Is virtual education here to stay?

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The COVID-19 pandemic forced educational programs to adapt to a virtual environment due to quarantine, social distancing and limitations of hospital centers for clinical practice. Medical schools and faculties were largely unprepared to face this challenge at the undergraduate level. Most professors, except for those who worked in graduate programs and virtual media, lacked experience with virtual teaching strategies. Institutional educational processes were not designed for this environment, and students also faced difficulties adapting to these sudden changes [(1)].

In view of this situation, educational institutions implemented timely measures such as accelerated training of their teaching staff, virtualization of theory classes and evaluations, and implementation of teaching strategies for small- and medium-sized group work, in line with problem-based learning and flipped classrooms. Simultaneously, practice classes in clinics and laboratories were suspended. For their part, students were able to adjust to these changes, provided they did not encounter connectivity problems, which remain a persistent challenge.

With the widespread adoption of virtual learning, there were claims that it was "here to stay," with some believing that the issue had been solved and that it would become the future teaching model.

Certain characteristics of online education have emerged as advantages over traditional face-to-face education. For instance, students save time by not traveling to their study centers, can attend classes from anywhere in the world, adjust their schedules to their needs, regulate the pace and speed of their studies according to their learning styles and characteristics, and access bibliographic resources more easily. Similarly, while professors initially struggled with adapting to virtual media, they also benefited from these advantages, and institutions had the opportunity to employ professors residing abroad.

Conversely, online education has drawbacks, such as connectivity issues, inadequate home environment for academic activities, and little or no interaction between participants (students and professors).

In medical education, some challenges remain unresolved and pose significant limitations. Firstly, the importance of nonverbal communication in teaching and student motivation is often overlooked. Nonverbal cues are essential for understanding, clarifying, emphasizing, internalizing and providing feedback, as well as for transmitting emotions among professors, students and patients. The absence of active video cameras during lectures or theory classes diminishes their effectiveness. Similarly, small group work conducted through chats, forums or emails—which are asynchronous communication tools—lacks the warmth and immediacy of face-to-face interactions [(2)].

Secondly, practical teaching during the clinical phase cannot be fully replaced by virtual methods. Simulation devices cannot replace human contact and everything involved in interacting with a patient. Evidence of this is seen in students who were at this stage during the pandemic and later faced challenges in establishing effective communication with patients, particularly during the anamnesis and clinical examination, which subsequently impacted the creation of an optimal medical history.

Thirdly, competency assessment is also affected in virtual environments and does not accurately reflect students' knowledge, skills and attitudes. There is a tendency among students to engage in academic dishonesty during evaluations, such as copying, allowing others to copy, using electronic devices for paid external help, impersonation or participating in group work without contributing [(3)]. Such issues are challenging to control in a virtual environment without sophisticated monitoring software. Poor competency assessments allow the advancement of unprepared students.

As time goes by and face-to-face learning resumes, it is essential to deeply reflect on virtual education and its impacts. This is the right moment to present the results of students' learning during those years, highlighting the advantages, disadvantages and limitations of the process. Consequently, robust evidence of the true impact of virtual education is required to assess its real value and potential applications in the future.

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Published studies primarily reflect students' perceptions rather than the actual learning quality or level. Professors in clinical and internship areas frequently express dissatisfaction with the low academic level of students educated during the pandemic, indicating a need for concrete evidence of the effectiveness of these teaching methods.

Students also express discomfort with virtual learning, which may explain their lower performance [4]. In addition, some students prefer face-to-face learning due to the negative impact virtual education has had on their clinical skills learning [5].

Notably, half of the students believe that virtual theory classes conducted via Zoom are equally effective or even better than face-to-face classes, especially when synchronous [6]. However, it is important to note that online lectures and presentations have a different dynamic from face-to-face ones, affecting the learning experience.

On the other hand, another group of students acknowledges the advantages of virtual education and suggests that it should complement rather than replace face-to-face education, advocating the blended approach [7]. While online learning offers flexibility, traditional face-to-face teaching remains more effective in developing skills and facilitating social interaction [8,9]. Clearly, technology cannot entirely replace face-to-face education.

At this point, it is crucial to examine the central question regarding the use of online or virtual teaching in medical education. Although it offers various advantages, disadvantages and limitations, no studies to date have demonstrated its effectiveness in learning. Existing reports reflect students' perceptions, which generally show dissatisfaction. Therefore, online education should be considered a complement in the traditional teaching-learning process rather than a complete replacement to traditional methods. While virtual education can be valuable for activities such as theory classes, it should not replace clinical training. Although virtual education will continue to play a role, it is important to acknowledge that it will not become the primary mode of instruction.

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