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# Enablers and Barriers to Achieving Clinical Competency among Dental Students: Lessons for Teaching and Learning

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**ABSTRACT**

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Adaptations to the teaching and learning during the pandemic affected dental students' ability to achieve clinical competency. This study aimed to: (1) assess the self-reported competencies of dental students affected by the pandemic; (2) describe the enablers and barriers to achieving clinical competency among these students; and (3) to elucidate factors related to the resilience of the teaching and learning system during the pandemic for future adaptations and implementations. A questionnaire consisting of eight domains with 43 questions was sent to Universiti Kebangsaan Malaysia's (UKM) recent dental graduates from the 2021 cohort. Eight students from the cohort were also interviewed. The semi-structured, in-depth interviews were recorded and transcribed. A total of 56 questionnaires were returned, resulting in a 100% response rate. Seven out of the eight studied domains had a high self-perceived competency score, while only six of the 43 skills had a self-perceived competency score of less than 80%. Eight participants were interviewed for the second part of the study. Multiple enablers and barriers were identified and categorised into five themes, which were clinical time, student mental health, clinical teaching, cross-infection protocols, and communication and other faculty policies. Dental graduates affected by the COVID-19 pandemic had a good level of self-perceived clinical competency. The multiple factors identified as enablers and barriers to achieving clinical competency can be utilised as references in curriculum development, planning and policymaking, especially with regards to adaptations made to the undergraduate dental curricula worldwide.

**Keywords:** *Blended learning, Clinical competence, Loss of clinical time, Self-reported, Sustainable dental education*

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## INTRODUCTION

The World Health Organization (WHO) declared COVID-19 a global health emergency on 30 January 2020 (1). The COVID-19 pandemic initially caused the complete closure of dental education institutions. Later, the gradual opening of these institutions was carried out in stages and brought unprecedented changes to their curricula and policies. These included the teaching method being changed to a hybrid model, adaptations being made to clinical sessions to better comply with cross-infection policies, changes to competency assessments and clinical requirements and the use of novel intelligent technologies for teaching and learning (2, 3).

Dental education can broadly be categorised into three different categories (2), with the first being didactic or problem-based learning. This form of dental education is typically taught via lectures, seminars, and group presentations. This category was mostly conducted online through different web-based software and systems during the pandemic. The second category of dental education involved the simulation laboratory, where dental students practise and sharpen their fine motor skills and practical knowledge on models. During the pandemic, this was ideally done utilising virtual reality (VR). However, this facility is not yet widely available. An alternative method was relied upon, whereby students were scheduled to enter and utilise the simulation laboratory in batches and on rotation, with appropriate measures being taken to prevent cross-infection (4). The third category is the clinical skills training which is the most important part of the dental education. This category typically takes the bulk of the education in the dental schools. Clinical skills training must be done with the patients, dental instructor and students being in close contact and, thus, was the most affected of the three categories (2).

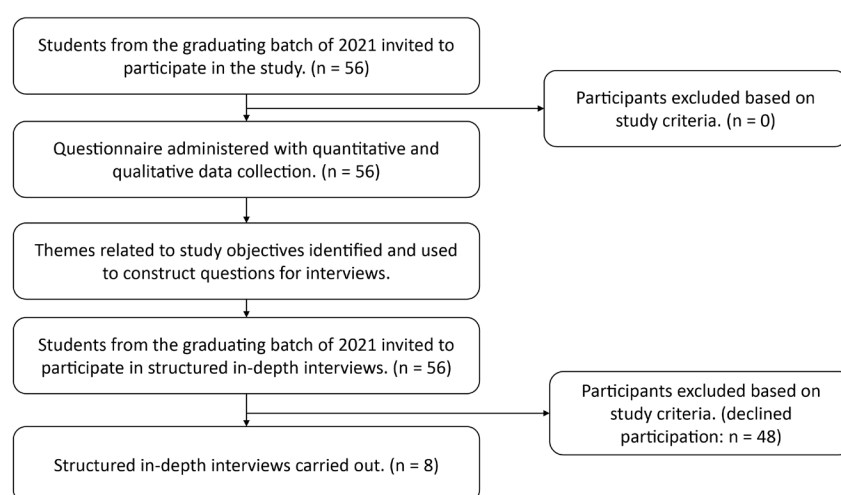
To date, different parts of the world have transitioned out of the pandemic based on their policies, healthcare capacity, and severity of disease experienced by the individual countries. This has led to the reversal of many of the changes and innovations that were brought about by the pandemic in dental schools. Most institutions worldwide are now reopening and returning to their pre-pandemic operations, where the implementation of flexible learning models and pathways adopted during the pandemic are now variable and institution-based (5–7).

While the adaptations to teaching and learning during the pandemic were unfortunate necessities due to the specific global situation, they also offered unique opportunities for dental students to experience different forms and methods of education that were not available to their predecessors. It is currently unknown if and how these changes have affected these students' ability to achieve clinical competency and which of these changes can continually be implemented post-pandemic. Hence, this study aimed to: (1) assess the self-reported competencies of dental students affected by the pandemic; (2) describe the enablers and barriers to achieving clinical competency among these students; and (3) elucidate factors related to the teaching and learning system's resilience during the pandemic for future adaptations and implementations.

## METHODOLOGY

### Study Design

This was an explanatory study that utilised a mixed methods sequential design. The purposive sampling method was relied upon, where all undergraduate students from the graduating class of 2021 were invited to participate in this study. A self-administered questionnaire was first utilised to assess the competency of the participants. Data from the questionnaire was then analysed and used to construct the interview questions. Participants from the same graduating batch were then invited to participate in structured in-depth interviews. Figure 1 shows the flow of the participants through each stage of this study. The consolidated criteria for reporting qualitative research (COREQ) were applied to this study's report (8).



**Figure 1:** Flow of the participants through each stage of the study.

### Participants

The graduating class of 2021 from the Faculty of Dentistry, Universiti Kebangsaan Malaysia (UKM) was selected as the cohort to be investigated in this study due to the COVID-19 pandemic's considerable impact on their education. This cohort was beginning their fourth year, out of five total years, of undergraduate study when the pandemic was announced. They had one year of clinical experience during the year 2019 through 2020 before the pandemic hit. They then experienced two years of study during the pandemic, both during the complete shutdown and later during the reopening of dental schools. All 56 students in this graduating class were invited to participate in the quantitative and qualitative sections of this study. When this study was conducted, the students had just graduated and had yet to start work. Invitations were sent to the participants via messages sent to their mobile phones. Informed consent was obtained from each participant prior to data collection.

## **Instrument**

This study's instrument comprised two parts. The first was a self-administered questionnaire and the second was in-depth interview.

## **Questionnaire**

The questionnaire utilised in this study was a modification of the instrument in Yusof et al. (9), which was validated and used in previous studies (10). It consists of eight domains with 43 questions aimed at assessing perceived competencies. Participants were required to self-evaluate and rate their competencies using a five-point Likert scale, where 1 = highly incompetent, 2 = incompetent, 3 = somewhat competent, 4 = competent, 5 = highly competent, and NK/NR = not known/not relevant. The responses were categorised as “incompetent” if the score was either 1, 2 or 3, whilst scores 4 and 5 were categorised as “competent”.

A separate section consisting of three questions aimed at evaluating satisfaction with clinical teaching and supervision, requirements and assessment and cross-infection control was also included. This section utilised a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). A score of 4 or 5 was grouped as “satisfactory”, and a score of 1, 2 or 3 was grouped as “unsatisfactory” to the aspects assessed. Finally, four open-ended questions were asked to obtain qualitative responses to different aspects of the curriculum and their effect on self-perceived competency.

## **Structured In-depth Interviews**

For the in-depth interviews, a female independent researcher (author JCSM, PhD) not involved in the participants' education was selected as the interviewer. The participants did not know the interviewer prior to the study's commencement. The interviews were carried out following an open-ended, piloted interview protocol, and the participants were informed of the study's objectives prior to the interview. The protocol was developed based on the Guide on Conducting In-depth Interviews (11). A semi-structured interview approach with open-ended questions was used. An interview guide was created (Appendix 1) based on the findings and analysis of the questionnaire's responses. It was then piloted on one final-year student and one researcher (author NMNA). Pilot interviews were utilised to improve the interview guide and were not included in the final analysis.

The participants were recruited via text messages sent to their mobile phones. Interviews were carried out using the Zoom application and recorded. The participants were alone in their homes during the interviews. The interviews were then fully transcribed verbatim, with participant anonymity being maintained. Factors considered during the sample size determination were the study's relatively narrow scope, the obvious nature of the topic and the similar experiences of participants who attended the same dental school. It was estimated that at least 15 participants would be needed to achieve saturation (12). Interviews were carried out until data saturation was achieved. Saturation is defined as the point where a full understanding of the researched issue is achieved and when no further dimensions, nuances or insights are found (13). No repeat interviews were carried out. Data collected from the interviews were returned to the participants for corrections and comments.

## Data Analysis

Statistical analysis of the quantitative data was performed using SPSS (ver. 28, IBM, Armonk, New York, US). Data were presented as frequencies (%) for all discrete variables. For the qualitative data, a six-step thematic analysis (14) was utilised, with NMNA open-coding the raw data and themes, while author BB reviewed the codes and themes. An inductive approach was used to derive the study's themes. A conventional content analysis was carried out, where coding categories were derived directly from the text data, based on Hsieh and Shannon's methodology (15). Enablers and barriers were coded together and were assigned to more than one themes if it suited multiple themes. Any disagreements or discrepancies surrounding the categorisation of factors was settled via consultation with author DA.

## RESULTS

### Response Rate and Demographic Distribution

All 56 invited participants agreed to participate in the first part of the study and returned the completed questionnaire, resulting in a 100% response rate. The participants were mostly female (n = 42; 75.0%). Ethnically, the respondents were mostly Malay (n = 25; 44.6%), followed by Chinese (n = 20; 35.7%) and then Indian (n = 11; 19.6%). All participants were local students.

### Ratings Across Domains

The distribution of responses categorised as “competent” (scores 4 and 5), “somewhat competent” (score 3), and “not competent” (scores 1 and 2) for all domains (A-H) and their specific skills are shown in Table 1. Domain F, “Management and Administrative”, had the lowest score, with 78.1% of respondents scoring themselves as “competent” in this domain. All other domains had over 80% of the respondents scoring themselves as “competent” in them.

### Ratings Across Specific Skills

Six skills had less than 80% of the respondents giving them a score of 4 or 5, which were Q9, Q15, Q28, Q29, Q30, and Q37. Q37 had the lowest score, with only 26.8% of respondents rating competence in this skill. This is followed by Q15 with only 58.9% of respondents having self-perceived competence in this skill. The skills with the highest levels of self-evaluated competence were Q11 and Q21, with all but one respondent scoring either a 4 or 5 in these two skills.

**Table 1:** Comparison of self-reported responses categorised into “competent” (scores 4 and 5), “somewhat competent” (score 3) and “not competent” (scores 1 and 2) for all domains (A–H) and their specific skills

Domain	Competent (scores 4 and 5)		Somewhat competent (score 3)		Not competent (scores 1 and 2)		Not known/not relevant	
	n	%	n	%	n	%	n	%
Domain A: Gathering information at chairside	108	96.43	4	3.57	0	0	0	0
Q1. Obtain and record the relevant medical, dental and social history.	54	96.43	2	3.57	0	0	0	0
Q2. Perform clinical examinations, intraoral radiographic and other necessary investigations.	54	96.43	2	3.57	0	0	0	0
Domain B: Diagnostic skills	152	90.48	16	9.52	0	0	0	0
Q3. Integrate findings of a comprehensive examination to make a diagnosis.	53	94.64	3	5.36	0	0	0	0
Q4. Apply clinical reasoning skills in decision making for oral healthcare delivery.	52	92.86	4	7.14	0	0	0	0
Q5. Apply an evidence-based approach in the practice of dentistry.	47	83.93	9	16.07	0	0	0	0
Domain C: Treatment planning	247	88.21	33	11.79	0	0	0	0
Q6. Formulate an appropriate treatment plan based on clinical examinations and investigations.	52	92.86	4	7.14	0	0	0	0
Q7. Practice patient care by taking into consideration their intellectual and socio-emotional characteristics.	52	92.86	4	7.14	0	0	0	0
Q8. Engage patients and/or their parents, guardians or caregivers in their oral health care.	49	87.50	7	12.50	0	0	0	0
Q9. Respond to patients' expectations, demands, needs and attitudes with regards to oral health care.	44	78.57	12	21.43	0	0	0	0
Q10. Follow the requirements for informed consent and confidentiality of the patient record.	50	89.29	6	10.71	0	0	0	0
Domain D: Treatment and prevention	741	88.21	97	11.55	1	0.12	0	0
Q11. Perform simple restorative procedures in primary and permanent dentition including pulp management of single-rooted teeth.	55	98.21	1	1.79	0	0	0	0

(Continued on next page)

**Table 1:** (Continued)

Domain	Competent (scores 4 and 5)		Somewhat competent (score 3)		Not competent (scores 1 and 2)		Not known/not relevant	
	n	%	n	%	n	%	n	%
Q12. Perform complex restorative procedures in primary and permanent dentition including onlays, single crowns, short-span bridges and root canal therapy of uncomplicated multirrooted teeth.	45	80.36	1	19.64	0	0	0	0
Q13. Perform simple removable prosthetic procedures for replacement of missing dentition.	48	85.71	8	14.29	0	0	0	0
Q14. Perform non-surgical management of periodontal conditions.	54	96.43	2	3.57	0	0	0	0
Q15. Carry out Basic Life Support (BLS) in the management of medical emergencies in dental practice.	33	58.93	22	39.29	0	0	1	1.80
Q16. Manipulate commonly used dental materials in dental practice.	52	92.86	3	5.36	1	1.80	0	0
Q17. Perform administration of local and topical anaesthesia and manage their potential complications.	54	96.43	2	3.57	0	0	0	0
Q18. Perform simple oral surgical procedures including exodontia.	46	82.14	10	17.86	0	0	0	0
Q19. Manage simple orthodontic treatment including removable appliances.	45	80.36	11	19.64	0	0	0	0
Q20. Display the good doctor-patient relationship in the delivery of oral health care.	54	96.43	2	3.57	0	0	0	0
Q21. Perform appropriate methods of infection control in clinical practice.	55	98.21	1	1.79	0	0	0	0
Q22. Carry out the prevention methods of common orofacial diseases and conditions based.	50	89.29	6	10.71	0	0	0	0
Q23. Recognise the limitations of their clinical skills to refer accordingly.	51	91.07	5	8.93	0	0	0	0
Q24. Perform an appropriate referral of a patient based on professional judgement.	47	83.93	9	16.07	0	0	0	0

(Continued on next page)

**Table 1:** (Continued)

Domain	Competent (scores 4 and 5)		Somewhat competent (score 3)		Not competent (scores 1 and 2)		Not known/not relevant	
	n	%	n	%	n	%	n	%
Q25. Prescribe and advise the use of common pharmaceutical agents related to dentistry.	52	92.86	4	7.14	0	0	0	0
Domain E: Community-based	191	85.27	29	12.95	0	0	1	0.12
Q26. Practice health promotion skills.	52	92.86	4	7.14	0	0	0	0
Q27. Implement preventive measures for individuals and the community according to the risk assessment.	54	96.43	1	1.79	0	0	1	1.80
Q28. Organise a community programme to improve the oral health of the public.	43	76.79	12	21.43	0	0	1	1.80
Q29. Collaborate with other health professionals and relevant agencies in health promotion and disease prevention in the community.	42	75.00	12	21.43	0	0	2	3.60
Domain F: Management and administrative	350	78.13	94	20.98	4	0.79	0	0
Q30. Lead the team members in any situation.	38	67.86	17	30.36	1	1.80	0	0
Q31. Explain concepts in planning and management of general dental practice in compliance with relevant regulations, policies and protocols.	47	83.93	9	16.07	0	0.00	0	0
Q32. Demonstrate ethical values and professional behaviour towards patients, members of the dental team and other healthcare personnel.	53	94.64	3	5.36	0	0	0	0
Q33. Practice ethical values and professionalism within the confines of the laws in the provision of dental service.	52	92.86	4	7.14	0	0	0	0
Q34. Comprehend the Code of Professional Conduct from the Malaysian Dental Council.	50	89.29	5	8.93	1	1.80	0	0
Q35. Comprehend the laws and regulations related to the practice of dentistry in Malaysia.	51	91.07	4	7.14	1	1.80	0	0
Q37. Comprehend the professional duties of care in dentistry in line with the Patients' Charter.	15	26.79	41	73.21	1	1.80	0	0

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**Table 1:** (Continued)

Domain	Competent (scores 4 and 5)		Somewhat competent (score 3)		Not competent (scores 1 and 2)		Not known/not relevant	
	n	%	n	%	n	%	n	%
Domain G: Communication	150	89.29	18	10.71	0	0	0	0
Q38. Communicate effectively and demonstrate leadership skills to function in a multicultural society and work environment.	48	85.71	8	14.29	0	0	0	0
Q39. Communicate with the dental team, patients, and other healthcare personnel to facilitate the delivery of oral health care.	52	92.86	4	7.14	0	0	0	0
Q40. Explain the principles of managing an oral healthcare programme.	50	89.29	6	10.71	0	0	0	0
Domain H: Personal management and professional development	142	84.52	26	15.48	0	0	0	0
Q41. Use current information technology resources in contemporary dental practice.	48	85.71	8	14.29	0	0	0	0
Q42. Recognise the resources for lifelong learning.	47	83.93	9	16.07	0	0	0	0
Q43. Acquire knowledge and scientific evidence.	47	83.93	9	16.07	0	0	0	0

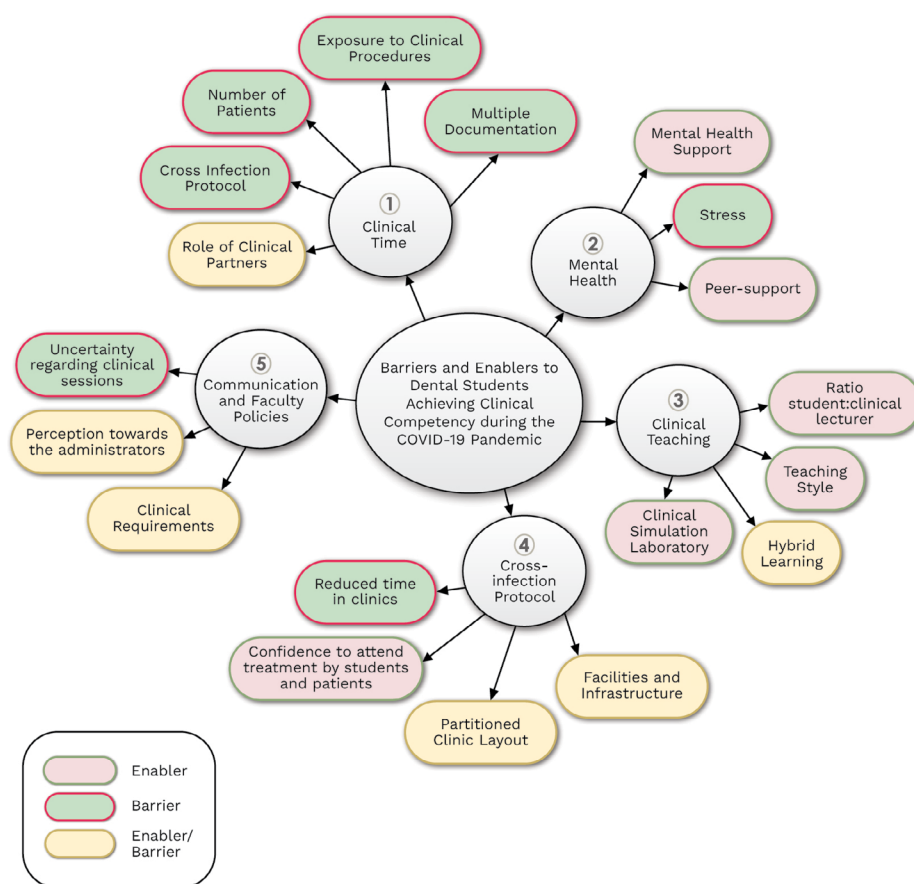
### Ratings for Clinical Teaching and Supervision, Requirements and Assessment and Cross-infection Control

The three specific questions on satisfaction with clinical teaching and supervision, requirements and assessment and cross-infection control had 98.2%, 75.0%, and 92.9% of the proportion of participants giving them a score of either 4 or 5, respectively.

### In-depth Interviews

Interviews were carried out with volunteers until data saturation was achieved. Eight respondents were interviewed. All participants were within the same age range of 20–24 years old. There were more male (n = 5) than female (n = 3) participants. All participants (n = 8) successfully graduated in 2021 during their first attempt at the examination, without any fails or repeats.

The coding of the dataset into themes and sub-themes is shown in Appendix 2. There were five themes identified. The themes that emerged from the interviews were categorised and are shown in Figure 2. No enablers were assigned to Themes 1 and 5, and no barriers were assigned to Theme 3.



**Figure 2:** Themes and sub-themes for the enablers and barriers to achieving clinical competency.

### Theme 1: Clinical Time

All participants described the reduced clinical time as a barrier to their clinical training. This includes the reduced sessions during the pandemic, as well as other limitations, such as the shorter duration of clinical time owing to the need to disinfect the utilised space after each session, as per cross-infection protocols. Certain specialties also had severely reduced sessions, such as hospital attachments in operating theatres.

The fourth year and fifth year (of dental school) are challenging (because) sometimes, in the beginning of our fifth year (of) study, we needed to close our faculty and study at home about one month. We did not have any clinical sessions and had to wait because the faculty needed to close. (Participant 01)

The clinical session become shorter; we needed to disinfect everything, so everything needs time, and the session all gets reduced so that's the main problem actually. That's the problem that (was) faced by everyone, but the more challenging part is that some patients that we have already started (treating) during my fourth year before the pandemic, then, suddenly, the pandemic hits then the patient doesn't want to come anymore. (Participant 05)

Due to the pandemic, participants were organised into groups of three and had to work together with their partners during clinical sessions. This was an enabler for certain groups, where they learnt to synergise and optimised their sessions, but for others, it served as a barrier when they were not able to work well together.

We need one operator, one assistant and one runner, so we are three people in the group. So the clinical session is already less (because) we need to rotate between three people... the clinical session for three people is worse because not everybody is able to voice their opinions, so sometimes, we see some people got bullied by their clinical partners, especially when paired with more dominant clinical partner. (Participant 05)

In my final year, because we all need to rush, so my partner and I had this agreement whereby, whenever we are the assistant, we need to know better about that particular procedure than the operator himself. So, if I'm the assistant and my partner need to do a root canal treatment on a patient, I need to know better than him because I'm the assistant. So, I needed to study, too, and not just go in with a blank mind. (Participant 02)

Students need to ensure that the clinical sessions' paperwork and documentation, including patient folders and logbooks, are signed by the supervising clinician. This also affected the amount of time students had in clinics.

## Theme 2: Mental Health

The circumstances arising from the pandemic adversely affected the students' psychological and mental health. The participants described the role of faculty members and their peers in helping them address these mental health issues. This was mostly viewed as an enabler of competency, as students were given the appropriate support to deal with their issues.

A lot of things to think about after clinical session, and we also had simulation clinic so everything will become very packed, and, at that time, COVID-19 hit. Everything becomes haywire and then, afterwards, we actually miss out part of our fourth year so during the final year we have to rush everything. That's the most stressful time that especially until they're worried that was very near to our exam, so I can see a lot of people very stressed out and including me. (Participant 05)

I rented a condominium with a few of my friends. Six of us stayed together, and it really helped me a lot. If I didn't have these housemates, right, a lot of time, I wouldn't be able to know how am I going to handle the stress...I think going back to the condominium and then we just sit down have a chat, other than that moral support I think it also helped. (Participant 02)

## Theme 3: Clinical Teaching

The supervising clinician-to-student ratio decreased during the pandemic and was repeatedly cited as an enabler. This is because it permitted the clinician to more frequently demonstrate techniques to and teach students one-on-one. It also allowed for a more thorough discussion with the students chairside.

...and also, the lecturer is able to spend more time for each student. From my experience, they are actually more patient and also they get to discuss things with us (in a) more detailed (manner), and also we get to discuss more about the treatment planning. (Participant 02)

Different teaching styles were both an enabler and a barrier during the pandemic. Some participants reported that case discussions done in the lecturer's room rather than in clinics were an enabler for them while others mentioned that issues with the lecturer's teaching style posed barriers for them.

There are few lecturers that I (was) really looking up to. What I used to do is (that) I would go up to them and straight away discuss the case in their room instead of just in the clinic. I would discuss beforehand. I would text (the) Dr, and (the) Dr would help for each time I approached them. So, from there, I could actually plan according to my schedule. In one session, what I should do first, what I should do next, and I am aware of some unexpected events that would happen so the lecturer can actually tell me first, so I know what to do and what to prepare. (Participant 07)

We can only start to work after, like, the treatment plan has already been discussed and agreed, but my partner wasted a session because of her (clinical supervisor's) impatience and also condescending nature. (Participant 06)

The pandemic led the faculty to shift didactic lectures and seminars to various online platforms. This was reported by the participants to be both an enabler and a barrier to their education. Some found the online classes useful as they were able to rewind and listen to lectures in their own time. The convenience of attending classes from home was also mentioned. However, others felt that they were unable to concentrate and self-regulate during these online classes.

I feel online learning to learn the theory is okay. (It is) a good platform to learn the theory stuff; for example, like, medicine or pathology, online is very good...It's because the lectures are recorded, and then you can slow down, you can rewind, and then sometimes, lecturer don't provide lecture notes in live class, but then online (classes), they're forced to give the lecture notes so that is a plus point for online classes. And then I really prefer online lectures because I can take notes easier because I won't bring my laptop to class so this I can just, like, screenshot and then write down. (Participant 03)

I think online class it's very dependent on the students own self-discipline. You know, for me, I don't have that much of self-discipline so online class, I mean, during my final year, the whole year, all my online classes were not okay. I don't think I was able to absorb half of the things taught by the lecturer because sometimes, when you are having a class and you have clinic thirty minutes later, you need to go there and prepare your instruments and all that so you just be joining that class, but then you are walking around walking on the street; you are doing something else. (Participant 02)

Reduced clinical time led some participants to look for clinical videos online to increase their knowledge and skills. This was an enabler for most participants to achieve clinical competency. They also stated that this sharpened their ability to discern the reliability of different sources of online information.

#### **Theme 4: Cross-infection Protocols**

The strict cross-infection protocols based on the standard operating procedures by the authorities were mostly described as enablers because it allowed the students and patients to be confident to attend the clinics during the pandemic. Time spent adhering to the protocols, however, reduced clinical time.

I think our university has done quite a good job, which has been COVID-free for a certain period, including our practice time which up to one year then it started up with some staffs getting COVID. But what I have been told that the standard operating procedure is quite safe. There is no infection where patient get from the clinician. (Participant 07)

Partitions were put up in the open-layout clinics to prevent cross-infection between the different cubicles. The partitions were mostly seen as enablers as they gave both students and patients the privacy they needed, as well as prevented what was happening in the other cubicles from affecting them. However, it also reduced learning opportunities, as students were no longer able to observe their colleagues carrying out treatment or discuss cases in clinics while waiting for patients or clinicians.

I think there's good and there's bad. The good, the good is that, of course, you reduce the infection risk, and the second is that I think patient quite like it when you have all the compartment because...I don't know. If I'm a patient, I don't like people looking at me undergoing dental treatments. (Participant 06)

I actually prefer to see what others are doing because sometimes, when you're waiting for your patient then you got nothing to do, you can see how others are doing; but now, it's like you need to wait in your own cubicle. But you still can prepare the instrument and prepare what to do later. (Participant 04)

### **Theme 5: Communication and Faculty Policies**

The changing faculty policies depended on the current pandemic situation and were based on decisions made by the authorities. This was viewed as a barrier by some participants due to the uncertainty and perceived lack of information given. However, others also described certain members of the faculty who were helpful when faced with the changing policies.

Sometimes, I feel that the faculty is giving even more burden to us and, like, making the situation worse. I think they even add to our pressure, and they just being never update us on anything, then suddenly, one day before the event itself, they say be doing certain things so it's always inconsistent and indecisive. It actually makes the situation worse, but, yeah, it's the faculty I'm saying. Certain lectures are really very good. (Participant 02)

One day, we had a meeting with the faculty, they announced that they will do whatever they can to help us push the requirements and, yeah, that's really helpful. Certain lectures are really helpful, like even in the management of the faculty. Also a few lectures are very helpful. They keep asking us if there is anything that stops you from completing your requirements and how can they help us. (Participant 02)

The monitoring of the faculty requirements allowed them to be aware of their own and other colleagues' progress and help in the clinics. The participants were satisfied that the requirements pushed them to achieve better clinical skills.

That I feel compared to other universities, sometimes, because of COVID, they did not get forced to do enough crowns something like that, so they graduated with the minimum. So, in that aspect, I am grateful that our faculty (for) allowing me to complete requirements on real patients, and then even though we were stressful at that time, you are forced to finish your requirements, but, then again, if you look back at it, actually it's for our (own) good. (Participant 03)

## DISCUSSION

The self-reported competency among the investigated dental graduates who were affected by the pandemic was high, with seven out of eight domains reporting over 80% “competent” responses. Thirty-seven out of 43 assessed skills also had high self-perceived competency, with more than 80% of the participants giving a score of 4 or 5 for these skills. Other studies done in Serbia (16), Jordan (17), Italy (18), and Malaysia (19) reported lower levels of confidence in performing dental procedures and preparedness to practice among dental students affected by the pandemic. These differences can be attributed to the different responses and mitigation protocols set by the institutions during the pandemic. Factors, such as the duration of the closure of the clinics, the types of treatment allowed to be carried out and cross-infection protocols, may all potentially influence the competency of dental graduates (20).

Comparisons made between the cohort investigated in this study with earlier cohorts from the same institution showed that the graduating batch of 2021 had similar levels of competence as the 2019 cohort and a higher level of competence than the 2020 cohort (21). The different cohorts experienced the pandemic at different points in their training. The 2021 cohort had resumed their clinical training in their final year of study, whereas the 2020 cohort was affected by COVID-19 in their fourth and final years. The faculty was also better prepared in 2021, as the 2021 cohort was the second batch of final-year students trained under pandemic conditions. This may explain why the 2021 cohort had self-reported competency levels that were similar to the 2019, pre-pandemic cohort.

Of the 37 investigated skills, Q37, “Comprehend the professional duties of care in dentistry in line with the Patients’ Charter”, and Q15, “Carry out Basic Life Support (BLS) in the management of medical emergencies in dental practice”, received low ratings, with only 26.8% and 58.9% of respondents having self-perceived competence in these skills, respectively. This can be due to the limited exposure of the students to these two skills. Although the rating for Q15 was low, it was relatively high compared to those of cohorts 2019 (37.0%) and 2020 (22.2%), as previously reported by Nik-Azis et al. (21).

To our knowledge, this is the first study to identify the enablers and barriers to achieving clinical competency among dental students during the pandemic. In the field of medical education, Reinhart et al. (22) describes five major themes contributing to the successful usage of clinical competency-based e-learning under lockdown, which are communication (with teachers, students, and patients), mental well-being, structure and self-organisation, technical issues and learning and commitment. The themes are similar to those described in the present study. Generally, the respondents were able to effectively make use of learning opportunities by utilising the various resources available to them, including online tools, simulation laboratories, case studies and the traditional resources provided by the faculty. This is in concordance with a review by Melo et al. (23) on the dental education profile during the pandemic, where blended teaching methodologies showed promising outcomes.

The reduced teacher-to-student ratio during clinic sessions was described as an enabler that facilitated discussion and learning. At the investigated faculty, the ratio was 1:2 or 1:3 during the pandemic. Other studies reported that a minimum teacher to student ratio of 1:4 or less for clinical sessions can improve the effectiveness of teaching (24). Other reported ratios in past literature include 2:1 to 8:1 in Saudi dental schools (25). While a reduced ratio can enhance the learning experience, the increased workload on the faculty and supporting staff, as well as the resources needed to support this, must be taken into consideration (7).

The national dental clinical requirements were revised during the pandemic, and the dental schools then revised their own requirements accordingly, based on their individual circumstances. The strict requirements were mostly viewed as enablers by students as these provided them with a guide for the minimum competency levels required during a pandemic. Seventy-five percent of the participants also graded the requirements set by the faculty as “satisfactory”, with a score of 4 or 5 on the Likert scale in the questionnaire. Students were motivated to work hard to qualify for their final examinations. The simulation laboratory was utilised to practise their practical skills, in lieu of clinical practice, if the circumstances did not allow for patients to be seen in the clinics. Despite the stress brought about by these requirements, the students still viewed them positively.

The open-plan layout plan of dental clinics, which was modified to include partitions, was described as both an enabler and a barrier by participants. The perceived lack of privacy during treatment, as well as when receiving feedback from the clinical supervisor, was highlighted. While the disadvantages in terms of aerosol contamination are evident (26), the advantages and disadvantages of open-plan clinics in teaching and learning have not been widely discussed. Future considerations of the appropriate method to deliver dental education should consider the benefits of having separated cubicles for a better learning experience and privacy.

The barriers described in this study include reduced time in clinics, mental health concerns, lack of ability to concentrate with the hybrid learning model, communication issues and limitations caused by the facilities and infrastructure. These were similar to those previously reported by other studies on clinical academic performances (27–29). While these barriers are not entirely a direct result of the pandemic itself, the crisis magnified them and brought them to the forefront of public consideration. For example, open communication, readily available and accurate information and quick dissemination of important information would be important under all circumstances. However, in a crisis, these are indispensable to allay student fears and enable them to better focus on their studies (20).

The hybrid learning model in clinical teaching, which utilises both face-to-face and online learning, surged in usage during the pandemic. Some dental schools even fully shifted to a digital method of teaching during this time (30). While online learning is convenient and allows for self-directed, lifelong learning, this study expounded on some of the barriers posed by the online learning model. This includes the lack of internal motivation and the inability to concentrate and self-regulate. These findings are comparable to reports by medical students who utilised online learning during the pandemic (31–33). The promotion of online learning post-pandemic should, hence, consider these barriers, and adopting a hybrid model would be advisable to balance the advantages and disadvantages of online learning.

The reopening of dental schools in Iran, Brazil, and Malaysia after the pandemic has been discussed, with focus given to clinical teaching and learning, infrastructure and facilities, and clinical services (5–7). The lessons from the innovations during the pandemic that is related to the resilience of the teaching and learning system for the future of clinical teaching in dentistry has yet to be extensively discussed. This study elucidated some of these factors, such as the hybrid teaching model, utilisation of technology and other online resources, reduced ratio of clinical teacher to students and open-plan clinics.

## CONCLUSION

Dental graduates affected by the COVID-19 pandemic from the graduating batch of 2021 had a good level of self-perceived clinical competency. Factors, such as the clinical time, mental health of students, clinical teaching, cross-infection protocols, and communication and other faculty policies, were identified as important enablers and barriers to the achievement of clinical competency in undergraduate dental education. Lessons from the adaptation of the delivery of dental education during the pandemic should be utilised post-pandemic to achieve a better dental education system worldwide.

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## ETHICAL APPROVAL

Ethical approval for the study was obtained from the Research Ethics Committee of UKM (UKM PPI/111/8/JEP-2020-715).

## REFERENCES

1. World Health Organisation. Statement on the second meeting of the International Health Regulations Emergency Committee regarding the outbreak of novel coronavirus (2019-nCoV); 2020 [cited 2023 Mar 6]. Available from: [https://www.who.int/news/item/30-01-2020-statement-on-the-second-meeting-of-the-international-health-regulations-\(2019-nCoV\)-emergency-committee-regarding-the-outbreak-of-novel-coronavirus-\(2019-nCoV\)](https://www.who.int/news/item/30-01-2020-statement-on-the-second-meeting-of-the-international-health-regulations-(2019-nCoV)-emergency-committee-regarding-the-outbreak-of-novel-coronavirus-(2019-nCoV))
2. Chang TY, Hong G, Paganelli C, Phantumvanit P, Chang WJ, Shieh YS, et al. Innovation of dental education during COVID-19 pandemic. *J Dent Sci.* 2021;16(1):15–20. <https://doi.org/10.1016/j.jds.2020.07.011>
3. Farrokhi F, Mohebbi SZ, Farrokhi F, Khami MR. Impact of COVID-19 on dental education-a scoping review. *BMC Med Educ.* 2021;21(1):587. <https://doi.org/10.1186/s12909-021-03017-8>
4. Alrashdi M, Hameed A, Aljabr A. COVID-19 and a call to adapt dental education. *Front Dent Med.* 2021;2:664460. <https://doi.org/10.3389/fdmed.2021.664460>
5. Hasanzade M, Aminishakib P, Hejri SM, Kharazifard MJ, Siadat H. Reopening of a school of dentistry in the era of COVID-19 pandemic, “step-by-step” approach. *Eur J Dent Educ.* 2023;27(1):167–73. <https://doi.org/10.1111/eje.12789>
6. Padoveze MC, Szylyt R, Vattimo MDFF, Pereira EG, Nichiata LYI. Step-by-step approach to reopening a Brazilian higher education institution during the COVID-19 pandemic. *Rev Bras Enferm.* 2022;75(6):e20210807. <https://doi.org/10.1590/0034-7167-2021-0807>
7. Hussin MZ, Farook MS, Nor NAM, Hariri F, Kadir K, Zakaria NN, et al. Resuming clinical teaching in the era of COVID-19: experiences and protocols from a dental school in Malaysia. *Sains Malays.* 2021;50(7):2123–34. <https://doi.org/10.17576/jsm-2021-5007-25>



8. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *Int J Qual Health Care*. 2007;19(6):349–57. <https://doi.org/10.1093/intqhc/mzm042>
9. Yusof ZYM, Jaafar N, Jallaludin RLR, Abu-Hassan MI, Razak IA. Malaysian dental graduates' competence in holistic care: what do graduates and employers think? *J Dent Educ*. 2010;74(12):1380–7. <https://doi.org/10.1002/j.0022-0337.2010.74.12.tb05013.x>
10. Nik-Azis NM, Baharin B, Abdullah D, Chan LP, Lok YY. Graduates' and employers' perceptions on competencies obtained from an undergraduate dental curriculum. *Malays J Health Sci*. 2021;19(1):81–7. <https://doi.org/10.17576/jskm-2021-1901-09>
11. Boyce C, Neale P. conducting in-depth interviews: a guide for designing and conducting in-depth interviews for evaluation input; Pathfinder International Tool Series; 2006 [cited 2023 Mar 15]. Available from: [http://www.pathfind.org/site/DocServer/m\\_e\\_tool\\_series\\_indepth\\_interviews.pdf?docID=6301](http://www.pathfind.org/site/DocServer/m_e_tool_series_indepth_interviews.pdf?docID=6301)
12. Morse JM. Determining sample size. *Qual Health Res*. 2000;10(1):3–5. <https://doi.org/10.1177/104973200129118183>
13. Hennink MM, Kaiser BN, Marconi VC. code saturation versus meaning saturation: how many interviews are enough? *Qual Health Res*. 2017;27(4):591–608. <https://doi.org/10.1177/1049732316665344>
14. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol*. 2006;3(2):77–101. <https://doi.org/10.1191/1478088706qp0630a>
15. Hsieh HF, Shannon SE. Three approaches to qualitative content analysis. *Qual Health Res*. 2005;15(9):1277–88. <https://doi.org/10.1177/1049732305276687>
16. Ilić J, Radović K, Savić-Stanković T, Popovac A, Miletić V, Milić Lemić A. The effect of COVID-19 pandemic on final year dental students' self-confidence level in performing clinical procedures. *PLoS ONE*. 2021;16(10):e0257359. <https://doi.org/10.1371/journal.pone.0257359>
17. Hattar S, AlHadidi A, Sawair FA, Alraheem IA, El-Ma'aita A, Wahab FK. Impact of COVID-19 pandemic on dental education: online experience and practice expectations among dental students at the University of Jordan. *BMC Med Educ*. 2021;21(1):151. <https://doi.org/10.1186/s12909-021-02584-0>
18. Francesca Z, Luca R, Andrea P, Davide P, Nicoletta Z. Clinical activities suspended: how the COVID-19 affected the self-confidence of Italian dental students. *Eur J Dent Educ*. 2023;27(4):1023–30. <https://doi.org/10.1111/eje.12894>
19. Pandarathodiyil AK, Mani SA, Ghani WMN, Ramanathan A, Talib R, Zamzuri AT. Preparedness of recent dental graduates and final-year undergraduate dental students for practice amidst the COVID-19 pandemic. *Eur J Dent Educ*. 2023;27(1):78–86. <https://doi.org/10.1111/eje.12779>
20. Iyer P, Aziz K, Ojcius DM. Impact of COVID-19 on dental education in the United States. *J Dent Educ*. 2020;84(6):718–22. <https://doi.org/10.1002/jdd.12163>
21. Nik-Azis NM, Baharin B, Abdullah D. Impact of the COVID-19 pandemic on the self-reported competencies of dental graduates in a Malaysian setting. *Eur J Dent Educ*. 2022;26(4):750–5. <https://doi.org/10.1111/eje.12757>
22. Reinhart A, Malzkorn B, Döing C, Beyer I, Jünger J, Bosse HM. Undergraduate medical education amid COVID-19: a qualitative analysis of enablers and barriers to acquiring competencies in distant learning using focus groups. *Med Educ Online*. 2021;26(1):1940765. <https://doi.org/10.1080/10872981.2021.1940765>

23. Melo LDC, Silveira BB, dos Santos JA, de Cena JA, Damé-Teixeira N, Martins MD, et al. Dental education profile in COVID-19 pandemic: a scoping review. *Eur J Dent Educ.* 2023;27(2):252–61. <https://doi.org/10.1111/eje.12798>
24. Shoaib LA, Safii SH, Naimie Z, Ahmad NA, Sukumaran P, Yunus RM. Dental students' perceptions on the contribution and impact role of a clinical teacher. *Eur J Dent Educ.* 2018;22(1):e26–34. <https://doi.org/10.1111/eje.12252>
25. Narayanaraopeta U, AlShwaimi E. Preclinical endodontic teaching. a survey of Saudi dental schools. *Saudi Med J.* 2015;36(1):94–100. <https://doi.org/10.15537/smj.2015.1.9336>
26. Malaysian Dental Deans Council. Minimum clinical experience/competency (COVID 4); 2021 [cited 2023 Mar 6]. Available from: <https://mdc.moh.gov.my/uploads/mceCovid19v3.pdf>
27. Ali K, Raja M. COVID-19: dental aerosol contamination in open plan dental clinics and future implications. *Evid Based Dent.* 2021;22(2):54–5. <https://doi.org/10.1038/s41432-021-0168-0>
28. Siraj HH, Salam A, Roslan R, Hasan NA, Jin TH, Othman MN. Stress and its association with the academic performance of undergraduate fourth year medical students at Universiti Kebangsaan Malaysia. *IUM Med J Malays.* 2014;13(1). <https://doi.org/10.31436/imjm.v13i1.488>
29. Kamarudin MA, Md Shah SAM, Ismail NAS, Yen TP, Shamsul AS, Che Razali HI, et al. Perceptions of mentors and mentees towards the mentoring system at the Universiti Kebangsaan Malaysia Medical Centre. *Educ Med J.* 2021;13(2):55–70. <https://doi.org/10.21315/eimj2021.13.2.5>
30. Demirekin ZB, Buyukcavus MH. Effect of distance learning on the quality of life, anxiety and stress levels of dental students during the COVID-19 pandemic. *BMC Med Educ.* 2022;22(1):309. <https://doi.org/10.1186/s12909-022-03382-y>
31. Schlenz MA, Schmidt A, Wöstmann B, Krämer N, Schulz-Weidner N. Students' and lecturers' perspective on the implementation of online learning in dental education due to SARS-CoV-2 (COVID-19): a cross-sectional study. *BMC Med Educ.* 2020;20:354. <https://doi.org/10.1186/s12909-020-02266-3>
32. Lee JX, Ahmad Azman AH, Ng JY, Ismail NAS. Open distance learning in medical education: does it improve students' motivation? *SAGE Open.* 2023;13(1). <https://doi.org/10.1177/21582440231157687>
33. Roslan NS, Halim AS. Enablers and barriers to online learning among medical students during COVID-19 pandemic: an explanatory mixed-method study. *Sustainability.* 2021;13(11):6086. <https://doi.org/10.3390/su13116086>

## APPENDICES

### Appendix 1

#### *Interview Guide for Participants*

##### Introduction to Participants

The changes to the curriculum, requirements, clinical sessions and the general clinical teaching and learning during the COVID-19 pandemic can have a significant impact on the clinical competency of the dental students. It is currently unknown how these changes pose a barrier to achieving clinical competency and what can be done to improve the circumstances to the benefit of the students.

##### Explanation of General Objective

The objective of this study is to investigate the enablers and barriers to achieving clinical competency among dental students during the COVID-19 pandemic.

##### Additional information to Participants

There are no right or wrong answers to these questions. The interviews will be recorded and later transcribed for analysis. Your name and identity will also be kept confidential, and not mentioned in the reports.

##### Questions and Prompts for Interviews

Type of question	Purpose	Question
Grand tour	<ul style="list-style-type: none"> <li>• Initiate the interview</li> <li>• Help participant to start talking about their experience</li> </ul>	<i>How was your clinical training in UKM?</i>
Core Question 1	<ul style="list-style-type: none"> <li>• Answer the research question 1</li> <li>• Help participants talk openly about the topic in an exploratory way</li> <li>• Typically asked of all participants</li> </ul>	<i>What factors helped you achieve clinical competency?</i>

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Type of question	Purpose	Question
Unplanned follow-up	<ul style="list-style-type: none"> <li>• Asked depending on participant responses</li> <li>• Help participants talk openly about the topic in an exploratory way</li> <li>• Obtain greater detail about responses</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Could you please tell me more about...</i></li> <li>• <i>I'm not quite sure I understood...Could you tell me about that some more?</i></li> <li>• <i>I'm not certain what you mean by...Could you give me some examples?</i></li> <li>• <i>Could you tell me more about your thinking on that?</i></li> <li>• <i>You mentioned....Could you tell me more about that? · What stands out in your mind about that?</i></li> <li>• <i>This is what I thought I heard...Did I understand you correctly?</i></li> <li>• <i>So what I hear you saying is...</i></li> <li>• <i>Can you give me an example of...</i></li> <li>• <i>What makes you feel that way?</i></li> <li>• <i>What are some of your reasons for liking it?</i></li> <li>• <i>You just told me about....I'd also like to know about....</i></li> <li>• <i>Anything else you would like to add to what you have just explained?</i></li> </ul>
Core Question 2	<ul style="list-style-type: none"> <li>• Answer the research question 2</li> <li>• Help participants talk openly about the topic in an exploratory way</li> <li>• Typically asked of all participants</li> </ul>	<p><i>What do you feel can be improved in your clinical training?</i></p>
Unplanned follow-up	<ul style="list-style-type: none"> <li>• Asked depending on participant responses</li> <li>• Help participants talk openly about the topic in an exploratory way</li> <li>• Obtain greater detail about responses</li> </ul>	<p><i>See above</i></p>

## Appendix 2

### Thematic Analysis Coding Tree

	<b>Coding based on dataset</b>	<b>Emerging themes</b>	<b>Theme</b>
1.1.1	Commitment and support from the clinical partners during clinical sessions	Role of clinical partners	
1.2.1	Reduced clinical sessions to adhere to cross-infection policies	Cross-infection protocols	
1.2.2	Shorted clinical session because of stricter cross-infection policies	Cross-infection protocols	
1.3.1	Reduction in the number of patients that are willing to come for treatment due to the pandemic situation	Number of patients	Clinical time
1.4.1	Lack of hospital attachment and exposure to treatment in operation theatre	Exposure to clinical procedures	
1.5.1	The need to have the clinical folders to be physically countersigned by the supervising clinician	Multiple documentation	
1.5.2	Multiple logbooks across different specialties	Multiple documentation	
2.1.1	Stress and pressure leading to better performance by the students	Stress	
2.1.2	Comparison with the performance and skills of peers from the same batch causing stress	Stress	Psychological and mental health
2.2.1	Support by faculty, lecturers, and appointed mentors	Mental health support	
3.1.1	More time with the clinical lecturer due to the reduced ratio	Ratio of student: lecturer during clinical sessions	
3.1.2	Lecturer taking time to explain the procedures and answer questions	Ratio of student: lecturer during clinical sessions	
3.2.1	Using real clinical cases to learn rather than a general lecture	Teaching style	
3.2.2	Guidance and discussion outside of clinics	Teaching style	Teaching and learning
3.2.3	Briefing before the clinical sessions begin and de-briefing after the sessions	Teaching style	
3.3.1	Self-directed learning with the resources provided	Hybrid learning	
3.3.2	Convenience of not needing to go to the faculty to attend lectures	Hybrid learning	
3.3.3	Lack of ability to concentrate during online lectures, students multi-tasking during lectures	Hybrid learning	
3.3.4	Utilising various online platforms to watch videos of certain procedures before the clinics	Hybrid learning	

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	<b>Coding based on dataset</b>	<b>Emerging themes</b>	<b>Theme</b>
3.3.5	Importance of self-discipline during online teaching and learning	Hybrid learning	Teaching and learning
3.3.6	Ability to differentiate between the different online resources utilised during online learning	Hybrid learning	
3.4.1	Enhanced training in preclinical simulation allowed students to have accelerated learning and achieve a certain standard before entering clinics	Clinical simulation laboratory	
4.1.1	The standard operating procedure installed confidence in the students to continue clinics during the pandemic	Confidence to attend treatment by students and patients	Cross-infection protocols
4.1.2	Patients were more willing to come for dental treatment during the pandemic	Confidence to attend treatment by students and patients	
4.2.1	Time needed to don and doff the personal protective equipment	Reduced time in clinics	
4.2.2	Cross infection protocols regarding aerosol generating procedures limited the number of procedures that can be carried out	Reduced time in clinics	
4.3.1	Privacy for students during feedback or instructions with clinicians	Partitioned clinic layout	
4.3.2	Provision of treatment more private and not felt that its being watched	Partitioned clinic layout	
4.3.3	Reduced learning opportunities because unable to observe treatment by others or discuss with other students in the clinic	Partitioned clinic layout	
4.4.1	Clinics, laboratory and other facilities that cannot accommodate all the students at certain times due to cross-infection policies like social distancing	Facilities and infrastructure	
4.4.2	Instruments and materials usage during pandemic that is outside of normal utility causing shortages	Facilities and infrastructure	
5.1.1	Students not aware of the updates regarding the clinical sessions and classes preventing better planning of sessions	Uncertainty regarding clinical sessions	
5.2.1	Perceived lack of transparency by the faculty	Perception towards the administrators	
5.2.2	Confidence in the efforts by the faculty to optimise teaching and learning for the students	Perception towards the administrators	
5.3.1	High requirements driving the students to perform better	Clinical requirements	
5.3.2	Confidence in clinical ability and skills due to high expectations and requirements by faculty	Clinical requirements	

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Coding based on dataset	Emerging themes	Theme
5.3.3 Uncertainty experienced by students due to unclear instructions on whether requirements during pandemic conditions	Clinical requirements	
5.3.4 Needed to change focus in clinical work due to changing of requirements due to the pandemic	Clinical requirements	Communication and faculty policies
5.3.5 Monitoring of competency was done on an informal online document that allowed students to monitor their progress	Clinical requirements	