

Training in Orthodontics at Medical College-Varna during the Covid-19 Pandemic

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Abstract - Orthodontics is a specialty which deals with the prevention and treatment of dental abnormalities and deformities. According to the Unified State Requirements for training in the specialty “Dental Technician”, the discipline of Orthodontics has a schedule of 180 academic hours. The devices included in the curriculum are single-jaw and double-jaw and are produced with the help of dental phantom heads and clinical models. The training in Dental Mechanics aims to enable students to develop as specialists who are able to integrate their knowledge of different disciplines and transform their skills into the necessary abilities and habits for a successful dental practice. Our research aims to study the students’ satisfaction with their training in Orthodontics during the Covid-19 pandemic. A sociological method has been applied. Some of the questions are borrowed from the questionnaire of the Central Commission for Quality at the Medical University of Varna. The survey was conducted at the end of March 2022 and covered 78.50% of students who were studying or completed their studies in the discipline (79% of second-year students and 78% of third-year students). The majority of the respondents attended on a regular basis the lectures and the dental practice activities held either in the online platform Blackboard or as live training. It was estimated that the training in the electronic environment, which was carried out in the Medical College of Varna due to the pandemic, is adequate and effective in terms of theoretical and practical training of students in the discipline.

Keywords: students, pandemic, education, training, research.

I. INTRODUCTION

Orthodontics is a specialty which deals with the prevention and treatment of dental abnormalities and deformities [19]. Orthodontic treatment aims to normalize the size and shape of the dentition in order to form normal occlusal proportions and to create optimal functional and aesthetic comfort for the patient. This is achieved by applying a number of orthodontic treatment methods [3, 10].

The devices included in the curriculum are single-jaw and double-jaw and are produced with the help of dental phantom heads and clinical models [24]. Working with clinical models creates the opportunity to improve the quality of training and to prepare the future professionals for successful practice [5].

The practical methods of education at the Medical College contribute to the formation of professional skills, habits and competencies. The methods are helpful in consolidating knowledge. They also illustrate how to be applied in practice and also expand students’ knowledge. The methods are based on the practical activity of the students. This leads not only to the interaction of the students in the learning process, but also to an increased activity and student independence [9].

The practical training lesson is a systematically organized and repetitive implementation of some actions which aims at their assimilation, consolidation and improvement. The effectiveness of this method depends on the theoretical basis of the subject and the conscious use of the method, as well as on the students' ability to rely on certain rules for performing the task [16].

The aim of the training is to enable students to develop as specialists who are able to integrate their knowledge of different disciplines and transform their skills into the necessary practical abilities and habits for a successful dental practice [11]. According to Varneva, a dental mechanic and an orthodontist with long experience, the number of orthodontic laboratories is very small and for this reason students acquire all the skills and competencies necessary for successful practice mainly during their study period at the college [6]. In this regard, the curricula concerning the training in orthodontics are developed and improved for the purpose of successful dental practice. The schedule and the curricula for the practical training in orthodontics have been changed over the years depending on the educational qualification degree and the duration of the training. The hours vary from 68 in 1983 to 90 in 2008 and 135 after 2008 to meet the new Uniform State Requirements for training in the discipline [6, 17, 22]. There has been a change in the curriculum for the training programme "Dental Technician" since the academic

year 2015/2016. Classes in the discipline of "Orthodontics" have become 200 in number and training has been divided into two semesters (third and fourth) according to students' wishes as a result of a survey among second and third year students (after completing their training in orthodontics) carried out by Varneva [1,4,8,23].

Technological innovations enter the field of education at a rapid pace and lead to the development of new methods and techniques in the learning process. Teaching and learning styles are constantly changing [7,18,21,25]. Blackboard is a world leader in the development of training systems and statistics are showing that the platform is used by 70% of universities in the United States, 80% of universities in England and the greatest part of higher education institutions in the Netherlands [15,18,27]. The online system has been introduced and successfully used at the Medical University of Varna since 2015 [12,18]. The system offers a full range of functionalities and capabilities in three key areas: teaching, communication and assessment [18,21,26].

As a result of the epidemiological situation and the lockdown introduced by the government in our country, the training at Medical College of Varna was entirely transferred to electronic environment. This created the need of the extensive use of the Blackboard platform.

According to Toncheva and Marinova, the professional improvement and adaptivity of health care specialists is formed and changed in the process of their training as well as in the practice of the profession [13,20]. The dental technician is a part of the dental team and participates in the treatment of patients by performing certain specific technical activities and by making dental prosthetic structures, orthodontic appliances, ecto prosthesis and others as prescribed by the dentist [2, 6, 14].

II. AIM

The aim of the present research is to study the students' satisfaction with the training in orthodontics (lectures and practical exercises) during the Covid-19 pandemic.

III. MATERIALS AND METHODS

A sociological method has been applied to achieve the goal of this research. Some of the questions are borrowed from the questionnaire of the Central Commission for Quality at the Medical University of Varna. The survey was conducted at the end of March 2022 and covered 78.50% of students who were studying or completed their studies in the discipline (79% of second-year students and 78% of third-year students). In our opinion, there is a good representation of the sample and the obtained results have statistical significance.

IV. RESULTS AND DISCUSSION

Due to the epidemiological situation introduced on March 13, 2020 and the current until recently, lectures in all disciplines at the Medical College - Varna are held through the platform Black Board. Part of the practical training for third-year students was also conducted in an electronic environment.

In order to improve the training in orthodontics and to evaluate its effectiveness (in electronic environment and in person), it is important and necessary to conduct a survey on students' opinions. Figure 1, which shows the attendance of the lecture course in orthodontics, shows that all third-year students regularly attend lectures in the discipline.

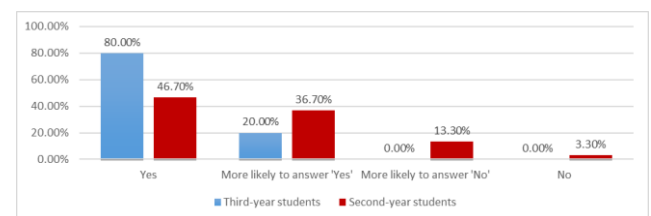


Figure 1: Attendance at the lecture course

The attendance of second-year students is slightly lower, as a small part of them (16.60%) do not attend the lecture course. We asked the respondents, who are sometimes absent or do not attend the lecture course, to indicate the reason (Fig. 2).

The main reasons students point out are the lack of time and the overloaded training programme. A small number of second-year students, who do not attend lectures (13.30%), indicate that the lectures are at an inconvenient time. We experienced difficulty in explaining this particular result due to the fact that the lectures in the subject were held before noon – after 8:30 in the morning. We should not skip and one of the reasons given by a very small number of third-year students (4%), who do not attend lectures, because the material repeats that in the textbook.

The real problem is more likely to be the lack of understanding of the exact purpose of the lecture. A very small part of the students (4%) state as a reason for not attending the lectures the overlapping of the lectures in orthodontics with the practical exercises in other disciplines, which shows that they were absent and practical activities are mandatory according to the rules of the Medical University of Varna. About 10% of the respondents, who do not attend lectures, provided a different answer and specified that they worked.

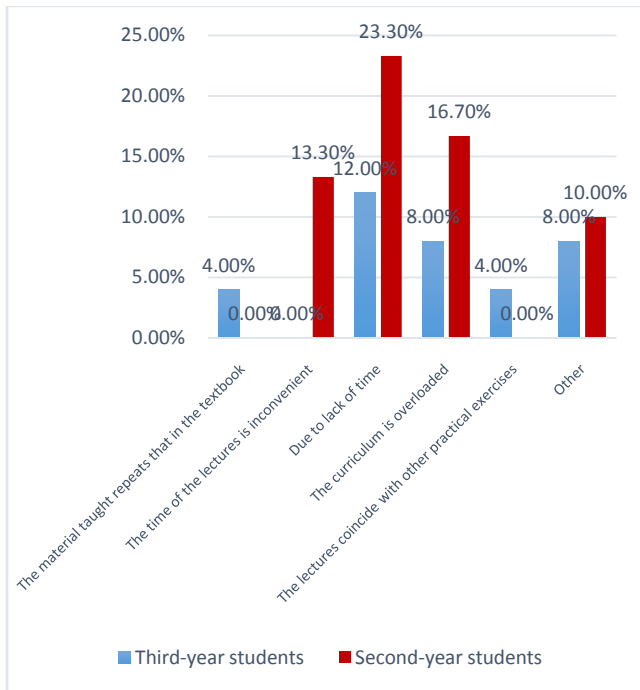


Figure 2: Reasons for not attending lectures in orthodontics

Students are relatively more active in stating the reasons behind their motivation to attend the lectures in orthodontics. The respondents indicated more than one reason and therefore the data in the figure exceed 100%.

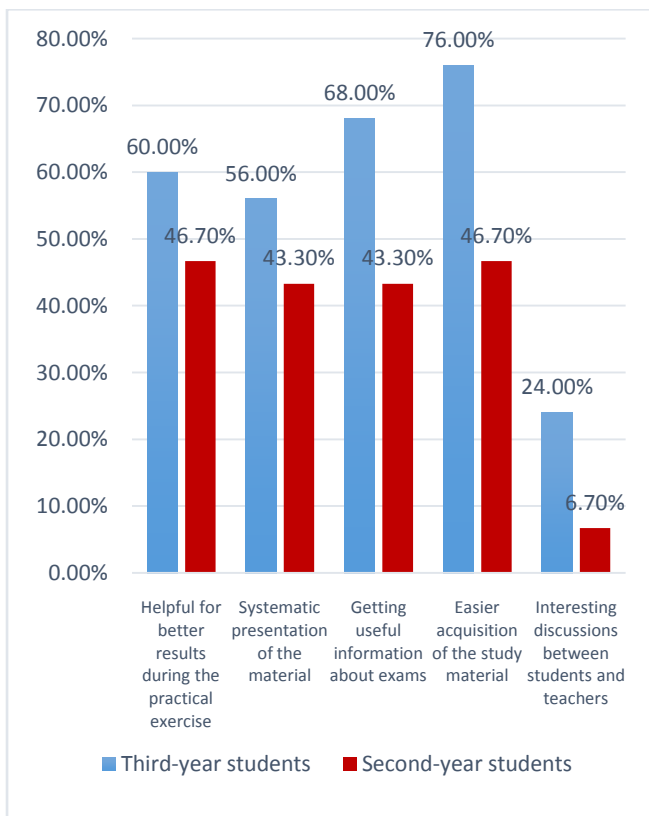


Figure 3: Reasons for attending lectures in orthodontics

The largest segment of third-year students attend lectures because this helps them to master the study material in an easier way, which fully corresponds to the purpose of the lecture. During the lectures students gain the necessary knowledge to successfully pass the theoretical exam, which was assessed as useful by two thirds of third-year students. Another positive aspect is the systematic presentation of the material, which helps students to do better during the practical training. The answers of the second-year students duplicate those of the third-year students but with smaller relative shares. The smallest is the part of respondents who indicated as a reason for attending the lectures the presence of interesting discussions between teachers and students, which leads to the need of improving the interactivity of the lectures.

The next group of questions aims to reveal the degree of satisfaction of students with the course of orthodontics.

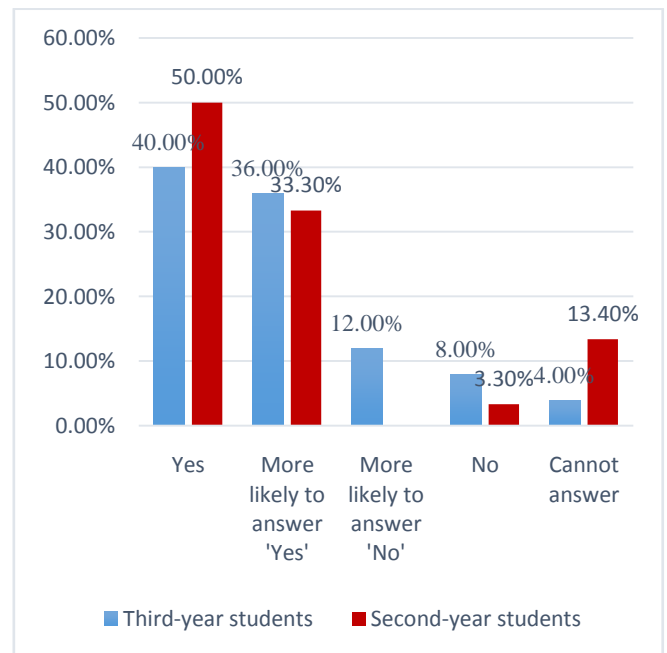


Figure 4: Satisfaction with the lecture course in preparation for the theoretical exam in orthodontics

Despite the high number of satisfied students, a small part of the respondents answered that the information they receive during lectures is not sufficient to prepare for the theoretical exam. With regard to this, it is necessary to mention that there is a sufficient number and a great variety of educational literature related to the discipline of orthodontics.

The list has been uploaded to the Blackboard system and a great part of it has been digitalized by members of the college library. This indicates that there is a need to provide students with further clarifications on information resources for self-training.

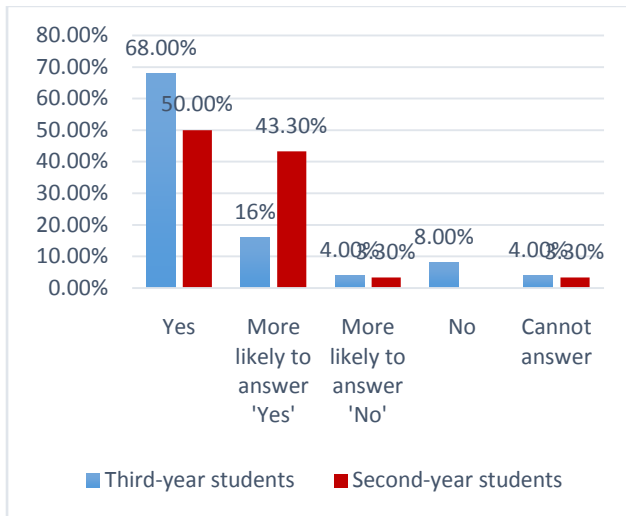


Figure 5: Satisfaction with the organization of practical exercises in Orthodontics (number of academic hours and duration)

The amount of students, who are satisfied with the number of academic hours for practical exercises and their duration, is relatively large among second and third year students. During the time of the research the academic hours are estimated to be one hundred and fifty and are divided into two semesters – third and fourth. The number of students who gave negative answers to this question is very small – the majority of them indicated that practical activities are insufficient in number, while others suggested that the groups should be smaller, so that the teacher can devote more attention to each student. Taking into account the high relative share of positive answers, it can be assumed that the number of practical classes in the discipline is sufficient and consists of properly selected thematic units.

In regard to the practical value of the exercises, students show an extremely high degree of satisfaction (Fig. 6).

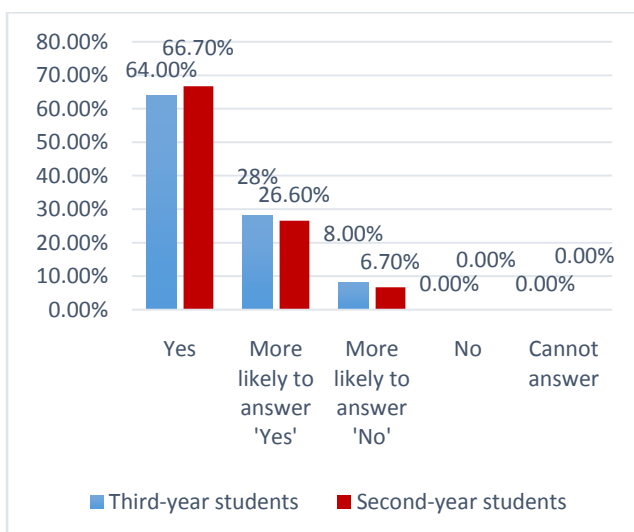


Figure 6: Gaining sufficient and useful practical skills during orthodontic exercises

Less than ten percent of the respondents answered that they had not acquired useful practical skills (third-year students 8% and second-year students 6.70%), but it should be noted that none of the students expressed a negative opinion.

The results of the answers to the question about the way of conducting the practical classes are similar. The opinions of the respondents are presented in Figure 7.

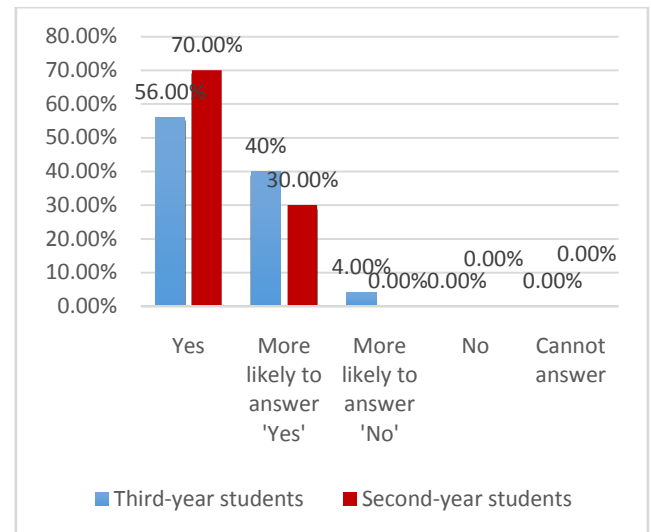


Figure 7: Satisfaction with the way of conducting practical exercises in orthodontics

All second-year students expressed a positive opinion. The number of students who are more likely to be dissatisfied is very small (4.00% third-year students). There are no negative evaluations. This is an indication of a very good organisation and an adequate and efficient way of conducting practical exercises in the discipline both with live presence and in the electronic environment.

V. CONCLUSION

The following conclusions can be drawn from the analysis of the obtained results:

1. There is very large attendance of the lecture course in the electronic environment. The number of students, who do not attend lectures, is small and mostly results from the lack of time and the overloaded curriculum.
2. The main benefits of the lecture course for the students are related to the easier assimilation of the material and the provision of a sufficient amount of knowledge for passing the theoretical exam.
3. Students show a very high degree of satisfaction with the number and duration of exercises, the way they are organised and the acquired practical skills.
4. The training in electronic environment, which is carried out at the Medical College of Varna due to the pandemic

Covid-19, is sufficiently effective and has not hindered the training in the discipline.

VI. RECOMMENDATIONS

The results and the conclusions of the research reveal some opportunities for improving the training in orthodontics, which can be outlined in the following recommendations:

1. It is necessary to systematically explain to students that the purpose of the lectures is to ease the assimilation of the material and it is normal that the content of the lectures is similar to the content of the material in the textbook.
2. It is necessary to carry out a survey to clarify the reasons for the dissatisfaction of the minor part of the students regarding the way of conducting the practical exercises.

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