

METHODS OF MEDICAL EDUCATION USED BY MEDICAL PERSONNEL DURING THE PANDEMIC

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RESEARCH ARTICLE

Abstract

For a better understanding of the COVID-19 pandemic impact over the medical education methods used by medical personnel, we have made a study using a standard form in which we have applied targeted questions regarding the methods used in medical education before and after the pandemic. This study followed the motivation and selection criteria of medical education forms before and after the pandemic, the advantages and disadvantages noted by attendees through onsite and online, also including suggestions for the future of medical education. The number of participants in online courses and the time assigned for online medical education has increased, compared to the period before pandemic. During the pandemic, has been recorded a reorientation of participants on online platforms, following the utilization of those platforms which allow uploading files as well as free interaction between students and lecturer. The advantages and disadvantages, noted in medical personnel training, are counterbalanced in both of education online – onsite forms (example: the interaction with the lecturer and also between the students at medical meetings, has been the main advantage of medical education onsite and the major disadvantage of online education). The majority of study participants consider, for the future, the combined use of both online and onsite professional training methods, and, therefore the participants can decide on what method of education should use.

Keywords: medical education, medical personnel, Covid-19 pandemic, onsite, online

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INTRODUCTION

The COVID-19 pandemic (McIntosh, 2021; Atzrodt, 2021; Centers for Disease Control and Prevention, 2022), despite the negative impact on life and society, has brought news and updated techniques even in medical education. Along with digitalization in many spheres of activity, the digitalization of the medical and education field, especially medical education at all levels, has gone through transformation, accelerated with the declaration of the COVID-19 pandemic.

When physical and social distancing was necessary (Stoto, 2021; Johansson, 2021; Khan, 2020; Meyerowitz, 2020), schools, hospitals and universities as well as other forms of education (for example postgraduate education) introduced various education platforms (to ensure the continuation of the education process). Both the lecturers and the participants in the education processes have adapted to the new online education system (Ferrel, 2020; Ho, 2021).

Traditional education methods (conferences and symposiums, courses, colloquiums, practical activities) were

combined or replaced with new methods in online format through various educational platforms, offering to students and medical staff new experience that stimulated innovation and active participation.

The aim of the study is to evaluate the impact of the pandemic on continuous medical education, the objectives being:

- The impact of the pandemic on the motivation and criteria for choosing continuous medical education programs before the pandemic;
- The impact of the pandemic on the type of platforms used by participants;
- The impact of the pandemic on the time spent on continuous medical education in online format;
- The advantages and disadvantages of continuous medical education in traditional format (with physical attendance) compared to online (or virtual) medical education;
- Preferences for the future;

The obtained results can be a starting point for improving the methods and assets of continuous medical education, using both traditional and online methods.

MATERIAL AND METHOD

To achieve the proposed goal and objectives, we have formulated a questionnaire that includes 15 questions with simple or multiple answers and 2 questions with narrative answers. The first 4 questions refer to age, gender, professional degree and length of service and have only one answer. Questions 5-15 refer to the continuous medical education methods used before and after the onset of the COVID-19 pandemic, the advantages and disadvantages of both types of education, the platforms (Tutorials, Microsoft Teams, Zoom, online exam preparation and other platforms) but also the time used for online medical education before and during the pandemic and preferences for the future. Questions 16 and 17 are open-ended (narrative) and refer to the positive aspects of the continuous medical education programs in which the medical staff has been participated in the last five years, as well as suggestions for improving the continuous medical education programs for the future. 153 questionnaires with complete answers were validated. The study was carried out between October 2021 - March 2022. Since we did not use or process personal data, the study did not require the approval of the ethics committee.

Medical personnel over 41 years old, female, doctors and medical personnel with more than 10 years of experience predominate (table 1).

RESULTS AND DISCUSSIONS

The motivation for participating in the continuous education programs regardless of format, online or with a physical presence (traditional type) was dominated by the desire to acquire new knowledge 38%, followed by obtaining credits 28% and obtaining professional skills 23%. The desire to obtain new medical knowledge and/or the acquisition of new skills are important aspects in professional development; obtaining credits is important for maintaining the right to free practice and is a mandatory aspect in the profession of medical personnel (figure 1).

The most frequent criteria for choosing professional training programs were: course theme 39%, obtaining skills and certificates of participation at graduation 22% and course organizers and trainers 16%, which contrasts

with the percentage of participants motivated by trainers (6%) in participating in the professional development programs from the previous section (figure 2).

The COVID 19 pandemic increased the share of medical personnel participating in online continuous medical education from 75% (until March 2020) to 96% (after March 2020), a fact explained by the online support of all forms of education (not only medical) during the pandemic (figure 3).

Before the pandemic, the most frequently used platform was Zoom (19%), Tutorials (13%), other types of platforms than those mentioned in the questionnaire (24%) and 25% did not use online education methods before the pandemic. The medical education platforms used during the pandemic changed: 33% used Zoom, 23% used Microsoft teams, 11% used Google meet. Online exam preparation increased from 4% before the pandemic to 11% during the pandemic (figure 3). A study conducted in India (Dash, 2021), evaluated the benefits and disadvantages of several education platforms. For example, Microsoft Teams is a platform where participants can complete the participation in a video or audio conference by sending messages (important for the questions and answers section of medical conferences). The fact that the presentation can be viewed through the share screen function is a plus, allowing participants to follow the presentations visually. Also, the conferences through this platform can be organized by a single person or a group and allow large-scale participation with up to 10,000 participants. Also, this platform offers the presenter the opportunity to analyze the quality of the conference, thus offering opportunities to improve presentations in the future.

The analysis of the number of hours spent on online medical education shows a significant increase in the number of people using the online platform over 30 hours/year, from 25% to 61% correlated with the inverse decrease of those with 0-10 hours/year (figure 4).

The advantages of medical education with physical presence offers participants direct interaction with trainers (42%), offers the possibility of socialization and exchange of experience (34%), allows free ad hoc discussions (16%) and the images / presentations are qualitatively superior to the online environment (figure 5).

The difficulties or disadvantages of traditional education with physical presence are

represented by the distance from the organizing center 30%, expenses related to transport and accommodation 23% and the period of traditional education sessions 15%. Other disadvantages mentioned: participation fee (which is obviously higher) 13%, duration 11% and others 8% (figure 6).

The advantages of online education are represented by saving time (42%), low cost (32%) but also many medical possibilities to participate in several sessions or conferences from home 22% (Figure 13). In a similar study (Raby, 2021) which compares the advantages of the 2020 conference (online) compared to the one organized in 2019 (with physical presence), it is noted, in addition to the low cost, the flexibility (since the participants had the opportunity to participate from home) and decrease the negative impact on the environment (figure 7).

The main disadvantage of online medical education was by far represented by the lack of direct interaction with trainers and colleagues, namely 47%; this result is in accordance with the answers regarding the advantages of traditional education, with the physical presence in which 42% of participants considered that the interaction with the trainers and the other participants in the respective medical education represents an advantage on this form of education. Other difficulties of online medical education were represented by connecting to the Internet 32%, and others 3%. Only 12% of the participants considered the quality of the images as a disadvantage of continuous online medical education and 6% considered the lack of necessary devices as a limitation of this type of education (figure 8). Similar results were also obtained in a European study (Woodruff, 2021) that conducted a survey through Twitter Polls, participants were asked about the possibility of sending papers for future virtual conferences; 54% answered less likely; only 10% answered as more likely and 7% indicated that it depends on the type of conference. The authors conclusion was that although online and virtual conferences have a positive impact on the time gained by the participants, lower costs and

positive effects for the environment (reducing transport implicitly reduces the emission of toxic substances for the environment), these conferences reduce the possibilities of socialization and development of professional relationships with other participants (this was observed especially in the younger participants); it also limits free and ad hoc discussions, decreases interactivity. Another study (Solomon, 2004) included medical students in Michigan, USA; the students completed a questionnaire regarding the advantages and disadvantages of traditional medical education compared to online ones, after viewing several courses in online format; although the students had technical difficulties regarding online education, the conclusion of the study was that the main disadvantages are represented by the difficulty of asking questions in person, the lack of interaction with colleagues, but also the fact of being in a different room than the presenter (first two disadvantages listed being similar to the results of our study). On the other hand, the advantages of online education were represented by the possibility to view the courses at the discretion of the student, saving time by not having to travel and the ability to save the courses in electronic format.

Regarding the preferences for the future concerning the type of programs, 32% would prefer the traditional onsite format, 27% suggest an onsite-online combination (within these programs, the organizers allowing the student to choose the form of participation), 21% prefer combined online (courses) - onsite (practical activities), and 18% approve the online form. Although 2% of the participants did not specify the type of continuous medical education or professional development in which they would prefer to participate in the future, the individual study from specialized or reference books, medical journals, medical practice guides as well as searching and studying research articles online, represents methods known and used by medical personnel to maintain and improve medical knowledge for individual professional training (figure 9).

Table 1

Distribution of respondents according to personal characteristics

Age group	No. (%)	Gender	No. (%)	Profession	No. (%)	Length of service	No. (%)
20-30 years	24 (16%)	Male	43 (28%)	Doctors	62 (41%)	0-5 years	38 (25%)
31-40 years	32 (21%)	Female	110 (72%)	Pharmacists	12 (8%)	6-10 years	19 (12%)
41-50 years	46 (30%)			Dentists	32 (21%)	Over 10 years	96 (63%)
Over 50 years	51 (33%)			Nurses	47 (30%)		

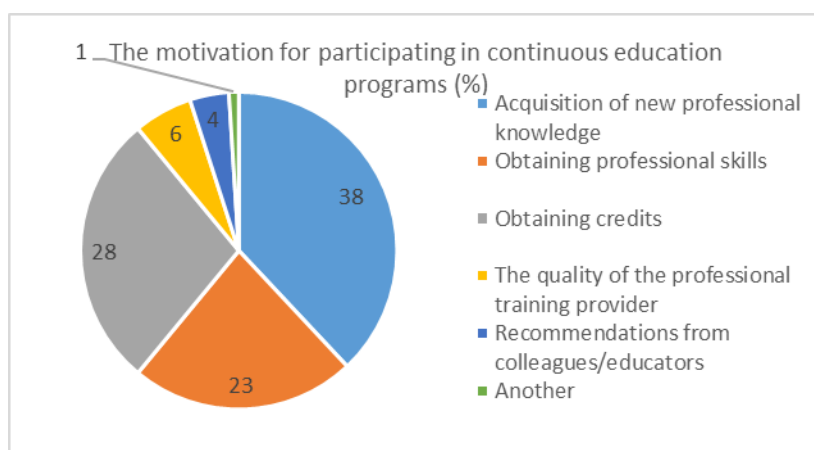


Figure 1 The motivation for participating in continuous education programs (%)

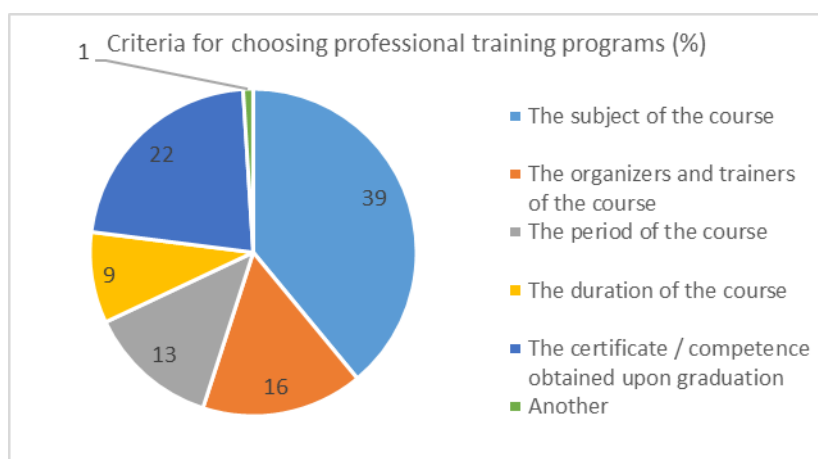


Figure 2 Criteria for choosing professional training programs (%)

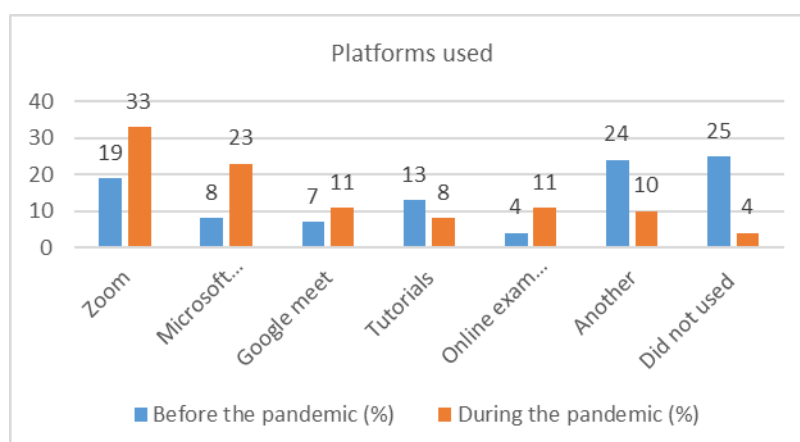


Figure 3 Percentage of platforms used in medical education, before and during the pandemic

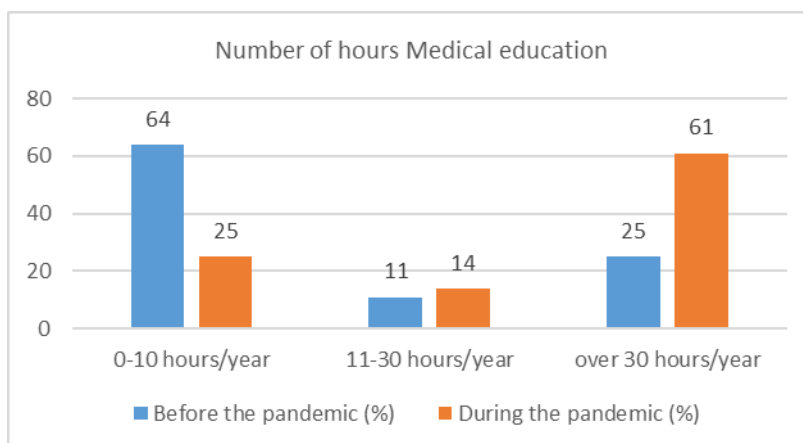


Figure 4 Percentage of the number of hours of medical education, before and during the pandemic

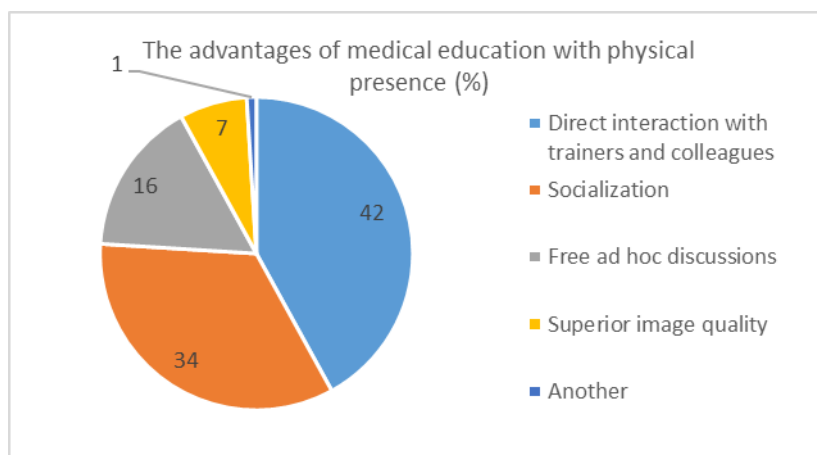


Figure 5 The advantages of medical education with physical presence (%)

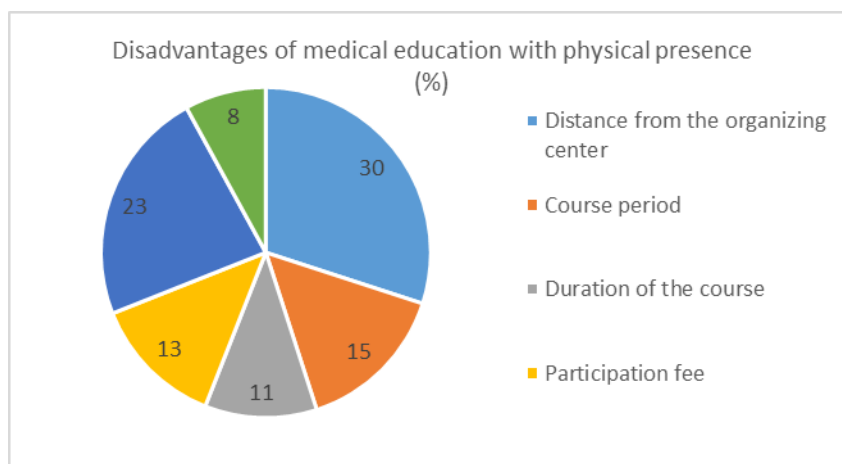


Figure 6 Disadvantages of medical education with physical presence (%)

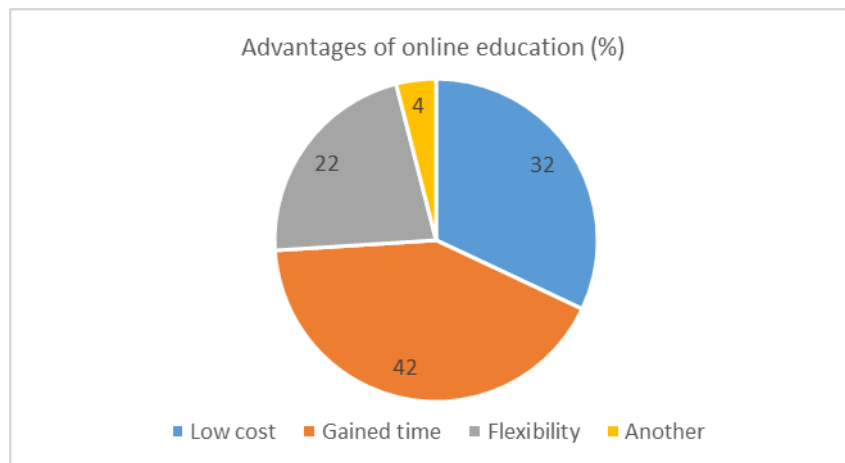


Figure 7 Advantages of online education (%)

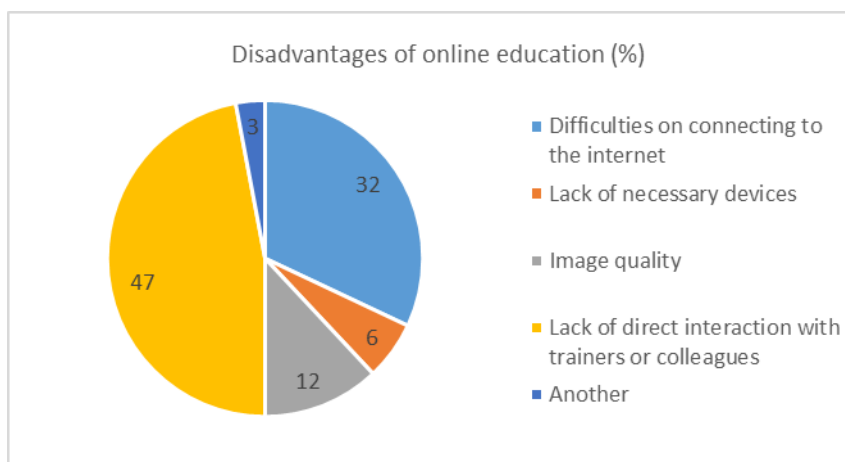


Figure 8 Disadvantages of online education (%)

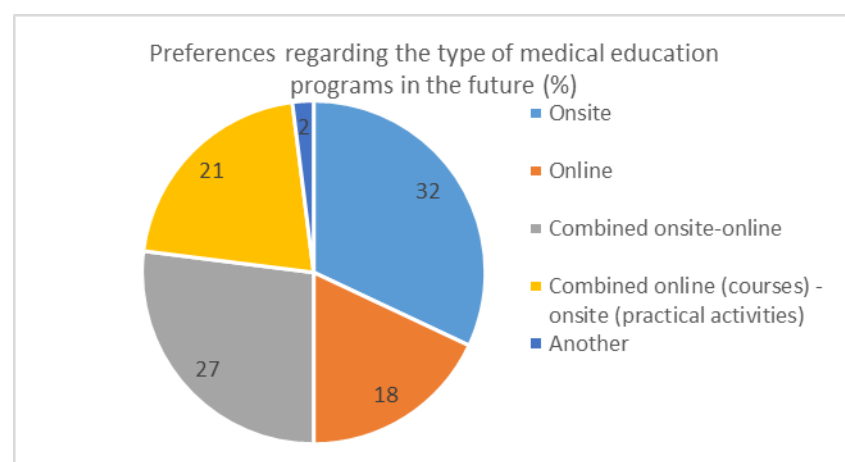


Figure 9 Preferences regarding the type of medical education programs in the future (%)

CONCLUSIONS

The COVID 19 pandemic did not stop the interest of the medical staff in continuous medical education or in obtaining new medical knowledge and skills. Although online education required the use of new educational methods and technologies for many participants, there was an increase in the

number of online participants and the time spent on online medical education.

Interaction with trainers, but also socialization and interaction with colleagues and participants at medical conferences, represented the main advantage of onsite medical education but also the main disadvantage of online education. The distance from the trainer's center as well as accommodation and transportation expenses

represented the main disadvantages of physical presence education.

Regarding preferences for the future, the onsite method predominates, but also various combined onsite-online methods.

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