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ORIGINAL

Research on Difficulties Associated with Webcam Application in Virtual Medical Training during Covid-19

Investigación sobre las dificultades asociadas a la aplicación de cámaras web en la formación médica virtual durante Covid-19

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ABSTRACT

The COVID-19 pandemic has forced an immediate change in medical education toward online platforms, which include webcams for remote training and teaching. The shift has created a number of challenges for students that are considering about taking part in online medical education. To maximize virtual learning opportunities and ensure the continuous provision of excellent healthcare instruction during the pandemic, it is vital to comprehend the challenges related to webcam applications in such an environment. The research was carried out in Indian medical students, received the survey on social media between July 8, 2022 and October 25, 2023 by the Google form. Total is 3 550 respondents, women made up 47 % (n =1 682) and males made up 52,7 % (n =1 868) responses. The study highlights challenges faced by medical students using webcams in virtual medical teaching due to the Covid-19 pandemic, technological issues and privacy concerns and data analyzed using statistical package social sciences (SPSS). Males prefer blended learning, while females prefer social media. The study emphasizes the need to improve webcam application is privacy and the COVID-19 pandemic; increase the technological support infrastructure for online medical education.

Keywords: Medical Students; Statistical Analysis; Learning Method; Medical Teaching; COVID- 19 Pandemic.

RESUMEN

La pandemia de COVID-19 ha forzado un cambio inmediato en la educación médica hacia plataformas en línea, que incluyen webcams para la formación y la enseñanza a distancia. El cambio ha creado una serie de retos para los estudiantes que están considerando participar en la educación médica en línea. Para maximizar las oportunidades de aprendizaje virtual y garantizar la prestación continua de una excelente instrucción sanitaria durante la pandemia, es vital comprender los retos relacionados con las aplicaciones de webcams en un entorno de este tipo. La investigación se llevó a cabo en estudiantes de medicina indios, recibieron la encuesta en las redes sociales entre el 8 de julio de 2022 y el 25 de octubre de 2023 por el formulario de Google. El total es de 3 550 encuestados, las mujeres constituyeron el 47 % (n =1 682) y los hombres el 52,7 % (n =1 868) de las respuestas. El estudio pone de relieve los retos a los que se enfrentan los estudiantes de medicina que utilizan webcams en la enseñanza virtual de la medicina debido a la pandemia del Covid-19, los problemas tecnológicos y la preocupación por la privacidad, y los datos se analizaron mediante el paquete

estadístico de ciencias sociales (SPSS). Los hombres prefieren la enseñanza semipresencial, mientras que las mujeres prefieren las redes sociales. El estudio hace hincapié en la necesidad de mejorar la aplicación de webcams es la privacidad y la pandemia de COVID-19; aumentar la infraestructura de apoyo tecnológico para la educación médica en línea.

Palabras clave: Estudiantes de Medicina; Análisis Estadístico; Método de Aprendizaje; Enseñanza de la Medicina; Pandemia COVID- 19.

INTRODUCTION

Medical professionals in Wuhan, China discovered a corona virus illness (COVID-19) in November 2019 that has symptoms similar to those of severe acute respiratory syndrome (SARS). Lockdowns occurred in more than 180 nations as a result of the outbreak, which infected billions of humans in public and it was considered a deadly disease.[1] The outbreak struck Malaysia twice: On the 24th of January, 2020, with one more time after a month, movement control order, was implemented on March 18 2020 issued with the government, essentially locking off specific areas of the nation. Schools and universities were among the non-essential institutions given the order to close, essentially halting economic activity. The only times it were allowed to leave the house were for things like grocery shopping or medical appointments. Colleges might close and students' access to medical training likely be endangered if educators don't act immediately to provide continuous education.[2] Figures 1 depicts the general framework of the positive impact of virtual medical education. To ensure that medical students and professionals continue to receive crucial training, the COVID-19 epidemic has compelled many medical institutions to embrace virtual training techniques, including the usage of webcam software, there have been some issues with using camera programs for virtual medical teaching,[3] telecommunication infrastructures application technologies are used by telemedicine and e-health systems to provide, administer, and analyze health care while shielding medical personnel and outpatients from COVID-19.

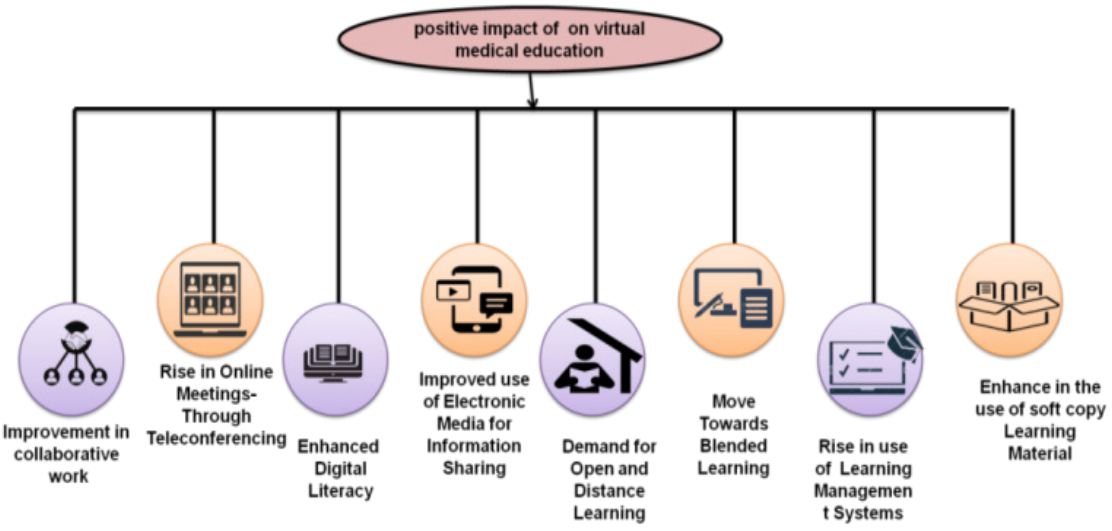

Figure 1. General framework of the positive impact of virtual medical education

Webcam-equipped mobile devices allow patients and doctors to communicate continuously in programs.[4] Basic surgical procedures, such as making tiny incisions, suturing and tying surgical knots are taught to fourth-year medical students by a general surgeon. Seven groups, each with 30 students, Medical student education improves global health by teaching essential clinical skills including optical assessment.[5] 2020 changed ophthalmic graduate medical education (GME). Medical educators quickly adapted their programs to new and effective virtual forms despite the global SARS corona virus outbreak. Which were unavailable due to greater travel and accommodation costs during the COVID-19 epidemic, can persist after the outbreak has subsided.[6,7] COVID-19 offered a singular chance to examine different approaches to virtual medical education delivery. In every room used by our main teaching teams, it installed webcams and microphones. To keep promoting a collaborative learning environment, they leveraged teleconferencing solutions that existed and included share screen, polling and audio/video capabilities.[8] The COVID-19 epidemic profoundly changed the curriculum for medical students. Students had very limited options for joining the operating room crew. During this period of constrained online teaching possibilities, technology can be leveraged to guarantee continued surgical education.[9] Research [10] investigated a creative campaign combining virtual tourism covid 19, reaction to

travel for 2020–2021: parasocial interactions designed by wildlife. During the COVID-19, a study [11] investigated the viability of using tele-simulation as a means of teaching the Fundamentals of Laparoscopic Surgery (FLS) to PGY1 residents. Telemedicine in otolaryngology reached its apex through the COVID-19 endemic outbreak in the US. Barriers to otolaryngologists' regular use of telemedicine can be identified and removed by analyzing usage trends and perceived limitations of telemedicine during the COVID-19 outbreak in 2020.[12] Research [13] examined the benefits of a virtual IPE competition for healthcare students that included the COVID-19 case and the lessons can be applied to enhance this learning opportunity in the future. Research [14] examined the need for augmented reality and virtual reality, other interesting recent technological advancements, to aid in the battle against COVID-19.

Study [15] showed that tele-health is as effective as traditional healthcare in terms of patient-doctor interaction, patient participation and health outcomes. The limitations to wellness and happiness are cultural and financial have been exacerbated by the digital divide. Medical dosimeter faculty undertook an Institutional Review Board (IRB)-approved study [16] to investigate how rapidly educational programs responded to the COVID-19 pandemic and how they modified their teaching methodologies. Research [17] discussed the implications, applications and challenges of telemedicine and virtual software, which are being employed to decrease COVID-19 spread. Research [18] suggested that school administrations should be better educated to offer resources and support, enhance work-life balance and enhance teachers' overall well-being. Research [19] examined the perceived efficacy of online learning among students during the summer quarter of 2020, examined the educational factors determining pupils' adoption of the structure and conducted an empirical assessment of the impact of online instruction on participants' academic achievement during the epidemic. Research [20] investigated pedagogical, inquisitorial and quality assurance concerns unique to the field. The theoretical durability of the profession is offered by Academies, pandemic was coordinated by the world organization of national colleges (WONCA), and across Africa was an organization of general practitioners/family medicine. The aim of this research is maximize virtual education opportunities and ensure the continuous provision of excellent healthcare instruction during the pandemic, it is vital to comprehend the challenges related to webcam applications in such an environment.

METHOD

Study design and distribution

An online poll accessible via emails, Telegram, Facebook and WhatsApp was employed for this cross-sectional survey conducted in India. Primary information consisting of 35 items was influenced by these sources. Online educators were surveyed using the Online Teaching Effectiveness Scale (OTES). Study expanded our poll to include other questions on medical students' anxiety levels. These two sources were utilized to construct the questions, which were reviewed and edited with a range of Indian medical students and academic members. The remaining poll questions were offered in multiple-choice, checklist and free-form formats. The most recent group of questions had three primary categories:

Q1: What perspectives do students have on online education in the framework of COVID-19?

Q2: How OTES affects medical students' perceptions of their anxiety and academic achievement?

Q3: Advantages and disadvantages of OTES?

The survey disseminated it to medical students in India via a Google form. The poll was sent via social media to Indian medical students between July 8, 2022 and October 25, 2023. At one of the medical colleges in India, the participants could have been enrolled in any year between their first and seventh years of medical school. India's medical institutions are thought to be home to about 80,000 medical students.

Statistical evaluation

The data was analyzed using the SPSS version 16,0. Combining descriptive mean, frequency, standard division and statistical method of and independent test statistics were used in the data analysis process. $P<0,05$ were deemed to be the significance threshold. To focus solely on the risks and benefit of ensure that research protocols evaluating a condition for which there is an accepted or standard treatment particular study participants, to ensure that research participants are spared from being subjected to unwarranted risks examined.

RESULTS

The study was responded by 3 550 medical students, both clinical and preclinical. Medical students' preferences during the COVID-19 epidemic, the justifications for not using webcams, the people who performed and their favored pedagogies was all the subject of research. The characteristics of the 3 550 comments are presented; of the replies, 47 % (n = 1 682) were from women and 52,7 % (n = 1 868) were from men. The investigation looked at how the pupils learned, what they preferred to do during the COVID-19 epidemic, the difficulty to use the device and what the average usage rate was.

Figure 2 and table 1 displays comparison of learning method preferences by gender during COVID-19 epidemic. In terms of learning styles, male like blended learning (59 %), online teaching (75 %), online instruction (72

%), online classes (85 %) and social media (46 %), (31 %) of females prefer social media, (65 %) prefer blended learning, (55 %) prefer online education, (68 %) prefer online instruction and (70 %) choose online programs.

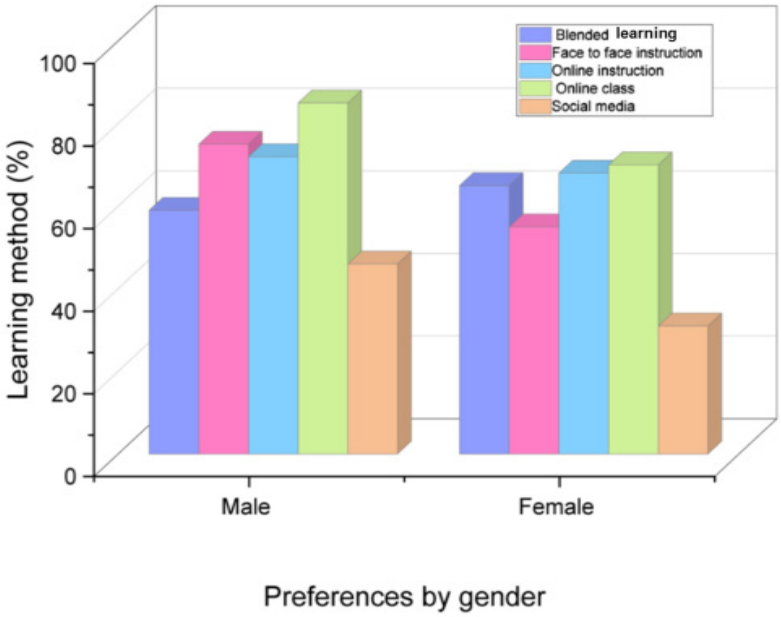

Figure 2. Comparison of learning method preferences by gender

Table 1. Learning method preferences by gender

Preferences by gender	Learning method (%)				
	Blended learning	Face to face instruction	Online instruction	Online classes	Social media
Male	59	75	72	85	46
Female	65	55	68	70	31

The COVID-19 epidemic caused a large variation in student choices. Blended learning, which mixes online education with online components, was chosen by (69 %) of respondents. (32 %) preferred conventional online training that did not include the Internet. Social media platforms were utilized by (40 %) of users for learning and communication, the respondents, 25 % favored remote learning over online instruction. 15 % of students indicated that online courses were preferable to blended learning or general online education. Figure 3 and table 2 represented the student source preferences during COVID -19 pandemic.

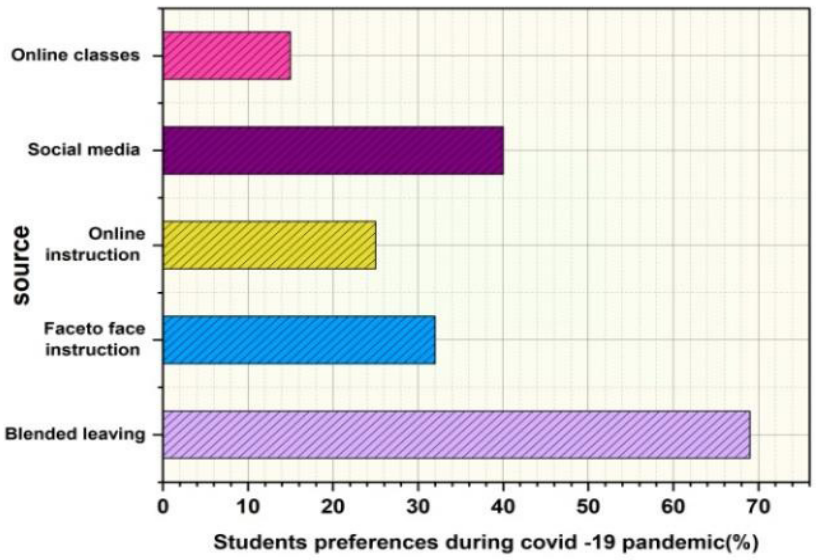

Figure 3. Comparison of student source preferences during Covid -19 pandemic

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Table 2. Evaluation of Student source preferences during Covid-19 pandemic

Source	Student's preferences while COVID-19 pandemics (%)
Blended teaching	69
confronting each other instruction	32
Online instruction	25
Social media	40
Online classes	15

Study indicates that (76 %) of webcam users interact socially with others during class, maybe through group conversations or chat features, (85 %) of users show accountability, demonstrating their dedication to the learning process and sense of duty. The interaction typical of online classroom settings comes from the perception held by (64 %) of webcam users that virtual instructional sessions resemble traditional classroom settings. In general, most webcam users show seriousness and dedication to the educational process. Figure 4 and table 3 depicts the instructional sessions of webcam users.

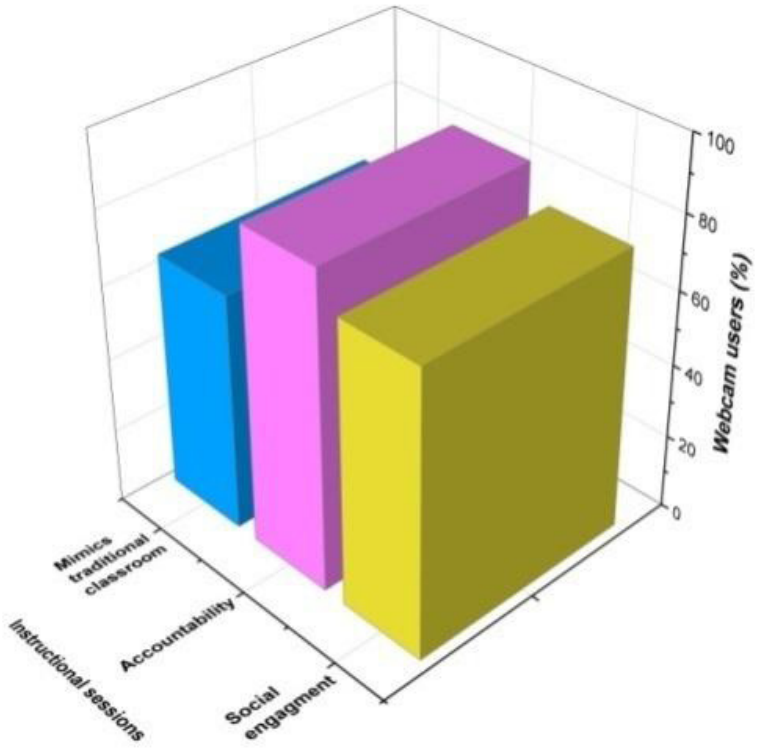

Figure 4. Comparison of instructional sessions

Table 3. Evaluation of instructional sessions

Instructional sessions	Webcam users (%)
Social engagement	76
Accountability	85
Mimics traditional classroom	64

The difficulties that students have while utilizing webcams for virtual medical instruction are covered in the column, including issues with privacy, stress, anxiety and technological difficulties as well as the COVID-19 epidemic. The proportion of students who responded that they neglected their webcams because of each issue is given and 90 % of students expressed worries about their privacy, 78 % indicated anxiety, 62 % indicated stress, 35 % indicated technological difficulties and 29 % asserted that the pandemic was the reason they elected not to use webcams. Table 4 highlights the importance of addressing these concerns to increase the efficacy of virtual medical instruction, while offering insights into the elements affecting students' decisions. Figure 5 depicts the difficulties of using webcam in pandemic period.

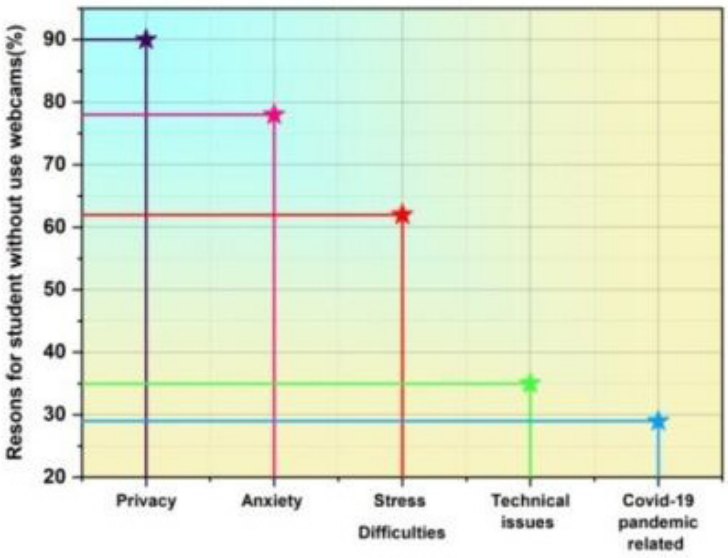

Figure 5. Difficulties of using webcam

Table 4. Numerical values difficulties of using webcam

Difficulties	Reasons for student without use webcams (%)
Privacy	90
Anxiety	78
Stress	62
Technical issues	35
Covid-19 pandemic related	29

DISCUSSION

The section considers the findings' implications for virtual medical training in the wake of the COVID-19 epidemic. Examine the impending consequence of these issues on students' engagement, performance and learning experiences in online environments. Many students find using cameras in online classes difficult to pay attention to, with some arguing that it makes the session feel like an actual class. It also believes that the motivation for using cameras is lack of active engagement. Many students demand that webcams be made available for optional online classes. The main issue is that online course instructors and students lack sufficient training, which is crucial for distinguishing between traditional classes and online sessions during the epidemic. Providing professors with ongoing training and assistance can help them teach effectively and increase students' satisfaction with online courses.

CONCLUSION

The majority of the respondents indicated that they have decided not to employ cameras for online instruction due to concerns about privacy, worry, anxiety and exhaustion. Webcams can impair focus, put students under pressure, raise anxiety levels and reveal living situations. Students' privacy rights are evaluated and plans to safeguard internet privacy must be created with student input in mind. Efficient methods for enhancing online learning without webcams include providing sufficient training and assistance. Addressing difficulties associated with webcam applications in virtual preparation during the COVID-19 epidemic is crucial. Efforts to enhance privacy protections, alleviate anxiety and improve technical support infrastructure are essential for optimizing the virtual learning experience. Determine the areas that require more investigation to improve our comprehension of the potential problems regarding the application of webcams to digital medical training. Provide directions for future research, such as comparative evaluations, longitudinal studies, or initiatives to increase camera use in virtual learning environments.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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