

Online Restorative Dentistry Education during the COVID-19 Pandemic: Advantages, Problems and a Hybrid Model Suggestion

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Abstract

Since March of 2020, face-to-face education in all universities in Turkey was stopped due to the new coronavirus pandemic, and all educational activities started to be carried out with online education. Restorative dentistry education, which includes preclinical and clinical practice courses, has never been done online before. More than a year has passed since this sudden educational model change. The problems and advantages encountered in the online restorative dentistry education during pandemic have been analyzed in the present article. In addition, a hybrid education model has been suggested to improve restorative dentistry education in the new era just entered.

Key Words: Covid-19, pandemic, restorative dentistry, online education, hybrid education

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1. Introduction

The new coronavirus disease (COVID-19), which started to be effective all over the world at the beginning of the spring months of 2020, unexpectedly changed the nature of the dental education systems all over the world (1). Physical education in schools was stopped during the pandemic, but the education system continued online in Turkey. This situation has also emerged a new education model "online education" (2). Lecturers and students faced different challenges in this new educational model. While restorative dentistry is an important field of dentistry, restorative dentistry undergraduate education is a

discipline that includes both basic knowledge courses and preclinical courses (3). In this new education model, it is necessary to aim that the quality of the education provided at least equal to the traditional system and new solutions should be produced in this regard. For this reason, the advantages and problems identified during the online restorative dentistry courses are discussed in the present paper. In addition, a hybrid education model has been recommended to increase the quality of restorative dentistry education after the pandemic.

2. Online restorative dentistry education during the COVID-19 pandemic

Restorative dentistry education not only allows students to understand and master the basic knowledge and practical skills of restorative dentistry, but also includes pre-clinical and clinical courses that must be covered with the theoretical course. The clinician lecturer prepares the course contents by determining the teaching curriculum and objectives in line with this purpose. In the online education method, online lectures are held synchronously with the universities' own video conferencing systems or with the tools of private organizations such as Google or Microsoft. By keeping the video recordings of these live lessons in the system, students can watch the lessons again asynchronously. Since the lessons are not only theoretical but also practical, for example, how to prepare a cavity is explained theoretically and then a demonstration video of this clinical procedure is presented to the students online. Practical assignments made by students must be evaluated by the instructor. This evaluation process is done by evaluating the practical homework photos taken by the students since the students are away. During the preparation of the assignments in practical lessons, there is some interaction between the students and the lecturer over the video conference system.

3. Advantages of online restorative dentistry education during the COVID-19 pandemic

The fact that there is no time and place limitation in the online education method allows the student to learn the course content in the time period determined by the student. In addition, having the opportunity to review the lecture records of the student may also help students to better understand the lesson topics that are difficult to understand. Another advantage of online education is that the student has access to different online multimedia resources related to restorative dentistry. The ease of accessing online resources encourages the lecturer to update their own course content.

4. Problems encountered in online restorative dentistry education during the pandemic

Because it is a new experience, it was inevitable to encounter some problems during the online restorative dentistry education. One of the obvious problems is that the lecturer does not have control over the students during online courses. Taking attendance in a course can be applied to control student attendance. However, it is very difficult to understand that the student is listening during the lesson in online education. In online education, student participation in the lesson depends largely on the student's own self-discipline. It can be accepted that the student's ability to learn from the course is quite limited and depends more on the student. This is especially true for the dentistry student to gain practical skills. In our restorative dentistry courses, the quality of the cavity preparations made by the students in their homes was evaluated by the lecturer based on the photos taken by the students themselves. Along with the evaluation process of practical assignments, some important limitations were encountered in practical lessons. These include the fact that there is more limited communication and interaction between the lecturer and the student during practical courses compared to classical education, the fact that the practical assessment is actually done by the student cannot be determined exactly, the quality of the photos taken is not always sufficient for adequate evaluation. For these reasons, it is seen that the quality of the practical courses of restorative dentistry performed with the remote online education method is quite insufficient compared to the traditional method. Especially, the lack of intense interaction between the student and the instructor in classical practical education was quite obvious in online education. The instructor did not have the opportunity to observe the learning situations of the students personally. Since this deficiency prevents the formation of a learning atmosphere, it prevents the student from concentrating on the lesson sufficiently. Another problem may be the inexperience of the teaching staff in online live courses. In addition, the fact that

the infrastructure provided by universities for online education is not always sufficient, may cause education not to be of the desired quality.

5. New development of restorative dentistry education model after pandemic

Decreasing the severity of the pandemic or coming to the end of the pandemic may cause the lessons to start again in the physical environment as before. However, given the widespread spread of the virus all over the world, it may take a very long time for us to return to the old normal. For this reason, in this new era, the question of which education models should be developed in disciplines that require practical skill acquisition such as restorative dentistry should be on the agenda of restorative dentistry lecturers. The opinion is that after the online education method has been used for a certain period of time, this new method will not completely replace the conventional method (4). However, both education methods have their own characteristics. Therefore, a new education model can be used, which a combination of online and conventional old face-to-face is training in the new era. The new education model should increase the quality of restorative dental treatment education and the learning effect of the students.

6. A new hybrid model for restorative dentistry education

A new teaching model consisting of a combination of online and offline teaching can be developed to further improve the clinical thinking and problem-solving abilities of dentistry students. In the new model, the course contents of the theoretical courses and the theoretical parts of the practical courses can be made online after they have been prepared according to online education. Since the lecturer's control over the student during the lessons is limited in online education, the course contents should be prepared in advance in a way that encourages students to work at home on their own (5). Online lessons should be taught with the participation of students as much as possible, for example in the form of questions and answers

or in another form of interaction. After online classes, reinforcement tests can be done to evaluate what students have learned from the course. All these practices will undoubtedly require more preparation time for the instructor before the lesson than in the conventional training method.

During the practical course, basic information and principles of restorative dentistry procedures can be transferred to students with online education with the help of online videos and related contents. However, students in restorative dentistry courses should use the theoretical knowledge they have learned to gain and develop their practical skills (3). For this reason, they need to apply the knowledge gained through the online method in practical course. Due to the shortcomings mentioned above, conducting the practical courses with the online method may not be a preferred method in terms of education quality. The course contents can be determined from the most necessary to the least necessary to be done face to face. Then, according to this classification, taking into account the severity of the pandemic, face-to-face practical training can be planned in advance. For example, theoretical knowledge of amalgam cavity preparation can be taught to students through online education. However, since it is impossible for the student to carry out the practical application of amalgam restoration with an online course in his own home due to technical possibilities and medical waste risk, it may be more logical to carry out such practical course contents on the dates of face-to-face training. In order to increase the student's participation in the course and to make sure that the learning goals are achieved in the online parts of the practical lessons, it will be useful to evaluate the homework done by the students in the form of questions and answers with the students during the online course.

7. Important factors to increase the effectiveness of the hybrid education model

Students should pay attention to the online part of the hybrid model at least as much as they do for

face-to-face training. In order to achieve success in online education, students will need to improve their self-learning skills and ability to access information. Students' motivation to do the lessons should be high especially in completing the practical assignments. Lecturers should also support students to develop these skills. Lecturers should give priority to students during online courses, allowing them to master the subject in the course. Universities and educational institutions should further strengthen their technological infrastructure used by online education. The continuity of the infrastructure that provides high-definition video transmission required for online education should be ensured. In addition, as the pandemic comes to an end and the reopening time approaches, the use of these two methods together should be encouraged so that online education and face-to-face education work together.

8. Conclusion

Online education is a supportive education method used to continue education in special conditions such as a pandemic. It is not the main education method used under normal conditions. Online education should be considered as an opportunity to combine internet and education during the pandemic. The overall quality of restorative dentistry education can be increased by developing an education model that fully takes advantage of the internet and multimedia and integrates online and face-to-face education.

Disclosure statement

Author has nothing to disclosure.

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