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Adaptation of clinical subjects in Dentistry to virtual environments during the COVID-19 pandemic in a Spanish University: A case study

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Abstract

Introduction: The evolution of the pandemic has generated a crisis in all areas, also including the faculties of dentistry. We detail how the teaching guides for clinical subjects have been adapted in the Department of Clinical Dentistry at the Universidad Europea of Madrid, moving to a 100% online environment.

Usual development of clinical practices in the DDS degree of UEM: Students in the fourth and fifth year of DDS degree take the courses "Introduction to Clinical Practice" and "Supervised Practice." Within the framework of continuous assessment, different systems and procedures are used to evaluate knowledge, skills or competences.

Curricular adaptation during the period of the COVID-19 pandemic: It was necessary to adapt the practical contents to virtual contents. 35% of the course (12 weeks) was adapted to a 100% online environment. Several activities were carried out that could be evaluated in real time, including lectures, clinical cases and resolution of multidisciplinary dental treatments.

Development of clinical practices in health education in other institutions during the pandemic: A narrative review was conducted to identify how this situation has been addressed in other institutions and countries; finding that similarly, it has been possible to establish monitoring of clinical practices in a virtual environment. An online questionnaire was conducted to the fourth and fifth year students of DDS degree to stablish the acceptance of the adaptation during the pandemic.

Conclusion: Despite the limitations of online training for the development of clinical practice, a system has been established to ensure appropriate clinical training for undergraduate students in dentistry. Some of the developments were well accepted by the students.

KEYWORDS
clinical training, COVID-19, online education

1 | INTRODUCTION

The COVID-19 pandemic, caused by the SARS-CoV-2 virus, emerged in 2019 in the Chinese city of Wuhan, where the first cases of atypical pneumonia of unknown origin were reported. On 7 January 2020, a new coronavirus was identified as the cause of this disease, called COVID-19.[1,2]

The evolution of the pandemic has generated a global crisis that has altered the day to day of all areas of the society, including Dentistry. In March 2020, Spain declared the State of Alarm and, like many European countries, suffered a strict and forced confinement in which during weeks the population was prevented from leaving their homes. All educational levels were the first to close across the country. Health care was collapsed due to pandemic cases, and dentistry was not considered, at that time, a priority health area. Faced with ambiguous legislation, which specified that dentists could only see dental emergencies, most clinics closed their doors, as did university dental clinics.

Several authors have mentioned in different publications and letters to the editor the need to adapt teaching in dentistry to this new scenario, and the challenge that this represents at teaching level.[3-5] Any approach must be accompanied by protection of the health and well-being, both physical and psychological of students, teachers and patients, whilst maintaining the safety of all of them.

Purely clinical subjects in dentistry are challenging, as students must acquire manual and patient management skills, which are traditionally trained on real patients in a purely clinical care environment.

In other areas of medicine and health sciences, such as orthopaedic surgery, ophthalmology, anatomy, otolaryngology, neurosurgery, radiology or dermatology, new models are being designed to ensure that students receive appropriate and quality training through distance learning, thus overcoming the challenge this has posed to health education.[6-16]

In the early stages of SARS-CoV-1 infection in 2003, it was proposed online teaching as a mean of choice to prevent spreading of the virus by students.[17-21] Even though some universities already implemented online courses before the COVID-19 pandemic,[23-27] normally dental education all over Europe features “face-to-face” teaching.

Dental schools have been characterised as slow processes changers, as the dental studies are based on practices with patients. However, this pandemic has not only created the need but also rather may have provided the chance to accelerate digital transformation in medical education. This could have a positive effect on future dental education even beyond COVID-19.[17-21,23-27]

Different authors have pointed out in their publications the use of technology, both to solve the current problem and to use it routinely in the future. Methodologies such as virtual flipped classrooms, clinical videos, online clinical case resolution, videoconferences or social network-based groups or platforms have been suggested to facilitate contact and case discussions.[17-19]

It would be especially interesting if this situation generated by the current pandemic turned into a learning experience, which would make us design new strategies and get to know all the tools we have at our disposal. This will allow us to be prepared and have a quick reaction on an educational level to new crisis situations in the future that may prevent contact and care practice.

This article details the teaching guides of clinical subjects’ adaptation in the Department of Clinical Dentistry at Universidad Europea de Madrid (UEM), going from a 100% face-to-face environment to a 100% online environment, ensuring that our students continue to receive their practical training, achieving the expected learning targets and results.

2 | REGULAR DEVELOPMENT OF CLINICAL PRACTICES IN THE DDS DEGREE AT UEM

Within the curriculum of the DDS degree at UE, there is a clinical part that students must pass in the fourth and fifth years. These subjects are called Initiation to Clinical Practice (ICP) in the fourth year and Supervised Practice (SP) in the fifth year. In the case of the ICP subject, there is a differentiation between the treatment of adult and child patients, being adult ICP (ICPA) and child ICP (ICPC). Such difference does not exist in the SP subject; there is a teaching load for the adult part and one for the child part. Both subjects are divided into I and II according to the semester in which they are included.

These subjects are based on the acquisition of very important skills for the students, since they are the culmination of the theoretical knowledge applied to patients, in the fourth year as an initial course, and in the fifth year as the end of the degree, and they will allow the students to work in a clinical environment the closest to the professional they will find once they graduate.

2.1 | ICP I and II, adults and children (fourth year)

This course aims to be an introduction to pre-professional practices in the form of integrated dental clinics on adult and child patients, which provide clinical experience of knowledge, skills, attitudes and values.

The course has 200 h of practice for adults and 200 h for children, in which students must carry out a series of practical activities to evaluate their skills and learning outcomes.

At the end of the course, the student has to acquire different basic, transversal and specific skills: To know the essential elements of the profession of dentist; to understand the importance of such principles for the benefit of the patient, society and profession; to know how to identify the concerns and expectations of the patient; to know how to apply the principles of anxiety control on oneself, on patients and on the team; to understand the importance of developing a professional practice with respect to the patient's autonomy, beliefs and culture; to know how to share information with other professionals and work as a team; to understand the importance of

maintaining and using records with patient information; to obtain and prepare a medical history; to know how to perform a complete oral exam; to have the ability to make an initial diagnostic judgement and establish a reasoned diagnostic strategy; to establish the diagnosis, prognosis and adequate therapeutic planning in all clinical areas of dentistry; to recognise life-threatening situations and know how to perform basic life support manoeuvres; to know and apply the basic treatment of the most common oral pathology in patients of all ages; to know how to plan and carry out multidisciplinary, sequential and integrated dental treatments; to propose and propose the appropriate preventive measures for each clinical situation and to acquire clinical experience under adequate supervision.

Within the framework of continuous evaluation, different systems/procedures are used to assess knowledge, skills or attitudes. The assessment systems to be used in the courses of ICPA and ICPC are as follows:

- Practical exercises: activities that are carried out to acquire, enhance or retain some knowledge and/or skills; a practical work that allows the verification of the theoretical teaching so that students can better assimilate the knowledge and learn to execute them properly.
- Case analysis: the student is provided with different presentations of actual clinical cases. Students must analyse the situation and make decisions. The aim is for the student to develop the ability to elaborate a complete treatment plan.
- Cooperative learning.
- Learning based on problems.

The student's assessment will be 90% quantitative and 10% qualitative. Quantitative being the practical part, corresponding to the treatment of patients, whereas qualitative corresponds to the assessment of transversal competences.

2.2 | Supervised Practices (fifth year)

This subject aims to integrate all the theoretical knowledge acquired during the previous years of the degree to perform an appropriate prevention, diagnosis and treatment in patients of all ages (children and adults). This subject has not a specific content, but it must integrate all the contents defined in the obligatory blocks included in the curriculum of the degree. Therefore, the entire load of credits must be dedicated to the completion of supervised practice in integrated dentistry.

The load of practical hours is 600 h, during which students must carry out a series of practical activities to evaluate their skills and learning outcomes.

At the end of the course, the student has to acquire different basic, transversal and specific skills: To know the essential elements of the profession of dentist; to understand the importance of such principles for the benefit of the patient, society and profession; to know how to identify the concerns and expectations of the patient; to know how to apply the principles of anxiety control on oneself, on patients and on the team; to understand the importance of developing a professional practice with respect to the patient's autonomy, beliefs and culture; to know how to share information with other professionals and work as a team; to understand the importance of maintaining and using records with patient information; to obtain and prepare a medical history; to know how to perform a complete oral exam; to have the ability to make an initial diagnostic judgement and establish a reasoned diagnostic strategy; to establish the diagnosis, prognosis and adequate therapeutic planning in all clinical areas of Dentistry; to recognise life-threatening situations and know how to perform basic life support manoeuvres; to know and apply the basic treatment of the most common oral pathology in patients of all ages; to know how to plan and carry out multidisciplinary, sequential and integrated dental treatments; to propose and propose the appropriate preventive measures for each clinical situation and to acquire clinical experience under adequate supervision.

Students will therefore achieve the following learning outcomes: completion of complete pre-professional practices in the form of an integrated dental clinic; incorporation of professional values, competencies of care completion, clinical reasoning, clinical management and critical judgement; conduction of clinical work on patients of all ages and conditions; demonstration of putting into practice all the professional competencies acquired during the completion of their studies; establishment of a differential and presumptive diagnosis, as well as a complete treatment plan; distinction of all situations that due to their complexity cannot be treated by the student and knowing how to refer them to the corresponding specialist; planning of the work session in the dental office and sequential and integrated solution of the diagnosed pathology.

The assessment systems to be used in the courses of SP is as follows:

- Practical exercises: activities that are carried out to acquire, enhance or retain some knowledge and/or skills; a practical work that allows the verification of the theoretical teaching so that students can better assimilate the knowledge and learn to execute them properly.
- Case analysis: the student is provided with different presentations of actual clinical cases. Students must analyse the situation and make decisions. The aim is for the student to develop the ability to elaborate a complete treatment plan.
- Cooperative learning.
- Learning based on problems.

Subjects SP I-II include 70% of practices in adults and 30% in children. Students need to pass each one separately to pass the subject.

- To assess students' general and specific skills, as well as to carry out multidisciplinary and sequential dental treatment through the supervision of the clinical procedure performed by the student on the patient.

1.	Conozco los objetivos del plan de estudios de la titulación de Grado de Odontología.
2.	A la hora de elegir los estudios para el futuro: conocía cuáles eran los conocimientos, aptitudes y destrezas que debía adquirir.
3.	Existe, y conozco, el documento (estandarizado por la ANECA y la UEM) de las asignaturas de Prácticas tuteladas e Iniciación a la práctica clínica, dónde se reflejan los objetivos, contenidos, materiales metodológicos y criterios de evaluación.
4.	Tras el comienzo de la docencia en el periodo COVID-19: Las plataformas de comunicación y las guías docentes siguen siendo accesibles y reflejan los cambios de adaptación al momento actual.
5.	Tras el comienzo de la docencia en el periodo COVID-19: El desarrollo del plan de estudios en cuanto a contenido, estructura temporal, profesorado, coordinación clínica y recursos on line es acertado.
6.	Tras el comienzo de la docencia en el periodo COVID-19: Reconoce las nuevas guías docentes coherentes con los objetivos fijados en el plan de estudios, aunque adaptados a la situación actual (cumpliendo los criterios básicos de formación práctica y profesional).
7.	Tras el comienzo de la docencia en el periodo COVID-19: El trabajo y los tiempos para la realización de los criterios de evaluación reasignados, está en proporción con los mismos.
8.	Tras el comienzo de la docencia en el periodo COVID-19: Las planificaciones semanales de contenido, materiales y criterios de evaluación, están disponibles con tiempo suficiente para su realización, de forma amplia y detallada.
9.	Tras el comienzo de la docencia en el periodo COVID-19: La coordinación entre el profesorado es adecuada (no hay solapamientos entre los contenidos). La forma de rúbrica y criterio de evaluación es constante para todo el profesorado.
10.	Tras el comienzo de la docencia en el periodo COVID-19: La planificación de las prácticas clínicas, que forman parte de los objetivos de la enseñanza en carreras sanitarias, es adecuada; formando una base futura para su trabajo profesional.
11.	Tras el comienzo de la docencia en el periodo COVID-19: En referencia al profesorado: estoy satisfecho con la planificación, el seguimiento y la calidad de la enseñanza.
12.	Tras el comienzo de la docencia en el periodo COVID-19: En referencia a la coordinación clínica: estoy satisfecho con la planificación, el seguimiento y la calidad de la enseñanza.

FIGURE 1 Survey sent to the UEM students in Spanish

- Each clinical procedure performed by the student is evaluated under the supervision of the teacher, through the Clinical Practice Evaluation Platform. UE evaluates, with the clinical protocols and rubrics developed and agreed by the teaching team.
- Assessment is continuous and weighted. It is carried out continuously throughout the academic year, and the grades are uploaded to the academic record at the end of the year, matching the grades obtained in the first and second parts of the course.
- All the practical treatments carried out during our clinical activity are evaluated using the computer tool Practice Evaluation Platform. EU makes the assessment.
- Each treatment to be assessed is described in steps, according to the sequence of the action protocol.
- The treatment steps that may generate doubts appear in explanatory texts.
- The detailed assessment is visualised by the student, providing feedback on the teacher-student results.

Within the framework of continuous evaluation, different systems/procedures are used to assess knowledge, skills or attitudes.

The assessment systems to be used in SP I and II are like those used in ICPA and ICPC.

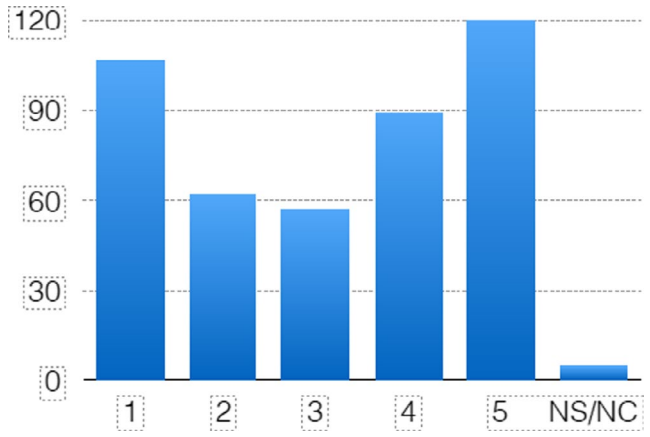

FIGURE 2 Knowledge of the learning objectives and methodologies in dentistry degree

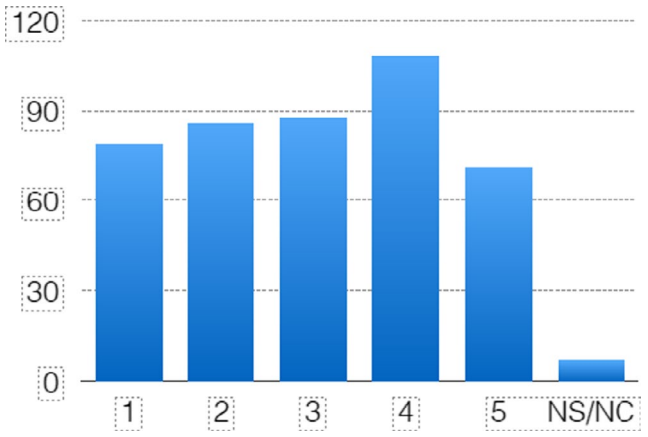

FIGURE 3 When choosing studies for the future: he knew what knowledge, aptitudes and skills he needed to acquire in order to get the degree

3 | CURRICULUM ADAPTATION DURING THE PERIOD OF THE COVID-19 PANDEMIC

Teaching changes made in Spain due to the COVID-19 pandemic lockdown fully affected all the face-to-face activities, especially those linked to the health field. In our case, the adaptation of clinical practices presented a challenge on several levels:

- Adaptation of both students and teachers to a virtual environment practically unused in face-to-face clinical practice.
- Adaptation to the needs of the Spanish educational authorities for the correct evaluation of online activities in clinical practice subjects.
- Need for structural adaptation of the subjects, their form of evaluation and monitoring.

According to these conditions, the teachers of UEM had to work against the clock on the adaptation for the continuity of teaching SP I-II and ICP (adult and child).

The Spanish education authorities established that university practical subjects in which more than 50% of clinical practice had been completed were eligible for assessment, and students could therefore pass those subjects.[18] In the case of our subjects, 70% of clinical practices had been carried out in the SP subject, and children and adult ICPs had reached 66% of completion, so we began to adapt the clinical activities and assessments to a virtual format that would maintain the students' competencies as well as the learning outcomes. Therefore, within 1 week, we moved from a clinical space with patients to a virtual space in which students would be assessed by teachers through different activities. This adaptation was called Applied Training for the Adult and Children Clinic.

Knowing that the minimum percentage clinical practice had been fulfilled, an addendum was made to the guides of the subjects in which it was proposed to continue the Training Applied to the Clinic in online mode through the connection in real time, on the same days and shifts according to schedule academic, with the same teachers, maintaining the teacher-student ratio.

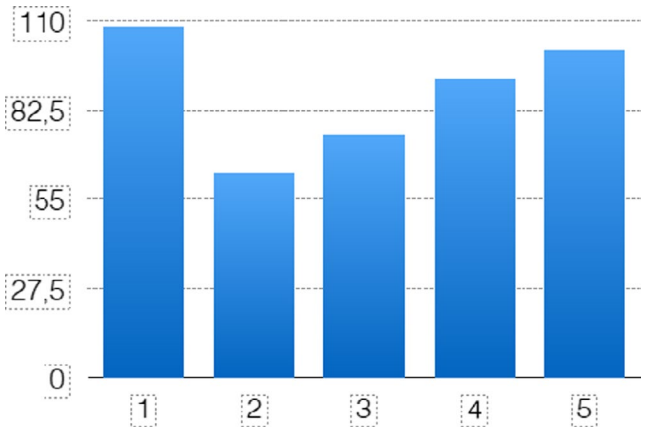

FIGURE 4 Question 4 After the beginning of teaching in the COVID-19 period: Communication platforms and teaching guides continue to be accessible and reflect the changes in adaptation to the current moment

3.1 | Virtual environment

In a very short time (1 week), it was necessary to convert the practical contents into virtual contents that could be adapted to the targets and methodologies of the DDS curriculum. 35% of the teaching load had to be adapted to an unusual environment for teachers and students in these subjects.

The virtual content was developed by the teachers and clinical coordinators in a virtual tool, Blackboard,[22] that is, a Virtual Campus for the DDS students. This web was used by other teachers in the UEM but not in the case of the clinical teachers.

The remaining course time, 12 weeks, was carried out entirely online, with several activities in which the teachers would assess the students in real time, based on the following evaluations and criteria:

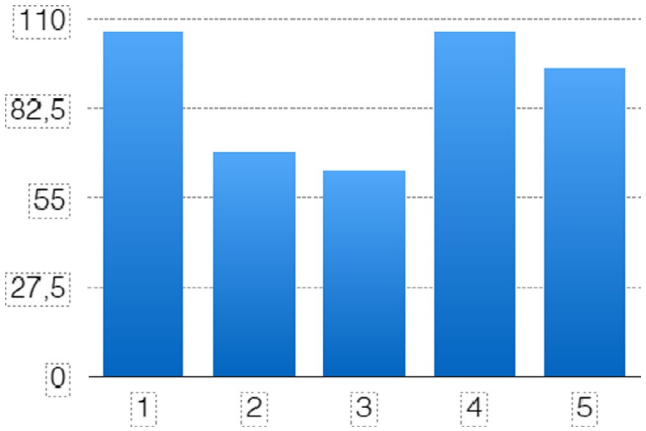

FIGURE 5 Question 8—After the start of teaching in the COVID-19 period: The weekly plans of content, materials and evaluation criteria are available with enough time to be carried out, in a comprehensive and detailed way

- Assessment of general and specific competencies established in the degree specifications.
- Assessment of clinical and training activities in the evaluation platform.
- Resolution of multidisciplinary and sequential dental treatments of actual cases through the analysis and discussion of clinical cases, which the student develops in real time with his or her teacher.
- Clinical cases performed in real time, under the tutorship of the professor through the Clinical Practice Evaluation Platform. The clinical cases and their assessment rubrics were agreed upon by the faculty.
- Lectures from leading professors that include real cases and virtual demonstrations that take place in real time in the practical sessions.
- Assessment is continuous and weighted. It is carried out continuously throughout the academic year, and the grades are uploaded to the academic record at the end of the year, matching the grades obtained in the first and second parts of the course.
- All clinical cases performed in real time during our clinical activity, according to academic hours, are assessed through the computer tool Practice Evaluation Platform:UEvalua.

To carry out the project, we opted for a model in which a high hourly teaching load was maintained with continuous real-time connection and with a very small number of students per teacher to guarantee personalised and adapted attention; the student/teacher ratio was very tight: each teacher had between 6 and 10 students. The teaching hours were distributed in shifts of 4 h of non-stop online work: one session every two weeks in ICPs and children's SPs, one weekly session in adult ICPs and 2–3 weekly sessions in adult SPs.

The adapted practice schedule was as follows: Initiation and presentation of the activity to be carried out by the clinical coordinators and leading professors using the virtual campus of the Blackboard Collaborate platform.[22] Carrying out activities, meetings and discussions with teachers in small groups using the Teams platform.[23] Closure of the session by coordinator using Blackboard Collaborate.

3.2 | Adaptation of online activities

Follows a list of all adapted activities:

- Clinical cases based on actual cases that are solved by the student and that are discussed and evaluated in real time with the teacher, in the time established for the resolution of the case, using Microsoft Teams as a platform.
- Master classes from leading professors that include actual cases, virtual demonstrations that are developed in real time. The teachers receive the questions to be asked to the students in their boxes with their respective evaluation and real-time resolution of doubts with the lecturer. The platform used is Blackboard Collaborate.
- Review of scientific articles that deepen the necessary clinical knowledge for the daily practice of students.

These activities were developed in a virtual environment with a well-defined dynamic and according to the evaluation criteria of the subject:

The teachers of the subject, in each shift, send the clinical cases to their groups of students, with individual mail from each student confirming receipt.

The agreed upon time is left for the resolution of the case by the student. During this time, the teachers perform individual tutorials, the student sends the solved case for later assessment and open discussion sessions are initiated through a virtual meeting with the students.

Should any student have connection problems or any other problem, the teacher reports the coordinator in real time of the situation, for immediate management.

The Clinical Coordinators in each shift and the department management have the evidence in real time of the start and end communications of each of the clinical sessions by each of the professors with their students.

All the clinical cases are directed towards the resolution of a multidisciplinary and sequential odontological diagnosis and treatment. By following the same format of clinical cases every week, students are assigned a case of Applied Clinical Knowledge in Adult and Children.

4 | SURVEY ON THE STUDENT'S SATISFACTION LEVEL WITH THE DDS OF UEM

In reference to all these changes, a small survey was conducted amongst the fourth and fifth-grade students asking about their level

TABLE 1 Development of clinical practice in health education at other institutions during the pandemic

Authors	Type of article	Health branch	Results
Almarzooq et al., 2020, USA	Application	Medicine (Cardiology) Harvard Medical School, Boston	• Virtual platform using TEAMS • Weekly Friday morning meetings. • Image of the week • Integration, collaboration, education and communication
Co Shih and Chen, 2020, Hong Kong	Application	Medicine (Ophthalmology) University of Hong Kong	• Written and video tutorials from teachers using Zoom. 1. Technique 2. Clinical signs 3. Typical mistakes 4. Clinical relevance • 60 minutes of video and 10 min of questions
Connor et al., 2020, USA	Application	Medicine BrookeArmy medical center and UCLA	• Virtual flipped classroom • Online questions • Videoconferences • Telephone diagnosis with the help of residents • Video-recorded surgeries
Ferrel and Ryan, 2020, USA	Publishing	Medicine	• Cancellation of face-to-face classes • Recorded or live classes. ONLINE • Interactive online forums with small groups
Iyer et al., 2020, USA	Publishing	Dentistry	• Use of technology • Social distance measures • Synchronous and asynchronous distance learning • Flipped classroom • Problem-based learning
Longhurst et al., 2020, UK	Application review	Medicine (Anatomy) 12 RU Universities 2 Ireland	• Recorded online classes. Panopto (50%) and others: Zoom, Collaborate Ultra and Big Blue Button (36%) • Practice with 3D applications
Morgan, 2020, USA	Publishing	Not specified	• Ensuring equity • Correct communication • High-quality resources • Caring for the emotional state of the students
North et al., 2020, USA	Publishing	Medicine Commonwealth University, Virginia	• The student connects remotely via telephone with a resident whilst he/she is working (real-time questionnaire)
Quinn et al., 2020, UK	Application review	Dentistry	• Questionnaire for Universities to see how they act a. At the clinic only senior staff (96%) and postgraduates (30%) worked for the emergency department b. Theoretical classes are 90% worked online, 72% with videos, 48% with links to other materials and 65% with virtual meetings
Meng et al., 2020, China	Publishing	Dentistry	• Non-face-to-face teaching is recommended
Moszkowicz et al., 2020, France	Application	Medicine Surgery Louis-Mourier Hospital, Colombes	• Videoconferencing using Google Hangouts app in small working groups

(Continues)

TABLE 1 (Continued)

Authors	Type of article	Health branch	Results
Newman and Lattouf, 2020, USA	Publishing	Dentistry Wake Forest School of Medicine, North Carolina	• WebEx and Zoom online classes • Organisational participation of students
Pather et al., 2020, Australia	Application review	Medicine (Anatomy)	• Most of them carried out asynchronous distance learning • Videos
Plancher and Petterson, 2020, USA	Publishing	Medicine (Orthopaedics) Several faculties	• Virtual meetings • E-learning technological support • Simulation • Virtual reality
Reinholz and French, 2020, Germany	Letter to the editor	Medicine (Dermatology) University Hospital Munich	• DOIT: Dermatology Online with Technology Platform • Inverted classes • Image diagnosis • Online cases
Slanetz et al., 2020, USA	Publishing	Radiology	• Interactive online classes with students • Creativity is recommended • IT support • Residents as new teachers
Torres et al., 2020, Poland	Study	Medicine Medical University of Lublin	• They carried out 2 weeks of readjustments and preparation of the teaching staff to work online • They created an online environment with Zoom: a. "Patient room" with SimMan 3D software b. Technician replacing the hands of the students c. Patient monitor d. Simulated patient e. Professor f. Students

of satisfaction with the curricular adaptations made during the pandemic. Most of the comments received were positive, and a high level of satisfaction was detected amongst students, even though the subjects were only practical assistance.

The survey was based on a Likert scale, with five possible answers, from totally agree, scored as 1, to totally disagree scored as 5. It was sent online to all DDS students in the fourth and fifth years, and the response was a total of 439 surveys. All the information was anonymous, and the questions are shown below (Figure 1).

There were 12 questions divided in three different aspects:

- The first three questions were about the student knowledge of the subjects that were adapted.
- The next seven questions were about the adaptation itself, regarding their own experience in questions 4, 8 and 9.
- The last three questions were about their own satisfaction and opinion about the subject adaptations.

In addition, the students were asked to send their opinion in their own words.

Regarding the results in the survey, we can assume that the students have a low knowledge of the Degree learning objectives and methodologies. In addition, they do not know what the skills are they must achieve to get the degree (Figures 2 and 3).

Regarding the questions about the practices during the pandemic, we can see in the results that we get in questions 4, 8, 9 and 11 are positives about the changes that were made in the clinical subject. On the other hand, we can see that in the other questions we have a higher proportion of positive answers if we add all the agree answers (that means answers 1, 2 and 3). The most representative answers results are shown in Figures 4 and 5.

Most of the comments from the students in the open questions received were positive, and a high level of satisfaction was detected amongst students, even though the subjects were only practical assistance.

5 | DEVELOPMENT OF CLINICAL PRACTICE IN HEALTH EDUCATION AT OTHER INSTITUTIONS DURING THE PANDEMIC

Various universities and health science study centres have published their experiences in recent months, also finding some interuniversity

consensus documents; noting that in a similar way, it has been possible to establish monitoring of clinical practices in a virtual vs face-to-face environment.[3,8,9,11,13,16,17,21,24-29]

The collected data from the narrative review are shown in Table 1, indicating the tools used in each case and the health branch to which the training is referred to.

If we focus on Dental Education, we can find European and American consensus and review documents.[3,26] Iyer et al[3] assessed the impact of COVID-19 on dental education in the United States of America. In their article, they recommend the greater use of technology, the maintenance of social distance as well as the implementation of synchronous and asynchronous teaching, flipped classroom and problem-based learning.[3] Quinn et al. sent a questionnaire to 153 European Universities to assess their performance during the pandemic. 69 Universities responded, highlighting that the senior staff took care of the emergencies in the university clinics, sometimes supported by graduate students. In the universities analysed, 90% of the classes remained online, with videos and teaching material, in addition to virtual meetings in 65% of the cases.[26] Meng et al. describe the protocol followed in Chinese Universities, in which online work was recommended during the first months of the pandemic.[27] Our Institution has followed the recommendations described in these articles, making the most of online education, in real time and individualised.

6 | CONCLUSION

Despite the limitations of online training for the development of clinical practices, it has been possible to establish a system that ensures appropriate clinical training for DDS students.

We are aware that it is not possible to replace practices with real patients with virtual development activities, but we have found that this system also brings advantages, since it deepens the knowledge needed for clinical practice and students have strengthened their security when dealing with multidisciplinary clinical cases.

We believe that this model increases healthcare knowledge in its application in person, proving to be almost essential and likely to be implemented in future periods when we are not subject to exceptional situations.

In the future, the implementation of these activities in the practices in a continuous way will allow us to value the improvement in patient care, the improvement in the resolution of clinical cases and the level of patient satisfaction.

Undoubtedly, the possibility of carrying out online activities focused on improving clinical skills in real time should remain in university curricula. This type of training is not only applicable to pandemic situations, but it can facilitate the teaching follow-up of clinical practices to students who due to illness cannot attend the practices in person or in those meteorological situations that prevent the attendance of the entire student body normally.

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CONFLICT OF INTEREST

All authors declare that they have no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request

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