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Level of Uunderstanding of Prosthodontics among the Undergraduates of a Tertiary Hospital in Bhubaneswar City, Odisha: A Cross Sectional Study

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KEYWORDS Attitude, Career, Dental Students, Prosthodontics.	ABSTRACT: Aim: Dental stu in dentistry in understanding o that facilitates o was to assess th learning difficul	ABSTRACT: Aim: Dental students should be aware of the "expectation" connected with any specific speciality in dentistry in order to seek additional education in that field. As a result, students' level of understanding of different specialisations, in a significant part, permits a meaningful knowledge that facilitates optimal planning in the dental sector for the community. Hence the aim of the study was to assess the level of understanding prosthodontics and to determine the factors resulting in learning difficulties in Prosthodontics among the undergraduate dental students					
	Materials and M year, final-year city. It had 16 prosthodontics a group difference	lethod: A cross-sectional questionnaire-b dentistry students and dental interns enr questions used to classify the respons is a post-graduate specialty. Chi-square es. At p 0.05, statistical significance was c	based survey was undertaken among third rolled in a dental college of Bhubaneswar ses to the questions regarding choosing test for proportions was used to look at considered to be present.				
	Results: The m challenging sub their BDS, most the government;	ajority of the study participants found ject. 52.7% of the interns thought it was students (74.3%) planned to pursue post and just 8% wanted to engage in clinical	I prosthodontics to be an intriguing yet s engaging yet challenging. After earning tgraduate studies; 11% wanted to work for practice.				
	Conclusion: Stu suggestions were	idents were satisfied with the calibre e provided for how to improve it.	e of their prosthodontic education, and				

Introduction

Prosthodontics is the branch of dentistry that deals with the restoration and replacement of missing or damaged teeth and oral structures. It is a challenging and rewarding specialty that offers a wide range of treatment options to patients. Prosthodontists work with patients of all ages and backgrounds, and they play an important role in helping patients to improve their oral health, function, and appearance. There are many reasons why dental students choose to pursue a career in prosthodontics. Some students are drawn to the complexity and artistry of prosthodontics, while others are interested in the opportunity to have a significant impact on their patients' lives. Prosthodontics is also a well-paying specialty, and it offers practitioners the flexibility to work in a variety of settings, including private practice, academia, and research. First, it is important to have a strong foundation in the basic principles of dentistry. This includes courses in

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anatomy, physiology, oral pathology, and restorative dentistry. In addition, prosthodontists need to be skilled in a variety of clinical procedures, such as crown and bridge preparation, implant placement, and denture fabrication. Second, it is important to gain experience in prosthodontics during dental school. This can be done by taking elective courses in prosthodontics, participating in research projects, and shadowing prosthodontists in private practice or academia. Finally, it is important to have a strong academic record and to be involved in extracurricular activities. This will make you a more competitive applicant for prosthodontic residency programs. The level of understanding of prosthodontics as a subject in undergraduate dental education varies depending on the school. However, most dental schools offer a variety of courses in including-introduction prosthodontics, to prosthodontics, fixed prosthodontics (crowns and bridges), removable prosthodontics (dentures and partial dentures), Implant prosthodontics, Maxillofacial prosthodontics (prosthetic reconstruction of patients with facial defects). In addition to these courses, many schools also offer elective courses in dental prosthodontics, such as esthetic dentistry, advanced prosthodontics, forensic prosthodontics and geriatric prosthodontics. Dental students who are interested in pursuing a career in prosthodontics are encouraged to take as many prosthodontics courses as possible during their undergraduate education. This will give them a strong foundation in the principles and procedures of prosthodontics. Hence the aim of the study was to assess the level of understanding prosthodontics and to determine the factors resulting in learning difficulties in Prosthodontics among the undergraduate dental students. The objectives was also to determine the factors causing anxiety and effecting level of understanding in the subject Prosthodontics among undergraduate students.

Materials and Methods

A cross-sectional study between 16 May 2023 and 26 August 2023, involving dental undergraduate students and interns was undertaken at the Kalinga Institute of Dental Sciences in Odisha. The KIIT Ethics Committee, which is considered to be an academic body, independently examined and authorised the study before it was carried out. The World Medical

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Association's Declaration of Helsinki was followed during the research's execution. The study participants were chosen using a convenience sampling procedure, and those who provided verbal consent were included. To a total of 110 students, the questionnaire was made available online through Google forms after class. Before giving out the questionnaire, the study's objectives were conveyed to the students. The students were made aware that there would be no financial rewards for taking part in the study and that their personal information would remain confidential. The questionnaire was delivered to participants with enough time to complete it. A self-constructed 16-item questionnaire was used to gather information on level of understanding prosthodontics among the dental undergraduates. To establish the viability and validity of the questionnaire, a pilot research was carried out. Before the study began, the validity of the questionnaire was reviewed by a panel of five subject experts, and changes were made as necessary. Under the direction of the guide, the investigator and the assistant received training and calibration at the department of prosthodontics at the Kalinga Institute of Dental Sciences. The Cronbach's alpha value was determined to be 0.86, indicating very high dependability. Data were entered into a Microsoft Excel spreadsheet, and SPSS Statistics for Windows, version 26.0 (SPSS Inc., Chicago, IL, USA) was used for analysis. The Chisquare test was used to perform inferential statistics. Frequency and percentages were used to describe categorical variables. The Mann-Whitney U test was used to compare scores from different domains between groups. The cut-off point for statistical significance was 0.05.

Results

The majority of the study participants found prosthodontics to be an intriguing yet challenging subject. 52.7% of the interns thought it was engaging yet challenging, 23.6% thought it was interesting, and 7.3% thought it was uninteresting. Among undergraduates in their last year, 50% thought it was engaging yet challenging, 28.6% thought it was interesting, and 3.6% thought it was uninteresting. None of the third-year students thought they were uninteresting, and 57.7% said they were fascinating but hard to understand. After earning their BDS, most

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students (74.3%) planned to pursue postgraduate studies; 11% wanted to work for the government; and just 8% wanted to engage in clinical practice. Few individuals who desired to pursue higher education chose prosthodontics as their field of study. Specifically, just 12.7% of students desired to specialise in prosthodontics. In order to better comprehend the topic, the majority of study participants (72%) and those with more access to prosthodontic cases (21%), respectively, wanted hands-on experience. (Table 1) For 71.6% of the students, the resources they used the most were lectures, textbooks, internet materials, and clinical experiences. Half of the survey participants regarded the pre-clinical classes to be engaging throughout the first and second years. The processing of complete dentures was the most challenging pre-clinical exercise. Comparisons between students from various years revealed statistical significance for the types of prosthetic treatments (p=0.006) and prosthetic features that students considered stressful (p=0.032). (Table 2) In figure 1 displays actions dental institutions/faculties can do to increase dental students' grasp of this subject, and Figure 2 depicts advice for incoming dental students to increase their knowledge of prosthodontics.

Table 1: Level of understanding	prosthodontics among	undergraduates
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Items	Responses	3 rd year n (%)	4 th year n (%)	Interns n (%)	Total n (%)	p value	
	Boring	0(0)	1(3.6)	4(7.3)	5(4.6)		
	Difficult	1(3.8)	5(17.9)	9(16.4)	15(13.8)		
Prosthodontics is	Interesting	10(38.5)	8(28.6)	13(23.6)	31(28.4)	.411	
	Interesting but difficult to understand	15(57.7)	14(50)	29(52.7)	58(53.2)		
	Change your Field	1(3.8)	2(7.1)	4(7.3)	7(6.4)		
Career Plans After	Clinical Practice	1(3.8)	4(14.3)	4(7.3)	9(8.3)	.284	
Completing BDS	Govt. Jobs	6(23.1)	1(3.6)	5(9.1)	12(11)		
	Postgraduation	18(69.2)	21(75)	42(76.4)	81(74.3)		
If You Want to Do	Maybe	14(53.8)	12(42.9)	18(32.7)	44(40.4)		
PG, Is Prosthodontics	No	11(42.3)	12(42.9)	28(50.9)	51(46.8)	.328	
your choice of subject	Yes	1(3.8)	4(14.3)	9(16.4)	14(12.8)		
Understanding In Prosthodontics can be increased by	More Access to Prosthodontic Cases	8(30.8)	5(17.9)	10(18.2)	23(21.1)	0.370	
	Classroom lectures	1(3.8)	0(0)	1(1.8)	2(1.8)		

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Hands-on experience	17(65.4)	20(71.4)	42(76.4)	79(72.5)
Videos/Demo	0(0)	3(10.7)	2(3.6)	5(4.6)

Table	2:	Factors	helping	students	in	understanding	prosthodontics
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Items	Responses	3 rd year n (%)	4 th year n (%)	Interns n (%)	Total n (%)	p value	
	Clinical Experience	4(15.4)	5(17.9)	4(7.3)	13(11.9)		
	Lectures	0(0)	2(7.1)	1(1.8)	3(2.8)		
Resources	Online Resources	2(7.7)	1(3.6)	5(9.1)	8(7.3)	0.615	
	Textbook	2(7.7)	2(7.1)	3(5.5)	7(6.4)		
	All of the above	18(69.2)	18(64.3)	42(76.4)	78(71.6)		
Daine La Ord	Difficult	3(11.5)	7(25)	18(32.7)	28(25.7)		
Year Did You	Easy	3(11.5)	1(3.6)	3(5.5)	7(6.4)	0.04%	
Find Preclinical	Interesting	17(65.4)	10(35.7)	27(49.1)	54(49.5)	0.04	
Exercises	Neutral	3(11.5)	10(35.7)	7(12.7)	20(18.3)		
	Occlusal Rim/ Articulation	1(3.8)	3(10.7)	9(16.4)	13(11.9)		
Most difficult Preclinical	Primary Impression/Cast Fabrication	1(3.8)	3(10.7)	4(7.3)	8(7.3)	0.004	
Exercise	Processing of CD	19(73.1)	7(25)	23(41.8)	49(45)	*	
	Teeth Arrangement	3(11.5)	12(42.9)	7(12.7)	22(20.2)		
	None of the above	2(7.7)	3(10.7)	12(21.8)	17(15.6)		
	Implant Prosthesis	5(19.2)	4(14.3)	16(29.1)	25(22.9)		
Participate in Prosthodontic following dental cases	Maxillofacial & Cast Partial Prosthesis	0(0)	2(7.1)	6(10.9)	8(7.3)	0.004 *	
	None of the above	21(80.8)	16(57.1)	19(34.5)	56(51.4)		
	All of the above	0(0)	6(21.4)	14(25.5)	20(18.3)		
Type of	Complete Denture	10(38.5)	4(14.3)	1(1.8)	15(13.8)	0.006	

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Prosthodontic Treatments Have You Learned In your	Complete Denture & Removable Partial Denture	5(19.2)	9(32.1)	16(29.1)	30(27.5)	
Dental Curriculum So	Fixed Prosthodontics	1(3.8)	0(0)	5(9.1)	6(5.5)	
Far	Implant Supported Prosthesis	1(3.8)	0(0)	1(1.8)	2(1.8)	
	None of the Above	0(0)	2(7.1)	1(1.8)	3(2.8)	
	Removable Partial Dentures	1(3.8)	4(14.3)	7(12.7)	12(11)	
	All of the above	8(30.8)	9(32.1)	24(43.6)	41(37.6)	
Clinical	No	0(0)	2(7.1)	5(9.1)	7(6.4)	
helpful in improving your understanding of Prosthodontics	Yes	26(100)	26(92.9)	50(90.9)	101(93.6)	.476
	Difficulty Level of the Coursework/Exams	2(7.7)	5(17.9)	10(18.2)	17(15.6)	
aspects of Prosthodontics Course Work or	Lack Of Support Or Resources	0(0)	2(7.1)	11(20)	13(11.9)	0.032
Exams do You	Others	5(19.2)	2(7.1)	5(9.1)	12(11)	
find most Stressful	Pressure to Perform Well	5(19.2)	2(7.1)	1(1.8)	8(7.3)	
	Time Constraints	3(11.5)	6(21.4)	5(9.1)	14(12.8)	
	Volume of Material to Learn	11(42.3)	11(39.3)	23(41.8)	45(41.3)	
Feel Anxious while Working on Patients in Prosthodontics	Maybe	10(38.5)	11(39.3)	14(25.5)	35(32.1)	
	No	4(15.4)	3(10.7)	24(43.6)	31(28.4)	0.013
	Yes	12(46.2)	14(50)	17(30.9)	43(39.4)	
What Aspects of Working on Patients in Prosthodontics	Fear of Making Mistakes or Causing Harm to Patient	14(53.8)	11(39.3)	20(36.4)	45(41.3)	0.641

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do you find most Anxiety Provoking	Fear of Negative Feedback From Teacher	0(0)	2(7.1)	6(10.9)	8(7.3)	
	Fear of not being able to complete the procedures Successfully	9(34.6)	10(35.7)	20(36.4)	39(35.8)	
	Fear of Patient Reaction	2(7.7)	3(10.7)	3(5.5)	8(7.3)	
	Others	1(3.8)	2(7.1)	6(10.9)	9(8.3)	
If You Are An Intern, are you confident enough to understand & perform Prosthodontic treatments after completing your Posting	Maybe	0(0)	0(0)	24(43.6)	24(22)	
	No	26(100)	28(100)	7(12.7)	61(56)	
	Yes	0(0)	0(0)	24(43.6)	24(22)	0.001 *
Total		26(100)	28(100)	55(100)	109(100)	

Figure 1: Suggestions that can be taken by Dental Institutions/Faculties to Improve the Understanding of this Subject among Dental Students



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Discussion

This study aimed to investigate dental undergraduates' reported levels of understanding when performing prosthodontic treatment and their perceptions of the calibre of prosthodontic education. Recent years have seen the emergence of studies on dental curriculum reform^{9,10} as well as the gathering of dental students' opinions on their educational experiences^{11,12}. The voice of the student is becoming increasingly important in pedagogical change. They are participants in the educational organisation and can be viewed as students. When examining the responses of the pupils, there are pragmatic considerations. The analysis of individual clinical abilities revealed a similar upward trend in confidence levels as students advanced, however it did reveal that final-year students felt more at ease carrying out some procedures than others. They were most comfortable performing the following procedures: creating initial impressions for partial dentures, creating secondary impressions for partial dentures, and fitting partial dentures. Although implant dentistry was incorporated into the curriculum of US dental institutions earlier than in the majority of other nations, 30.7% of the 2016 graduating dental students felt their training in implant dentistry was insufficient.13 Furthermore, a recent study found that only 26.4% and 15.2% of the students actually performed periodontal surgery and implant placement surgery, despite the fact that 97% of the US dental colleges surveyed allowed students to perform some types of periodontal surgery and 45.5% included some implant surgery in the predoctoral programme.14 Only 5% of dental students surgically inserted implants, according to a 2008 survey of dental universities in Europe.¹⁵ Although many colleges were yet to implement more prosthetic procedures for implant restorations in the undergraduate curriculum, dental colleges in Europe were found to have increased them in 2013. Although implant dentistry is increasingly being used in everyday dental care across the globe, teaching implant dentistry to dental students shouldn't come at the expense of their exposure to removable prosthodontics. The introduction of, for instance, education in implant dentistry, generally necessitates a reduction in a related subject such as removable prosthodontics due to the limited number of instructional hours available in a saturated dental curriculum.^{16,17} In the current study, only a small of students wanted to specialise in number prosthodontics. This may be due to the subject's level of difficulty, which is corroborated by a study in which 15% of the MCQs about the impression-making process were challenging with a difficulty index (p) below 30%, 15% had weak discrimination skills, and 55% had at least one distracter that wasn't functioning.¹⁸ Another study was conducted to evaluate and compare the knowledge of prosthodontic diagnostic aids among interns and postgraduates. From the results obtained, it was found that interns had less knowledge regarding diagnostic tools than postgraduate students.¹⁹ This study's findings are exclusive to one university. It would be wrong to believe that these results are necessarily generalizable because each university will have its own course structures and teaching strategies. As a result, students will have different clinical and educational experiences. Although the present cross-sectional research identifies the level of understanding and the fears, expectations of

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students from the subject prosthodontics, it also has certain methodological limitations that should be taken into consideration when interpreting the findings. A dentistry college's curriculum needs to be updated and changed while taking into account a variety of cause and effect effects on graduates' abilities and knowledge. However, curricula must continue to develop and be improved in order to reflect improvements in clinical dentistry, clinical practise, and population-wide changes in dental requirements and expectations. Despite these drawbacks, this study offers a current benchmark of dental undergraduates' levels of confidence when doing prosthesis therapy. The university is now conducting a comprehensive curriculum review, and the findings of this study may inform future undergraduate curriculum planning.

Conclusion

This study discovered that as students advanced through the course and received more clinical experience, their perceived levels of confidence rose. Partial denture construction was reported to have better levels of confidence than complete denture construction. In general, students were happy with the standard of their prosthodontic education, and recommendations were made for ways that their instruction may be made even better.

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