Original Article

Current and Future Impact of COVID-19 Pandemic Lockdowns on the Confidence Level of Clinical Practice among Female Dental Students in Namakkal District – A Cross-sectional Study

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Abstract

Introduction: Coronavirus has influenced the health-care system and human life in several aspects. Education being an important factor has decreased the level of interest and confidence among the students. **Objective:** The objective of this study was to assess the impact of the COVID pandemic on the self-confidence level of clinical practice. **Materials and Methods:** A cross-sectional study was conducted among 120 female dental students in the Namakkal district. Students were selected using a simple random sampling lottery method. Their level of self-confidence was assessed using a pretested questionnaire framed in all specialties regarding clinical work. The questionnaire was distributed via Google Forms and evaluated using a five-point Likert scale. **Results:** Among 120 students, a higher level of confidence was seen in endodontic procedures followed by periodontics. A lower level of confidence was seen in managing dental emergencies and procedures such as pulpotomy/pulpectomy and extractions. Only 24% were confident in class I cavity preparation, 30% in instructing patients about oral hygiene, 13% in recording case history, and 6.7% in fluoride application. Most of the students wish to improve their level of confidence through extra training because only 20% were satisfied with their self-confidence. **Conclusion:** In the field of dentistry, contact with clinical practice has been severely affected, and it is understood that online educational platforms can only improve the theoretical part and have lower performance in clinical education.

Keywords: COVID pandemic, dentistry, oral health, self-confidence, specialty

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Introduction

The development of the new coronavirus has led to a major impact on health and has significantly influenced the health-care system in various aspects. The spread of this pathogen has led to infection control measures, the implementation of policies and strategies, vaccination, and antiviral therapy. The main factors affected during this pandemic are human life, the economic system, and education.[1] Transmission risk is greater with dental care, which has changed the pattern of dental care provision and utilization.[2] Since dental care is provided in close proximity; the acquisition of infections is higher compared to other health professionals.[3] Therefore, dentistry is greatly influenced in all aspects.[4] Dental education accounts for the majority due to a rapid transition to online teaching methods. As distance education diversifies due to the development of technology, theoretical and practical training have a great impact when theoretical content cannot be applied in practice.[5] Student's graduation depends on both written and practical examinations with a targeted number of training courses, procedures, and clinical treatments. Due to pandemics, the current trend is being undermined in the assessment of learning outcomes.[6]

Cognitive and psychomotor skills play an important role in a dental procedure which requires analysis, interpretation, and hand-eye coordination. Performing procedures multiple

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times brings not only experience but also a level of trust in common.[7] The changes that occur during this period have a significant impact on a Student's development, abilities, and confidence in performing treatment and procedures. When the experience is structured, enhanced clinical practice can transform a graduate into an independent physician.[8] A better understanding of dentistry and broadening one's skills in clinical practice in a wider community will lead to better placements for dental students in attaining self-confidence.[9] Formative and summative assessments can also help to ensure their competency skills in pregraduation training, and the prime motive is to enhance well-being in a successful environment.[10,11] All of these factors have been affected by the pandemic, reducing the level of confidence in exposure to clinical practice. Therefore, the study aims to assess the current and future impact of the COVID-19 pandemic lockdowns on the confidence level of clinical training among female dental undergraduate students in Namakkal district.

Materials and Methods

Study design and study participants

A cross-sectional survey was conducted among the intern students who were graduating with the 5-year course study. They are the ones who got severely affected during COVID lockdowns and have come across online learning and interruptions in practical and academic activities. They were selected from a dental college in the Namakkal district by a simple random sampling lottery method. Out of 479 students, 63 students who were not willing to participate in the study were eliminated, and the final sample obtained was 120 dental students. The sample size was calculated using G*Power software 3.0.

Questionnaire assessment

Questionnaires were framed in all specialties to assess the level of self-confidence among dental students in clinical procedures. All the questions were curriculum based which is being done before the completion of an undergraduate degree. A pilot study was conducted among 20 students to assess the validity of the questionnaire and found to have a Cronbach's alpha value of 0.86. After getting informed consent from the students, the final framed questionnaire was sent in Google Forms through E-mail. Self-confidence level was assessed with a five-point Likert scale of 1 (not confident), 2 (little confident), 3 (moderate confidence), 4 (confident), and 5 (very confident).

Statistical analysis

Statistical analysis was done using the Statistical Package for the Social Sciences (SPSS) software version 25.0 (IBM, SPSS Inc, Chicago, USA). Frequency and percentage were performed for each question.

Results

Among 120 female dental students, the self-confidence level in oral medicine and radiology is shown in Table 1. Among various procedures, a higher confidence level (20% – very confident) was noted in reading intraoral periapical radiographs followed by recording case history (16%). Only 54% had moderate confidence in diagnosis and investigation and 5% of students were little confident in prescribing medications. Nearly half of the students (52%) were not confident in reading orthopantomogram/lateral cephalogram (CEPH) [Table 1].

Confidence in pedodontics was low which remained below 10% in all the procedures. Performing dental treatments was found to be confident among 37% of students. Moderate level of confidence is seen in handling children (55%) followed by little confident (38%) in pulpectomy/pulpotomy procedure [Table 2].

The level of confidence was high in making removable appliances (20%) followed by a 47% confidence level in the recording case history. Nearly half of the students were found to have moderate confidence in all the procedures and items. Thirty-three percent had little confidence in adjusting orthodontics appliances and 25% were not confident in changing wires and modules [Table 3].

Nearly 50% were confident in all the procedures. Forty-two percent had confidence in doing border molding/secondary impression. Only 31% and 11% had little confidence and no confidence in tooth preparation, respectively [Table 4].

Among periodontics, hand scaling is the common procedure done by the intern students and only 38% were very confident in performing the procedure. Fifty-five percent were confident in giving oral hygiene instructions and only 50% had a moderate level in examining and diagnosing periodontal diseases. Little confidence was seen in root planing procedure [Table 5].

Table 1: Frequency and percentage of self-confidence level in the department of oral medicine and radiology

Dental specialty Oral medicine and radiology	Self-confidence level				
	Not confident	Little confident	Moderate confidence	Confident	Very confident
Communicating with patients	3 (2.5)	10 (8.3)	35 (29.2)	60 (50.0)	12 (10.0)
Recording case history	1 (0.8)	5 (4.2)	34 (28.3)	64 (53.3)	16 (13.3)
Proper diagnosis and investigation	2 (1.7)	18 (15.0)	54 (45.0)	40 (33.3)	6 (5.0)
Reading intra (IOPA)	6 (5.0)	10 (8.3)	40 (33.3)	44 (36.7)	20 (16.7)
OPG/lateral CEPH	52 (43.3)	34 (28.3)	20 (16.7)	10 (8.3)	4 (3.3)
Planning of dental treatment	1 (0.8)	19 (15.8)	49 (40.8)	47 (39.2)	4 (3.3)
Prescription of medications	5 (4.2)	39 (32.5)	45 (37.5)	27 (22.5)	4 (3.3)

IOPA=Intraoral periapical; OPG=Orthopantomogram; CEPH=Cephalogram

Table 2: Frequency and percentage of self-confidence level in the department of pediatrics and preventive dentistry

Dental specialty Pediatrics and preventive dentistry	Self-confidence level				
	Not confident	Little confident	Moderate confidence	Confident	Very confident
First dental visit activity for children	3 (2.5)	36 (30.0)	48 (40.0)	30 (25.0)	3 (2.5)
Handling children	1 (0.8)	21 (17.5)	66 (55.0)	27 (22.5)	5 (4.2)
Performing dental treatments	3 (2.5)	29 (24.2)	47 (39.2)	37 (30.8)	4 (3.3)
LA and extraction	12 (10.0)	29 (24.2)	44 (36.7)	29 (24.2)	6 (5.0)
Pulpectomy/pulpotomy	40 (33.3)	46 (38.3)	26 (21.7)	7 (5.8)	1 (0.8)
Space maintainer and other appliances	18 (15.0)	39 (32.5)	45 (37.5)	14 (11.7)	4 (3.3)

LA=Local anesthesia

Table 3: Frequency and percentage of self-confidence level in the department of orthodontics and dentofacial orthopedics

Dental specialty Orthodontics and dentofacial orthopedics	Self-confidence level				
	Not confident	Little confident	Moderate confidence	Confident	Very confident
Case history	2 (1.7)	16 (13.3)	43 (35.8)	47 (39.2)	12 (10.0)
Changing wires and modules	25 (20.8)	27 (22.5)	33 (27.5)	21 (17.5)	14 (11.7)
Model analysis	2 (1.7)	28 (23.3)	47 (39.2)	32 (26.7)	11 (9.2)
Removable appliance	2 (1.7)	17 (14.2)	45 (37.5)	36 (30.0)	20 (16.7)
Adjustment of orthodontic appliances	19 (15.8)	33 (27.5)	37 (30.8)	24 (20.0)	7 (5.8)

Table 4: Frequency and percentage of self-confidence level in the department of prosthodontics and crown bridge

Dental specialty Prosthodontics and crown bridge	Self-confidence level				
	Not confident	Little confident	Moderate confidence	Confident	Very confident
Functional impression for removable and complete dentures	3 (2.5)	9 (7.5)	35 (29.2)	61 (50.8)	12 (10.0)
Border molding/secondary impression	2 (1.7)	15 (12.5)	42 (35.0)	52 (43.3)	9 (7.5)
Denture insertion	2 (1.7)	14 (11.7)	37 (30.8)	52 (43.3)	15 (12.5)
Repair work for patients – rebasing/relining	5 (4.2)	16 (13.3)	43 (35.8)	44 (36.7)	12 (10.0)
Tooth preparation – FPD	11 (9.2)	31 (25.8)	43 (35.8)	26 (21.7)	9 (7.5)

FPD=Fixed partial denture

Table 5: Frequency and percentage of self-confidence level in the department of periodontology

Dental specialty Periodontology	Self-confidence level				
	Not confident	Little confident	Moderate confidence	Confident	Very confident
Examination and diagnosis of periodontal diseases	1 (0.8)	16 (13.3)	50 (41.7)	42 (35)	11 (9.2)
Hand scaling	0	4 (3.3)	23 (19.2)	55 (45.8)	38 (31.7)
Ultrasonic scaling	12 (10.0)	24 (20)	25 (20.8)	37 (30.8)	22 (18.3)
Root planing	29 (24.2)	38 (31.7)	35 (29.2)	16 (13.3)	2 (1.7)
Medication for elimination of local irritations	11 (9.2)	32 (26.7)	48 (40)	28 (23.3)	1 (0.8)
Oral hygiene instructions after scaling	0	9 (7.5)	20 (16.7)	55 (45.8)	36 (30)
Prescribing mouthwash	0	10 (8.3)	26 (21.7)	58 (48.3)	26 (21.7)

Higher confidence in preparing for class I cavity was seen in 24% and 62% in diagnosing caries. Selecting appropriate burs is of moderate confidence with only 40% and little confidence in rubber dam application and 34% were not confident in performing root canal treatment [Table 6].

Nearly 31% were very confident in delivering the postextraction instructions and only 58% were confident in extracting an erupted tooth. Forty percent of students are at a moderate level for administering local anesthesia and managing dental emergencies. For the management of oroantral communications and fistulas, 43% were found to have no confidence [Table 7].

Only 33% were very much confident in demonstrating the brushing technique and nearly 50% had confidence in screening patients, recording case history, recording indices, and giving health education. A moderate level of confidence is seen among 50% in performing preventive resin restoration and only 26% had little confidence in fluoride application and <10% had no confidence in all procedures [Table 8].

Table 6: Frequency and percentage of self-confidence level in the department of conservative dentistry and endodontics

Dental specialty Conservative dentistry and endodontics	Self-confidence level				
	Not confident	Little confident	Moderate confidence	Confident	Very confident
Clinical examination	0	14 (11.7)	37 (30.8)	52 (43.3)	17 (14.2)
Caries diagnosis	0	13 (10.8)	27 (22.5)	62 (51.7)	18 (15)
Rubber dam application	15 (12.5)	41 (34.2)	37 (30.8)	22 (18.3)	5 (4.2)
Class I cavity preparation	1 (0.8)	10 (8.3)	27 (22.5)	53 (44.2)	29 (24.2)
Class II cavity preparation	2 (1.7)	16 (13.3)	40 (33.3)	46 (38.3)	16 (13.3)
Usage of appropriate cavity preparation burs	3 (2.5)	24 (20)	40 (33.3)	43 (35.8)	10 (8.3)
Mixing of GIC	0	7 (5.8)	31 (25.8)	58 (48.3)	24 (20)
Light cure composite restoration	0	10 (8.3)	32 (26.7)	54 (45)	24 (20)
Root canal treatment	34 (28.3)	34 (28.3)	24 (20)	25 (20.8)	3 (2.5)

GIC=Glass-ionomer cement

Table 7: Frequency and percentage of self-confidence level in the department of oral and maxillofacial surgery

Dental specialty Oral and maxillofacial surgery	Self-confidence level				
	Not confident	Little confident	Moderate confidence	Confident	Very confident
Diagnosis and therapy of acute and chronic dental infections	20 (16.7)	37 (30.8)	37 (30.8)	23 (19.2)	3 (2.5)
Administer local anesthesia	0	7 (5.8)	40 (33.3)	51 (42.5)	22 (18.3)
Extraction of erupted teeth	2 (1.7)	15 (12.5)	24 (20)	58 (48.3)	21 (17.5)
Extraction of impacted teeth	37 (30.8)	40 (33.3)	31 (25.8)	10 (8.3)	2 (1.7)
Suturing	2 (1.7)	12 (10)	34 (28.3)	46 (38.3)	26 (21.7)
Curettage of periapical lesion	40 (33.3)	39 (32.5)	23 (19.2)	16 (13.3)	2 (1.7)
Conservative treatment for oroantral communications and fistula	43 (35.8)	44 (36.7)	25 (20.8)	7 (5.8)	1 (0.8)
Postextraction instructions	1 (0.8)	11 (9.2)	26 (21.7)	51 (42.5)	31 (25.8)
Management of dental emergency	20 (16.7)	41 (34.2)	40 (33.3)	17 (14.2)	2 (1.7)

Table 8: Frequency and percentage of self-confidence level in the department of public health dentistry

Dental specialty Public health dentistry	Self-confidence level				
	Not confident	Little confident	Moderate confidence	Confident	Very confident
Screening patients	3 (2.5)	18 (15)	39 (32.5)	45 (37.5)	15 (12.5)
Case history	2 (1.7)	10 (8.3)	36 (30)	46 (38.3)	26 (21.7)
Index recording	0	11 (9.2)	40 (33.3)	50 (41.7)	19 (15.8)
Comprehensive treatment plan	2 (1.7)	16 (13.3)	46 (38.3)	45 (37.5)	11 (9.2)
Pit and fissure sealant application	5 (4.2)	20 (16.7)	49 (40.8)	33 (27.5)	13 (10.8)
Fluoride application	8 (6.7)	26 (21.7)	48 (40)	30 (25)	8 (6.7)
Atraumatic restorative treatment	8 (6.7)	24 (20)	40 (33.3)	38 (31.7)	10 (8.3)
Preventive resin restoration	10 (8.3)	26 (21.7)	50 (41.7)	26 (21.7)	8 (6.7)
Diet counseling	3 (2.5)	11 (9.2)	44 (36.7)	43 (35.8)	19 (15.8)
Brushing technique demonstration	0	9 (7.5)	27 (22.5)	51 (42.5)	33 (27.5)
Giving health education and promotion	2 (1.7)	10 (8.3)	38 (31.7)	52 (43.3)	18 (15)

Nearly 96.7% want to improve their confidence level by extra training and 79% were not satisfied with their training during COVID [Table 9].

Discussion

Dentistry is a profession with more clinical procedures. A lack of basic skills can make a dentist feel less confident while handling patients and performing procedures. This study showed the different levels of self-confidence among internship students and COVID-19 impact on performing clinical procedures. The level of confidence can be achieved by gaining knowledge and skills in clinical practice rather than theoretical knowledge. Since COVID-19 has caused a great impact on the education system, the level of clinical practice and confidence level was greatly affected among dental students. According to this study, various clinical departments and the procedures carried out have been explained with the level of self-confidence. This would help to conclude with a realistic evaluation of clinical performance in dentistry among students during the pandemic times.

Table 9: Frequency and percentage of level of confidence

Confidence level	Frequency (%)
I wish to improve my level of self-confidence through extra training	
Yes	116 (96.7)
No	4 (3.3)
Am satisfied with the level of self-confidence and training I attained	
Yes	25 (20.8)
No	95 (79.2)

Oral medicine and radiology

Among 120 female dental students, 53% had a confidence level in recording case history, and this was mainly attained by their postings in the final year which was contrary to where a higher confidence level was noted in other studies.[12-14] Planning of dental treatment was 39% in our study and it was found to be 69% before the pandemic period,[12] reading radiograph confidence level was 36%, whereas other studies seemed to have a higher confidence level of 94%, 81%, and 95%.[12-14] For clinical diagnosis, only 33% had confidence which was not in accordance with other studies where students had greater confidence in diagnosing the conditions.[13,14] Confidence in prescribing medications was only 37% because of less exposure to patients and was found to coincide with previous studies[12,15] and contrary to one study[13] which had 72%. In our study, 50% felt confident in communicating with patients and it was similar to 69% in previous studies.[12]

Pediatrics and preventive dentistry

Performing dental treatments in children was found to have a 30% confidence level which was in accordance with 39%,[12] but contrary to a previous study, 66% of engaging with children and performing treatments under guidance made them more confident.[14] Procedures such as pulpal therapy (5%) and extraction (24%) were found to be contrary (13% and 55%, respectively) to other studies.[12] In our study, only 39% of students had moderate confidence in basic procedures, and this was mainly due to a lack of practical skills in handling children.

Orthodontics and dentofacial orthopedics

Orthodontic assessment and confidence level in taking case history seem to have 39% which was in accordance with a study of 29%,[12] and other procedures such as model analysis and fabrication of removable appliances had a level of 30% that was mainly due to the knowledge gained from final-year clinical postings.

Prosthodontics and crown bridge

The confidence level in delivering complete dentures was found to be 43% which was contrary to 60% in previous studies.[12] A mean of 5.73[16] was found in partial denture experience, whereas in our study, a mean of 3.53 had confidence in performing partial dentures. In the previous study, taking a primary impression for complete denture had a mean of 7.62, performing border molding/secondary impression had a mean of 7.46 and denture insertion of mean 7.52,[16] whereas in our study, it was contrary where only half of the students were confident in primary impression (mean: 3.58), 43% with the secondary impression (mean: 3.42) and denture insertion procedures (mean: 3.53). In a study, 13% had high confidence in performing crown procedures,[17] whereas in our study, it was only 7% this was mainly due to a lack of exposure to clinical practice. The confidence level of 53% in managing patients with prosthodontic needs including fixed, partial, and complete prostheses was similar to other studies.[13]

Periodontology

The confidence level of students in delivering oral hygiene instructions was 45% whereas a study had a 63% confidence level.[14] The diagnosis of periodontal diseases was found to be 35% and root planing 13% which was contrary to 86% and 79%, respectively, to the previous studies.[12] Only 30% were confident in performing ultrasonic scaling whereas 84% and 64% were reported by previous studies.[13,14] Basic ultrasonic scaling procedures seemed to be affected by COVID-19 pandemic which had a great impact on clinical practice.

Conservative dentistry and endodontics

On performing light cure composite restoration, only 45% had a confidence level and it was not in accordance with previous studies where a higher confidence level was noted (84%) in performing procedures in anterior and posterior composite restoration.[12,14] Twenty percent of moderate confidence was reported for root canal treatment procedures which was mainly due to the experience gained in a private clinic during the pandemic and that was contrary to 89%[12] and 44% reported by the previous study during their college internship posting days.[14] A study had 97% extremely high confidence in performing restorative procedures[17] which was contrary to our study where only 24% had high confidence and a confidence level of 98% was seen in caries management.[13] Change in the confidence level to a large extent for endodontics procedures was noted mainly due to pandemic situations.

Oral and maxillofacial surgery

Confidence in the extraction of erupted teeth was found to be 48% similar to previous studies 49% and 50%[13,14] and contrary to a study with 93%.[12] Removal of the impacted tooth was 8% which was similar to a study with 12%[12] where exposure to complex treatment procedures was less during those times. On managing medical emergencies during clinical procedures, only 14% of students were confident which was similar to 10%[12] and contrary to 61% in the previous study.[13] The confidence level in managing dental trauma had a Visual Analog Scale – 4.5 mean,[18] whereas in our study, 84% of students were confident. Our students had higher confidence in managing dental trauma patients.

Public health dentistry

Procedures such as pit and fissure sealant and fluoride application had a confidence level of 52%, whereas in previous

studies, 87% and 60% were reported.[12,14] The confidence level of preventive resin restoration was 21% which was contrary to 96% in the previous study.[12] A study showed that students were more confident in preventive treatments (Visual Analog Scale – 8.5 mean)[18] which was contrary to our study. Since practical application and knowledge of clinical skills were limited, students seemed to have a great impact on confidence levels.

Limitations

Dental interns have not been exposed to various clinical departments at the time of study duration.

Recommendations

Clinical practice can be developed by in-home practice using typo jaws and pieces of equipment for performing basic procedures. This can be achieved when a practicing kit like restorative material at low cost to practice their restorative skills, typo jaws, micromotor is made available at an affordable price. The students can get benefited by making use of these available materials which helps them to develop some basic procedure skills and practice in need. This can improve the confidence level and practice among students which can make them work more efficiently on patients than performing procedures directly on patients without some basic skills.

Conclusion

COVID-19 has more disadvantages in the field of dentistry where exposure to clinics and practice had been greatly affected. Students were confident only in simple basic procedures such as communicating with patients, case history, diagnosis, and restoration. Efforts such as more practical videos, live demonstrations, typho model practice, and patient-centered skills should be made to improve their knowledge and clinical skills to perform complex treatments. All these can make them confident to handle patients in a better way since most of the students were not satisfied with their confidence level.

Ethical statement

Ethical approval not obtained.

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Conflicts of interest

There are no conflicts of interest.

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