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Interaction Between Professors, Medical Students and Patients in the COVID-19 Era: An Educational Experience Report

MH. Rigatto¹, AM. Sandri¹

¹School of Medicine, Pontifícia Universidade Católica do Rio Grande do Sul.

*Corresponding author: Maria Helena Rigatto, Infectious Diseases Service, Hospital São Lucas da PUCRS, Av. Ipiranga, 6690 - Jardim Botânico, Porto Alegre - RS, 90619-900, Email: maria.rigatto@pucrs.br

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INTRODUCTION

In March 2020, the novel coronavirus (COVID-19) was declared a pandemic with high rates of transmission and mortality (World Health Organization, 2020). Since then, presential educational activities were suspended in Brazil and shifted to an online format. Medical education was a particularly challenging area for this adaptation due to its practical training characteristics, which traditionally takes place at the patient's bedside. We believe that direct contact with patients brings an emotional involvement that enhances students' willingness to learn. Translating this learning process to exclusively theoretical online lectures did not seem to be an adequate alternative (Althwanay, 2020).

Training students for remote contact with patients could be an alternative to maintain practical activities in the context of the COVID-19 pandemic (Ianco, 2020). This has already been incorporated in some medical schools in the last decades with the advance of telemedicine (Waseh, 2019) and gained special importance in the current scenario.

Here, we describe an educational experience during the COVID-19 pandemic. Our objective is to provide a narrative description of the adaptations made for online learning and describe students' perceptions about it.

MATERIALS AND METHODS

We restructured curricular activities for a 2-week infectious disease module for sixth-semester students at Pontifícia Universidade Católica do Rio Grande do Sul (PUCRS) medical school. An evaluation of students' perceptions about it was done at the beginning and end of the module. Two voluntary anonymous online surveys with multiple-choice and open-ended questions were given to students from August to October 2020. The first survey (evaluating their expectations) was conducted only for the first two groups of students because they were beginning to work in the online format and did not have previous experience with educational changes done during the pandemic. After the first month, students could have their expectations influenced by other online activities and by the feedback given by their colleagues.

Survey data results are presented as frequencies and percentages. We qualitatively described responses to open questions. No statistical analysis was done, as this work has a merely descriptive purpose.

RESULTS

Educational Adaptations During the COVID-19 Pandemic

The infectious disease module is the students' first clinical contact with patients after propaedeutic training. Before the pandemic, the discipline consisted

of practical activities, such as joining ambulatory consultations and evaluating in-hospital patients with infectious diseases. In 2020, we shifted completely to the online format. Seventy-two students, divided into six

groups of 12 students, joined this new format. Every group spent 2 weeks completing the module. The new module design consisted of synchronous and asynchronous activities.

Table 1. Survey to evaluate students' perceptions at the beginning and end of the Infectious Disease Module during the COVID-19 pandemic

<u>Beginning of the module questions</u>	<u>N</u>	<u>Answers</u>
What is your expectation for the online activities?	18	Bad (0) Regular (6%) Good (50%) Very Good (44%)
How effective do you think Moodle activities will be for your learning?	18	Not effective (0) Regular (6%) Effective (72%) Very effective (22%)
Would you prefer traditional lectures or case discussions during online activities?	18	Traditional lectures (33%) Case Discussion (66%)
Do you think that the pandemic emotionally affected you, possibly interfering with your performance on the module?	18	Yes (78%) No (22%)
What is your main expectation/ feeling about the online educational format that will begin? (open question)	18	Most students hoped it would be good but were worried about missing presential activities and contact with patients.
<u>End of the module questions</u>		
How do you evaluate the module?	40	Below my expectations (2%) Achieved my expectations (18%) Above my expectations (78%)
How do you evaluate Moodle activities?	40	Poor (2%) Regular (12%) Good (22%) Very good (62%)
How do you evaluate video-calls to patients?	40	Bad (2%) Regular (12%) Good (40%) Very good (42%)
How do you evaluate case discussions during the lectures?	40	Bad (2%) Regular (2%) Good (8%) Very good (85%)
Do you think that starting on-line activities interfered with your emotional status during the pandemic?	40	Did not interfere (25%) Yes, I feel worse (30%) Yes, I feel better (45%)
How do you evaluate the volume of work during the module?	26	Not demanding (4%) Demanding, it helped me to learn (81%) Excessively demanding, compromised my learning (15%)
What worked better in the module? (open question)	40	Most students answered interactive discussions about real and Moodle cases.
What could be improved? (open question)	40	Some students said they wanted more interaction with patients, while some mentioned feeling overwhelmed with the number of online forums.
What should continue after the return to presential activities? (open question)	40	Most students said forums and case discussions should be maintained after the pandemic.

Synchronous Activities

We contacted hospitalized and ambulatory patients and asked for their authorization to receive video calls from students. Preferably with their camera on, groups of four students called patients to collect their medical history. Patients were free to keep their cameras on or off. After the video call, the professor met with all 12 students to discuss the case. Students played a central role in these discussions by narrating the patient's history and pointing out the patient's problem list, as well as a possible diagnosis for the case and suggesting a therapeutic approach. Professors acted as moderators of the discussion.

Asynchronous Activities

Moodle platform was used to provide one written case each week. Cases were complex and involved diagnostic, therapeutic, and ethical dilemmas. There was more than one possible solution for each case, and some important information was left out to see if students could identify what additional data would be helpful. Students had to discuss the cases, adding references to justify their opinion, and interacting with their colleagues in two different forums every week. Every Friday, there was an online meeting for a final discussion.

We also did an optional forum, where students were stimulated to talk about movies, art, books, documentaries, poetry, or any experience related to the infectious disease field.

The evaluation (graded from 0-10) considered all the activities proposed to the students: 4 points for Moodle participation, 4 points for video-calls and case-discussion, 2 points for Friday meetings participation, and 1 extra point for the optional forum. We chose not to include an exam in the module, as students would have a final multiple-choice and oral exam at the end of the semester including contents from all modules.

Students' Perceptions About the New Educational Format

Eighteen of 24 (75%) and 40 of 72 (55.6%) students answered the first and second queries, respectively. Answers are described in **Table 1**.

DISCUSSION

Adapting medical education to an online format is challenging, especially regarding practical training. In this report, we share the experience of creating different opportunities for student interaction. Although online

learning is not new, encouraging students to maintain direct contact with patients through video calls and allowing the continuation of this "real case practical training" was very enriching and well accepted by students. This experience facilitated medical human contact during the extreme situation of the COVID-19 pandemic. However, some effort had to be made to find patients suitable for this activity.

Most students expected the module to be good, but many of them were worried about the impact of missing presentational activities. In the final evaluation, 78% rated the online experience as above their initial expectations. Although 33% of the students initially said they would prefer traditional lectures, 82% and 93% rated video-calls and case discussions as good or very good, respectively. To keep students interested in the online discussions, a friendly environment was created, so that they would feel safe to speak. Asynchronous activities stimulated the search for information and student debates about complex clinical cases and were also well evaluated. These results were encouraging compared to other experiences reported in the literature. In a cross-sectional survey with 2721 United Kingdom students, most did not find online teaching to be engaging or enjoyable and said it should be more interactive, but recognized time flexibility as an advantage (Dost, 2020). Before the beginning of online activities, 78% of students felt emotionally affected by the pandemic, possibly interfering with their academic performance. We hoped that giving the chance to maintain direct contact with patients could reduce their concern about losing presentational activities. On the other hand, we were worried about generating a good balance between stimulating students' interest and giving an excessive workload in this already stressful period (Sani 2020; Saraswathi 2020) Although some students mentioned being overwhelmed with the number of activities, 81% were satisfied with the workload during the module. After starting activities 45% felt better compared to the beginning.

New creative solutions are essential to provide effective learning for students. We implemented teaching interventions that can enhance interactivity, give time flexibility and provide practical training with patients even at distance. These can be used not only in the context of the pandemic but also with patients who have hospital visit restrictions or difficulty to get presentational healthcare access.

As a limitation, we did not objectively compare students' knowledge about the infectious disease field before and after the 2-week period. Measuring clinical

learning is complex and involves many reasoning abilities that are difficult to capture on tests. In addition, the collection method used to gather students' perceptions could be biased, as not all the students answered the query. Nevertheless, most students felt it was a productive learning experience.

CONCLUSIONS

The experience gained in this period can be used to create interactive environments even after the pandemic. Video calls are a feasible alternative to allow real interaction between students and patients. Creative online spaces are a valuable tool that can amplify learning possibilities.

Conflict of interests

The authors followed the International Committee of Medical Journal Editors (ICMJE) form for disclosure of potential conflicts of interest. All listed authors made a substantial contribution, drafted the article, and

approved the final version of the article. The authors declare no financial or personal conflict of interest.

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