International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Dental Students Perspectives: A Comparative Analysis of Knowledge, Attitude, and Awareness Towards Tooth-Supported Fixed Partial Dentures Among Undergraduate and Postgraduate Programs

Vithiya S K[1], Dr. Ponsekar Abraham[2], Dr. Vinita Mary[3]

[1]Junior Resident, Thai Moogambigai Dental College and Hospital, Chennai
[2]Head Of the Department, Department of Prosthodontics, Thai Moogambigai Dental College and Hospital, Chennai.
[3]Head Of the Department, Department of Public Health Dentistry, Thai Moogambigai Dental College and Hospital, Chennai

Abstract:

Background: Tooth-supported fixed partial dentures (FPD) are an essential component of restorative dentistry, and the proficiency of dental students in understanding, appreciating, and advocating for their use is crucial. This study aimed to assess and compare the knowledge, attitude, and awareness between junior residents and postgraduate students regarding tooth-supported FPD.

Methods: A cross-sectional survey was conducted among dental students from all dental institutes all over the Tamil Nadu using a structured questionnaire. The questionnaire assessed participants' knowledge about the indications, contraindications, and benefits of tooth-supported FPD, their attitude towards its clinical application, and their awareness of recent advancements in FPD technology. Data were analysed using descriptive statistics and regression analysis.

Results: The study shows that there is significant knowledge difference between junior resident and postgraduate students. From the survey, it is evident that 74.4% of interns have received and training on tooth supported fpd and about 89.7% undergraduate students have received a structured education in training about tooth supported fpd which is statistically significant.

Conclusion: The study suggests that there is a significant disparity in knowledge regarding tooth-supported FPDs between junior residents and undergraduate students. This finding has implications for dental education and practice, highlighting the need for further investigation and potential adjustments to the curriculum to ensure consistent and comprehensive training for all dental professionals.

Keywords: Tooth-supported fixed partial dentures, dental students, knowledge, attitude, awareness, restorative dentistry.

Introduction:

Tooth-supported fixed partial dentures (FPD) represent a cornerstone of contemporary restorative dentistry, providing an effective means of restoring function, aesthetics, and oral health for individuals with missing teeth. The success of tooth-supported FPD not only depends on the technical skills of the dentist but also on the knowledge, attitude, and awareness of dental professionals, especially dental students, who are the future practitioners of dentistry. Dental students undergo rigorous and comprehensive education and training to become competent dental practitioners. They are exposed to various aspects of restorative dentistry, including the fabrication and placement of dental prostheses. According to DCI regulations for BDS course, in terms of (3rd Amendment) notification published on 25th, **during internship students should complete 240x8 hours-1920 clinical hours** [2]**.** Whereas, from DCI Revised regulations for MDS course 2017, in terms of (2nd Amendment) notification published on 18.09.2018 in the Gazette of India, each trainee shall work in the clinics on regular basis to acquire adequate professional skills and competency in managing various cases, A model checklist for evaluation of clinical postings is annexed at Schedule-III of these regulations [1] for whole three years.so there is significant variation in the clinical exposure.

Therefore, it is imperative to assess their level of knowledge regarding tooth-supported FPD, their attitudes toward this treatment modality, and their awareness of recent advancements in FPD technology. Understanding the knowledge base and attitudes of dental students towards tooth-supported FPD is essential for several reasons. Firstly, dental students are the foundation of the future dental workforce, and their proficiency in providing evidence-based care is critical for improving patient outcomes. Secondly, as dental treatments and materials continue to evolve, it is essential for dental students to stay abreast of the latest advancements to provide the best possible care to their patients. Thirdly, positive attitudes and awareness among dental students can influence their patient communication and education, potentially leading to higher acceptance rates of appropriate treatment options such as tooth-supported FPD.

Despite the significance of these factors, there is limited research on the knowledge, attitude, and awareness of dental students regarding tooth-supported FPD. Hence, this study aims to scrutinize this gap by conducting a comprehensive assessment of dental students' knowledge, attitudes, and awareness related to this important restorative dental treatment modality. By shedding light on the current status of dental education in this area, this research seeks to inform educational strategies and curriculum development, ultimately enhancing the quality of dental care provided to patients. In the following sections, we will present the methodology, results, and discussion of our study, which will provide insights into the knowledge, attitude, and awareness levels of dental students towards tooth-supported FPD. Moreover, we will explore the implications of these findings for dental education and patient care, emphasizing the role of dental professionals in advancing restorative dentistry practices.

Materials and methods

Study Design

The present study was a cross-sectional one that utilises a survey method by using questionnaires. The statistical population of the study is 163 that includes the junior resident and Postgraduate dental students within the state Tamil Nadu in 2023. The data for 163 participants was collected and analysed. A questionnaire was distributed to evaluate the participants' knowledge regarding the factors contributing to the failure of tooth-supported FPDs, including inadequate tooth preparation, improper cementation, occlusal discrepancies, and poor oral hygiene. The questionnaires also assess the participants' awareness

of the potential complications associated with FPD failures, such as periodontal disease, abutment tooth fracture, and prosthesis debonding.The attitude of interns and postgraduates towards tooth-supported FPD failures will be explored through survey questionnaires related to their confidence in handling FPD cases, their willingness to seek help or guidance in complex cases, and their perception of the impact of FPD failures on patient satisfaction and oral health outcomes. The online survey was distributed among different dental college students. The data were gathered 6 months after the education year started and this process continued for 5 months. After getting consents from the participating students, it was ensured that their responses would remain confidential and only be used for research purposes.

INSTRUMENTS:

Self-administered questionnaire of 25 close-ended questions was prepared and it was distributed among interns and postgraduates of dental college students of private dental institutions through online survey forms —GOOGLE FORMS. Demographic details were also included in the questionnaire. The questions are all intended to be answered based on their knowledge and idea about tooth supported fixed partial dentures.

Inclusion Criteria: All Interns and postgraduate students of various dental institutions who were willing to participate were included.

Exclusive criteria: Dental practitioners, staff, first year to final year dental undergraduate students, other department students except dental students were excluded from this survey.

Ethical Considerations:

To ensure the accuracy and reliability of the findings, we employed **validation techniques**. A pivot study was conducted to test the validity and reliabilities of the questionnaire. The face validity of the questionnaire was established by taking an expert's opinion. This step helped to validate the consistency and robustness of the collected data and provided an opportunity to address any potential biases or limitations.

Data Quality Assurance: The collected data were checked regularly for clarity, competence, consistency, accuracy, and validity. The required correction was made on questionnaires, and invalid questionnaires were deleted before the actual collection of data.

Statistical analysis:

The data obtained through google forms were transferred into excel format and its analysis was done using IBM SPSS Statistics for Windows, Version 26.0. Armonk, NY: IBM Corp. Descriptive statistics including frequency and percentages were calculated for all the responses given by the participants. Comparison of the responses across different levels of study between Intern and post graduates was done using cross tabulations and statistical significance was assessed using Pearson's chi-square test and Fisher's exact test. The statistical significance in the present study was kept at $p<0.05$.

The total study population, including junior residents and postgraduate students of All dental colleges within Tamil Nadu. In this 58.3 % of them were interns and 41.7 % of them were postgraduate students with different Specialisations, including 5.5 % from Endodontics, 4.9 % from oral maxillofacial surgery,

8.0% from oral medicine and radiology, 1.2 % from oral pathology, 7.4 % from orthodontics, 3.1 % from pedodontics, 2.5 % from prosthodontics, 2.5% from public health dentistry. The study includes 65.0% female and 34.4% male and age group between 20 to 33 years.

Sr no	Questions	Responses	Interns		Postgraduates		P value
			Count	Percentage	Count	Percentage	
1.	Have you received any education or training on tooth supported FPD?	Yes	71	74.7	61	89.7	**0.025***
		No	24	25.3	7	10.3	
2.	Are you familiar with the concept of FPD failure?	Yes	71	43.6	59	86.8	0.075
		No	24	14.7	9	13.2	
3.	Tooth supported FPD are dental prostheses used to replace missing teeth	Yes	82	86.3	61	89.7	0.631
		No	13	13.7	7	10.3	
4.	Do you discuss the potential risk and complications associated with FPDs during patient consultation?	Yes	72	23	54	14	0.586
		No	75.8	24.2	79.4	20.6	
5.	Have you ever experienced or come across failure in FPD in your clinical practice?	Yes	54	56.8	50	73.5	0.033
		No	41	43.2	18	26.5	

6.	Do you know the appropriate steps to take when a FPD is failing or has failed?	Yes	61	64.2	53	77.9	0.083
		No	53	15	77.9	22.1	
7.	Do you stay updated on advancement and research related to dental prosthodontics, including FPD?	Yes	57	60.0	51	75.0	0.064
		No	38	40.0	17	25.0	
8.	If yes, from which source do you get recent updates?	E-journals & articles	0	0.00	1	1.5	**0.024***
		Journals & articles [through printing media.]	30	31.6	38	55.9	
		Through eBooks and webinars	16	16.8	7	10.3	
		Through social media	22	23.2	13	19.1	
		Not aware	26	27.4	9	13.2	
		Not applicable	1	1.1	0	0.0	
9.	Tooth supported FPD have a higher risk failure compared to other tooth replacement options.	Yes	63	66.3	54	79.4	0.079
		No	32	33.7	14	20.6	
10.	What is the main cause of failure of tooth	Crown fracture	34	35.8	16	23.5	0.330
		Dental caries	40	42.1	39	57.4	

	supported FPD?	Discolouration of teeth	3	3.2	3	4.4	
		Loss of retention	17	17.9	9	13.2	
11.	Proper oral hygiene practice can help prevent the failure of tooth supported FPD	Yes	84	88.4	66	97.1	0.075
		No	11	11.6	2	2.9	
12.	Tooth supported FPDs are reliable and effective tooth replacement options	Agree	23	24.2	22	32.4	0.234
		Disagree	8	8.4	2	2.9	
		Neutral	46	48.4	35	51.4	
		Strongly agree	5	5.3	5	7.4	
		Strongly disagree	13	13.7	4	5.9	
13.	The potential for failure in tooth supported FPDs outweighs their benefits	Agree	26	27.4	26	38.2	0.415
		Disagree	6	6.3	5	7.4	
		Neutral	49	51.6	29	42.6	
		Strongly agree	12	12.6	5	7.4	
		Strongly disagree	2	2.1	3	4.4	
14.	Dentist should provide more information to patients about the potential risk and failure rated of tooth supported FPDs	Agree	23	24.2	24	35.3	0.375
		Disagree	12	12.6	5	7.4	
		Neutral	47	49.5	29	42.6	
		Strongly agree	5	5.3	6	8.8	
		Strongly disagree	8	8.4	4	5.9	
15.	Patients should consider some other tooth replacement options instead of tooth supported FPDs to minimize the risk of failure	Agree	16	16.8	22	32.4	0.203
		Disagree	12	12.6	6	8.8	
		Neutral	54	56.8	34	50.0	
		Strongly agree	3	3.2	2	2.9	
		Strongly disagree	10	10.5	4	5.9	
16.	How can dental students	Approach the experienced	46	48.4	40	58.8	0.679

	enhance their knowledge and skills in preventing and managing failures associated with tooth-supported FPDs?	senior for guidance					
		Read articles related to it	21	22.1	11	16.2	
		Watch and learn previous similar case	16	16.8	11	16.2	
		Am not sure	11	11.6	5	7.4	
17.	What could be the most common cause of biological failure?	Crown fracture	13	13.7	14	20.6	**0.014***
		Dental caries	29	30.5	34	50.0	
		Loss of retention	23	24.2	5	7.4	
		Poor oral hygiene	19	20.0	12	17.6	
		All the above	1	1.1	0	0.00	
		Don't know	10	10.5	3	4.4	
18.	Are you aware of subpontic inflammation?	Yes	64	67.4	58	85.3	**0.010***
		No	31	32.6	10	14.7	
19	Is ante's law used in abutment evaluation?	Yes	69	72.6	56	82.4	0.189
		No	26	27.4	12	17.6	
20.	Ideal crown root ratio for FPD?	1:1	11	11.6	9	13.2	0.099
		2:1	8	8.4	2	2.9	
		2:3	47	49.5	46	67.6	
		3:2	10	10.5	3	4.4	
		Don't know	19	20.0	8	11.8	
21.	Is discoloration considered as a failure of fpd	Yes	57	60.0	46	67.6	0.329
		No	38	40.0	22	32.4	

***Statistically significant**

Discussion

In this survey article, it is crucial to highlight several significant points that merit in-depth examination and discussion. From our statistical results, there is a significant difference between interns and postgraduate students in receiving education and training on tooth supported fixed Partial dentures, about 74.7% of interns only got a knowledge of FPD training while 84.7% of postgraduate have a knowledge and training about FPD. The P-value is 0.025. This difference is maybe because UG students are typically at an earlier stage of their academic journey, whereas PG students have already completed their

undergraduate studies. DCI Regulations for BDS & MDS students suggest that PG students gain more experience and exposure to academic challenges comparatively, making them more aware of FPD and also PG programs often involve more complex and specialized coursework, which may increase their knowledge and awareness towards FPD [1]. UG programs may not emphasize FPD as strongly [2]. Once the goals of restorative treatment are articulated, the constituents of failure become easier to comprehend. Fixed prosthodontic therapy can provide outstanding happiness to both patients and dentists. Failure is defined as the inability to reach or satisfy objectives [3]. From our survey results it is shown that only 56.8% of intern populations have come across failure in FPD which is 54 interns out of 95. while 73.5% of postgraduates have experienced FPD failure in their clinical practice. This is a huge difference and it is mainly because PG students usually spend more time in clinical settings, where they may receive more extensive FPD training compared to UG students who may have limited clinical exposure based on DCI regulations for BDS &MDS students [1][2] and because of circulation method to different departments during internship they don't have proper time to review the patients.

FPD failure can occur at any time from diagnosis to treatment, which can be upsetting. There are some goals that a fixed prosthesis should accomplish. Failure to achieve these will result in failures in fixed prosthodontic treatment [4]. So, it is important to know how you are going to manage when the treatment is not favourable. And there is a significant difference in knowledge between interns and postgraduate students to take appropriate steps to take when the students are facing the failure of FPD. Only 61 out of 95 interns are aware of the management of FPD failure which is about 64.2% and almost 77.9% of postgraduates have accepted their knowledge in managing FPD failure. This significant difference is mainly due to the fact that PG students often specialise in areas like prosthodontics, which includes FPD, and are more likely to receive specialised training in this field compared to UG students pursuing a general dentistry degree and also dude to their more clinical exposure and experience comparatively and also due to interdisciplinary education. According to DCI Regulation for MDS 2017, in terms of (2nd Amendment) notification published on 18.09.2018 in the Gazette of India, to bring in more integration among the specialities and allied fields, each department shall workout a programme to rotate the trainees in related disciplines [1]. During dental masters, interdisciplinary education (IDE) can assist generate dentists who work more effectively to deliver consistent and dependable patient care [5]. another key point of the survey is, only 60.0% of interns show interest in recent advancement and research related to FPD and its failure but involvement of postgraduates is higher in this, which is about 75.0%. This is mainly because of the following reasons Postgraduates often work closely with professors, researchers, and experts in their field. These interactions expose them to discussions about current research and trends, including those related to FPD. Many postgraduate programs require students to conduct research [1], which entails staying up-to-date with the latest developments in their field, including any new insights or interventions related to FPD. From our survey results the peers use journal and articles through printing media mainly to stay updated, it may be due to various reasons some of them are Students are distracted by digital gadgets in a variety of ways. From previous survey, students remarked that he was not used to studying in this manner, he became bored and couldn't continue reading for more than six minutes, so he began surfing other websites. Another barrier for students was the requirement for online connectivity; they couldn't read the e-book until they logged on to the LMS, which required internet access. More than two-thirds (71%) of them considered this a disadvantage. Reading from a screen can cause health problems due to the impact of radiation on the eye [6]. students may find physical note-taking more intuitive and effective. About 31.6%

interns and 55.9% postgraduate students prefer journals and articles through printing media. The p-value for this particular question is 0.024.

It is certain that interns and postgraduate students have various opinions on common causes and issues in failures of FPD. First and most important step in treating the problem is finding the cause. In this particular portion of discussion, the peer's knowledge shows wide varieties in their opinion, from the intern population 30.5% of them thinks dental caries as the most common cause, 24.2% for loss retention, 20.0% for poor oral hygiene and 13.7% for crown fracture. While postgraduate give answers as **50.0%** for dental caries, 7.4% for loss of retention, 17.6% for poor oral hygiene and 20.6% for crown fracture. From the above results it is evident that most postgraduate students think dental caries as the most common cause for biological failure and it corresponds with other studies [7][8]. The P-value for this question is 0.014. Last but not least, the awareness about subpontic inflammation gives a significant difference between these two populations. 67.4% of the intern population and 85.3% of the postgraduate population are aware of this term. The P-value of this is 0.010. the reason for this maybe because PG students frequently engage in discussions with peers who share similar academic interests. These conversations can expose them to specialized topics like subpontic inflammation. Also, PG students may be studying fields where knowledge of subpontic inflammation is directly applicable to their future careers, motivating them to learn about it in more depth.

Limitations:

The sample population was not pan wide. Concise to a particular region and not widely distributed to every institution, small sample size and limited geographical coverage could limit the generalizability of the findings. This survey is a cross sectional one, a snapshot of students' knowledge, attitude, and awareness at a specific point in time. Longitudinal studies may provide more comprehensive insights. This survey is a part of the prosthodontic department, the minimum participation of PG students from prosthodontic departments is another drawback in this study. In this study, we were unable to cover all aspects of knowledge, attitude, and awareness relevant to fixed partial dentures.

conclusion:

In conclusion, this comparative study sheds light on the critical factors that influence dental students' approach to tooth-supported fixed partial dentures at both the undergraduate and postgraduate levels. The findings underscore the importance of continuous education and clinical exposure in shaping knowledge and attitudes toward restorative and rehabilitative dentistry. It is evident that postgraduate students exhibit a higher level of knowledge, more positive attitudes, and increased awareness of the complexities involved in this field. However, this study also highlights the need for further research to explore the specific educational interventions that can bridge the gap between undergraduate and postgraduate dental education, ensuring that all aspiring dentists are equipped with the skills and attitudes necessary to provide optimal patient care in the realm of fixed partial dentures. Ultimately, this research contributes to the ongoing effort to enhance dental education and improve the quality of dental care provided to patients worldwide.

Authors' contributions

All authors participated in the design of the study and drafted the manuscript and read and approved the final manuscript.

Conflicts of interest: None of the authors have conflicts of interest to report.

Funding/support: None.

Reference:

1. Dental council of India, revised MDS course regulation 2007.
2. Dental council of India, revised BDS course regulation 2007.
3. Classification system for conventional crown and fixed partial denture failures. John Joy Manappallil.J Prosthet Dent. 2008 Apr.
4. Simpson RL. Failures in crown and bridge prosthodontics. The Journal of the American Dental Association. 1953 Aug 1;47(2):154-9.
5. The Status of Interdisciplinary Education in Advanced Education Programs at U.S. Dental Schools.Vidya Ramaswamy, Nadeem Karimbux, Irina F. Dragan, Noshir R. Mehta, Theodora Danciu. First published: 01 November 2018.
6. Obstacles to Using E-Books in Higher Education, May 2020,International Journal of Education and Literacy Studies 8(2):44
7. Fixed Partial Denture Failures: A Clinical Survey for Evaluation of the Factors Responsible. 1.Manjula B Chandranaik, 2Roopa K Thippanna
8. Rangarajan V, Padmanabhan TV. Textbook of Prosthodontics. 2nd ed. Reed Elsevier India Pvt.Ltd;2017