
Combination of above options, please specify	12.03%	48
Do you face problems with inconsistent internet connection during the class? *		
Yes	71.54%	284
No	28.46%	113
Are you able to complete assignments on time? *		
Yes	69.19%	274
No	12.88%	51
Does not apply	17.93%	71
Do you feel face to face interaction with the teacher helps in the process of learning? *		
Yes	76.96%	304
No	23.04%	91
What problems are you facing due to continues screen viewing? *		
None	28.72%	114
Strain in the eyes	41.56%	165
Headache	13.35%	53
Back pain	4.53%	18
Neck pain	6.30%	25
Other (please specify)	5.54%	22
What do you prefer-classroom teaching or e-learning? *		
classroom teaching	84.09%	333
e-learning	15.91%	63
Does covid-19 pandemic affect your mental status and efficiency of learning?		
Yes	63.36%	249
No	36.64%	144
Does media coverage of covid-19 makes you stressed out about the pandemic?		
Yes	62.76%	246
No	37.24%	146
Are you able to distract yourself from the media coverage of covid-19?		
Yes	70.41%	276
No	29.59%	116

the students are still unable to solve their problems and some of them feel irritated as there was no option but to attend the classes in spite of their troubles. Thus, 84.1% of the undergraduate students preferred conventional Classroom learning to e-learning. Furthermore, students without previous experience of online learning were finding the Classroom teaching better than e-learning. (90.63% vs 82.21%)

In addition to this, we also explored the effect of the COVID-19 pandemic on the mental wellbeing and the learning of the students. 63.4% of the students perceived that the learning efficiency in the pandemic was reduced as the media coverage of COVID-19 distressed them (62.8%). But, majority (70.4%) of them were able to distance themselves from the digital media by using various stressbusters such as spending time with family, exercising, reading, listening to music, watching television.

Discussion

The national lockdown was implemented in order to break the chain of transmission and halt the progression of COVID-19. Thus, the educational institutions adopted distance learning to facilitate curriculum implementation for MBBS Students. Majority of the students had prior experience of e-learning and were comfortable with accessing the online e-learning portal. But, there were major impediments to their learning on online platforms such as erratic internet connectivity.

In 2020, Aboagye et al conducted a study to elucidate the challenges faced by students in tertiary institutions in lieu of implementation of online learning during COVID-19 pandemic. They concluded that accessibility issues such as internet connectivity posed as a major barrier to the intention of students to study online [7]. Additionally, developing countries such as India are facing multitude of problems in e-learning implementation due to their inexperience in remote learning, weak content development, poor internet connectivity issues and inadequate training and infrastructure in educational institutions [8]. Jena also pointed out that the students who were from low income household were facing more challenges due to non-availability of high speed internet and lack of electronic gadgets [9]. Therefore, teachers should be schooled regarding appropriate content development and directed to upload the e-lectures on online classroom to facilitate revision of the content by learners. Along with this, the faculty should be motivated to design e-lectures in an interactive manner with a purpose of imparting knowledge at a higher domain of Bloom's taxonomy [10]. Furthermore, undergraduates should be motivated to give regular feedback after the online learning session. On the other hand, government should improve information and communication infrastructure to provide widespread high speed broadband internet connection which is a prerequisite

for remote learning. They should conduct MOOC's (Massive open online courses) such as Swayam for necessary training of learners and teachers on distance learning.

In addition to these, issues such as inability to clear doubts, lack of audio clarity, lack of environment, concentration issues, notifications from social media, student teacher interactions, lack of practical knowledge were roadblocks in the progression of online learning. Jena advanced that hurdles such as lack of physical interaction with the teacher and peers made the learners unhappy leading to loneliness [9]. Majority of the students were suffering from Digital eye strain due to continuous screen time. The persistent exposure lasting almost 8-12 hrs per day of high energy blue waves emitted from the screen led to photochemical damage to the eye [11]. This computer vision syndrome affecting a large percentage of MBBS students has emerged as a public health threat leading to consequent stress and burn out in these students. Due to these obstacles, most of the students preferred conventional teaching to e-learning. The learners should be advised to practice good ergonomic practices such as following 20/20/20 rule (after 20 minutes of screen time, look at 20 feet for 20 seconds) [12], proper distance from digital device computer 36 inches and from mobile 40 cms should be maintained. Regular usage of eye drops should be practiced in case of dry eyes along with healthy blinking frequency, using blue light filters or anti-glare glasses restricting screen time to less than 4 hours/day, placement of the gadget 20 degrees below level of eyes along with scheduling adequate breaks between the classes to ensure good ocular health of students [13].

Studies have suggested that Gender can play an important role in predicting learning outcomes of online learning. In our study, females were able to deal with online learning with more dedication and positive attitude. Though, equal percent male and female students were able to concentrate on online class, but more percent of females were able to understand the content of e-learning class, cleared more doubts in the class and complete assignments on time. Majority of the females felt the need for face-to-face interaction during learning and were facing more problems due to continuous screen viewing as compared to males, but were still able to complete their objectives. Similar findings were reported by Richard and Woodley who postulated that determined attitude of females enabled higher learning outcomes as compared to males [14]. In 2002, Pajares et al also forwarded that females were confident and showed more goal planning and monitoring activities as compared to males [15].

Therefore, to offset the disadvantages of distance learning, the pedagogy of blended learning which includes both online and offline learning would be better suited to medical students to facilitate curriculum implementation. Blended learning has been described as all forms of teaching and

learning that combines conventional face-to-face teaching with online system of learning, making use of information communication technology-facilitated learning [16]. But due to implementation of strict social distancing and lockdown in COVID-19 era, it is almost impossible to enable blended learning due to non-feasibility of offline classes. Thus, pedagogy of remote learning remains the only viable option for teaching and learning in these difficult times. The students should be advised to follow good ergonomic practices to maintain their ocular health and should be motivated to enhance their mental well-being and learning amid COVID-19 pandemic to remove impediments in the path of remote learning.

Conflict of Interest:	All authors declare no COI
Ethics:	There is no ethical violation as it is based on voluntary anonymous interviews
Funding:	No external funding
Guarantor:	Dr. Arpita Suri will act as guarantor of this article on behalf of all co-authors.

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