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AN ASSESSMENT OF THE INFLUENCE OF ONLINE AND OFFLINE CLINICAL DEMONSTRATION ON THE CONFIDENCE OF UNDERGRADUATE DENTAL STUDENTS TO PERFORM DENTAL PROCEDURES

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Abstract

Aim: To compare the level of self-confidence in diagnosing and performing various clinical dental procedures taught online and offline to dental graduate students of Final year BDS. Methods and Material: The study comprised of two groups of 4th year BDS students whose dental education were interrupted by the Coronavirus pandemic lockdown in one semester. A total of 258 final year BDS students from the year 2020 batch participated as study group and 285 students of final year BDS batch of the year 2021 participated as control group. An incognito survey comprising of 40 questions with respect to self-assurance level in carrying out 40 dental procedures and a five point Likert-like scale was distributed among of 3 dental schools in November 2020. The responses of study and control group were compared and analyzed. Results: The response rate was 258 (85.7%) in study group and 285 (93.4%) in control group. The distribution of self-confidence scores varied throughout the observed groups, and 258 students in the study group indicated a mean degree of confidence that was significantly lower than the 282 students in the control group (3.28±1.08 vs. 3.58±0.88, respectively). Conclusion: Based on the data analysis, the study group students felt less confident in eight clinical procedures than control group graduates.

INTRODUCTION

The gravity of Covid-19 pandemic has led government and private institutions to implement strict regulations on the ongoing education system. Universities had to adopt new strategies to guarantee the continuation of instruction in an effort to strike a balance between patient, professor, and student safety and evolving national policy [1,2]. The largest obstacle has been letting up of direct patient care, which is an essential part of the dental curriculum. It is indisputable that didactic and clinical skills are two distinct educational outcomes. The intimate interaction with patients cannot be replicated by virtual sessions.[3]

Dental schools are nonetheless accountable for verifying the proficiency of their students in all cases, even if they choose to stray from the prescribed course of study. In order to guarantee the best academic practices for undergraduate education, dentistry associations worldwide like Indian Dental Association (IDA) have created the frameworks for dental education. IDA has been planning, conceiving, organizing as well as conducting Accredited Continuing Oral & Dental Education Programs (ACODE) aimed to impart high levels of skills and knowledge. The COVID-19

pandemic outbreak in 2020 has had a significant impact on dental students' present knowledge base by drastically altering both teaching and learning approaches in the field [3]. There have been claims that the COVID-19 pandemic had a significant impact on dental education and clinical dentistry. Dental colleges were compelled to close for students, teachers, and patients due to the lockdown that was imposed in most nations in an effort to stop the spread of viruses. The traditional teaching techniques in all dental schools and colleges were suspended for a while. Before the COVID-19 pandemic, the dental college curriculum in India included courses lasting for one or two semesters a year, for a period of five-years which combines both in person theory lectures with practical lessons (either preclinical or clinical). The majority of the educational activities at our dental school were moved to an online learning platform in 2020 owing to the nationwide lockdown, which included pre-recorded theory classes, case discussions. In recent times, distance education has emerged as the exclusive means of guaranteeing the uninterrupted provision of higher education. Thankfully, virtual education has shown to be an effective supplement and has undoubtedly changed the learning atmosphere for medical students [4].

According to a preliminary survey conducted to look into the European Dental Institutions' initial response, the majority of schools have reported employing online pedagogical approaches for non-clinical education, with relatively few allowing for clinical activity [5]. The secret to success in these difficult times is resilience. Use new technologies that have the potential to improve education in order to take advantage of technological advancements for our benefit. In order to help students to further solidify their understanding and support their self-directed learning with creative techniques, staff members should also follow up with them. These strategies will assist us in avoiding the damage to our advantage.

It seems appropriate, in our opinion, to consider how the pandemic has affected dental education and training. Thus, a survey was performed to determine how the Covid-19 pandemic affected final-year undergraduate dental students' confidence in performing clinical procedures.

MATERIALS AND METHODS

Final-year undergraduate dentistry students who were in their second term of study during the COVID-19 lockdown during the first wave of the pandemic and experienced online learning and disruptions in their practical academic activities were included in the survey. Institutional ethical committee approval was taken. (BVDU/IEC/R2/10/22-23, date 24.08.2022).

The study group comprised of 258 Final year Dental students of the year 2020 batch (SG_2020) while the control group comprised of 285 Final year Dental students of the year 2021 batch (CG_2019). A specially created online questionnaire was used to gauge the final-year dentistry students' degree of confidence in their ability to execute various dental operations. Ten questions each from the areas of periodontology, oral surgery, prosthodontics, and conservative dentistry were selected, for a total of 40 questions that represented 40 distinct dental operations associated with different dental specialties.

Additionally, two sets of five questions each were assigned to Conservative Dentistry procedures and and Endodontics treatments. Similarly, prosthodontic procedures were distributed into two groups of five questions each for removable and fixed

prosthodontics. The Dental Council of India's curriculum specifies the competencies that students should possess upon completion of specific courses, and these are the basis for the procedures that are included in the questionnaire.

Via a Google form link, an invitational cover letter explaining the goal of the study with informed consent and a link to an online survey was sent to all final-year students of three separate dental colleges in Pune(included in the X1 Appendices). Along with a detailed description that participation in the study is purely voluntary and anonymous. Moreover, it was mentioned that by completing the online survey, the respondents would be deemed to have provided written agreement for their participation in the study and the use of the information they provided for statistical analysis.

Furthermore, it was made apparent that neither the students' choice to participate nor the responses provided would affect their standing as students at the individual dental colleges at this time. The SG 2020 group was assigned to the people who replied to this invitation. The investigation's control group (CG_2019) was assigned the self-evaluation survey responses from the previous year's final year dentistry students. According to the questionnaire described, 285 students' responses from the database assessing their degree of confidence in carrying out dental treatments were included in the CG_2019.

At the conclusion of each academic year, DCI (Dental Council of India) approved dental colleges use this type of questionnaire for internal assessment of the educational process. Dental students in their final year evaluate their own clinical confidence among other factors. This survey, along with others, is a component of internal quality assurance and oversight.

The study was carried out in accordance with the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) guidelines [6]. Final-year undergraduate dental students participated in a cross-sectional survey consisting of questions. The study comprised of two groups: First group was study group which comprised of 2020 final year BDS students (study group_SG) and second group was a control group which comprised students of final year 2019 batch (control group_CG) to compare the levels of self-confidence regarding the the diagnosis of clinical conditions and perform various clinical procedures necessary for the treatment. Participants were chosen at random, without regard to their gender or age. The institutional ethical committee gave their approval to the study protocol (IEC). Following the Institutional Ethical Review Committee's (IERC) ethical permission for this study, participants filled out a validated interview-based questionnaire, and their answers were gathered using a personalised Google form. The pertinent questions were asked of the participants, who were invited to respond anonymously.

The formula used to calculate the sample size in the present study was:

$$n = p\ (100-p)\ z2$$
$$E2$$

n - Sample size

p - Occurrence of a condition (%)

E - Maximum error (%)

Z - Confidence level

Based on the above formula, a sample size of 200 was derived. Final-year students who have completed all four subjects, clinical postings in a single attempt, and students who consented were included in the study. The exclusion criteria included repeaters and students who have not completed all four subjects, clinical postings regularly, students in the final year first semester batch, and those who do not give consent for the study.

Before the study began, the examiner underwent training and calibration to guarantee consistent inspection by a panel of experts to ensure uniform interpretations of the codes and criteria that were to be recorded. The questionnaire consisted of a total 20 questions. Questions (n = 5) related to the specialties of conservative dentistry, prosthodontics, oral surgery, and periodontics were included. The responses were recorded through a five-point Likert scale (there are five possible levels of self-confidence when performing an operation: 1 is having no confidence at all, 2 is having little confidence, 3 is having moderate confidence, 4 is having confidence, and 5 is absolutely confident) [7]. The questionnaire's questions contained no sub-questions. Completing the survey ought to require an average of fifteen minutes. A personal approach was made to a random sample of people to ask them to complete the survey.

All the participants of the survey (including those from both groups) used a marking method on the basis of five points. Likert-like scale-like format (from 1-no self-confidence, 2-llittle self-confidence, 3-mmoderate self-confidence, 4-having self-confidence to 5-very confident).

According to Jamieson, the questionnaire's response format consisted of five categories; thus, we handled them as continuous variables and presented averages and standard deviations for each item as well as at the level of entire groups in the case of different dental specialties [8].

We provided the median value of stated self-confidence for each question in order to be thorough. The 'intervalistic' method previously discussed made it possible to apply a more potent parametric mode of analysis. We examined distributions and compared each item in non-parametric mode for further evidence and conclusions. Since there were substantial variations in the self-confidence scores and distribution, the null hypothesis was rejected as expected.

The study utilised the Statistical Package for Social Sciences (IBM SPSS Statistic for Windows, version 21.0; Armonk, NY: IBM Corp.) to conduct statistical analysis with 80% power, 95% confidence interval, and 5% alpha. Descriptive statistics were performed in terms of mean, standard deviation, frequency, and percentage. Using Pearson's unpaired t test, statistical significance was assessed, with a p value of less than 0.05 being deemed significant.

RESULTS

The study group's response rate was 258 (85.7%), but the control group's response rate was 285 (93.44%). There were 10,320 responses in the study group and 11,400 in the control group overall (none of the respondents in either group skipped any questions). Between these two groups, there was a significant difference in response rates ($z = 3.219$, $p = 0.003$). With a Cronbach's α of 0.982, the questionnaire's reliability level was deemed satisfactory. In the research group, 208 (86%) female students participated in the study while only 50 (14%) male students had particpated, where as in the control group, 228 (80%) female students and 57 (20%) male studnets

participated in the study, which formed the majority of respondents as female. The research and control groups' respective mean values of self-confidence levels for a certain dental sector differ. (Table 1).

Table 1: Mean values of students' self-confidence for specific dental fields in the study group in comparison to control.

	Study Group (N=258) Mean (SD)	Control Group (N=285) Mean (SD)	p value (unpaired t test)
Restorative dentistry	2.42 (0.506)	3.73 (0.27)	p<0.001**
Prosthetic dentistry	2.33 (0.33)	3.5 (0.3)	p<0.001**
Oral Surgery	2.05 (0.31)	3.35 (0.36)	p<0.001**
Periodontics	2.19 (0.3)	3.3 (0.46)	p<0.001**

N = Number of students, SD = Standard Deviation, ** = Statistically Significant

When specific questions on skills in the field of conservative and restorative dentistry were analysed, there was a statistically significant difference (p 0.05) between the study group's and the control group's reported levels of self-confidence for two skills: 'For taking radiographs for a root canal treatment tooth', and 'Usage of micromotor and air-rotor without supervision' (Table 2). However, there was no significant difference observed in the evaluation of the requirement for application of liners, bases, and varnish when compared between the groups as well as within the group (Table 2).

Table 2

	Study Group (N=258) Mean (SD)	Control Group (N=285) Mean (SD)	p value (unpaired t test)
Diagnosis and treatment planning skills in restorative dentistry	**2.28 (1.1)**	**3.74 (0.86)**	**p<0.001****
Rate your confidence regarding the preparation of a class 2 cavity to receive amalgam and composite restoration	2.01 (1.03)	3.7 (0.67)	p<0.001**
Rate your matrix band placement skills	**2.45 (1.08)**	**3.53 (0.91)**	**p<0.001****
How efficiently and confidently do use rubber dam isolation for restorative procedures	1.48 (0.77)	3.37 (0.99)	p<0.001**
How confidently can you use airotor/ micromotor without assistance or supervision	**2.39 (1.38)**	**4.2 (0.79)**	**p<0.001****
Rate your confidence regarding cavity preparation in the maxillary arch using indirect vision	2.24 (1.12)	3.77 (0.94)	p<0.001**
How confidently can you evaluate the requirement for application of liners, bases and varnish	**3.24 (1.09)**	**3.66 (0.85)**	**p<0.001****
How confident are you in taking radiographs for root canal treatment	2.32 (1.13)	4.16 (0.62)	p<0.001**
How well can you do the differential diagnosis of reversible and irreversible pulpitis	**3.43 (1.01)**	**3.56 (0.8)**	**p =0.077 (NS)**
Rate your skills in reproducing the occlusal anatomy in amalgam restorations	2.4 (1.28)	3.62 (0.85)	p<0.001**

Prosthodontics-related question analysis revealed that the study group's perceived degree of self-confidence was considerably lower than the control group's ($p<0.05$) for almost nine out of ten questions. Except for understanding the manipulation of impression materials used in the fabrication of complete dentures, the self-confidence level was almost the same for both groups. There were highly significant differences, which were detected in nine out of ten questions about prosthetic dentistry, between the study group and control group (Table 3).

Table 3

	Study Group (N=258) Mean (SD)	Control Group (N=285) Mean (SD)	p value (unpaired t test)
Locating anatomical landmarks of maxilla and mandible intraorally to perform prosthodontic complete denture procedures.	2.07 (1.11)	3.52 (0.91)	p<0.001**
Understanding of manipulation of impression materials used in fabrication of complete dentures	3.57 (0.91)	3.8 (0.74)	p=0.001*
Understand the indications of supragingival finish lines in fixed partial denture	2.08 (0.93)	3.11 (0.56)	p<0.001**
Relating fox guide plane to interpupillary line and ala-tragus line during jaw relation recording.	2.44 (1.22)	3.65 (0.83)	p<0.001**
Skills in border moulding and recording final impression.	2.53 (0.72)	4.07 (0.79)	p<0.001**
Counselling complete denture patients	2.8 (0.88)	3.68 (0.98)	p<0.001**
Evaluating steps in try-in in complete dentures.	2.1 (1.23)	3.42 (0.85)	p<0.001**
Recording centric jaw relation	1.77 (0.84)	3.42 (1.03)	p<0.001**
Laboratory procedures in complete dentures without assistance from laboratory personnel	1.96 (0.91)	3.15 (0.88)	p<0.001**
Confidance level in relating the theory taught online to clinical practice	2.03 (0.52)	3.22 (0.85)	p<0.001**

N = Number of students, SD = Standard Deviation, ** = Statistically Significant

The least confidence was reported for ‘Recording of centric jaw relation’ in the study group. Whereas the ‘knowledge regarding the laboratory procedures related to complete dentures without assistance from laboratory personnel’ was second least for the study group as compared to the control group.

In the field of oral surgery, there was a significant difference in the self-confidence levels between the study group and the control group in nearly nine out of ten questions. (Table 4). The most confidence among all ten questions for oral surgery was reported for ‘Skills in identification of different types of forceps and elevators’ in the study group (2.85 + 0.93) as well as in the control group (3.9 + 0.81) (Table 4).

Table 4

	Study Group (N=258) Mean (SD)	Control Group (N=285) Mean (SD)	p value (unpaired t test)
Rate your confidence in administration of local anaesthesia	1.56 (0.84)	3.66 (0.78)	p<0.001**
Identification of different landmarks required for administration of local anaesthesia	2.29 (0.86)	3.52 (0.7)	p<0.001**
Extracting root canal treated teeth	1.31 (0.54)	3.22 (0.85)	p<0.001**
Extraction of grossly carious teeth or root stumps	2.17 (1.03)	3.68 (0.79)	p<0.001**
Extraction of teeth in medically compromised patients	2.08 (0.54)	2.99 (0.86)	p<0.001**
Manage post extraction bleeding in hypertensive patients	1.44 (0.63)	3.15 (0.95)	p<0.001**
Confidence in suturing of an extraction wound	2.22 (1.0)	2.91 (0.84)	p<0.001**
Confidence in the management of an apprehensive patient.	2.24 (1.08)	3.58 (1.1)	p<0.001**
Confident are you in the interpretation of different types of skull radiographs	2.34 (0.65)	2.91 (0.83)	p<0.001**
Skills in identification of different types of forceps and elevators	2.85 (0.93)	3.9 (0.81)	p<0.001**

N = Number of students, SD = Standard Deviation, ** = Statistically Significant, **p<0.001 = highly significant difference

The study group and control group's overall score distribution differed considerably (D = 0.251, p<0.001). The research group and the control group had significantly different degrees of self-confidence in each of the ten periodontal treatments (Table 5). The least confidence was reported for the procedure of 'Performing subgingival scaling in patients with systemic diseases or conditions' in the study group. While in the control group, the least self-confidence was related to the procedure of 'Using a Gracey Curette.

DISCUSSION

The main finding of this evaluation was the level of self-confidence in clinical dental undergraduate studies when executing 40 different clinical dentistry procedures in the final year under graduate students of the 2020 batch. We compared it to the self-assurance scores of final-year undergraduates from earlier years, where the lockdown caused by the coronavirus pandemic had no impact on their learning and studies. The control group tested in 2019 had a relatively high response rate. The prior estimation of the necessary sample size was omitted because the target population was anticipated to behave similarly, as there was a difference in the participation numbers among the two groups. In fact, the 258 (85.7%) student response rate that was achieved suggested that the sample included the majority of the population under study. High response rates also helped to lessen the bias of non-representative data. All the participants of the survey (including those from both groups) used a marking method on the basis of five points. Likert-like scale-like format (from 1-no self-confidence, 2-llittle self-confidence, 3-mmoderate self-confidence, 4-having self-confidence to 5-very confident)

According to Jamieson, the questionnaire's response format consisted of five categories; thus, we handled them as continuous variables and presented averages and standard deviations for each item as well as at the level of entire groups in the case of different dental specialties [8]. We provided the median value of stated self-confidence for each question in order to be thorough. The 'intervalistic' method previously discussed made it possible to apply a more potent parametric mode of analysis. We examined distributions and compared each item in non-parametric mode for further evidence and conclusions. Since there were substantial variations in the self-confidence scores and distribution, the null hypothesis was rejected as expected. It can be argued that the loss of direct patient contact and the change to remote online learning as a result of COVID-19 have had a significant impact on dental students' confidence in executing standard dental procedures in their final year. This is in line with reports from the School of Dental Medicine at the University of Belgrade, Serbia, and the University of Sydney in Surry Hills, New South Wales, Australia, about the opinions of their students and faculty [1].

In the six core clinical skills of conservative dentistry and endodontics, final-year dental students from the study group felt less confident than those from the control group. A substantial change in self-confidence was not observed when performing the differential diagnosis of reversible and irreversible pulpitis. When compared to the final-year dental students from the previous year, the self-confidence of the graduating students from the 2020 batch in other dental specialties was statistically significantly different. There is no doubt that the lack of adequate clinical practice brought on by the lockdown may have contributed to the study group's low self-confidence scores. According to the Dental Council, out of the 40 clinical procedures that were looked into, training for more than 25 clinical procedures in the prosthodontics, endodontics, and oral surgery specialties is placed in the second semester of the final year dental curriculum in all of our country's dental schools. However, this semester was severely impacted by the lockdown.

The final-year dental students from the pre-covid batch (control group) had the highest self-confidence scores for the majority of the clinical procedures in restorative dentistry, prosthodontics, and some less complex oral surgery. While the final-year dental students from the COVID batch (study group) indicated low confidence in the same operations, these are the clinical courses that students who underwent observation and learning through online teaching completed in the year during and after the pandemic. During the COVID-19 lockdown, they undoubtedly missed valuable practice time for these skills, which is why their results are much lower than those of the final-year dentistry students from the previous year. Similar to how Jordanian students perceived Conservative Dentistry as being most badly impacted by the COVID-19 lockout, the authors of the study said it was understandable given that Restorative Dentistry accounted for the majority of students' clinical exposure during their final years [9].

Since the final year of dental college’s curriculum lists a few complicated procedures from all two of the four subjects as competencies like extracting root canal-treated teeth, extraction of grossly carious teeth or root stumps, using a Gracey curette, and performing subgingival scaling in patients with systemic diseases or conditions, a significant number of questions based on them were included. Our graduates scored better on easier oral surgery procedures and worse on more difficult ones, which is consistent with Cardiff and Cork grads' results [10]. It is noteworthy that our students,

like those in the Porto study done by Sampaio-Fernandes M et al., felt comfortable carrying out the majority of prosthodontic procedures with the exception of "recording centric jaw relation" [11]. Like the subject of oral surgery, analysis of students' levels of confidence in their ability to perform complex periodontal procedures like "Performing subgingival scaling in patients with systemic diseases or conditions" and "Using a Gracey curette" revealed that our students in both groups gave these tasks low marks related to self-confidence. Additionally, these are the procedures that were infrequently carried out by students, and as is the case in the majority of dental colleges in India, students in the internship primarily observe surgical procedures carried out by faculty members or postgraduate students, as observed by Varvara et al. [12]. It was also confirmed that the greatest influence on students' readiness was in fact their clinical exposure [1-5]. As expected, self-confidence levels in the subject of Conservative Dentistry and Endodontics are lower for 2020 batch final year dental students, while they are relatively uniform across groups, indicating that this field will be more severely impacted by the end of clinical practice than by the overall impact of the teaching process shift as it involves most of its procedures, which are patient-oriented. Regarding this particular subject of Conservative Dentistry and Endodontics, the majority of the final-year students disagreed that online assessment is a viable technique of evaluation when compared to third- and fourth-year dental students, as per Gilmour et al. [13]. When executing sophisticated endodontic operations, one may anticipate a gain in self-confidence if the perceptions of competence and confidence grow over time.

The results from the Jugoslav Ilićl et al. study concluded that the decline in confidence level is not solely attributable to the cessation of teaching in a clinical setting but also to a combination of the pandemic's impact on the way of teaching [1]. In particular, the abilities that were developed throughout the dental course until the final year that were completed prior to the COVID-19 epidemic were also impacted. Additionally, the change in the distribution of scores among the observed groups had an impact on self-confidence in addition to lowering the perceived level. Overall, the findings of this study showed that dental students in their final year in 2020, in addition to having reduced self-confidence, will begin their professional careers with fewer clinical skills and capabilities. Another study from Germany and European countries also concluded that students are aware that their practical training is insufficient to prepare them for their future careers in dentistry [14]. They must therefore address their areas of weakness in order to seek out additional training, either in the private practice of some senior dentist or attending additional clinical courses. Dental colleges and their administrators should also offer additional courses and seminars related to the mentioned clinical topics to overcome the weaknesses of dental graduates. That is supported by Hattar et al.'s finding that almost two-thirds of students in Jordan who were included in their study preferred to be supervised after graduation [9]. The fact that some procedures that form a set of crucial clinical abilities, such as preparing for ‘Diagnosis and treatment planning skills in restorative dentistry’, ‘Skills to do the differential diagnosis of reversible and irreversible pulpitis', and ‘Skills to Differentiate between Gingivitis and Periodontitis', were scored higher for self-confidence by the study group despite the rapid shift in the education process, which is encouraging [15]. Similar to how Italian final-year students rated the COVID-19 pandemic change in teaching methodology, they found it to be "fair" in terms of engagement, knowledge, and level of individual preparation [12].

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Therefore, it might be said that the use of online or distant learning techniques had some impact on students' acquisition of in-depth information. In doing so, students have laid the groundwork for further enrichment and development of their self-confidence through practical abilities.

One advantage of this study over other similar studies done worldwide was that this study involved four dental colleges, whereas the other studies were carried out at only one dental college. Even though approximately more than 60% of dental students in our nation attended the college during lockdown, the findings cannot be generalised to the other states of the entire country because there are substantial curricular variances and diverse ways that education changed during lockdown. As a result, students at other dental colleges may react differently, but we firmly feel that the strength of our study resides at a point when educational results, shown as self-confidence level, were compared to those of previous-year students from three different dental colleges.

The investigation focused on the batch of 2020 dental graduates since they are about to enter their own private practice and because we believed that their level of confidence would have a significant impact on their own careers in the near future. Additionally, research has indicated that students' interest in maintaining their practical abilities increased significantly in their final year of school [16].

The research's findings evaluated the 4th year dentistry students' subjective opinion about self-confidence and, indirectly, the knowledge and skills they have learned in light of the challenging teaching circumstances brought on by the COVID-19 lockdown. The results of this study show that students who have been educated under highly restricted circumstances, such as lockdown, do not feel safe carrying out the majority of the clinical procedures that are being observed. These students may need additional educational support, such as observation at senior dentists' offices, enrolment in short-term clinical courses, or pursuit of a diploma or postgraduate degree in clinical dentistry.

This study clarifies the consequences of online education and raises problems with integrating new teaching methods in the dental educational field. As it was obvious that the pandemic was long-lasting and had significant effects, it is advised that dental colleges re-examine their competency-based education, permanently integrate different forms of distance learning into their curriculum, and train their teachers to teach using technology [17, 18].

Rising numbers of studies in this field are proof that attempts are being made globally to use various modes to improve pedagogical techniques and minimise the negative consequences of abrupt changes in the educational process, which encourages cooperation between dental schools. Therefore, within the boundaries of the indicated limitations, the outcomes of this study may contribute to understanding the significance of continuing the educational practices taken during the COVID-19 pandemic, which may be helpful in creating new teaching methods for dental education in the future.

The study's shortcomings may be attributable to the fact that it was a questionnaire-based project and that final-year dentistry students' self-confidence rather than competency was assessed.

CONCLUSION

The conclusion drawn from the results of this study show that students who have been educated under highly restricted circumstances, such as lockdown, do not feel safe carrying out the majority of the clinical procedures that are being observed. These students may need additional educational support, such as observation at senior dentists' offices, enrolment in short-term clinical courses, or pursuit of a diploma or postgraduate degree in clinical dentistry. This study clarifies consequences of online education and raises problems with integrating new teaching methods in dental educational field.

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