

Self-confidence and academic performance in hybrid clinical dentistry

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Abstract

Transitioning to remote learning and lack of direct engagement with patients in the advent of COVID-19 pandemic in 2020 radically affected the teaching style and clinical training in dental schools, potentially affecting students' clinical abilities and their confidence in providing dental procedures on real-life situations. This study aimed to assess the self-confidence and academic performance of the dental students. More specifically, it aimed to present the profile of the respondents according to sex, year level and academic performance on their professional subjects during the second semester, SY 2021-2022 based on their general weighted average; determine self-confidence level in performing dental procedures in restorative dentistry, endodontics, prosthodontics, periodontics and oral surgery; test the significant relationship between self-confidence level and academic performance; and propose an action plan based on the findings of the study. Descriptive method of research was used to evaluate the self-confidence of the Dentistry students using a survey instrument. The results revealed that majority of the Dentistry students were female, fourth year students, with good general weighted average (1.75-2.00). The students have moderate self-confidence level in performing dental procedures in restorative dentistry, endodontics, prosthodontics, periodontics and oral surgery. Males have higher confidence than females in performing periodontic procedures. Fourth year students have higher confidence than third year in performing endodontic, prosthodontic and periodontic procedures. Those who got better GWAs (below 2.25), have higher confidence in performing oral surgery than those who got poorer GWAs (2.25 & higher). Action plan was proposed to improve self-confidence and academic performance of students in Clinical Dentistry.

Keywords: academic performance, clinical training, dentistry, hybrid learning, self-confidence

Self-confidence and academic performance in hybrid clinical dentistry

1. Introduction

From school year 2020 to 2022, dental schools have been adapting to distance learning to provide quality dental education amidst the restrictions brought by the pandemic. Transitioning to remote learning and the lack of direct engagement with patients in the advent of the COVID-19 pandemic in 2020 has radically affected the teaching style and clinical learning in dentistry schools, potentially affecting students' clinical abilities and their confidence in providing dental procedures on real-life situations. Student's readiness to practice their profession after graduation and their confidence level in providing treatment to wide range of patients should be ensured by the dental school by providing the necessary clinical training and building on the foundational skills of a dentist.

Preclinical dentistry relies heavily on simulated laboratory learning courses to help the students smoothly progress into the dental clinic and improve their preclinical abilities in all branches of dentistry. In a simulation laboratory, manikins and physical typodonts are the most common equipment. Teaching these pre-clinical skills in the context of social distancing and restricted gathering during a pandemic is a serious challenge. It is particularly challenging, if not impossible, to simulate a real-life dental case scenario to a manikin online. The hand-on training simulation laboratory course could not be replaced by a mere video presentation of clinical procedures (Liu, et al., 2021).

Since increased clinical time in challenging procedures assists final-year students in gaining confidence in those areas (Honey, et al., 2011), assessing the confidence level and clinical performance of dental clinicians would be helpful in ensuring success and improving quality of work of the students. Understanding any correlation of the confidence level and clinical competence is necessary so that both confidence and competence may be enhanced, and certain interventions may be made amidst the pressing challenges of the pandemic.

This research assessed the dental students' self-confidence in performing dental procedures as the skills they have gained in previous years and correlated it with their academic performance on the current semester of their collegiate year. Producing highly competent and confident dental practitioners who will be front liners in promoting oral health in the new normal is the legacy of any dental school thriving amidst the current educational challenges. The thrust of this research is to enhance the students' confidence and performance, both may prove to be key factors in ensuring their success as future dentists. Understanding self-confidence and academic performance of the students in the hybrid dental clinic will greatly benefit the policy makers, dental institutions, faculty and dental students as they find innovative ways in ensuring quality dental education in the new normal. Findings may also be reference for consideration in drafting new protocols, guidelines and curriculum enhancements in clinical trainings and instruction. An action plan was recommended to increase self-confidence and improve academic performance of the dental students in the Clinical Dentistry. It hopes to improve instruction and learning experience in Clinical Dentistry and facilitate efficiency of the clinical work of the undergraduates.

Objectives of the research - The study aimed to assess the self-confidence and academic performance of the dental clinicians in one private dental university. More specifically, it aimed to: 1) present the profile of the respondents according to sex, year level and academic performance on their professional subjects during the second semester, SY 2021-2022 based on their general weighted average, 2) determine self-confidence level in performing dental procedures in restorative dentistry, endodontics, prosthodontics, periodontics and oral surgery, 3) test the significant difference between self-confidence level when grouped according to profile, and 4) propose an action plan based on the findings of the study.

2. Methods

Research design - This study used a quantitative descriptive research design using survey among the dental students who experienced hybrid clinical set up of learning. Descriptive research is used to investigate perceptions, beliefs, attitudes, or views of the population under study (Siedlecki, 2020).

Respondents of the study - The respondents of the study were the dental clinicians, both third year and fourth year students, enrolled in Clinical Dentistry of the second semester SY 2021-2022. Out of the total population of 165, 116 students participated in the study. Using Raosoft sample size computation, 116 is the recommended sample size for a total population of 165, to tolerate 5% margin of error and 95% confidence level. Response rate in the study group was 70.3% (116 respondents out of 165 students). Forty-nine (49) out of 165 students opted not to respond and participate in the survey.

Data gathering Instrument - In this study, a self-administered and closed-ended questionnaire was used. The questionnaire's items were gathered from earlier studies that were both valid and reliable, with the reliability level of the questionnaire as satisfactory with Cronbach's α of 0.951 (Ilic et al., 2021). Part I included the profile of the respondents including age, gender, year level and their general weighted average for second semester SY 2021-2022. Part II presented questions in which they gave the estimation of their own self-confidence in performing dental procedures as the skills they have gained in previous study years. It consisted of 40 items with 5 questions related to Restorative Dentistry, 5 questions related to Endodontics, 10 questions related to Prosthodontics, 10 questions related to Periodontics and 10 questions related to Oral Surgery. Using a 5-point Likert scale, they were asked to grade their self-confidence in each given dental procedure by giving one of the following grades:

- 1- I don't have self-confidence while performing this procedure at all
- 2- I have little self-confidence while performing this procedure
- 3- I have moderate self-confidence while performing this procedure
- 4- I have self-confidence while performing this procedure
- 5- I am completely self-confident while performing this procedure

Data gathering procedure - Due to the restrictions brought about by the pandemic and the limitation of physical access with the students and faculty, data was gathered using online Google forms questionnaire that was sent through active social media accounts of the respondents. Results of the survey were tallied by the researchers through Microsoft excel. An important method used to gather data was the documentary analysis of the general weighted averages (GWA) of the target participants. The researchers sought the assistance and approval from the Registrar and permission from the Dean to have copies of the GWA of target participants, dental clinicians of the College of Dentistry of Batch 2021-2022, in their professional courses for the second semester of the academic year 2021-2022. This was to ensure that the validity and accuracy of the GWA of respondents for that grading period.

Data analysis - The data gathered is analyzed using SPSS for Microsoft Windows. Descriptive statistical data was tabulated and summarized in proportions and percentage, using the t-test for independent groups and ANOVA to compute for significant differences when grouped according to profile. Less than 5% significance was adopted in this study ($p < 0.05$).

Ethical Consideration - The researcher ensured full confidentiality and privacy of the data and personal information gathered. To guarantee maximum collaboration, the researcher sought the approval and consent from the college dean and chief of clinics to conduct the study among the dental clinicians. Using a detailed cover letter and consent form, the researchers presented the goals and methodology of the study. The voluntary nature, benefits and utilization of the study were thoroughly explained to the participants. After obtaining their consent, they were asked to answer the questionnaire, and those who did not give their consent were excluded from the

study.

3. Results and discussion

Table 1

Profile Distribution of the Respondents (N = 116)

Profile	Frequency (f)	Percentage (%)
Sex		
Male	26	22.4
Female	90	77.6
Year Level		
DDM 3	30	25.9
DDM 4	86	74.1
General Weighted Average		
1.26-1.50	3	2.6
1.51-1.75	20	17.2
1.75-2.00	50	43.1
2.01-2.25	33	28.4
2.26-2.50	8	6.9
2.51-2.75	1	0.9
2.75 and below	1	0.9

Table 1 presents the profile distribution of the respondents. Based on sex, majority of the students were female (77.6%), others being male (26%). By year level, majority of the students were fourth year (74.1%) while others are from third year level (25.9%). Majority of the students have a general weighted average of 1.75-2.00 (43.1%) interpreted as Very Good, followed by 2.01-2.25 (28.4%) interpreted as Good and 1.51-1.75 (17.2%) interpreted as Superior. Only one student got 2.75 (Fair) and below. More women are being inclined to take courses in college related to arts and social science (Gao, 2022). Dentistry is one among medical subspecialties highly employing arts in preserving esthetics of the patient's oral structures and smile. Social skills and having good interpersonal nature also pose as an advantage for women taking dental program. Given these advantages and natural inclination for women to care and provide esthetic services, more female students are enrolling in Dentistry, as observed in many dental schools.

Majority of the students were fourth year students due to several students being delayed in their clinical requirements and extending their time in their senior clinical years. There was also a gap year when there are less freshmen enrollees due to the new curriculum implemented from K-12 program. Majority of the students (43.1%) have a general weighted average of 1.75-2.00 interpreted as Very Good, followed by 28.4% of the students achieving GWA of 2.01-2.25 (Good). Students are expected to meet the academic institution's learning objectives and to acquire the necessary skills and competencies of a dental practitioner capable of providing quality dental health care services to society. Ensuring that students who graduate are competent and efficient in their duties gives the dental profession and public health a sense of security and integrity. To achieve this goal, academic institutions that offer Dentistry must ensure quality education for dental students and encourage high academic performance among students to ensure academic and professional success. Student academic achievement is measured through Grade Point Average (54.8 percent) and grades (12.9 percent), which are the top two most commonly used scales in empirical educational research (York et al., 2015).

Table 2.1 presents the self-confidence level in performing dental procedures in Restorative Dentistry. The composite mean of 3.33 denotes that the students have moderate self-confidence in performing the listed restorative procedures. Among the procedures listed, maintaining of dental records in restorative dentistry got the highest rank with the weighted mean of 3.53 which was interpreted as having self-confidence. This is followed by cavity preparation with weighted mean of 3.41, and clinical examination in restorative dentistry with weighted mean of 3.41, both denoting moderate self-confidences.

Table 2.1*Self-confidence level in performing dental procedures in Restorative Dentistry (N=116)*

RESTORATIVE DENTISTRY	WM	Std Dev	Rank	Interpretation
1. Clinical examination in restorative dentistry	3.3017	0.81529	3	<i>I have moderate self-confidence</i>
2. Maintaining of dental records in restorative dentistry	3.5345	0.78498	1	<i>I have self-confidence</i>
3. Caries diagnostics and planning of therapy	3.1724	0.79428	5	<i>I have moderate self-confidence</i>
4. Cavity preparation	3.4138	0.95160	2	<i>I have moderate self-confidence</i>
5. Placement of all types of tooth restorations	3.2500	0.84313	4	<i>I have moderate self-confidence</i>
COMPOSITE MEAN	3.3345	0.70218		<i>I have moderate self-confidence</i>

Legend: 5.00 – 4.50 (I am completely self-confident while performing this procedure) 4.49-3.5 (I have self-confidence while performing this procedure) 3.49-2.5 (I have moderate self-confidence while performing this procedure), 2.49-1.5 (I have little self-confidence while performing this procedure) and 1.49-1.00 – (I don't have self-confidence while performing this procedure at all)

Maintaining dental records ranks first (3.53) among the restorative procedure that the students are most confident of, because of its importance in proper diagnosis and treatment of the patient, and the adequate training given to the students during their preclinical years, and as they apply the record keeping in their clinical cases. The status of a patient's dentition, including the number of natural teeth still present, detected caries lesions, and types of restorations, should be accurately recorded in dental charts. Following a restorative procedure, information regarding the dental materials and techniques should be recorded in the progress notes (Savić Pavičičin et al., 2021). Students have moderate self confidence in doing cavity preparation (3.41). Students' training on cavity preparation began in the pre-clinical practical instruction conducted in a simulation laboratory using mannequin heads and artificial model teeth (McGleenon & Morison, 2021). Rigorous practice of various types of cavity preparation for different caries location and depth enabled the students to be familiar with the principles applied in ideal cavity preparation. The benefits of using these traditional techniques may include their low cost, their effectiveness in enhancing manual dexterity and hand-eye coordination, and their long-term credibility due to their long-standing use in preclinical dental training (Khalaf et al., 2020). Feedback and monitoring of students' progress is helpful in learning proper techniques and avoiding errors, which would be harmful to actual patients.

Students also have moderate self confidence in performing clinical examination. Part of the diagnostic phase of restorative dentistry is determining the extent of carious lesion, thoroughly assessed by clinical examination of the tooth and the surrounding structures. Clinicians performed clinical examination among their patients prior to any restorative treatment. Individualized feedback is required to support students' performance during the clinical examination to identify their successes and learn from their mistakes (Schlenz et al., 2020).

On the other hand, even though interpreted as having moderate self-confidence, among the procedures listed, caries diagnostics and planning of therapy (3.17) got the lowest rank, followed by placement of all types of tooth restorations (3.25). Students had least confidence level in performing caries diagnostics and planning therapy because they were using mannequins and artificial teeth during most of their clinical training during the pandemic. To be able to detect caries, clinicians must have direct access to the patient's dentition. This will then be followed by a comprehensive treatment planning, considering all other oral conditions the patient might have. However, one of the most difficult challenges of online learning during the pandemic has been to discontinue direct patient care, which is an important component of the dental curriculum. Students were not able to learn from actual clinical setting and patient interaction. There is no denying that didactic and clinical skills are two distinct educational outcomes. No virtual sessions can replace the close interaction with patients (Hattar et al., 2021).

Table 2.2 presents the self-confidence level in performing dental procedures in Endodontics. The composite mean of 2.9172 denotes that the students have moderate self-confidence in performing the listed endodontic procedures. Among the procedures listed, irrigation and medication in endodontic therapy got the highest rank with the weighted mean of 2.93 which was interpreted as having self-confidence. This is followed by root canal obturation in endodontic therapy and pulpal diagnosis both with weighted mean of 2.92, denoting moderate self-confidence.

Table 2.2*Self-confidence level in performing dental procedures in Endodontics (N=116)*

ENDODONTICS	WM	Std Dev	Rank	Interpretation
6. Pulpal diagnosis	2.9224	0.97044	2.5	<i>I have moderate self confidence</i>
7. Diagnosis of apical periodontitis	2.9138	0.93780	4	<i>I have moderate self confidence</i>
8. Endodontic therapy- root canal preparation	2.8966	1.07444	5	<i>I have moderate self confidence</i>
9. Endodontic therapy-irrigation and medication	2.9310	1.06913	1	<i>I have moderate self confidence</i>
10. Endodontic therapy- root canal obturation	2.9224	1.04799	2.5	<i>I have moderate self confidence</i>
COMPOSITE MEAN	2.9172	0.94107		<i>I have moderate self confidence</i>

Legend: 5.00 – 4.50 (I am completely self-confident while performing this procedure) 4.49-3.5 (I have self-confidence while performing this procedure) 3.49-2.5 (I have moderate self-confidence while performing this procedure), 2.49-1.5 (I have little self-confidence while performing this procedure) and 1.49-1.00 – (I don't have self-confidence while performing this procedure at all)

Students has self-confidence in performing irrigation and medication in endodontic therapy, as this is an importance step in making sure the root canal is well cleansed and free from any debris and bacteria. This procedure is also easily and conveniently done by using a disposable syringe and antiseptic solution to flush debris from the root canal. Students were also well-taught of the various intracanal medicaments used in between endodontic appointments. In a study by Kaplan et al. (2019) and Potluri et al. (2020), dental students mostly did not report any difficulty in performing irrigation and intracanal medication procedures. Students also have moderate self-confidence in performing root canal obturation and pulpal diagnosis because of the ease and convenience of applying obturation with the materials they learned from their laboratory class in endodontics. They were also able to present their cases of various pulpal diagnosis during their clinical training and special studies in endodontics.

On the other hand, even though interpreted as having moderate self-confidence, among the procedures listed, root canal preparation in endodontic therapy (2.89) got the lowest rank, followed by diagnosis of apical periodontitis (2.91). Root canal preparation comprised of multiple phases of cleaning and shaping the root canal of the tooth to prepare it for obturation and final restoration, to preserve the tooth in the oral cavity. Many dental students find learning endodontics to be complicated, difficult, and stressful due to the different tooth and root canal anatomy, their responsibility to the patient, and their low self-confidence (Potluri et al, 2020). Because of the complexity of root canals and difficulty in periapical radiography, students are having difficulty and least confidence in root canal preparation and diagnosis of apical periodontitis. Limited endodontic education at the undergraduate level may be indicated by the poor technical quality of the root fillings completed by undergraduate students. The team in charge of endodontic education and training should discuss a plan to raise the standard of root fillings and, consequently, the overall standard of root canal therapy (Ribeiro, et al., 2018).

Table 2.3*Determine self-confidence level in performing dental procedures in Prosthodontics (N=116)*

PROSTHODONTICS	WM	Std Dev	Rank	Interpretation
11. Anatomic and situational impressions	3.4569	0.83814	1	<i>I have moderate self confidence</i>
12. Functional impression for removable and complete dentures	3.3448	0.81404	2	<i>I have moderate self confidence</i>
13. Establishing of intermaxillary relationship	3.2500	0.82225	5	<i>I have moderate self confidence</i>
14. Teeth set up try in	3.2586	0.87597	4	<i>I have moderate self confidence</i>
15. Delivery of dentures	3.1810	0.80864	7	<i>I have moderate self confidence</i>
16. Root canal preparation for casted post	2.7759	1.01370	10	<i>I have moderate self confidence</i>
17. Tooth preparation in fixed prosthetics	3.2069	0.85990	6	<i>I have moderate self confidence</i>
18. Impressions in fixed prosthetics	3.3103	0.82792	3	<i>I have moderate self confidence</i>
19. Try-in of ceramic fused to metal reconstructions and rearticulation	2.9741	0.90852	9	<i>I have moderate self confidence</i>
20. Cementing of fixed prosthetic	3.0345	0.93186	8	<i>I have moderate self confidence</i>
COMPOSITE MEAN	3.1793	0.72033		<i>I have moderate self confidence</i>

Legend: 5.00 – 4.50 (I am completely self-confident while performing this procedure) 4.49-3.5 (I have self-confidence while performing this procedure) 3.49-2.5 (I have moderate self-confidence while performing this procedure), 2.49-1.5 (I have little self-confidence while performing this procedure) and 1.49-1.00 – (I don't have self-confidence while performing this procedure at all)

Table 2.3 presents the self-confidence level in performing dental procedures in Prosthodontics. The composite mean of 3.1793 denotes that the students have moderate self-confidence in performing the listed prosthodontic procedures. Among the procedures listed, performing anatomic and situational impressions got the highest rank with the weighted mean of 3.46 which was interpreted as having moderate self-confidence. This is followed by functional impression for removable and complete dentures with weighted mean of 3.34, and impressions in fixed prosthetics with weighted mean of 3.31, both denoting moderate self-confidences. Performing anatomic and situational impressions got the highest rank with moderate self-confidence of the students, because they appreciated the ample time they were provided to practice impression taking during their prosthodontic laboratory classes. Helping the students appreciate the correct consistency, mixing technique and placement of impression inside the patient's mouth are skills that the students should master before they step into their prosthodontic clinical cases. As students advanced through the course, their confidence in performing prosthetic treatment increased, and this confidence would only grow as they gained more clinical experience (Puryer et al., 2018; Sampaio-Fernandes et al., 2020).

In a study by Luo et al. (2022), dental students took alginate impressions of one another while acting as patients or doctors. This role-playing training technique enhances students' impression-taking abilities and gives them an immersive opportunity to understand patients' feelings when they visit a dentist. As a result, using this method enables students to become proficient in the considerations that need to be made when forming opinions from the perspectives of patients and doctors.

On the other hand, even though interpreted as having moderate self-confidence, among the prosthodontic procedures listed, root canal preparation for casted post (2.78) got the lowest rank, followed by try-in of ceramic fused to metal reconstructions and rearticulation (2.97), and cementing of fixed prosthetic (3.03). Least among prosthodontic procedures, root canal preparation for casted post is one procedure that the students found difficult and had least confidence, due to the limited awareness of the technique. Students were able to access and practice applying the casted post, only after they were able to complete a root canal therapy. Although they felt that too much time was spent on laboratory instruction and that more clinical experience would be most helpful in building their confidence, students were satisfied with their prosthodontic education (Puryer et al., 2017). New methods of teaching and clinical training of cast post preparation may also be adopted among clinicians who are having difficulty in learning post preparation (Höhne, et al, 2020).

Table 2.4

Self-confidence level in performing dental procedures in Periodontics (N=116)

PERIODONTICS	WM	Std Dev	Rank	Interpretation
21. Diagnosis of periodontal pathology	2.9138	.94702	3	<i>I have moderate self confidence</i>
22. Causal therapy of periodontal disease	2.8448	1.00955	7	<i>I have moderate self confidence</i>
23. Diagnosis of mucogingival anomalies	2.8534	.94413	6	<i>I have moderate self confidence</i>
24. Correction of mucogingival anomalies.	2.7672	.99002	9	<i>I have moderate self confidence</i>
25. Surgical elimination of periodontal pockets.	2.7241	1.00075	10	<i>I have moderate self confidence</i>
26. Diagnosis and elimination of traumatic dental contacts	2.7931	.99142	8	<i>I have moderate self confidence</i>
27. Evaluation of causal therapy success	2.8879	1.01956	5	<i>I have moderate self confidence</i>
28. Recognition of risk factors for periodontal disease	3.0431	.97260	1	<i>I have moderate self confidence</i>
29. Swab taking.	2.9569	1.09061	2	<i>I have moderate self confidence</i>
30. Elimination of local irritations. Local medication	2.9052	1.00415	4	<i>I have moderate self confidence</i>
COMPOSITE MEAN	2.8690	.89194		<i>I have moderate self confidence</i>

Legend: 5.00 – 4.50 (I am completely self-confident while performing this procedure) 4.49-3.5 (I have self-confidence while performing this procedure) 3.49-2.5 (I have moderate self-confidence while performing this procedure), 2.49-1.5 (I have little self-confidence while performing this procedure) and 1.49-1.00 – (I don't have self-confidence while performing this procedure at all)

Table 2.4 presents the self-confidence level in performing dental procedures in Periodontics. The composite mean of 2.869 denotes that the students have moderate self-confidence in performing the listed periodontic procedures. Among the procedures listed, recognition of risk factors for periodontal disease got the highest rank with the weighted mean of 3.04 which was interpreted as having moderate self-confidence. This is followed by swab taking with weighted mean of 2.96, and diagnosis of periodontal pathology with weighted mean of 2.91,

both denoting moderate self-confidence. Since the students are well oriented with the risk factors and other diagnostic considerations in periodontology, they were able to appreciate and understand the importance of these risk factors in the treatment plan. Case presentations with thorough patient assessment is vital in helping the students recognize the risk factors that might affect the treatment and prognosis of the patient. To understand the pathogenesis of periodontitis and to prevent and treat it, it is crucial to define and evaluate risk factors, risk indicators, and predisposing factors (Bouchard et al., 2017), and so it is an important part of the dental curriculum.

Swab taking and other laboratory tests are also well presented and included in the periodontology class and provided awareness among students of its importance and application in treating patients with periodontal diseases. Student became aware that dysbiotic interactions between the host and microbes lead to the development of pathogenic subgingival microbial biofilms, causing periodontitis. Distinct microbial communities show strong host immune system selection and enable the development of targeted antibiotic therapy that is selective for the main periodontal pathogen in a particular patient (Wirth et al., 2021). A combined sample of supra- and subgingival plaque taken from the deepest periodontal pocket in each sextant may produce the most accurate results for determining the intraoral carrier state of patients with periodontitis. This sampling technique may be applied in clinical research as well as routine microbial testing for more accurate diagnosis and detection of pathological microbes causing periodontal disease (Beikler et al., 2006).

On the other hand, even though interpreted as having moderate self-confidence, among the periodontic procedures listed, surgical elimination of periodontal pockets (2.72) got the lowest rank. This is followed by correction of mucogingival anomalies (2.77) and diagnosis and elimination of traumatic dental contacts (2.79), both denoting moderate self-confidences. Due to the advanced knowledge and skills that are required to perform surgical elimination of periodontal pockets, correction of mucogingival anomalies and traumatic dental contacts, the students expressed only moderate confidence. In-depth study and practical exposure to these surgical techniques is needed so that the clinicians can have better appreciation and practice in clinical set up. Success rate and side effects of periodontal therapy should be considered when choosing the appropriate surgical approach for patients with moderate to advanced periodontitis. Treatment planning for each periodontal case relies on patient-specific factors that could affect the overall outcome (Polak, et al., 2020), and further clinical training may be needed to expose the learner to various cases in periodontics. During the hybrid clinical training of the students, they were not able to perform periodontal surgery to live patients, and thus were not able to observe the pre-operative and post-operative procedures needed for a successful treatment. Students however did simulate learning exercises to understand and apply various treatment modalities—both nonsurgical and surgical phases of periodontal therapy, keeping in mind that the overall goal of periodontal therapy is to prevent progression of oral disease to avoid risk of tooth loss (Graziani, et al., 2018).

Table 2.5 presents the self-confidence level in performing dental procedures in Oral Surgery. The composite mean of 2.5914 denotes that the students have moderate self-confidence in performing the listed oral surgery procedures. Among the procedures listed, diagnosis of periapical lesions and cysts in jaws got the highest rank with the weighted mean of 2.71 which was interpreted as having moderate self-confidence. This is followed by administering of local anesthesia in oral tissues with weighted mean of 2.66, and diagnosis and therapy of acute and chronic dental infections with weighted mean of 2.64, both denoting moderate self-confidence. Because the students are well practiced with case presentation and reporting during their online class and clinical training, their confidence in diagnosing periapical lesions and cysts in jaws got the highest rank. Understanding and differentiating these lesions are important in the treatment planning for oral surgery. The foundation of diagnosis is the identification of normal anatomical structures. Effective management of the disease process depends critically on the ability and knowledge to distinguish between normal and abnormal (Ongole & Praveen, 2021). Having a good foundation on oral pathology and dental infections is important in oral surgery.

Table 2.5*Self-confidence level in performing dental procedures in Oral Surgery (N=116)*

ORAL SURGERY	WM	Std Dev	Rank	Interpretation
31. Administering of local anesthesia in oral tissues.	2.6552	1.07221	2	<i>I have moderate self confidence</i>
32. Extraction of erupted teeth and wound management.	2.5948	1.09527	5	<i>I have moderate self confidence</i>
33. Tooth extractions with separation of roots.	2.5086	1.11508	9	<i>I have moderate self confidence</i>
34. Surgical extractions of fractured radices	2.4828	1.07528	10	<i>I have moderate self confidence</i>
35. Recognition of indications for extraction of impacted teeth.	2.6121	1.05312	4	<i>I have moderate self confidence</i>
36. Diagnosis and therapy of acute and chronic dental infections	2.6379	0.99910	3	<i>I have moderate self confidence</i>
37. Tooth extraction and minor oral surgery in medically compromised patients.	2.5776	1.10454	6.5	<i>I have moderate self confidence</i>
38. Hemostasis in tooth extractions and minor oral surgery	2.5517	1.04128	8	<i>I have moderate self confidence</i>
39. Diagnosis and conservative therapy of oroantral communications and fistulas.	2.5776	1.03966	6.5	<i>I have moderate self confidence</i>
40. Diagnosis of periapical lesions and cysts in jaws.	2.7155	1.01129	1	<i>I have moderate self confidence</i>
COMPOSITE MEAN	2.5914	0.99613		<i>I have moderate self confidence</i>

Legend: 5.00 – 4.50 (I am completely self-confident while performing this procedure) 4.49-3.5 (I have self-confidence while performing this procedure) 3.49-2.5 (I have moderate self-confidence while performing this procedure), 2.49-1.5 (I have little self-confidence while performing this procedure) and 1.49-1.00 – (I don't have self-confidence while performing this procedure at all)

Students also have moderate self-confidence in administering local anesthesia because of the adequate instruction and pre-clinical practice provided for them. According to Sjöström & Brundin (2021), students' confidence in using local anesthesia was increased by combining theory and practical instruction, using anatomically accurate models and peer instruction. The students who were divided into groups of three and who each performed, received, and observed the procedure showed the biggest boosts in confidence.

On the other hand, even though interpreted as having moderate self-confidence, among the oral surgery procedures listed, surgical extractions of fractured radices (2.48) got the lowest rank. This is followed by tooth extractions with separation of roots (2.51) and hemostasis in tooth extractions and minor oral surgery (2.56), both denoting moderate self-confidence. Students have least confidence in surgical extractions of fractured radices because they were not yet able to actually practice this procedure in a patient due to online clinical training set up. Their online clinical cases for extraction comprise of a model dentition on a mannequin, where they explain the surgical procedure step by step. Similarly, there is moderate self-confidence in tooth extractions with separation of roots, and hemostasis in tooth extractions and minor oral surgery, because these procedures must be applied in an actual patient. Knowing the principles and having a sound theoretical background is important, however confidence level increases when students are exposed to actual practical training involving patient interaction (Hattar et al., 2020).

Table 2.6*Summary Table of Self-confidence level in performing dental procedures (N=116)*

Dental Procedures	WM	Std Dev	Rank	Interpretation
RESTORATIVE DENTISTRY	3.3345	0.70218	1	<i>I have moderate self confidence</i>
ENDODONTICS	2.9172	0.94107	3	<i>I have moderate self confidence</i>
PROSTHODONTICS	3.1793	0.72033	2	<i>I have moderate self confidence</i>
PERIODONTICS	2.8690	0.89194	4	<i>I have moderate self confidence</i>
ORAL SURGERY	2.5914	0.99613	5	<i>I have moderate self confidence</i>

Legend: 5.00 – 4.50 (I am completely self confident while performing this procedure) 4.49-3.5 (I have self confidence while performing this procedure) 3.49-2.5 (I have moderate self confidence while performing this procedure), 2.49-1.5 (I have little self confidence while performing this procedure) and 1.49-1.00 – (I don't have self confidence while performing this procedure at all)

Shown in Table 2.6 is the summary table of self-confidence level in performing dental procedures with Restorative Dentistry with highest weighted mean (3.33) and Oral surgery with least (2.59). Clinicians have the highest self-confidence in performing Restorative Dentistry among all the clinical procedures, because restorations can be conveniently done, monitored, evaluated and taught in the online clinical set up, compared to all other dental laboratory procedures. Restorative Dentistry involves cavity preparation for certain types of restoration which should be done in various surfaces of different teeth. It also holds the greatest number of clinical requirements in any given clinical level, that the students must perform to advance in the clinics. Clinical instructors were also adept in giving feedback and coached the students on the proper cavity preparations,

emphasizing the errors that should be avoided and clinical techniques which the students could improve on. In a study by Hattar et al. (2021), restorative dentistry received the highest confidence ratings from students, followed by endodontics and fixed prosthodontics. To increase perceived confidence, which will improve students' present and future professional performance, clinical skills improvement and targeted exposure are required.

Due to the length of time given to produce prosthodontic dentures, students are becoming more adept in practicing their clinical judgment, manual dexterity and understanding of the principles in prosthodontics. Given the adequate time and effort that the students and clinical instructors put in for prosthodontic training, it yielded moderate self-confidence among the students. Similarly, due to the multiple sitting and length of time required to finish Endodontic treatment procedures, students were able to appreciate and engage themselves in practically learning endodontic principles in the hybrid clinical set up.

On the other hand, even though interpreted as having moderate self-confidence, among the dental procedures listed, oral surgery (2.59) got the lowest rank, followed by periodontics (2.87) denoting moderate self-confidence. Oral Surgery is one of the most invasive procedures in dental clinical settings, and students are intimidated by it even when they are competent, so they lacked confidence in this procedure (Cabbar et al., 2019). This also reflects the lack of practical experience of extraction from an actual live patient due to the restrictions posed during the pandemic.

Periodontics, which included deep scaling and making a mucoperiosteal flap, is also one invasive procedure that can be more appreciated and learned when done in an actual live patient. Since students were not allowed to conduct direct interaction with patient, students show least self-confidence when performing such procedures. All periodontal therapies aim to halt the disease's progression while also minimizing attachment loss, which includes eliminating periodontal pockets. This is best appreciated by students in an actual periodontal patient interaction. Making the right treatment plan for the tooth or part of the tooth requires knowing the type and extent of attachment loss. One of the main goals of surgical periodontal therapy is to create access to the affected area so that all irritants, including plaque, calculus, diseased cementum, bone, and soft tissue, can be removed. When bone defect extends apically along a root, case selection is crucial to increasing the likelihood of a successful procedure (Lobprise & Stepaniuk, 2019).

Table 3 summarizes the relationship of self-confidence level in performing dental procedures when grouped according to demographic profile. There is significant relationship of self-confidence level in performing dental procedures when grouped according to demographic profile. Males have higher confidence than females in performing periodontic procedures." Fourth year students have higher confidence than third year in performing endodontic, prosthodontic and periodontic procedures. Those who got better GWAs (below 2.25), have higher confidence in performing oral surgery than those who got poorer GWAs (2.25 & higher). Male students have greater confidence than females when performing periodontic procedures. Male students are more kinesthetic and tend to learn better when principles are applied practically in clinical set up, especially in periodontic procedures involving multiple sitting and various modalities of treatment procedures. On the other hand, there are reports of increased anxiety among women over the issues of their competence (Blanch et al., 2008), which could be the reason for less self-esteem in performing clinical procedures. Females are naturally more emotional and overthinker, while males are basically driven with the motivation to perform and deliver. In a study of Stewart et al. (2006), males had significantly higher dental admission test averages and perceptual ability test scores than females. More so, male students had significantly higher clinical scores in the board examination.

Table 3 shows that Fourth-year students have greater self-confidence than third year when performing endodontic, prosthodontic and periodontic procedures. Since the fourth-year students had undergone various clinical cases ahead of the third year, their experience of dealing with endodontic, prosthodontic and periodontic cases is marked with higher confidence, given that they took these special studies in their lecture and laboratory classes already, and were given opportunity to take on pertinent clinical cases. There is a sense of increased

preparedness among students when they have the most experience of the clinical procedure (Donnell et al., 2022).

Table 3

Differences of self-confidence level in performing dental procedures when grouped according to demographic profile (N=116, alpha = 0.05)

Variable	t/F-value	p-value	Interpretation
SEX			
Dental Procedures			
RESTORATIVE DENTISTRY	1.176	0.242	Not Significant
ENDODONTICS	1.414	0.160	Not Significant
PROSTHODONTICS	1.535	0.127	Not Significant
PERIODONTICS	2.104	0.038	Significant
ORAL SURGERY	1.834	0.069	Not Significant
YEAR LEVEL			
Dental Procedures			
RESTORATIVE DENTISTRY	-0.371	0.711	Not Significant
ENDODONTICS	-2.811	0.006	Significant
PROSTHODONTICS	-1.143	0.255	Significant
PERIODONTICS	-2.166	0.032	Significant
ORAL SURGERY	-1.355	0.178	Not Significant
GWA			
Dental Procedures			
RESTORATIVE DENTISTRY	1.108	0.362	Not Significant
ENDODONTICS	1.593	0.156	Not Significant
PROSTHODONTICS	1.149	0.339	Not Significant
PERIODONTICS	1.873	0.092	Not Significant
ORAL SURGERY	3.096	0.008	Significant

There is less clinical experience among third year students compared to fourth-year students, which has led to decreased confidence of the third year (Gilmour et al., 2016). Due to limited exposure to theoretical knowledge and clinical practice, third students have less self-esteem in performing treatment, however they were motivated to learn more and expand their knowledge to be properly prepared as they advance in their training. Those who got better GWAs (below 2.25), have higher confidence in performing oral surgery than those who got poorer GWAs (2.25 & higher). Students who perform well in their subjects have greater confidence in doing surgical procedures because having good theoretical knowledge of the subject matter enables them to apply the principles and techniques in surgery.

Clinical dentistry is where undergraduates are being trained to use all the basic health and dental sciences that they had learned in earlier years, and apply them in patient-centered approach of clinical training. This is the venue for students to apply comprehensively all the principles learned to address the chief complaints and underlying oral health problems of their patients. Good critical judgment and practical understanding of the anatomy, physiology, pathology and various treatment modalities are important to be able to address the health concern of the patient. A good foundation on the various dental materials, equipment and clinical techniques are also needed so that the procedures will be performed with utmost care, precision and quality, reducing adverse effects and promoting overall health.

According to Meisha & Al-dabbagh (2021), clinical and academic performance were positively correlated with self-confidence scores in clinical procedures. Since oral surgery encompasses many considerations of the various principles and concepts related to anatomy, pathology, oral medicine, surgical techniques and dental materials, a good understanding of all these concepts yield good confidence when the clinician performs surgical procedure to the patients. Having self-confidence in performing surgical procedures during undergraduate clinical training was a predictor of future clinical success of the students.

As dental practitioners in the future, undergraduates should aim to increase their self-confidence and

competence so that they would be able to assure the patient of quality dental care when they put up their own clinical practice. Integrity and trust, as well as competency in providing dental services, are essential ingredients of a successful dental practice.

Table 4

Plan of Action to Improve Self-Confidence and Academic Performance of Students in Clinical Dentistry

KRA/ Objectives	Strategies	Expected Outcome	Persons Responsible
Restorative Dentistry – to detect and diagnose caries and plan necessary therapy	Clinical instructors and restorative dentistry faculty members may require extracted tooth with dental caries for detection and diagnosis for their restorative clinical simulated cases Clinical instructors and students may attend trainings on restorative dentistry to update knowledge in caries detection, new dental materials and techniques manage caries	Improved practice of caries detection and diagnosis	Dentistry Faculty, clinical instructors, clinicians
Endodontics – to enhance root canal preparation	Endodontics faculty members may provide hands on demonstration and case presentation of different root canal preparations Advanced endodontic clinical training for clinical instructors	Better practice of root canal preparation and confidence in managing endodontic treatment failures	Dentistry Faculty, clinical instructors, clinicians
Prosthodontics – to provide quality casted post after root canal therapy	Exposure to dowel preparation, case presentation and new techniques in casted post procedures Advanced prosthodontic laboratory training for clinical instructors	Competence in providing quality post core as support for prosthesis in root canal treated tooth	Clinical instructors, clinicians
Periodontics – to appreciate surgical approach in periodontal therapy	Collaborative effort of periodontics and oral surgery departments in providing training for students in surgical approach for patients with moderate to advanced periodontitis Surgical prosthodontic training for clinical instructors and students	Better appreciation and confidence in performing surgical periodontal therapy	Clinical instructors, clinicians
Oral Surgery – to provide clinical training for surgical extractions of fractured radices	Include fracture radices as one of the Oral surgery requirements Provide in-depth feedback and coaching on difficult surgical procedures	Competence and confidence in surgical extraction of fractured roots	Clinical instructors, clinicians

4. Conclusion and recommendation

Majority of the respondents were female, fourth year students, with very good general weighted average (1.75-2.00). The students have moderate self-confidence level in performing dental procedures in restorative dentistry, endodontics, prosthodontics, periodontics and oral surgery. Males have higher confidence than females in performing periodontic procedures. Fourth year students have higher confidence than third year in performing endodontic, prosthodontic and periodontic procedures. Those who got better GWAs (below 2.25), have higher confidence in performing oral surgery than those who got poorer GWAs (2.25 & higher). An action plan was proposed to improve self-confidence and academic performance of students in Clinical Dentistry.

Higher educational institutions may provide advance trainings to clinical instructors, specializing in various branches of Dentistry. Dental schools may adjust the clinical requirements and guidelines based on the findings of the study to address areas for improvement in hybrid clinical set up. Co-curricular and extra-curricular programs and activities that enhance self-confidence may also be provided to the students. Alumni associations may provide timely updates to graduates to increase self-confidence in handling complex clinical cases in their private practice. The proposed action plan may be considered by dental schools for further discussion and may be reviewed for possible utilization. Future researchers may conduct study using different variables such as academic motivational beliefs and emotion, test results, students' physical and emotional well-being that may influence self-confidence and academic performance of the students.

5. References

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