Use of modern technology in psychiatry training in a middle-income country

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Abstract
Recent advances in information technology (IT) provided us with novel teaching solutions, with the potential of a new enhanced learning experience, that is, more adapted to the needs and preferences of the younger generations of psychiatric trainees. These tools include the use of online/virtual whiteboards, live surveys/polls, live quizzes, virtual classrooms, and virtual reality. In the present paper, we describe the implementation of modern technology in psychiatric training in Tunisia, a North-African middle-income country. We discuss the potential benefits arising from this implementation, and we report the challenges and difficulties. Overall, the implementation of these modern technology-based tools in psychiatric training has been successful, with a very few obstacles. It seems that the integration of these novel approaches is possible even in middle and low-income countries without much hassle. These tools can enhance trainees’ participation, motivation, and engagement, thereby potentially improving learning outcomes. Most disadvantages are related to potential technical glitches, and are likely to improve as technology progresses. Teaching is the art of tailoring the educational tools to the learning objectives and to the learners’ characteristics and preferences. To achieve optimal learning outcomes, it is often needed to use a mixture of different “modern” and “less modern” techniques.

KEYWORDS
education, modern, online, psychiatry training, quiz, teaching

1 | BACKGROUND

Rather than a one-directional process, teaching is increasingly conceptualized as a bidirectional process occurring between the teacher and the learner (Kansanen, 1999). Attention plays a key role in learning and is essential in the retention of covered material, and enhancing attention can enhance recall and retention (Bradbury, 2016; Farley et al., 2013). Attention depends on different factors, among which interaction probably plays a principal role (Bradbury, 2016). Engaging the audience probably requires the use of methods and tools that are tailored to the characteristics of the attendees. Currently, most trainees in psychiatry belong to Millennials/Generation Y and increasingly to Generation Z. It is clear that the skills and learning preferences of these generations are vastly different from that of previous generations (Shinners et al., 2017). While traditional methods of teaching might have been appropriate for psychiatric trainees years ago, these methods are probably no longer optimal. They have been increasingly criticized for being mostly unidirectional (one delivers and the others passively receive the information), and sometimes even “boring,” which negatively impacts the attention span of attendees and reduces...
the overall quality of the learning experience (Schwartz et al., 2019). With the fast advances in information technology (IT), and the widespread use of smartphones and Web applications for virtually all kinds of tasks, it seems paramount to take advantage of such modern technologies to enhance the learning experience among psychiatric residents (Firth et al., 2019; Torous et al., 2018), who now have advanced IT skills, use IT on a daily basis, and tend to be unattracted by the traditional lectures they are often provided (Schwartz et al., 2019; Torous et al., 2018; Torous et al., 2019).

The COVID-19 pandemic has accelerated these inevitable changes, and online teaching has become the norm across the globe in most fields (Lockee, 2021; Ng, 2020). The modern tools that can be used in teaching psychiatry may include the use of online/virtual whiteboards, live surveys/polls, live quizzes, virtual classrooms, as well as virtual reality (Lee et al., 2020; Mian et al., 2018). While residency program directors have a key role in adapting the course formats to the ever-changing needs of residents, the residents themselves can also play a fundamental role in implementing these changes (Chen & Mullen, 2020; Pinto da Costa, 2020; Weiss & Li, 2020).

2 | IMPLEMENTATION OF MODERN TECHNOLOGIES IN PSYCHIATRY TRAINING IN A MIDDLE-INCOME COUNTRY

In Tunisia, a middle-income North African country (The World Bank, 2021), psychiatric residents have taken the lead in shaping their curriculum since 2011, a year marked by drastic changes in the country driven by the Tunisian Revolution (Aleya-Sghaier, 2012). Indeed, in this postrevolutionary climate, psychiatric residents founded the Association of Young Doctors and Residents in Psychiatry (Jeunes Psy - Association of Young Doctors and Residents in Psychiatry, 2019). Through this association, psychiatric residents have taken the lead in innovating their curriculum in collaboration with the residency program directors. One of the major pillars of innovation has been to adapt the learning objectives and tools to the ever-changing needs of psychiatric trainees.

The first effective implementation of the use of modern technologies took place during the fourth Scientific Meeting of the Jeunes Psy in Hammamet, Tunisia in October 2016. A plenary live quiz session was organized for attendees, using the Kahoot! platform (A. I. Wang & Tahir, 2020). Around 60 participants, mostly residents in psychiatry or young psychiatrists, were split into different teams, and each team elected one leader. The tournament had a knock-out format, and each game consisted of 10 questions related to the Meeting’s topic (personality disorders). Most questions used images or videos to enhance the learning experience, and two facilitators tried to add an entertaining dimension throughout the session, and attempted to boost the competitive spirit between teams. At the end of the quiz, the winners were granted with a small gift. The feedback from attendees was very positive, with most participants rating the session as the best session in the Meeting.

Similar sessions were subsequently organized, with the most notable ones taking place during the third World Congress of Early Career Psychiatrists, which was organized by Jeunes Psy and the World Psychiatric Association in Hammamet in December 2019, and in the World Conference of Psychiatry in 2020. Participants highlighted that they were able to learn and have fun at the same time, in particular due to the integration of teamwork, competition, and different question formats into a game format (Pinto da Costa, 2020).

In addition to the quiz sessions, other tools were used during different educational activities dedicated to psychiatric trainees. These include the use of virtual classrooms and live polls in psychotherapy workshops using the Socrative platform (Bello Pintado & Merino Diaz de Cerio, 2017). The feedback from these sessions was also positive, with participants appreciating the interactive format, and highlighting how live polls encouraged them to participate and answer questions without the fear of being judged for giving wrong answers.

During the COVID-19 pandemic, courses of biostatistics and methodology were also converted to an online format, with the use of virtual whiteboards and video-conference solutions. Participants reported being highly satisfied with the new format of the courses, and many actually preferred the online to the more traditional in-person format. Overall, a very few obstacles were encountered. Apart from occasional drops in the connection quality, and a few sporadic technical difficulties with webcams/microphones, no other major obstacles were reported both by the faculty and the attendees.

3 | POTENTIAL ADVANTAGES OF THE USE OF MODERN TECHNOLOGIES IN PSYCHIATRIC TRAINING

The use of modern technologies in psychiatric training can have multiple advantages. First, they can improve classroom dynamics and enhance motivation and engagement (Bello Pintado & Merino Diaz de Cerio, 2017; A. I. Wang & Tahir, 2020). Motivation and engagement have been consistently shown to fundamentally impact the learning outcome, and traditional teaching formats often make it challenging to keep students’ motivation and engagement (Butler, 1992; Prince, 2004). To improve interaction in classrooms, several approaches were tried, most notably the introduction of systems allowing presenters to gather attendees’ answers during a lecture. These student response systems (SRSs) have been shown to improve classroom dynamics and to enhance learning performance (Caldwell, 2007). Live polls/surveys and quizzes can be considered to be more modern versions of SRSs, where different content formats can be used and where no particular hardware is needed, since participants can use their own smart devices (A. I. Wang & Tahir, 2020). The use of these modern technologies can also be considered as tool that can be utilized in the flipped classroom approach. Flipped classroom represents a shift in educational approaches from passive teacher-centered learning strategy to a more active student-centered strategy (Yang et al., 2021). Several studies showed a positive impact of using live polls or quizzes on classroom dynamics, attendance rates, as well as on interactivity with the instructor and with peers (Hung, 2017;
A. Wang & Lieberoth, 2016; Wichadee & Pattanapichet, 2018). Modern educational tools can also help to reduce one of the major obstacles toward the active participation of certain students, namely the fear of giving wrong answers and/or being negatively judged. Participants in live polls or quizzes consistently reported that it was easier for them to participate without fear of judgment, especially when answers were anonymous (using aliases), or when playing in teams (Scales Jr. et al., 2016; A. I. Wang & Tahir, 2020). By adding humors, live quizzes also alleviate stress and reduce attendees’ anxiety (Bawa, 2018).

Second, and probably partly as a result of enhancing motivation and engagement, technology-supported learning can also improve learning outcomes. Indeed, several comparative studies found that groups that use modern technology tools have better grades than groups that use more traditional methods (Bawa, 2018; Hung, 2017; Shi et al., 2019). In this regard, a team-based competition or a gamified approach can be particularly useful. Indeed, a randomized controlled trial involving medical residents from different training programs found that a team-based competition environment improves participation and learning outcomes in online courses (Scales Jr. et al., 2016). A “gamified” teaching experience was also found to improve attendance, downloads of course materials, classroom dynamics, and final grades (Fotaris et al., 2016).

Third, modern tools can improve the students’ and teachers’ perception of the learning experience. Indeed, the students’ perception of live quizzes was reportedly to be better than paper-based quizzes (A. Wang & Lieberoth, 2016; Wichadee & Pattanapichet, 2018). Physicians’ perception of webinars and online education during the COVID-19 pandemic was also mostly positive (Ismail et al., 2021). Other studies reported that teachers perceive that the use of live quizzes boost their motivation, enhance their attention and concentration, help them to check students’ understanding, allow instantaneous feedback and engagement with a large number of attendees (Nkhoma et al., 2018; Yapici, 2017).

Fourth, many modern technology-based tools involve teamwork, thus potentially fostering teambuilding. For instance, virtual whiteboards often require synchronous input from multiple attendees, which can help build collaborative thought process. Participating in live quizzes as teams also trains the attendees on teamwork skills and can promote building future connections between them (Khan et al., 2021; A. I. Wang & Tahir, 2020). By improving soft skills like teamwork, modern technology can provide learning outcomes that are beyond the mere retention of the presented material. This is crucial, as we have become increasingly aware of the importance of training in soft skills in medical training (Burns et al., 2021).

Fifth, some techniques, like virtual reality, can also be applied in clinical training, and can offer new possibilities of increasing the exposure of psychiatry trainees to certain symptoms, conditions, or situations that might be rare or difficult to encounter in ordinary training settings. Virtual reality simulation programs are increasingly easier to implement thanks to the recent advances in IT, and can be really immersive, involving many senses at once, thus improving the learning outcomes (Lee et al., 2020).

Other potential benefits of online educational tools may include easier participation of instructors from other regions or countries, more location flexibility for attendees, the inclusion of a wider audience, and the chance to involve attendees from different countries (Ismail et al., 2021).

Moreover, amidst the COVID-19 pandemic, the use of modern technology-based tools has been essential to ensure that medical and scientific conferences were converted into virtual meetings rather than canceled because of travel restrictions. Overall, previous studies showed that the vast majority of attendees were highly satisfied with the online virtual format. Online conferences may have several advantages over “traditional” face-to-face scientific meetings, including ease of access to recorded conference material anytime from anywhere, lower costs for the attendees, as well as potentially higher engagement and motivation (Martin-Gorgojo et al., 2020; Porpiglia et al., 2020).

Online platforms have also been successfully used for clinical supervision for medical students, interns, residents, and fellows with a positive feedback from faculty and trainees. Online clinical supervision can be time-effective, and can be applied to one-to-one, as well as to group supervisions (Chen & Mullen, 2020; Rendon, 2021).

Last, the implementation of these technologies is generally simple and cost-effective. Participants can simply use their smartphones, tablets, or laptops; and most of the used applications have free versions. In Tunisia, a middle-income country, the implementation of these innovative tools was easy and straightforward. With the increasingly easy access to high-speed internet throughout the world (Chang et al., 2020), we believe that the implementation of these tools will become feasible soon even in low-income countries.

4 | POTENTIAL DISADVANTAGES AND CHALLENGES OF THE USE OF MODERN TECHNOLOGIES IN PSYCHIATRIC TRAINING

The use of modern technologies in psychiatric training can have a few disadvantages. Indeed, it is not uncommon for any technology-based educational activities to have technical glitches, with potential internet connection issues, potential difficulties that some attendees or instructors can have with using the platform. It is not uncommon for participants to mistakenly switch on/off their microphones or webcams during the session. In real-world conditions, there is an almost inevitable latency, and response time can be significantly slower when compared to in-person interactions. All these technical aspects can cause some delays, and can waste some precious educational time (Goh & Sandars, 2020; Ismail et al., 2021; A. I. Wang & Tahir, 2020). These problems can be made worse by the fact that access to high-speed internet can be difficult in certain low to middle-income countries (Naem et al., 2020).

While virtual conferences have received mostly positive feedback, many attendees highlighted the lack of in-person contact and the subsequent networking difficulties as a major potential drawback. Nonetheless, the use of instant messaging tools can partly mitigate this downside (Martin-Gorgojo et al., 2020).
In addition, using most modern tools can be less optimal than traditional methods with regards to social interaction between the instructor and the attendees, as well as between the attendees themselves (Goh & Sandars, 2020). However, certain modern technologies can be integrated into in-person sessions thus offering “the best of both worlds.” When video-conference platforms are used to deliver “traditional” lectures, without much engagement of the audience, most advantages of modern technologies are no longer present, and a traditional in-person lecture can offer a better social interaction (Ismail et al., 2021). Higher distractibility when using modern technologies is another potential drawback reported by some participants in webinars (Goh & Sandars, 2020; Ismail et al., 2021). However, this potential disadvantage can be easily overcome by using tools that require a more active engagement, like live polls/surveys and quizzes.

Another possible limitation is that extended time on screen can result into detrimental effects on participants' mental health, physical activity, as well as ocular health (Bakhir & Grandee, 2020; Smith et al., 2020).

Because of these potential drawbacks, some learners still prefer the traditional methods. Some training aspects, like bedside teaching, are also difficult to replicate with modern technologies. Even though the use of virtual reality may be useful in certain cases, direct interactions with the patient, and the possibility of physical examination are superior with onsite bedside teaching (Ismail et al., 2021; Pinto da Costa et al., 2019).

5 | CONCLUSIONS

Integrating modern technologies into psychiatric training seems almost inevitable, with the changing learning preferences of the younger generations of psychiatric trainees, with the recent advances in IT, and with the ongoing COVID-19 pandemic. Implementing these tools has been quite straightforward in a middle-income country, and it is likely that this implementation is actually possible also in low-income countries. Overall, many modern tools can enhance participation, motivation, and engagement, thereby improving learning outcomes. Most disadvantages are related to potential technical glitches, and are likely to improve as technology progresses. However, the use of these novel technologies does not have to become a goal per se, and some traditional methods still hold a place in many situations. Modern technologies are best considered as “additional” tools that can enrich “the educational arsenal,” rather than tools that replace “old-fashioned” teaching methods. Each educational tool has its own advantages and disadvantages, and can be suitable for a certain number of situations/circumstances. Teaching is the art of tailoring the educational tools to the learning objectives and to the learners’ characteristics and preferences. To achieve optimal learning outcomes, a mixture of different “modern” and “less modern” techniques is often needed.

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CONFLICT OF INTEREST

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

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