

Survey on Student Experiences in Transitioning from Preclinical to Clinical Phases of Removable Prosthodontics Training

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ABSTRACT

Introduction: This study explores Dental students' perceptions, challenges, and readiness during the critical transition from preclinical to clinical training in Removable Prosthodontics. It aims to inform curriculum design to better support this shift and enhance learning outcomes.

Methods: A questionnaire survey is conducted among the undergraduate students involved in clinical practice of the removable complete dentures.¹

Results: A majority of students found their initial clinical tasks in removable prosthodontics moderately difficult, particularly primary and secondary impressions, border moulding, and jaw relation recording. Over 70% rated jaw relations as moderately to highly challenging. Tasks like tooth selection, wax denture handling, and acrylic tooth arrangement were also seen as moderately difficult. Denture insertion and post-insertion care were considered easier, while preclinical simulations were generally helpful despite some difficulty.

Conclusion: According to preliminary data, several students expressed a lack of confidence even though they felt somewhat prepared theoretically.

Key words: Removable complete denture, preclinical training, clinical phase, transition, confidence, difficulties

INTRODUCTION

The change from preclinical to clinical training is an important phase of Dental education, especially in the area of removable prosthodontics. Students mainly concentrate on gaining fundamental theoretical information and honing technical abilities in a supervised, simulation-based setting during the preclinical period^{1,2}. Repetitive practice, controlled instruction, and little exposure to real-world clinical issues are characteristics of this stage³. Students are not yet in charge of actual patients during these relatively low-pressure activities, despite the fact that they are crucial for the development of psychomotor skills and conceptual comprehension⁴.

However, students are expected to apply their technical proficiency and learned information to real patient care once they start the clinical phase⁵. In the uncertain and dynamic environment of a dental clinic, this entails not only performing procedures on live patients but also handling clinical decision-making, communication, time management, and ethical issues⁶. As a result, students frequently experience tension, worry, and a decline in their self-confidence during this shift⁷. Commonly expressed feelings of inadequacy, fear of making mistakes, and worry about patient outcomes can have a detrimental effect on learning outcomes and clinical performance⁸.

Thus, the purpose of this study is to examine the experiences of dental students as they progress from the preclinical to the clinical stages of their training in removable prosthodontics. It specifically aims to investigate their confidence levels, perceived readiness, typical challenges faced, and recommendations for development.

The results are anticipated to yield insightful information that can guide faculty development, curriculum improvement, and student assistance tactics, ultimately enhancing clinical competency and patient care outcomes in prosthodontics education.

MATERIALS AND METHODS

A questionnaire-based, cross-sectional observational study was carried out in the undergraduate dental students who had recently moved from the preclinical to the clinical phase of their removable prosthodontics training. All respondents were part of the Bachelor of Dental Surgery (BDS) program. The survey was conducted over a 3 months period in 3 phases; Phase 1 - Research and Planning (15 days), Phase 2 - Data Collection and Analysis (1.5 months), Phase 3 - Report Writing (1 month).

Study design:

Using a descriptive, questionnaire-based methodology, a cross-sectional observational study will be conducted among students who have been trained in total denture rehabilitation. This study will assess how well students understand and carry out the clinical procedures involved in complete denture prosthesis by the knowledge obtained from preclinical training. To find the degree of complexity in performing steps in complete denture fabrication for the first time in students, data will be collected using a standardized and validated questionnaire, and statistical analysis will be performed.

Sample size:

The factor of interest of participating as sample among the given population was considered as 50%.

That is,

$P=50\%$

$$\text{Sample size} = Z^2 p q / L^2$$

Where, Z = normal standard varies at 95%

$$= 1.96$$

P = population proportion has factors of interest participating in this

$$q = 100 - p$$

L = margin of error at 90%

$$= 10\%$$

Therefore,

$$\text{Sample size} = (1.96)^2 \times (50) \times (50) / (10)^2 \\ = 96$$

Approximately 100 participants were selected for this survey.

Criteria:

Inclusion criteria:

1. Students who are in their third year, final year and internship phase of bachelor of dental surgery course.
2. Postgraduate students enrolled in master's program in prosthodontics and crown and bridge, given that they underwent through the transition from preclinical removable prosthodontics to clinical removable prosthodontics in complete denture rehabilitation.

Exclusion criteria:

1. Students in First and second year of bachelor of dental surgery course.
2. Students with no clinical exposure in removable complete denture prosthesis.
3. Participants who are unwilling to participate or do not complete the necessary survey.

Ethical approval for study:

The Institutional Ethics Committee has given permission to initiate the research (Protocol Number 117/2025-2026) titled, "Survey on Student Experiences in Transitioning from Preclinical to Clinical Phases of Removable Prosthodontics Training."

Data collection:

The survey will be conducted in digital formats (Google Forms) to maximize accessibility to the students. Prior to distribution, a brief overview of the goal of this study will be provided.

Data collection methods:

Participants and Questionnaire-

Using the Universal Questionnaire Designer platform, an online survey was created and disseminated to evaluate the ability of students after preclinical training to perform various steps in complete denture rehabilitation (CDR). Respondents had to fill out every area of the questionnaire in order to participate. All participants gave informed consent before beginning the study.

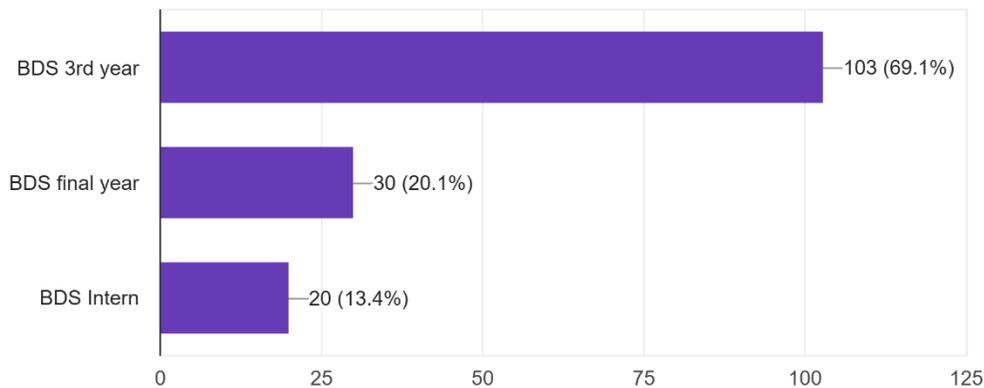
Statistical data: The SPSS program (version XX, IBM Corp., Armonk, NY, USA) will be used to analyse the data after it has been collected using Microsoft Excel. The demographics of the participants and general response patterns will be described using summary statistics like frequency, percentage, mean, and standard deviation. When comparing mean scores between two groups, the independent t-test will be used, and when comparing more than two groups, one-way ANOVA with Tukey's post-hoc analysis will be used. The Chi-square test will be used to investigate correlations between categorical variables. The reliability of the questionnaire will be evaluated using Cronbach's alpha, with values of 0.7 or higher indicating satisfactory internal consistency, and Pearson's correlation will be used to examine relationships between continuous variables. For all statistical studies, a significance level of $p < 0.05$ shall be set.

RESULTS

149 of the 160 students who were invited to participate submitted their forms, resulting in a 93.1% response rate.

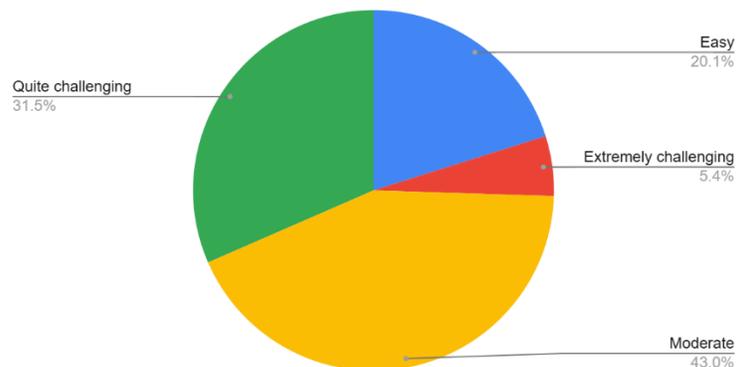
Qualification

149 responses



BDS third-year students made up the majority of responders (69.1%), followed by final-year students (20.1%) and interns (13.4%).

1. How did your initial primary impression in clinical practice go?



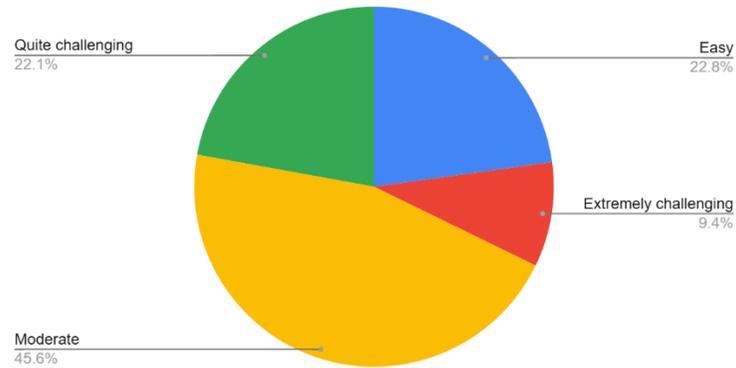
Easy: 20,1% — about one-fifth found it comparatively easy.

Moderate: 43.0% — the largest group found the experience as moderately challenging.

Quite challenging: 31.5% — over a quarter of respondents reported facing considerable difficulty.

Extremely challenging: 5.4% — a smaller portion experienced it as highly difficult

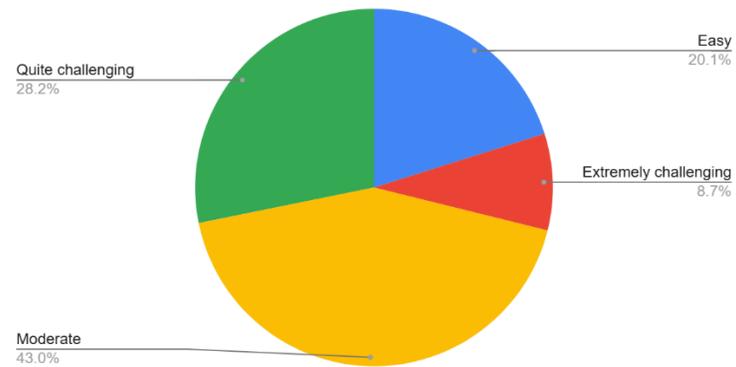
2. How was your initial experience doing border moulding on a patient?



Easy: 22.8%, or almost a quarter, thought the work was not too difficult.

Moderate: The greatest percentage of responders, 45.6%, described their experience as somewhat difficult. Extremely difficult: 22.1% — a comparable percentage encountered significant challenges.

Extremely challenging: 9.4%; a smaller group had a really hard time. 3. How was your first try at making a secondary impression in a patient?



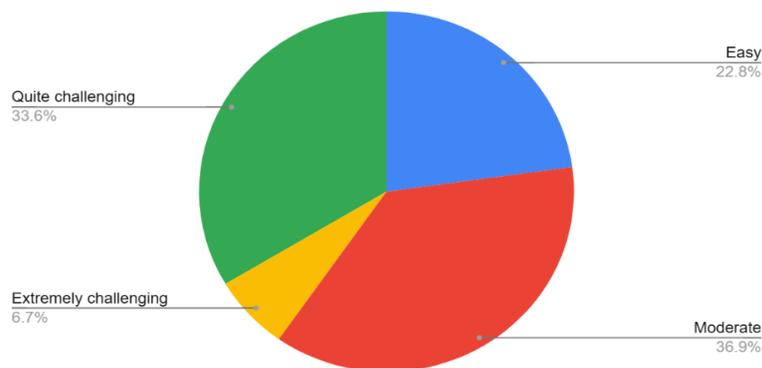
Easy: 20.1%, or almost one-fifth, thought it was easy.

Moderate: The greatest percentage, 43.0%, thought the work was moderately difficult.

Quite challenging: 28.2% – more than 25% had serious problems.

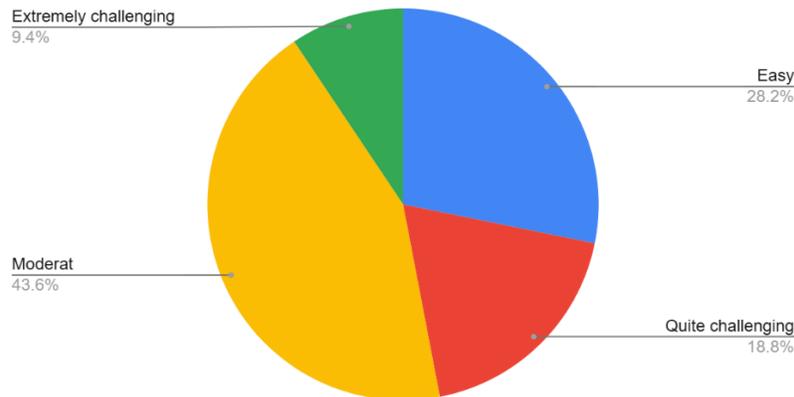
Extremely challenging: 8.7% – a small fraction found it extremely challenging.

4. How did it feel to record a patient's jaw relationship for the first time?



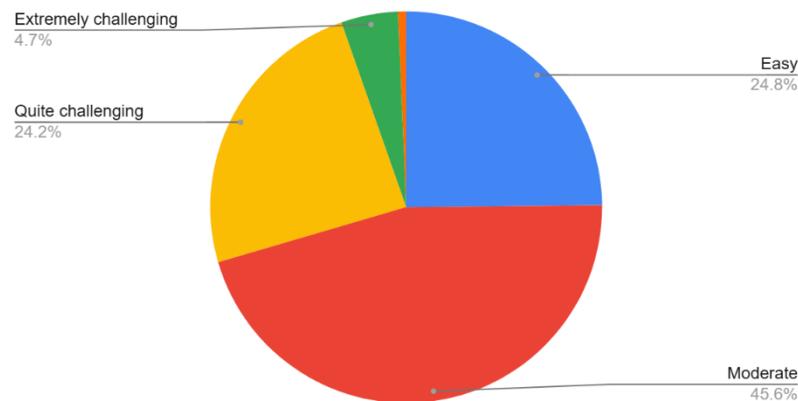
Most students thought it was moderate (36.9%) or fairly difficult (33.6%) to record a patient's jaw connection for the first time, whereas fewer thought it was easy (22.8%) or very difficult (6.7%).

5. How did you first feel when selecting teeth for a patient?



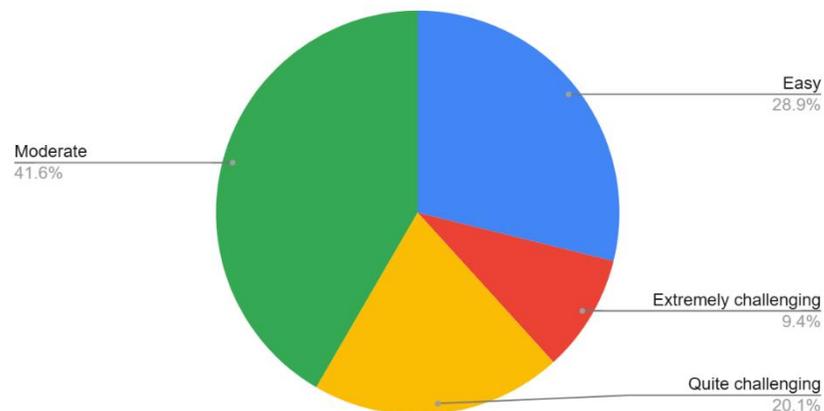
The majority of students said choosing teeth for a patient was relatively difficult (43.6%), easy (28.2%), rather difficult (18.8%), and very difficult (9.4%).

6. How would you rank your first clinic experience getting acrylic teeth arranged?



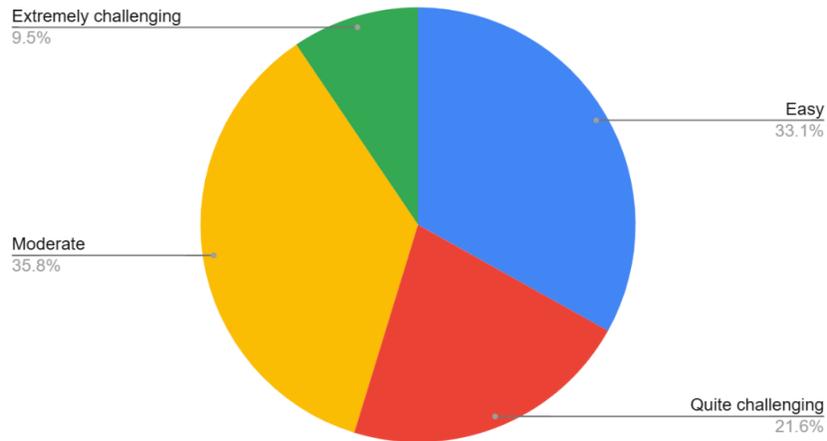
While some students found it easy (24.8%), quite tough (24.2%), and highly challenging (4.7%), the majority dental students assessed their first clinic experience of placing acrylic teeth as moderate (45.6%).

7. How was your initial experience with a fully waxed denture for a patient?



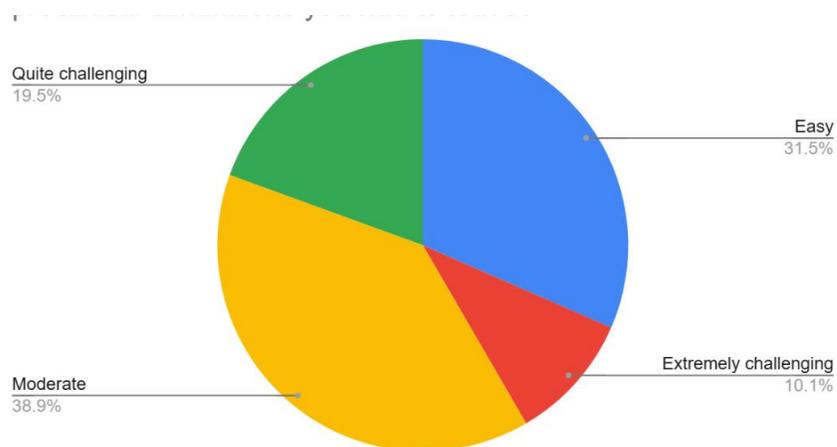
After their first encounter with a fully waxed denture, the majority of students rated it as moderate (41.6%), easy (28.9%), fairly tough (20.1%), and highly challenging (9.4%).

8. What would you say about your first clinical practice denture insertion experience?



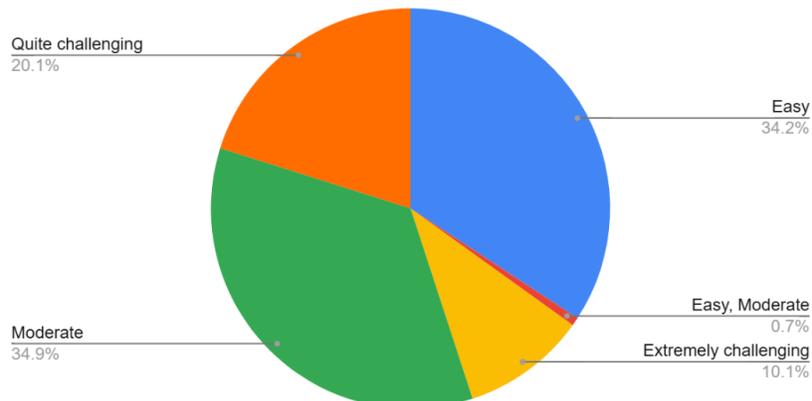
Fewer students thought their first clinical practice denture insertion experience was pretty difficult (21.6%) or extremely difficult (9.5%), whereas the majority thought it was easy (33.1%) or moderate (35.8%).

9. How was patient management during the post-insertion examination?



Patient management during the post-insertion assessment was rated as easy (34.2%) or moderate (34.9%) by the majority of students, as rather challenging (20.1%) or highly challenging (10.1%) by others, and as both easy and moderate by a very small percentage (0.7%).

10. What was your overall impression of the preclinical simulations you had to leave?



Fewer students thought the preclinical simulations were very difficult (19.5%) or very difficult (10.1%), while the majority thought them were moderate (38.9%) or easy (31.5%) overall.

DISCUSSION

The transition from preclinical to clinical training is a significant milestone in Dental education, often marked by a shift from theoretical and simulation-based learning to direct patient care. In the context of Removable Prosthodontics, this phase is particularly demanding due to the procedural complexity and the need for hands-on precision. Our study revealed that a majority of students perceived key clinical procedures, such as primary impressions, border moulding, and jaw relation recording, as moderately to highly difficult. This finding reflects broader trends in dental education, where students commonly report challenges during this transitional period^{1,5,7}. The psychological stress and uncertainty during the early clinical phase have been well-documented and remain a persistent concern in curriculum planning⁷.

Preclinical training is designed to equip students with the foundational knowledge and technical skills required for clinical competence. However, students in our study often rated their preclinical experiences as only moderately helpful in preparing them for real patient encounters. This aligns with the observations of Pravina et al¹, who found similar sentiments in students transitioning into clinical fixed prosthodontics. The gap between simulation-based exercises and clinical realities may contribute to decreased preparedness and confidence. In India, particularly, the quality of preclinical training is challenged by high student-to-faculty ratios, limited infrastructure, and insufficient clinical exposure during the early stages³.

Procedures that require critical thinking, manual dexterity, and clinical judgment—such as border moulding and jaw relation recording—were perceived as especially difficult by the students in our study. This is consistent with Mohan et al⁴, who identified such steps as "threshold concepts" in removable prosthodontics. These are concepts or procedures that, once understood, transform the learner's perception of the subject. However, many students struggle with these due to limited experiential learning and inadequate scaffolding during preclinical training. Thus, these areas represent key bottlenecks in student learning and clinical performance.

The incorporation of Early Clinical Exposure (ECE) has shown promising results in bridging this gap. Maheshwari et al^{2,10} reported that students exposed to clinical scenarios earlier in their training developed better conceptual clarity and reported increased readiness for clinical tasks. ECE allows students to contextualize theoretical knowledge and observe clinical procedures before they are required to perform them independently. Our findings support this, as students who reported some form of clinical exposure during preclinical years appeared to have a smoother transition.

Self-perceived confidence plays a crucial role in clinical performance. Khatib et al⁶ highlighted that students often lack confidence in performing complex prosthodontic procedures, despite having theoretical knowledge. This was evident in our findings, where many students reported only moderate confidence in tasks like denture insertion, teeth selection, and post-insertion care. These findings suggest that curricula should include more opportunities for repeated practice and formative feedback to enhance students' self-efficacy in clinical settings.

The emotional and psychological aspects of this transition cannot be overlooked. Henzi et al⁷ explored student stress levels and found that uncertainty, fear of making mistakes, and performance anxiety were common among students beginning their clinical rotations. This aligns with our results, where even students with sound theoretical understanding expressed concern about the clinical application of their knowledge. A supportive learning environment with structured mentorship could help reduce this stress and enhance clinical learning⁸.

Additionally, curriculum alignment remains a critical area of improvement. Ali et al^{8,9} emphasized that inconsistencies between preclinical teaching methods and clinical expectations often leave students unprepared. Our study supports this viewpoint, as students felt that preclinical exercises did not adequately simulate clinical conditions. Therefore, dental curricula should aim for better vertical integration—ensuring that what is taught in preclinical years is directly applicable in clinical practice.

Another important observation from our study is the variation in difficulty perception across different procedures. While tasks like primary impressions and secondary impressions were commonly rated as difficult, denture insertion and post-insertion care were seen as relatively easier. This could be due to the procedural simplicity or the reduced pressure in these later stages. Nevertheless, this disparity points toward specific procedures that need enhanced instructional focus and simulation in the preclinical curriculum⁴.

Finally, students' feedback reinforces the necessity for comprehensive curricular reforms in removable prosthodontics. Structured skill development modules, patient simulation using typodonts with feedback, objective assessments, and reflective learning strategies can significantly improve student preparedness. As the findings from Chiu et al⁵ suggest, incorporating students' perspectives during curriculum design ensures that the educational framework is both learner-centered and clinically relevant. A well-supported transition not only improves clinical skills but also fosters professional confidence and competence.

CONCLUSION

For Dental students, the shift from preclinical instruction to clinical practice in removable prosthodontics is an important yet difficult stage. According to this poll, despite the fact that preclinical training gave students a solid academic and technical foundation, many students found it difficult to manage their confidence, patients, and apply their talents in actual clinical settings. The steep learning curve encountered during this transition was highlighted by the frequent reports of tasks including primary and secondary impressions, recording jaw relations, tooth selection, and denture implantation as moderately to extremely difficult.

These results underline the need for improved teaching methods, such as more incorporation of simulation-based instruction, early patient exposure, and organised mentoring. Teachers can help students develop their confidence, competence, and adaptability by filling in these gaps, which will ultimately improve patient care outcomes in prosthodontics.

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Author contribution:

The study's general idea and design were overseen by Miss. Shruti Mahesh Thorawade. They conducted the literature analysis, developed the questionnaire, and gathered information. They also oversaw the composition of the manuscript, including the discussion and conclusion sections, and carried out the data analysis and interpretation.

Dr. Ajay Gaikwad, who offered scholarly direction during the investigation. They supported ethical approvals, helped to improve the study design, and offered insightful criticism on the analysis and paper's final draft.

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