

Medical Students' Perception about Online Teaching Methods during COVID-19 Pandemic

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ABSTRACT

BACKGROUND

The process of online teaching and learning had an impact on both teachers and students; as a result, for the students who were assigned (confined) to staying home there were limited opportunities to practice in the clinic. The aim of this study was to assess foreign medical student's perception about the efficiency of the remote teaching method, and to investigate their opinion about implementing some online teaching features even after the pandemic period would pass.

METHODS

A questionnaire was created, providing questions related to social-demographic factors and 20 statements for assessing the opinion of the respondents regarding the online educational process implemented during the pandemic period. The questionnaires were distributed by email.

RESULTS

459 answers were statistically analyzed. We noticed that students accepted remote lectures and other learning activities due to the higher risk of contamination. But among those who wrote an answer to this question, many would like to restart the classic activities as soon as possible, especially for the labs or clinical practice. We observed also a tendency to accept remote lectures, or a combination between online and traditional lectures, after the pandemic period is over.

CONCLUSIONS

Considering the results of the present survey, we can affirm that foreign students had an overall positive opinion about the acceptability and usability of online medical learning. Students viewed online activities as helpful, but as a supplement to their learning rather than a replacement for traditional teaching methods.

KEY WORDS

Assessment, Education, Student, Covid-19 Pandemic

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BACKGROUND

As Covid-19 pandemic affected society in every domain, education also was impacted at all levels, from kindergarten until post-graduation programs, as all institutions had to suspend activities. Medical universities all over the world had to cope with closure, social distancing, and continuing learning activities remotely.¹

The process of online teaching and learning had an impact on both the teachers and students; as a result, for the learners who were assigned to stay at home there were limited opportunities to learn in the clinical environment.²

Although several researches have been published, prior to Covid-19 pandemic, regarding the possibility of combining traditional, face-to-face teaching with remote methods in medical universities,^{3,4,5} not all medical schools managed to introduce a mixed learning method, online and traditional.⁶

“Iuliu Hatieganu” University of Medicine and Pharmacy in Cluj Napoca, Romania, managed to develop in a short time (10 days), a method to continue all the teaching activities (lectures and practical activities) in a virtual environment. In this context, we believe that students’ opinion about the entire online learning process is an important factor, essential to judge the success of the new implemented system.

This is why the present research was conducted 12 weeks after the implementation of the online learning during Covid-19 pandemic. The aim of this study was to assess foreign students’ (from France, Germany, Greece, Italy, Israel, etc.) perception about the efficiency of the remote teaching method, and to investigate their opinion about implementing some online teaching features even after this pandemic period would pass.

METHODS

A questionnaire was created in order to evaluate the students’ opinion about the online teaching methods used by “Iuliu Hatieganu” University (Cluj Napoca, Romania) during Covid-19 pandemic. The survey was first randomly pilot tested among 10 students, in order to validate the clarity of the questions, the response options and the time needed for completion. After making the necessary modifications, 20 questions were included in the survey, in addition to the questions investigating the social and demographic factors.

The questionnaire was distributed between May the 18th 2020 and May the 25th 2020 via email. This way the questionnaire was distributed among all the foreign medical and dental students.

The survey was divided into 3 sections, as follows-

1. The first section included the GDPR agreement, so that only the respondents who agreed with the conditions of processing personal data could continue answering the survey;
2. The second section referred to social and demographic factors, like gender, age, domicile, faculty and year of study;
3. The third section contained 20 statements for assessing the opinion of the respondents regarding the online educational process implemented during the pandemic

period. The questions in this section are resumed in Table 2.

The possible answers for each statement were (a) agree; (b) disagree; (c) uncertain. The distribution of the questionnaires was done by email (using Google Forms web site) to students from Faculty of General Medicine and Faculty of Dentistry, French and English Section, from the University of Medicine and Pharmacy of Cluj Napoca.

Data Analysis

All the answers registered online were further downloaded from the Google Forms web site as a Microsoft Excel (Microsoft Corp., Redmond, WA) file. In order to perform the statistical analysis, the variables were registered, and the answers were exported to a SPSS file (Statistical Package for Social Sciences software 22.0 - SPSS, Chicago, Il).

The Kolmogorov-Sminov normality test determined the data distribution. Descriptive and crosstab analyses were used to compare students’ preferences for each statement. Pearson’s correlations were tested. Statistically significant differences were those with $p \leq 0.05$. Assumptions of logistic regression such as dependent variable configuration were also verified.

RESULTS

460 students from the Faculty of Medicine and Faculty of Dentistry responded to the survey. As 1 respondent refused to accept the GDPR conditions of processing of their personal data, the responses of 459 students were analyzed. The social-demographic characteristics of survey participants are summarized in Table 1.

The 459 answers were statistically analyzed: there were 289 women and 170 men, 116 were from Germany, 163 were from France, and the rest of 180 were from different countries in Europe, Asia, or even USA. The distribution based on the study year showed that 276 students were in their preclinical years (1st, 2nd, and 3rd), while the rest of 186 were in the clinical years (4th, 5th and 6th). Regarding the faculties, 221 of the respondents were students at the Faculty of Medicine, while the rest of 238 were students at the Faculty of Dentistry (Table 1).

Variables	Age (in Years)				Gender (F / M)		Domicile			Study Year						Faculty		
	18 - 19	20 - 21	22 - 23	24 - 25	Over 25	Female	Male	Germany	France	Other countries	1 st year	2 nd year	3 rd year	4 th year	5 th year	6 th year	Medicine	Dentistry
Number of participants (N) and %	40 (8.7.3 %)	103 (22.4 %)	143 (31.2 %)	118 (25.7 %)	55 (12 %)	289 (63 %)	170 (37 %)	116 (25.3 %)	163 (35.5 %)	180 (39.2 %)	102 (22.2 %)	66 (14.4 %)	105 (22.9 %)	77 (16.8 %)	66 (14.4 %)	43 (9.4 %)	221 (48.1 %)	238 (51.9 %)
Total	459 (100 %)																	

Table 1. Description of Respondents Participating in the Survey

Out of the 459 respondents, 358 subjects (78.0 %) considered that online lectures are useful, while 332 (72.3 %) of the respondents were satisfied with the traditional lectures,

before Covid-19 pandemic. When asked about their communication with the teacher during lectures, 164 (35.7 %) of the respondents agreed that they could communicate better online, than face-to face, and 296 (64.5 %) would prefer a combination of online and traditional lectures, post Covid-19 pandemic. (Table 2).

Section 3 of the Survey	Answer Options	No. of Respondents (459 - 100 %)
1. I can connect to the online teaching platform on my computer (desktop / laptop).	Agree	436 (95 %)
	Disagree	20 (4.4 %)
	Uncertain	3 (0.7 %)
2. I know how to open, edit and load documents on a computer.	Agree	437 (95.2 %)
	Disagree	21 (4.6 %)
	Uncertain	1 (0.2 %)
3. Before the Covid-19 pandemic, I used to access the Internet daily or weekly, to check online tutorials or online course announcements.	Agree	304 (66.2 %)
	Disagree	140 (30.5 %)
	Uncertain	15 (3.3 %)
4. "In general, I find online lectures useful"	Agree	358 (78 %)
	Disagree	97 (21.1 %)
	Uncertain	4 (0.9 %)
5. „In general, I find online procedural videos useful"	Agree	252 (54.48 %)
	Disagree	87 (19 %)
	Uncertain	120 (26.1 %)
6. „Before the Covid-19 pandemic, I was satisfied with the way traditional lectures were conducted"	Agree	332 (72.3 %)
	Disagree	122 (26.6 %)
	Uncertain	5 (1.1 %)
7. „I consider the online lectures, presented on a power point presentation, to be more useful than the classic courses"	Agree	205 (44.7 %)
	Disagree	239 (52.1 %)
	Uncertain	15 (3.3 %)
8. „During the online lectures, I consider that I am able to communicate better with the teacher, compared to a traditional course"	Agree	164 (35.7 %)
	Disagree	274 (43.6 %)
	Uncertain	21 (0.5 %)
9. "Regarding the lectures, I prefer a combination of traditional and online learning";	Agree	296 (64.5 %)
	Disagree	145 (31.6 %)
	Uncertain	18 (3.9 %)
10. Before the Covid-19 pandemic, I was satisfied with the way the labs / clinical practice were carried out"	Agree	372 (81.0 %)
	Disagree	85 (18.5 %)
	Uncertain	2 (0.4 %)
11. "I consider the labs / clinical practice tutorials to be more useful than the traditional ones	Agree	58 (12.6 %)
	Disagree	377 (82.1 %)
	Uncertain	24 (2.6 %)
12. "The video tutorials presented were more useful than the live demonstrations during the labs / clinical practice"	Agree	58 (12.6 %)
	Disagree	381 (83.0 %)
	Uncertain	20 (4.4 %)
13. "Online video tutorials should partially replace the traditional labs / clinical practice, during the academic year"	Agree	103 (22.4 %)
	Disagree	343 (74.7 %)
	Uncertain	13 (2.8 %)
14. "During the online lab / practice, I consider that I was able to communicate better with the group's instructor, compared to the traditional one"	Agree	103 (22.4 %)
	Disagree	333 (72.5 %)
	Uncertain	23 (5.0 %)
15. "For the practical activity, I would prefer a combination of online tutorials with traditional labs and clinical practice"	Agree	197 (42.9 %)
	Disagree	250 (54.5 %)
	Uncertain	12 (2.6 %)
16. „I would prefer the classical labs / clinical practice, compared to online tutorials"	Agree	390 (85.0 %)
	Disagree	54 (11.8 %)
	Uncertain	15 (3.3 %)
17. "In general, I consider useful the online teaching to partially continue, even after the Covid-19 pandemic is over"	Agree	267 (58.2 %)
	Disagree	186 (40.5 %)
	Uncertain	6 (1.3 %)
18. "During these weeks of online learning, I consider that I have received a lot of information that will be useful to me during my career."	Agree	306 (66.7 %)
	Disagree	127 (27.7 %)
	Uncertain	26 (5.7 %)
19. On a scale from 1 to 5 (1 being the lowest value, 5 being the highest) how would you score the online teaching platform?	5 / 4 / 3	311 (67.8 %)
	1 / 2	148 (32.2 %)
20. Regarding the overall online activity so far, what would you like to be changed?	Open answer	

Table 2. Section 3 of the Survey with the Answers Offered for Each Statement

Regarding the practical activities, 372 (81.0 %) of the respondents were satisfied with the traditional practical activities, and 377 (82.1 %) subjects didn't consider online

activities more useful than traditional method; also, during the online activities, 333 students (72.5 %) disagreed with the fact that they could communicate better with their instructor. 390 respondents (85.0 %) preferred the traditional way for the practical activities, and 197 (42.9 %) believed that online activities regarding practical issues should partially continue even after Covid-19 pandemic (Table 2).

Also, 306 respondents (66.7 %) believed that during this online learning activity they received useful information, and 311 (67.8 %) evaluated the platform used for online activities as good and very good. (Table 2).

Crosstab analyses revealed that 145 (50.2 %) women considered online video tutorials useful, while 107 (62.9 %) males agreed with this statement ($\chi^2 = 10.664$, $df = 2$, $p = 0.005$), but 248 (85.8 %) women and 129 (75.9 %) men do not believe that online practical activities are more useful than the traditional ones ($\chi^2 = 7.447$, $df = 2$, $p = 0.024$). 155 (56.3 %) women and 112 (65.8 %) men would prefer continuing online activity even after the Covid-19 pandemic would be over ($\chi^2 = 9.024$, $df = 2$, $p = 0.011$).

When analyzing the students' domicile and their answers to the statements, 274 respondents did not consider that they could communicate better with the teacher during online lectures, among them being 67 (57.5 %) German respondents and 101 (61.9 %) French respondents ($\chi^2 = 19.311$, $df = 10$, $p = 0.036$). Regarding the communication with the group's instructor during online practical activities 333 (72.5 %) students disagreed with the statement 14 ($\chi^2 = 26.166$, $df = 10$, $p = 0.004$) (Table 2).

332 (72.3 %) students from all years of study were satisfied with the traditional lectures sustained before Covid-19 pandemic ($\chi^2 = 36.298$ $df = 10$, $p = 0.000$), while 79 (77.4 %) students from the first year of study did not considered that they could communicate better with their teacher during online lectures ($\chi^2 = 53.032$, $df = 10$, $p = 0.000$). Also, 381 respondents did not consider video tutorials more useful than live demonstrations ($\chi^2 = 18.541$, $df = 10$, $p = 0.046$). 59 (57.84 %) students from the first year of study disagreed with the statement no. 17 ("in general, I consider useful the online teaching to partially continue, even after the Covid-19 pandemic is over") ($\chi^2 = 24.790$, $df = 10$, $p = 0.006$). Regarding the statement no. 18 ("during these weeks of online learning, I consider that I have received a lot of information that will be useful to me during my career") 22 (51.6 %) students from the 6th year of study disagreed with it.

Analyzing the results based on the respondents' faculty, 174 (78.73 %) dental students and 158 (66.38 %) general medicine students were satisfied with the traditional lectures ($\chi^2 = 9.331$, $df = 2$, $p = 0.009$). Also, 188 (85.06 %) dental students and 184 (77.3 %) general medicine students were satisfied with the traditional labs and practical activities, while 193 (87.3 %) dental students and 184 (77.3 %) did not consider online practical activities more useful than the traditional ones ($\chi^2 = 8.177$, $df = 2$, $p = 0.017$). Also, 201 (90.9 %) dental students and 189 (79.4 %) general medicine students preferred traditional practical activities ($\chi^2 = 14.344$, $df = 2$, $p = 0.001$).

Multinomial regression, between the answers and the demographic variables revealed in general a $p > 0005$.

AGREEMENT,
on the processing, processing and storage of personal data
according to art. 6 of Regulation (EU) 2016/679 (here in after referred to as GDPR)
 By this agreement I expressly consent to the investigator collecting, processing and storing my personal data, consisting of:
 Personal date, respectively: age, gender, domicile, year of study, place of birth.

This data will be anonymized for the entire storage period.

The rights you have with regard to your personal data are those provided in the GDPR: the right of access to personal data (art. 12-15), the right to rectification (art. 16), the right to delete data or the right to be forgotten (art. 17), the right to restrict processing (art. 18), the right to data portability (art. 20), the right to opposition and automated individual decision-making (art. 21-22), the right to withdraw your consent (art. 7), the right to file a complaint with us and / or the competent authority on data protection - ANSPDCP (art. 77), the right to exercise a judicial remedy (art. 78- 79).

I agree that the results of the medical tests, as well as the results of the investigations to which I was subjected to be offered, freely and unequivocally, for the purpose of carrying out the research project, consent valid for a period of up to 5 years.

I confirm that I have been informed about the provisions of the personal data security policy, in accordance with Regulation (EU) 2016/679, within the university.

May 2020

Figure 1. Agreement Regarding the Processing of the Participant's Personal Data

DISCUSSION

Students' learning preferences of medicine and dentistry schools had drastically changed over the last several years, mainly because of different cultures, experiences or personality.⁷ In the context of Covid-19 pandemic, teachers in medical universities all over the world had to make a fast and efficient transition toward online teaching.^{8,9} As a result, all medical students (general medicine and dentistry) were barred from entering clinics and hospitals, and continued their learning process remotely. The medical teachers adapted to provide students online teaching using interactive video conferences, replacing traditional practical activities.¹⁰

"Iuliu Hatieganu" University of Medicine and Pharmacy in Cluj Napoca, Romania, had also suspended face-to-face lectures, as well as preclinical and clinical activities for all the students. The aim of this study was to assess foreign students' opinion (from English and French sections) about the learning activities they had to virtually attend during the second semester of the academic year 2019 - 2020.

Out of the 460 students answering to the survey, 459 agreed with the processing and storing their personal data (Figure 1) included in the first section and continued answering, while 1 student was excluded as he denied from answering to the survey.

The survey included in the second section consisted questions regarding some social-demographic factors like age, study year or faculty. There were 20 statements and questions in the third section, inserted in order to assess the students' opinion about online educational process compared to the traditional one.

The respondents' age ranged between 18 years old and over 25. The students from both English and French section

came from different European countries, like Germany (116 respondents) and France (163 respondents), but also Greece (14 respondents), Italy (11 respondents), UK, Belgium, Sweden, Spain, etc.) as well as Asia (Israel, United Arab Emirates, Iran, Saudi Arabia, etc.), and even Africa (Maroc) or USA.

In this context, we initially believed that some differences in opinion will appear regarding the answers given to the statements included in the third section of the survey. The statistical analyses revealed significant differences between respondents' opinion related to the communication with the teacher / instructor during online live activities; a higher percentage of French students compared to others disagreed with the statements no. 8 and 14. As medical education is a very complex process, the results emphasize the importance of communication, between the student and the teacher / instructor, on one side, and between the student and the patient, on the other side.

Students from the first year of study preferred the traditional lectures more than the others, but when asked if they could accumulate useful information during these online learning activities, more than half of the 6th year students answered negative. This is also probably linked with the fact that during their last year of faculty, students finish their researches for final thesis, aspect which was no longer possible.

Analysing the results based on the respondents' faculty, dental students tend to prefer traditional lectures and practical activities in a higher percentage than the general medicine students, which is explainable considering the practical skills dental students should gain during the 6 years of study.

The last question of the survey demanded an open answer, meaning that the students were asked to write some thoughts about the changes they would like to make to the online educational activity performed during those 3 months. 183 answers were left blank; some answers referred either to schedule the activities that took place (different time zones) or the technical issues encountered (problems with the internet connection).

We noticed that, in general, students accepted remote lectures and other learning activities due to the higher risk of contamination. But among those who wrote an answer to this question, many would like to restart the class activities as soon as possible, especially for the labs or clinical practice. We also observed a tendency to accept remote lectures, or a combination between online and traditional lectures, after the pandemic period is over.

Answers like "Labs / clinical practice can't be carried out online. For lectures, online teaching might be a great alternative, especially to solve problems regarding illnesses and absences. Maybe there's the possibility to actually hold the lecture in person but offering an online live stream so that people can attend the class if they aren't able to come to the course due to illness / necessary travels to home (in case of death / critical illness / their own medical appointments in their home countries). Maybe the allowed hours to attend online classes should be limited so that it won't be used as a way not to go to university anymore. The teacher-student relationship seems quite lost, as well as the student-student relationship if there are only online classes. I also have to say that I personally strongly believe that many people would abuse the online classes by taking it too casually, especially among English section students. French section students gave shorter answers, related to some specific issues, like bad internet connection they encountered during online activities, or difficulties related to different time zones, etc.

CONCLUSIONS

Foreign students had an overall positive opinion about the acceptability and usability of online medical learning. Students viewed online activities helpful, but as a supplement to their learning rather than a replacement for traditional teaching methods.

We believe that additional studies are necessary for assessing subjective as well as objective outcome measures of online learning and considering other factors that should be recognized in order to implement a successful model for online education in medical universities.

All respondents who were included in this study agreed with the conditions of processing personal data and continued answering the survey.

Data sharing statement provided by the authors is available with the full text of this article at jemds.com.

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