



A Cross-Sectional Survey to Assess the Need for Introduction of Early Clinical Exposure in Pre-Clinical Complete Denture Prosthodontics

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Article Info	ABSTRACT
<p>Article type: Short Communication</p> <hr/> <p>Article History: Received: 25 Aug 2024 Accepted: 01 Apr 2025 Published: 22 Sep 2025</p> <hr/> <p>* Corresponding author: Department of Prosthodontics, ESIC Dental College & Hospital, New Delhi, India Email: komalladha@yahoo.co.in</p>	<p>Pre-clinical Prosthodontics (PCP) training in India is restricted primarily to didactic lectures and development of laboratory skills pertaining to removable complete denture prosthodontics, with no exposure to patients. Introduction of Early Clinical Exposure (ECE) as a supplement to the traditional PCP curriculum, aimed at improving the competency of dental undergraduates, needs to be explored.</p> <p>The aim of the present study was to assess dental students' perceived needs regarding introduction of ECE in the subject of PCP and to identify the barriers perceived by them in learning the subject.</p> <p>A cross-sectional survey was conducted among 26 third-year Bachelor of Dental Surgery (BDS) students using a 25-item semi-structured questionnaire based on 5-point Likert scale. Response rate was 100% and the majority of the respondents reported difficulty in performing border molding step. More than 70% of the students felt a strong need for inclusion of ECE in the subject of PCP in second year.</p> <p>Keywords: Needs Assessment; Education, Dental; Denture, Complete</p>
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INTRODUCTION

The undergraduate dental curriculum in India introduces clinical exposure to removable Complete Denture (CD) prosthodontics in the third year of the undergraduate program. Besides, the Pre-Clinical Prosthodontics training introduced in the first two years of the program is restricted primarily to didactic lectures and development of laboratory skills related to removable CD Prosthodontics, with no patient contact. This often leaves students perplexed by the complexities of CD procedures when they initiate patient care in third year.

Early Clinical Exposure (ECE) of pre-clinical students to CD procedures by demonstration on patients can help to mitigate the above difficulties. ECE is a teaching-learning methodology which promotes exposure of health sciences students to patients as early as the first year of college.[1]

In 2019, the Medical Council of India (MCI) devised a competency based undergraduate curriculum for the Indian Medical Graduate which implemented ECE module in the Bachelor of Medicine and Bachelor of Surgery (MBBS) program with the objective of

integrating basic sciences with clinical sciences.[2] This led us to introspect that a similar initiative must be undertaken in dental education and the first step towards this was to obtain feedback from dental students as they are one of the stakeholders of changes in the curriculum.

To our knowledge, there is only a single published study in the Indian context that has explored the perspective of dental students on the teaching and learning of PCP and suggested the need to integrate traditional teaching with ECE [3].

Therefore, the purpose of the present study was to assess third year dental students' perceived needs regarding introduction of ECE in the subject of PCP at our institute and to identify the barriers perceived by them in learning the subject. Based on the results of this study, our long-term goal is to integrate ECE with the traditional PCP curriculum at our institute.

MATERIALS AND METHODS

A cross-sectional survey was conducted among third-year Bachelor of Dental Surgery (BDS) students in the Department of Prosthodontics from January 2022 to February 2022. Students who attended clinical postings in prosthodontics during their third year, fabricated CDs for at least two patients, and provided written consent for participation, were included in the study.

The study was conducted after obtaining approval from the Institutional Ethics Committee of the college (No. 43/01/2022/IEC DC).

Sample size was calculated using nMaster 2.0 software and was done as per the article by Tayade et al. (2021) [4] with an estimated prevalence of 92.75% students who strongly agreed that the method of ECE teaching allowed better assimilation of knowledge gained during learning. The power of the study was taken to be 80% and a Confidence Interval (C.I.) of 95% was taken. The final sample size was estimated to be a minimum of 26 students.

Study procedure

A total of 26 students were included in the

study and assembled in a classroom for the survey contact session. The principal investigator sensitized the students regarding the purpose of the study, familiarized them with the concept of ECE, and briefed them about the informed consent document & the survey questionnaire. All the students were encouraged to participate in the study and written informed consent was obtained from willing candidates.

Study Instrument

A 25-item anonymous, self-administered, semi-structured questionnaire was designed with inputs from two faculty members having academic experience of more than 13 years. The questionnaire comprised of 24 closed-ended questions based on 5-point Likert scale and one open-ended question. Some of the survey questions were adapted from validated questionnaires developed by Tayade et al.,[4] Rawekar et al.[5], and Patil et al.[6]. Content validity of the questionnaire was confirmed by three clinical professors having experience of more than 14 years. The questionnaire was pilot-tested with ten students from the study population to check that all the items in the questionnaire could be comprehended by the students and were unambiguous. The reliability coefficient according to Cronbach's alpha was 0.781 showing that the overall internal consistency of the study instrument was good.

The questionnaire consisted of three sections. The first section (Part-A) addressed the socio-demographic profile of the students. The second section (Part-B) was designed to understand the difficulties faced by the students in learning and applying PCP in clinical settings. The third section (Part-C) was designed to collect information about students' perceived needs for introduction of ECE in the subject of PCP. (Annexure A)

Statistical Analysis

Data was entered into Microsoft Excel and statistical analysis was done using SPSS software version 25.0. Categorical variables have been expressed in the form of frequency and percentages and ordinal variables in the form of median and interquartile range (IQR).

RESULTS

All the students (n=26) participated in the study and returned duly-filled survey forms. Mean age of the respondents was 22.04 ± 1.18 years and 73.1% of the respondents were females.

The major difficulty perceived by students (50%) was in performing mandibular border molding procedure (Table 1), and more than 70% students felt a strong need for inclusion of ECE in PCP in the second year (Table 2).

Table 1. Students' perceived difficulties in application of pre-clinical prosthodontics learning to clinical prosthodontics

Statements	Frequency and percentages (%) of responses					Median (IQR)
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	
You could identify the chief complaint and needs of complete denture patients	3 (11.5%)	20 (76.9%)	3 (11.5%)	-	-	4.00 (0.00)
You could obtain thorough general, medical, dental and social history	4 (15.4%)	14 (53.8%)	8 (30.8%)	-	-	4.00 (1.00)
You felt apprehension during your first patient contact in third year	9 (34.6%)	6 (23.1%)	8 (30.8%)	3 (11.5%)	-	4.00 (2.00)
You could perform intra-oral and extra-oral examination	1 (3.8%)	12 (46.2%)	9 (34.6%)	4 (15.4%)	-	3.50 (1.00)
You could select stock trays and make primary impressions	2 (7.7%)	15 (57.7%)	5 (19.2%)	4 (15.4%)	-	4.00 (1.00)
You could locate and mark posterior palatal seal area in patient's mouth	1 (3.8%)	10 (38.5%)	5 (19.2%)	8 (30.8%)	2 (7.7%)	3.00 (2.00)
You could perform maxillary border molding procedure and make secondary impressions	2 (7.7%)	7 (26.9%)	6 (23.1%)	7 (26.9%)	4 (15.4%)	3.00 (2.00)
You could perform mandibular border molding procedure and make secondary impressions	2 (7.7%)	6 (23.1%)	5 (19.2%)	9 (34.6%)	4 (15.4%)	2.50 (2.00)
You could take jaw relation records	1 (3.8%)	9 (34.6%)	5 (19.2%)	9 (34.6%)	2 (7.7%)	3.00 (2.00)
You could select anterior and posterior artificial teeth for patients	3 (11.5%)	15 (57.7%)	7 (26.9%)	1 (3.8%)	-	4.00 (1.00)
You could obtain patients opinions and approval during anterior teeth selection	1 (3.8%)	10 (38.5%)	11 (42.3%)	3 (11.5%)	1 (3.8%)	3.00 (1.00)
You could obtain patients approval for esthetics by asking them to check the anterior teeth in a mirror	7 (26.9%)	10 (38.5%)	7 (26.9%)	2 (7.7%)	-	4.00 (1.75)
You could complete the try-in step for proper teeth arrangement and occlusion	4 (15.4%)	14 (53.8%)	5 (19.2%)	3 (11.5%)	-	4.00 (1.00)
You could perform denture insertion and check for its border extensions, retention and stability	4 (15.4%)	14 (53.8%)	6 (23.1%)	2 (7.7%)	-	4.00 (1.00)
You could check denture occlusion and refine it using articulating paper	1 (3.8%)	14 (53.8%)	8 (30.8%)	3 (11.5%)	-	4.00 (1.00)
You could identify post-insertion problems, if any, and resolve them at the follow-up appointment	1 (3.8%)	5 (19.2%)	12 (46.2%)	7 (26.9%)	1 (3.8%)	3.00 (1.00)

Table 2. Need for ECE

Statements	Neutral (%)	Agree (%)	Strongly Agree (%)	Median (IQR)
Inclusion of clinical demonstration of complete denture procedures (ECE) on patients in second year will be beneficial	1 (3.8)	6 (23.1)	19 (73.1)	5 (0.75)
ECE will be helpful in stimulating interest in the subject	2 (7.7)	7 (26.9)	17 (65.4)	5 (1.00)
ECE will be helpful in enhancing the knowledge of the subject	0 (0.0)	5 (19.2)	21 (80.8)	5 (0.00)
ECE will enable better understanding of the complete denture clinical procedures	0 (0.0)	3 (11.5)	23 (88.5)	5 (0.00)
ECE will be helpful in integration of theoretical knowledge with its clinical applications	0 (0.0)	6 (23.1)	20 (76.9)	5 (0.00)
ECE will be helpful in establishing rapport and communication with patients	5 (19.2)	5 (19.2)	16 (61.5)	5 (1.00)
ECE will be helpful in reducing your apprehension during patient contact in third year	4 (15.4)	5 (19.2)	17 (65.4)	5 (1.00)
ECE will be helpful in enhancing students' confidence	1 (3.8)	7 (26.9)	18 (69.2)	5 (1.00)

In response to the open-ended question that was put forth at the end of the survey questionnaire, majority of the students (96.2%) felt that ECE will be most helpful in imparting better clarity for the border molding and final impression step followed by jaw relations (61.5%), diagnosis and treatment planning (26.9%), post-insertion (19.2%), try-in (15.4%), primary impression (11.5%) and denture insertion (7.7%).

DISCUSSION

Pre-clinical Prosthodontics training aims to ease the transition of dental students from pre-clinical to clinical phase and helps in developing their competency, skills, and confidence to facilitate improved patient management in clinics. However, a lack of patient contact acts as a deterrent to the fulfillment of this aim.

In the present study we identified various barriers faced by third year BDS students in applying pre-clinical prosthodontics learning in the clinics and their perception regarding the need for introduction of ECE in the subject of PCP. A total of 26 students participated in the study. Several students had to be excluded from the study; the sample on whom questionnaire was pilot-tested, students who did not attend third year prosthodontics clinical posting and those students who did not complete a minimum of two CDs in their posting.

The main barriers identified by students in the present study include; locating and marking posterior palatal seal area in patient's mouth (38.5%), performing maxillary (42.3%) and mandibular (50%) border molding procedures and taking jaw relation records (42.3%).

Students' responses to the open-ended question in the present study also strongly pointed towards clinical demonstration of border molding (96.2%) and jaw relation (61.5%) steps to impart better understanding and visualization of the procedures.

These results, however, could not be strongly correlated, as to our knowledge, no published literature has quantitatively explored the challenges faced by students in applying pre-clinical prosthodontics. The only Indian study that qualitatively explored the above subject also reported that students were unable to visualize CD procedures such as impression techniques and jaw relation, and faculty expressed that jaw relations posed a challenge for the students.[3]

In our study, students expressed a strong need for the introduction of ECE in the subject of PCP (73.1%) in the form of clinical demonstration of CD procedures on patients. In the studies by Shigli et al.[3] and Haralur and Al-Malki [7], students felt a similar need for ECE so as to ease the transition from pre-clinical to clinical phase.

Students strongly agreed that ECE will enable better understanding of the CD clinical procedures (88.5%) and enhance their knowledge of the subject (80.8%). Similar results have been reported in the studies by Johnson et al.[8], Lang et al.[9], Shigli et al.[3],[10], and Rawekar et al.[5] that were undertaken in different dental and medical settings. It has also been observed that 76.9% students strongly agreed that ECE will be helpful in the integration of theoretical knowledge with its clinical application. This is in consensus with the findings from the studies by Ali et al.[11], Obrez et al.[12], and Rawekar et al.[5] who reported that introduction of early clinical experience significantly improved students' academic performance and enabled vertical and horizontal integration within the curriculum. Majority of the students also felt that ECE will be helpful in establishing rapport and communication with patients, in reducing their apprehension during patient contact in third year as well as in enhancing their confidence. Similar results have been reported in studies by Lang et al, [9] Tayade et al.[4], [13] Das et al.[14] and Rawekar et al.[5]. In fact, such is the effectiveness and impact of ECE, that the MCI in 2019 included ECE in the competency-based undergraduate curriculum as one of the compulsory practices in regular teaching from foundation course [2].

Limitations of the study

It is a single-center study with limited sample size therefore the results are not generalizable to the entire dental student population. Faculty perception towards the need for ECE and barriers in teaching-learning PCP were not taken into consideration.

Implications of the study and future recommendations

This study clearly establishes the need for introduction of ECE in the subject of PCP. A mixed-methods study with larger sample size will provide a deeper insight into the challenges faced by faculty and students in teaching-learning PCP. Also, based on the results of this study, an interventional study has been planned and initiated at our institute to assess the effectiveness of introduction of

ECE in the subject of PCP.

CONCLUSION

From the present study we can conclude that students at our institution felt a strong need for introduction of ECE in the subject of PCP and the major barrier identified by them was the lack of ability to correlate theoretical aspects of border molding procedure taught in pre-clinical prosthodontics with its clinical aspect on patients.

CONFLICT OF INTEREST STATEMENT

None declared.

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