Current trends in Removable Partial Prosthodontic Education in Dental Colleges of Pakistan

Article *in* European Journal Of Dental Education · December 2020

DOI: 10.1111/eje.12648

6 authors, including:

Muneeb Ahmed Lone
Dow University of Health Sciences
13 PUBLICATIONS **9** CITATIONS
SEE PROFILE

Maham Muneeb Lone
Jinnah Sindh Medical University
14 PUBLICATIONS **41** CITATIONS
SEE PROFILE

Muhammad Farhan Khan
King Khalid University
11 PUBLICATIONS **17** CITATIONS
SEE PROFILE

Mohid Abrar Lone
Jinnah Sindh Medical University
13 PUBLICATIONS **16** CITATIONS
SEE PROFILE

Received: 30 September 2020 | Revised: 24 November 2020 | Accepted: 13 December 2020

DOI: 10.1111/eje.12648

ORIGINAL ARTICLE

WILEY

Current trends in removable partial prosthodontics education in dental colleges of Pakistan

Muneeb Ahmed Lone[1] | Ahsan Inayat[2] | Maham Muneeb Lone[3] | Muhammad Farhan Khan[4] | Mohid Abrar Lone[5] | Muhammad Saad Shaikh[6]

[1]Department of Prosthodontics, Dr. Ishrat-ul-Ebad Khan Institute of Oral Health Sciences, Dow University of Health Sciences, Karachi, Pakistan

[2]Department of Oral Medicine, Fatima Jinnah Dental College, Karachi, Pakistan

[3]Department of Operative Dentistry, Sindh Institute of Oral Health Sciences, Jinnah Sindh Medical University, Karachi, Pakistan

[4]Department of Prosthodontics, Baqai Dental College, Baqai Medical University, Karachi, Pakistan

[5]Department of Oral Pathology, Sindh Institute of Oral Health Sciences, Jinnah Sindh Medical University, Karachi, Pakistan

[6]Department of Oral Biology, Sindh Institute of Oral Health Sciences, Jinnah Sindh Medical University, Karachi, Pakistan

Correspondence
Dr. Muneeb Ahmed Lone, Department of Prosthodontics, Dr. Ishrat-ul-Ebad Khan Institute of Oral Health Sciences, Dow University of Health Sciences, Sparco Road, Gulzar-e-Hijri, Karachi, Pakistan.
Email: muneeblone@gmail.com

Funding information
None.

Abstract

Objective: The objective of this study was to investigate the current trends in undergraduate teaching of removable partial prosthodontics in various dental colleges of Pakistan.

Methodology: A cross-sectional study was conducted in which a questionnaire was sent by email to head of Prosthodontics department of thirty-one dental institutes of Pakistan. The survey included multiple questions regarding current trends in removable partial prosthodontics education in undergraduate dental colleges.

Results: Out of thirty-one questionnaires, twenty-six were completely filled and returned. In 19 (73%) dental colleges, removable partial denture is taught over a period of at least two years of undergraduate education. Students of only six dental colleges fabricate 10–12 removable partial dentures during their Prosthodontic rotation. Lectures and live clinical demonstration for construction of removable acrylic dentures are reported to be carried out in all the dental schools. Simple hinge articulator is the articulator of choice in 22 (84.6%) colleges. Even though twenty-four out of twenty-six colleges (92.3%) teach fabrication of cast partial dentures in lectures, none of the student fabricate these dentures during their Prosthodontic rotation.

Conclusion: This survey is the first to comprehensively report the teaching practices of removable denture Prosthodontics in undergraduate dental colleges of Pakistan. Faculty of all twenty-six colleges give clinical demonstrations of acrylic partial denture construction before students start working in the dental OPD. Most of the dental colleges report use of similar impression materials and techniques in removable partial denture fabrication. More than 90% of dental colleges teach cast partial dentures theoretically, but their construction is grossly neglected in all the dental colleges. It is important that this skill is taught and practised by students in order to have the necessary skill set, so they can provide comprehensive treatment to partially dentate patients once they graduate.

KEYWORDS
cast partial denture, current trends, removable partial prosthodontics, undergraduate dental education

1 | INTRODUCTION

A removable partial denture (RPD) is a prosthesis to replace teeth in a partially edentulous arch and can be readily inserted and removed from the mouth by the patient.[1] Inspite of enhancement in preventive dental practices globally, an increased need for fixed and removable prosthetic treatment will still remain in the foreseeable future due to population growth and extended life expectancy.[2] Studies report that around 4.1% of the total Pakistani population above 65 years of age is edentulous, with an expected increase up to 9.3% by 2030.[3] Removable partial dentures are still used as conventional rehabilitation prosthesis for patients of partial edentulism as a predictable, satisfactory and least invasive treatment option.[4] Recent advances in dentistry have shifted the focus to implant supported restorations as replacement of missing teeth.[5] The disadvantage of high cost, surgical risks and complexities associated with implant supported prosthesis may be a reason that conventional removable dentures still remain as a popular treatment modality worldwide to replace missing teeth.[6]

In Pakistan, Pakistan Medical & Dental Council (PM&DC) provides the framework for the curriculum and outlines the key competency list for undergraduate dental programmes of the country. Removable denture fabrication is an essential component in the undergraduate curriculum of Prosthodontics as laid down by PM&DC. Although, didactic teaching is an essential tool for attaining basic knowledge of any subject, it does not provide appropriate competency to the students to perform the skill in independent clinical settings. Provision of removable dentures is a skill that, like other dental procedures, has to be demonstrated and practised for better understanding before the students can provide the same to their patients.[5,7]

Dentists gain the relevant knowledge, learn necessary technical skills and experience in treatment planning for missing teeth in their formative undergraduate years.[8,9] For provision of successful removable dentures, precise treatment planning and attention to detail are required when designing the denture framework. Deleterious effects on the oral tissues, that is plaque accumulation, food packing, undue stress on underlying residual ridge and abutment teeth can result if a faulty prosthesis is designed and fabricated. This can lead to gingivitis, dental caries, periodontal problems and excessive bone resorption in the long term.[10] It is thus the responsibility of the teachers at dental colleges to prepare graduates with the right competence and professional attributes to meet the challenges of oral health care in the community. Lack of clarity and any disparities in teaching removable prosthodontics may result in misunderstandings in dental graduates when treating patients in independent clinical settings, resulting in patient care that may not be up to the mark.

Petropoulos et al[11] concluded in their study that 18% of dental schools in the United States have removed construction of RPDs from the clinical requirements for graduation. They attribute this finding to the increased use of dental implants in partially edentulous patients as increasing evidence in literature shows implants to be a successful treatment modality for replacing missing teeth compared with conventional RPDs.[12] On the contrary, studies from Pakistan report that dental implant placement and rehabilitation have still not been adopted as a core competency within the clinical practice of undergraduate dental education programmes in various colleges.[13]

Dental undergraduate programmes must continually evaluate their curricula to ensure that current treatments and techniques are being taught to the students, so dental health needs of the society will be met once they graduate.[8,9] Over the years, a number of studies have been done to assess the methods used to teach removable partial denture prosthodontics, both theoretically and practically, to undergraduate students in developed countries.[4,8,9,12,14] On the contrary, we found no similar study assessing the current trends of teaching practices conducted in the dental colleges of Pakistan. The authors conducted a similar study to assess the current trends in teaching methods and techniques for removable partial denture construction in Prosthodontics in Sindh. The objective of the present study was to determine the current trends in undergraduate removable partial Prosthodontics didactic and clinical teaching at undergraduate level education in colleges of the major provinces of Pakistan.

2 | METHODOLOGY

This cross-sectional descriptive study comprised of multiple choice questions regarding current trends of teaching practices of removable partial prosthodontics at undergraduate dental colleges of Punjab, Balochistan and Khyber Pakhtunkhwa, Pakistan. The questions were adapted from previous studies with changes made keeping the local context in mind.[11,15] Feedback was also sought from two medical educationists regarding the clarity, wording and layout of the questions. The questionnaire was then sent to three senior content experts and the changes that they advised were incorporated into the final survey form. The questionnaire was then pilot tested by administering to 03 head of departments of Prosthodontics. Once they had filled the survey form, they were questioned directly by the primary investigator regarding the clarity of the questions or any ambiguities that they found. Any necessary changes identified were made in the questions at this time. These measures were taken to improve the validity of the questionnaire before it was administered to the rest of the study population.[16] Ethical approval was obtained from Ethical Review Committee (Ref# AUG-2019- PRSO1).

A list of dental colleges in the provinces of Punjab, Balochistan and Khyber Pakhtunkhwa that are recognised by PM&DC was obtained.[17] All heads of Prosthodontics department involved in teaching undergraduate dental students in three major provinces of Pakistan, that is Punjab, Balochistan and Khyber Pakhtunkhwa were included in the study population. Newly established dental institutes and participants who did not give informed consent were excluded from the study. The structured questionnaire was distributed by email in December 2019 to the Head of Department of Prosthodontics of dental colleges who fulfilled the inclusion criteria. The participants were reminded twice, at two weeks' intervals,

by email and phone calls for completion and return of forms. This self-administered questionnaire consisted of two parts. Part I of the data collection instrument included the sociodemographic details of the participants. Part II of the form consisted of questions that inquired about the theoretical and practical teaching practices in the undergraduate removable partial denture course. Email address and telephone number of the principal investigator were provided on the forms in case the respondents had any queries regarding the questionnaire. The privacy of data collection and confidentiality was maintained throughout the study. If respondents wanted to maintain anonymity, they were given the option of only mentioning the location (province) of institute. Data analysis was done by SPSS v.23.0 (SPSS Inc., USA).

3 | RESULTS

Questionnaires were distributed to thirty-one dental institutes that fulfilled the inclusion criteria. After repeated reminders, twenty-six completely filled forms were returned, giving a response rate of 83.9%. Seven out of twenty-six (26.9%) dental schools carry out the theoretical and practical teaching regarding removable partial dentures in the 3rd and 4th year of dental school, 23.1% in the 2nd and 3rd year while only one of the schools teach removable partial denture only in 4th year. The number of cases of removable acrylic partial dentures that the students fabricate during their Prosthodontic rotation is shown in Figure 1.

Out of twenty-six, twenty-five dental colleges teach preclinical laboratory-based removable partial denture courses to their students before they start their rotations to treat patients in the OPD. Students exercise construction of acrylic partial denture, rest seat preparation, cast partial denture designing and surveying during their preclinical years. The RPD prosthodontics hands-on exercises carried out by students in their preclinical years are shown in Table 1. All dental colleges reported that the students are given clinical demonstration of steps of removable partial denture construction before they start working in the dental OPD. The various methods employed in teaching removable partial dentures (RPDs) to undergraduate students are shown in Table 2. The topics taught related to removable partial dentures are shown in Table 3.

The material of choice for primary impressions of removable partial dentures was irreversible hydrocolloid in 25 (96.2%) of the dental colleges. One (3.8%) school reported use of both irreversible hydrocolloid and polyvinyl siloxane. For secondary impressions of partially dentate arches, irreversible hydrocolloid was also the preferred material of choice by 21 (80.8%) dental colleges, followed by irreversible hydrocolloid and poly vinyl siloxane in 03 (11.5%) and irreversible hydrocolloid and polyether in 02 (7.7%) dental schools. Twenty-five dental schools advocated the use of green stick compound for border moulding of final impressions in partially dentate arches while only one institute advocates the use of polyether as well as green stick compound depending upon different clinical scenarios. In cases of mandibular distal extension RPDs, selective pressure technique was taught and practised by students in 18 (69.2%) colleges, mucostatic technique in four (15.4%) and mucocompressive in two (7.7%) dental colleges. Modelling wax was reported to be used for interocclusal records by all dental colleges. One college each also mentioned use of bite registration paste and polyvinylsiloxane along with wax for interocclusal record making. Out of twenty-six, students of twenty-five schools (96.2%) perform the laboratory steps for the acrylic removable partial dentures themselves. For mounting casts when fabricating RPDs, simple hinge articulator is the articulator of choice in all clinical cases in twenty-two dental colleges (84.6%). Students of only two (7.7%) colleges use semi-adjustable articulator, while 02 (7.7%) colleges report use of both the simple hinge as well as the semi-adjustable articulator. Artificial teeth made of acrylic resin were used in all twenty-six dental schools.

None of the students fabricate cast partial dentures or implant supported removable prosthesis during their Prosthodontic rotation. Figure 2 shows the common reasons reported by the dental

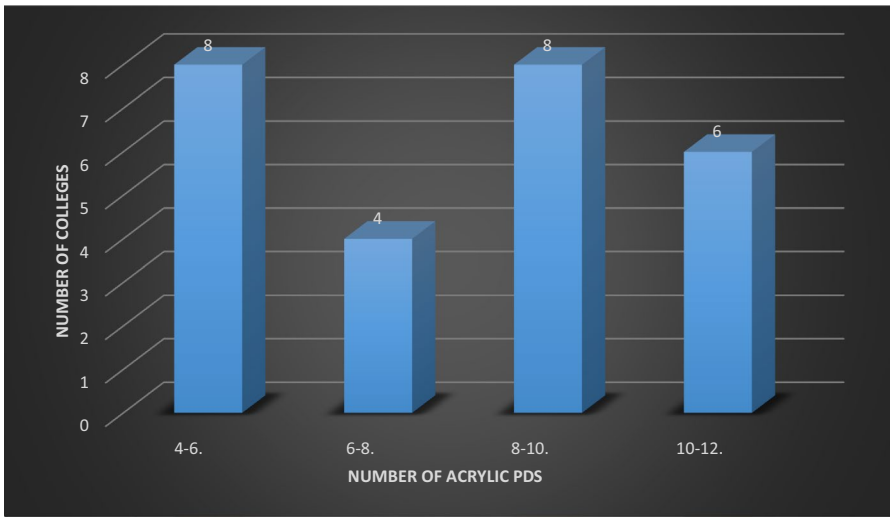

FIGURE 1 Number of removable acrylic partial dentures fabricated by students during their Prosthodontics rotation

TABLE 1 Removable Partial Denture (RPD) Prosthodontics hands-on exercises carried out by students in their preclinical years

Preclinical RPD Prosthodontics hands-on exercises	Number of schools (%)
Acrylic partial denture construction	24 (92.3)
Rest seat preparation	02 (7.6)
Surveying	16 (61.5)
Cast partial denture designing	19 (73.1)

TABLE 2 Methods employed to teach removable partial denture in undergraduate dental colleges

Teaching methods	Number of schools (%)[a]
Lectures	26 (100)
Hands-on on models	13 (50)
Live clinical demonstrations	26 (100)
Small group discussions	19 (73)
E-learning/ Videos	-

[a]As more than one method can be used by each dental colleges, the total percentage is more than 100.

TABLE 3 Topics taught related to removable partial dentures in undergraduate dental colleges

Topics taught	Number of schools (%)[a]
Cast partial dentures	24 (92)
Interim partial dentures	24 (92)
Precision attachments	07 (27)
Sectional dentures	07 (27)
Implant retained/ supported partial dentures	05 (19)

[a]As more than one method can be used in the dental colleges, the total percentage is more than 100.

colleges for undergraduate students not being able to construct these prostheses. McCracken's Removable Partial Prosthodontics is the recommended book for teaching removable partial dentures by all the dental schools. Alongside this, books by Steward, Nallaswamy and Fenn are also recommended by a couple of schools each. About one-thirds of the dental colleges (34.6%) recommended journals to their students apart from textbooks.

4 | DISCUSSION

Over the past few years, emphasis has been placed worldwide to document the trends in teaching practices in undergraduate dental schools.[8,12,18,19] A few of the developed countries have even carried out follow-up studies after a couple of years to assess changes, if any, in the teaching practices.[15,20] On the contrary, we found no similar study assessing the current trends of teaching practices conducted in the dental colleges of Pakistan. To ascertain the suitability, a study was first conducted in the dental colleges of only one province of Pakistan, that is Sindh. We then conducted this survey to assess the current trends in removable partial prosthodontics teaching and practice in undergraduate dental colleges over the other 03 major provinces of Pakistan. Results of this study can be generalised to all dental colleges of Pakistan. Even though variations may exist on individual level, as evident by the results, but as all institutes follow the basic guidelines of the governing body in Pakistan, that is Pakistan Medical and Dental Council, all have similar trends in didactic and practical teaching methodologies.

Provision of dentures as part of prosthetic rehabilitation of partially dentulous patients is a skill that a dental graduate should possess to be able to provide quality dental treatment to patients once they start their own independent dental practice. It is therefore of utmost importance that dental graduates have the basic skill set pertaining to patient management after graduation. Results of our survey reported that students of twenty (76.9%) schools construct less than 10 acrylic RPDs during their Prosthodontic rotation. This number was even more alarming in Sindh, where students of only 01 school construct 10–12 acrylic dentures during their rotation. These numbers are a cause of concern as according to the guidelines set by Pakistan Medical & Dental Council, a minimum of 12 acrylic RPDs should be fabricated by each student prior to graduation. The mean number of acrylic partial dentures reported to be constructed in our study, that is 08 is similar to the number of RPDs constructed by students of Turkish dental schools.[14] Comparable data from developed countries revealed that students, on an average, constructed a far less number, that is 02 acrylic partial dentures in United Kingdom and Ireland and 3–4 in Spanish dental schools prior to graduation.[8,18,21] Thus, undergraduate dental students in Pakistan are fabricating a higher average number of acrylic partial dentures compared to international practices.

On the flip side, the practice to fabricate cast partial dentures is negligent in our undergraduate students. Acrylic removable partial dentures are said to serve as interim prosthesis which should be replaced in the definitive treatment phase with cast partial denture. Acrylic dentures are tissue-borne and cover a large portion of the gingival tissues, thereby effecting periodontal tissues, supporting residual ridge and abutment tooth.[15,22] Although didactic teaching of CPD is being carried out in 92% of dental schools, it is alarming that none of the students are constructing cast partial dentures during their prosthodontic rotation. The most common reason reported for this is lack of resources as well as lack of patient affordability at most dental institutes. This finding is in contrast with studies in developed countries where students are required to fabricate CPD during their rotation in prosthodontic department.[8,11,12,15,18,23] Lack of exposure to CPD cases during undergraduate years may be one of the reasons that new dental graduates apparently diverge from guidelines to prescribe CPDs in general practice and are therefore reluctant to plan RPD therapy.[8] In the authors' view, dental colleges should make an effort to provide the necessary resources at subsidised treatment costs so that the students can be provided the clinical experience

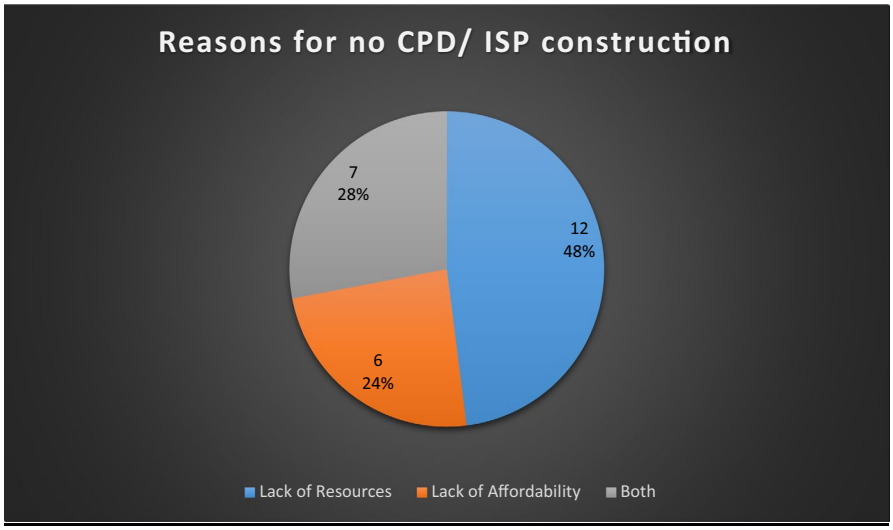

FIGURE 2 Common reasons reported by the dental colleges for undergraduate students not being able to construct Cast Partial Dentures (CPD)/ Implant Supported Prosthesis (ISP)

for CPD fabrication during their undergraduate years. This will help to improve the students training experience as well as enhance their expertise in rehabilitating CPD cases once they graduate. In the era of e-learning, simulation-based learning by interactive software program can be encouraged that would expose the students to designing dentures in various different clinical scenarios, thus helping them in clinical practice even if they have not treated a multitude of patients in actual clinical setting.[24]

More than 90% of dental colleges in our study teach cast partial dentures as well as interim partial dentures in the theoretical component of the subject. Contrary to this, only 07 (27%) colleges include precision attachments and sectional dentures, while only 05 colleges teach implant retained partial dentures in the undergraduate curriculum. This practice is comparable to results of Dikbas et al. who concluded that precision attachments and sectional dentures were presumably more specialised clinical procedures and thus included in post-graduation educational programme.[14]

Preclinical courses are considered as preparatory courses for clinical practice that helps students to improve their skills as they enter clinical years. Majority (95%) of the dental schools teach preclinical laboratory-based RPD course to their students. Almost all dental schools (92%) teach the laboratory steps for acrylic partial denture construction in the preclinical course. However, students of only 02 (7.7%) dental colleges were taught rest seat and guide plane preparation on phantom heads in their preclinical years. Rest seat preparation is an essential step during the construction of cast partial dentures. Other important components of preclinical course such as use of dental surveyor were taught in 19 (73.1%) dental schools, whereas cast partial denture designing was only taught at 16 (61.5%) dental schools. These steps are essential in the planning and execution of a CPD and students must be confident in these important areas prior to treating patients with removable prosthesis. In a recent study, Khan MF et al[25] reported that almost half the dental practitioners believed that RPD designing was the dental technician's job instead of their own. As the dentist has firsthand knowledge of the oral health and condition of the patient, it should be the dentist's foremost responsibility to design the removable denture, not vice versa. It is safe to deduce that similar practice would be observed by dental graduates of today as they are still not getting enough skill training regarding denture designing in their formative undergraduate years. It is therefore essential to develop guidelines to improve the standards of preclinical prosthodontics course so that a more uniform practice is carried out at colleges nationwide.

Most of the dental colleges report use of similar impression materials and techniques in RPD fabrication. All dental schools use irreversible hydrocolloid as material of choice for primary as well as secondary impressions. Use of PVS and polyether was reported by 2–3 schools along with irreversible hydrocolloid for secondary impressions. Green stick compound was used by all dental schools for border moulding of secondary impressions in partially dentate arches. These findings are in contrast to study done in UK and Ireland which report that 60% of schools used PVS and only 40% used irreversible hydrocolloid for final impressions.[8] A possible explanation for these findings may be related to irreversible hydrocolloid being a cheaper material as compared to elastomeric impression materials and hence more suited to the budget of various private and public dental colleges. Although irreversible hydrocolloid and elastomeric impression materials both are acceptable means of making a reliable impression, elastomeric impression materials have better dimensional stability, adequate working and setting time and more elastic recovery.[14,26]

As noted from our survey, a large majority (84.6%) of schools reported use of simple hinge articulator to mount casts when fabricating RPDs. Petropoulos et al,[11] in his study concluded that around 98% of dental schools in United States use a semi-adjustable articulator to mount casts when planning and fabricating RPDs. Another study reported the use of semi-adjustable articulator in as many as 90.9% dental schools.[14] This practice may

be justified in developing countries, such as ours, because of increased cost of semi-adjustable articulators, preventing the students' ease of affordability to buy this type of articulator. Never the less, simple hinge articulators cannot simulate all mandibular movements in the laboratory setting when fabricating removable dentures. Recommendations should be put forward to schools to reiterate the use of semi-adjustable articulators in majority of cases for mounting casts while fabricating a removable partial prosthesis, especially when constructing dentures with unstable occlusion.[27]

In this survey, students of all the dental schools (100%) performed laboratory steps for the acrylic RPDs they fabricated for patients. This is in contrast to studies done in United States, UK and Turkey where majority of students did not perform laboratory steps for their clinical cases.[11,12,14,15] Therefore, in these countries dental technicians had a major responsibility to complete laboratory-related steps with minimum student involvement. Performing laboratory steps themselves helps students understand the fabrication process, better liaise with their dental technicians and laboratories once they graduate and establish their clinical practice.[14]

In a study by Packer et al,[28] students reported that they benefitted from demonstration of clinical steps by a faculty member prior to treating their own patients. It is encouraging to report in our study that students of all dental colleges are given clinical demonstrations by faculty before they start their clinical rotations to construct removable partial dentures. Small group discussions are also practised by 19 dental schools, which may help students understand the concepts better. It is noteworthy that none of the schools reported the use of e-learning as an aid to teach their students. In this recent era of digitalisation, dental schools should be encouraged to use alternate teaching strategies such as online videos and virtual teaching where the students can learn the principles of removable denture construction. Video-taped recordings should be used more frequently as a learning tool since they have been reported to be as effective as live clinical demonstrations.[18,29] Due to current pandemic situation all over world (COVID-19), academic halt foisted many dental institutes to use the digitalised learning environment. In such circumstances, teaching through e-learning has become the main focus worldwide and thus students would benefit tremendously from the opportunity to interact by the help of online resources in the absence of a classroom setup.[30]

According to the results of our survey, almost one-thirds of the dental colleges (34.6%) recommended journals to their students along with textbooks. Although textbooks are good source of learning, journals provide more up-to-date evidence-based knowledge regarding the subject. Faculty of dental colleges should thus be encouraged to recommend journals to their students so they would have up-to-date knowledge regarding the subject.

According to results of our study, implant-supported/ retained partial dentures are taught at very few dental colleges of Pakistan. Khan FR et al in 2016 concluded that more than 50% dental schools all over Pakistan do not teach the prosthetic rehabilitation part of implant dentistry in the undergraduate curriculum.[14] This is in contrast to study done in United Kingdom where the implant dentistry is taught in majority (81%) of dental schools by faculty of Oral Maxillofacial and Restorative department.[27] Moreover, none of the dental schools in Pakistan provided either observation of live surgical procedure or surgical implant placement procedure to their students during their Prosthodontic rotation. This is similar to a study conducted in dental schools of United Kingdom and Ireland where direct clinical experience provided to students in restoring and placing dental implants remains low and similar to previous finding.[19,20]

4.1 | Recommendations and future directions

The present study highlights the deficiencies in teaching methodologies and practices in undergraduate removable partial denture prosthodontics in different dental colleges of Pakistan. It should be kept in mind that these are self-reported practices of the heads of department and thus should be pondered upon with caution. Further studies should be planned in which students' input on the teaching methods and trends of removable partial prosthodontics education in undergraduate years be compiled and then compared to results found in this study. Also, study focusing on the undergraduate students' perspectives and confidence in managing patients who require removable partial dentures can be conducted. Even though there is widespread use of implants across the world, the importance of conventional removable partial denture fabrication has its own importance considering the economic condition of patients reporting to dental institutes in our part of the world. As the construction of cast partial dentures by the undergraduate students is negligible, therefore, it is imperative that CPD construction should be reiterated in the dental curriculum in the preclinical and clinical years. In light of the results of this study, recommendations can be put forward to governing educational body of Pakistan to help improve the curriculum needs and thereby the clinical practice of undergraduate students.

5 | CONCLUSION

This survey is the first to comprehensively report the teaching practices of removable partial Prosthodontics in undergraduate dental colleges of Pakistan. Faculty of all twenty-six dental colleges provide clinical demonstrations of steps of removable acrylic partial denture construction before students start working in the dental OPD. Most of the dental colleges report use of similar impression materials and techniques in removable partial denture fabrication. Even though more than 90% of dental colleges in our study teach cast partial dentures as well as interim partial dentures in the theoretical component of the subject, none of the students construct these in their undergraduate clinical rotations. Efforts should thus be focused on improving the teaching practices so as to improve practical skills of students, so they are better prepared to manage partially dentate patients once they graduate.

CONFLICT OF INTEREST

The authors and co-authors have no conflicts of interest to declare.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ORCID

Muneeb Ahmed Lone https://orcid.org/0000-0003-3155-8480
Maham Muneeb Lone https://orcid.org/0000-0002-9124-5286

REFERENCES

1. Ferro KJ. The glossary of prosthodontic terms. *J Prosthet Dent*. 2017;117(5S):e1-e105.
2. Jayasinghe RM, Perera J, Jayasinghe V, et al. Awareness, attitudes, need and demand on replacement of missing teeth among a group of partially dentate patients attending a University Dental Hospital. *BMC Res Notes*. 2017;10:334.
3. Rashid H, Naseem M, Vohra F, Shah SU, Shehzad A. Prosthodontic services provided by the dental practitioners of Karachi, Pakistan. *J Pak Dent Assoc*. 2014;23(4):159-163.
4. Bidra AS, Agar JR. Clinical experience of residents with RPD treatment in U.S. graduate prosthodontics programs. *J Dent Educ*. 2010;74(2):104-109.
5. Basker RM, Harrison A, Davenport JC, Marshall JL. Partial denture design in general dental practice 10 year. *Brit Dent J*. 1988;165:295-299.
6. Douglass CW, Shih A, Ostry L. Will there be a need for complete dentures in the United States in 2020? *J Prosthet Dent*. 2002;87:5-8.
7. Taylor CL, Grey N, Satterthwaite JD. Assessing the clinical skills of dental students: a review of the literature. *J Educ Learn*. 2013;2(1):20-31.
8. Lynch CD, Allen PF. The teaching of removable partial dentures in Ireland and the United Kingdom. *Br Dent J*. 2007;203(8):e17.
9. Lynch CD, McConnell RJ, Wilson NH. Teaching the placement of posterior resin-based composite restorations in U.S. dental schools. *J Am Dent Assoc*. 2006;137(5):619-625.
10. Dula LJ, Ahmedi EF, Lila-Krasniqi ZD, Shala KS. Clinical evaluation of removable partial dentures on the periodontal health of abutment teeth: a retrospective study. *Open Dent J*. 2015;9:132-139.
11. Petropoulos VC, Rashedi B. Removable partial denture education in US dental School. *J Prosthodont*. 2006;15:62-68.
12. Rashedi B, Petropoulos VC. Preclinical removable partial denture curriculum survey. *J Prosthodont*. 2003;12(2):116-123.
13. Khan FR, Lone MM. Oral Implantology education in the dental colleges of Pakistan. *J Pak Dent Assoc*. 2016;25(4):137-142.
14. Dikbas I, Ozkurt Z, Kazazoglu E. Predoctoral prosthodontic curricula on removable partial dentures: survey of Turkish dental schools. *J Dent Educ*. 2013;77(1):85-92.
15. Clark RKF, Radford DR, Juszezyk AS. Current trends in removable partial denture teaching in British Dental School. *Brit Dent J*. 2011;211(11):531-535.
16. Artino AR, LaRochelle JS, Dezee KJ, Gehlbach H. Developing questionnaires for educational research. AMEE Guide No. 87. *Med Teach*. 2014;36(6):463-474.
17. Recognized Dental Colleges in Pakistan. Webpage on the internet. c 2006 [cited: Jul 26 2020] Available from: http://pmdc.org.pk/RECOGNIZEDDENTALCOLLEGESINPAKISTAN/tabid/167/Default.aspx.
18. Castillo de Oyague R, Lynch C. Variations in teaching removable partial dentures in Spanish Dental Schools. *Med Oral Patol Oral Cir Bucal*. 2011;16(17):e1005-1013.
19. Addy LD, Lynch CD, Locke M, Watts A, Gilmour AS. The teaching of implant dentistry in undergraduate dental schools in the United Kingdom and Ireland. *Br Dent J*. 2008;205:609-614.
20. Chin JS, Lynch CD, Rees J, Locke M, Thomas MBM, Addy LD. Teaching of implant dentistry in undergraduate dental schools in the UK and Ireland. *Brit Dent J*. 2018;225:763-768.
21. Loch C, Brunton PA, Rahim ZA, et al. The teaching of removable partial dentures in dental schools in Oceania. *J Dent*. 2020;95:103309.
22. Suwal P, Singh RK, Ayer A, Roy DK, Roy RK. Cast partial denture versus acrylic partial denture for replacement of missing teeth in partially edentulous patients. *J Dent Materials Tech*. 2017;6(1):27-34.
23. Barsby MJ, Swartz WD. A survey of teaching of partial denture construction in dental schools in UK. *J Dent*. 1979;7:1-8.
24. Higgins D, Hayes M, Taylor J, Wallace J. A scoping review of simulation-based dental education. *Med Ed Publish*. 2020;9(1):36.
25. Khan MF, Khan FNA, Lone MA, Hussain MW, Shaikh MA, Shaikh IA. Knowledge and attitute regarding designing RPD among interns and dentists; dental schools of Pakistan. *J Pak Dent Assoc*. 2020;29(2):66-70.
26. Phoenix RD, Cagna DR, Defreest CF. *Stewart's Clinical Removable Partial Prosthodontics*, 3rd edn. Chicago: Quintessence; 2003.
27. Hindle JR, Craddock HL. The use of articulators in UK dental schools. *Eur J Dent Educ*. 2006;10(4):197-203.
28. Packer ME, Scott BJ, Davis DM. An assessment of the influence of clinical demonstrations on the confidence of undergraduate dental students, when treating patients requiring removable partial dentures. *Eur J Dent Educ*. 1999;3(3):133-139.
29. Packer ME, Rogers JO, Coward TJ, Newmans PS, Wakeley R. A comparison between videotaped and live demonstrations, for the teaching of removable partial denture procedures. *Eur J Dent Educ*. 2001;5(1):17-22.
30. Hazra UK, Das R, Mukherjee S. e-Learning Platform in SAARC Countries. Library Philosophy and Practice. 2019;1-9.

How to cite this article: Ahmed Lone M, Inayat A, Muneeb Lone M, Farhan Khan M, Abrar Lone M, Saad Shaikh M. Current trends in removable partial prosthodontics education in dental colleges of Pakistan. *Eur J Dent Educ*. 2021;00:1–7. https://doi.org/10.1111/eje.12648