

Original Research Article

# Evaluation of experiences and challenges faced by dental students during their transition from preclinical to clinical year of study

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## ABSTRACT

**Objectives:** The objective of this study was to assess the difficulties faced by dental students with respect to dental procedures on patients when they transitioned from preclinical to clinical department during their undergraduate course.

**Materials and Methods:** A pre-validated questionnaire was distributed amongst third year, final year students and interns.

**Results:** A total of 241 students participated in the study. The majority of the students 45 (18.6%) faced difficulty in the procedure of extraction of teeth, and struggled least 5 (2%) with communicating with patients in their mother-tongue language.

**Conclusion:** This study concluded that the transition period was not as much stressful to the present study participants. There were difficulties encountered by students especially during some clinical procedures such as formulating a proper treatment plan, during extraction of teeth and controlling bleeding during extraction where the concentration should be given by both students as well as educators. The interns of the present study were at a disadvantage as their third year and final year academics were held online due to pandemic, giving them less exposure to clinicals and patients.

**Keywords:** Pre-clinical, Clinical, Dental procedures, Transition, Dental education

## INTRODUCTION

“Nothing ever seems real till it is experienced”

-John Keats

As rightly said by John Keats, everything feels unreal until it is experienced. One has to go through the process of understanding and learning to master that skill.

Difficulty is defined as something needing much effort or skill to accomplish, deal with, or understand. Dentistry is a science, a trade, and a fine engineering profession. It necessitates a comprehensive understanding of how to align the theoretical and practical parts of the subject, as well as a fine dexterity in putting it into practice.<sup>[1]</sup>

Hence, introduction of clinical experience is a crucial component of dental education as it prepares students for real-world practice. Dental education involves a 5-year course with initial theoretical knowledge and application of this into practice. The 1<sup>st</sup> and 2<sup>nd</sup> year of the course involves preclinical learning followed by 3<sup>rd</sup> year onward, where they are trained for clinical practice. This transition can be found to be profoundly stressful for some students.

Dentistry is a demanding program that requires a great deal of dedication, encouragement, and practical experience. A variety of elements influence dentistry students' mental development, the most important of which is stress. These elements can have a big impact on a student's confidence as well as how they view and experience their education.<sup>[2]</sup>

The factors contributing may be personal or institutional. Some of the personal factors include unable to understand the concepts clearly, lack of concentration, training environment, to meet patient's expectations, competition, and frequent examinations.<sup>[2]</sup> On the other hand, some of the institutional factors are less exposure of clinicals to students. Therefore, feedback is taken during teaching and training from the students hold importance in improving the treatment and patient care.

After reflecting of the feedbacks, the educators get a clear vision of difficulties so as to train the students accordingly. This helps in minimizing the negative experiences and enhancing the quality of life of patients.

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Received: 23 November 2022 Accepted: 15 May 2023 Published: 23 August 2023 DOI: 10.25259/JADPR\_32\_2022

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## Objectives

The aim of this study was to assess the difficulties faced by dental students with respect to dental procedures on patients when they transitioned from preclinical department to clinical department during their undergraduate course.

## MATERIALS AND METHODS

The Institutional Ethical Committee approval was obtained from the institute for the conduction of study. A cross-sectional type of study was conducted among the 3<sup>rd</sup> year, final year students, and interns of VSPM dental college and research center, Nagpur. A pre-validated self-administered questionnaire containing 20 questions related to several dental procedures was distributed. Out of 20, ten questions were taken from published study,<sup>[3]</sup> ten questions were newly added, and the whole questionnaire was got validated again and distributed among the students.

The questionnaire consists of two parts.

- Part 1 includes demographic details such as age, sex, and year of study
- Part 2 includes 20 multiple-choice questions based on their perception.

The difficulty level was enumerated based on options provided in the survey questionnaire. The difficulty level ranged from “frequent” to “never.” “Frequent” indicating lack of experience in that particular procedure.

A self-administrated questionnaire was distributed among the participants anonymously. All willing and present participants were included in the study. Any incomplete questionnaire was excluded from the study.

The data collected were inserted in excel sheet. Further, the mean and standard deviation was calculated of individual year results. Online OpenEpi calculator version 3 was used to find out the significance level.

## RESULTS

A total of 241 responses were collected. The age of the participants ranged from 20 to 25 years. Mean age was 22.5 years. Majority of participants were female 80.49% (194) and the rest 19.50% were male (47), as shown in [Figure 1].

Out of 241 students, most of students were interns 92 (38.17%), 3<sup>rd</sup> year students 76 (31.53%), and final year students 73 (30.29%), as shown in [Figure 2].

A descriptive analysis of the percentage of students having difficulties in certain clinical procedures is shown in [Table 1].

Let us see the results. When patient first enters the clinic, the most initial and important step is history taking which ultimately leads to correct diagnosis and followed by treatment planning. Hence, to achieve this and make the patient comfortable, it is advantageous for the dentist to be able to speak the patient’s mother tongue. According to Question 1, only 5 (2%) of the students found it

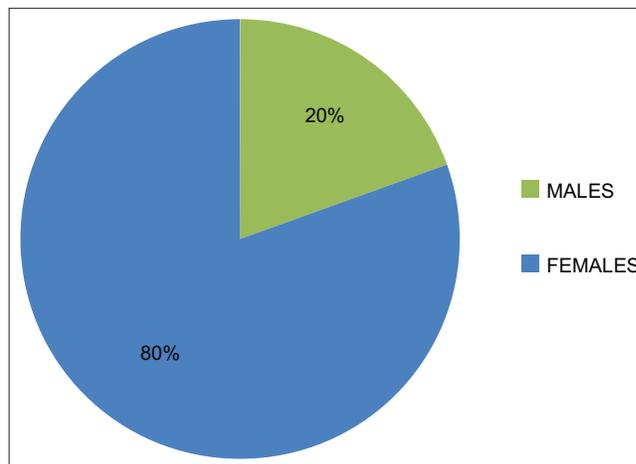


Figure 1: Ratio of males and females.

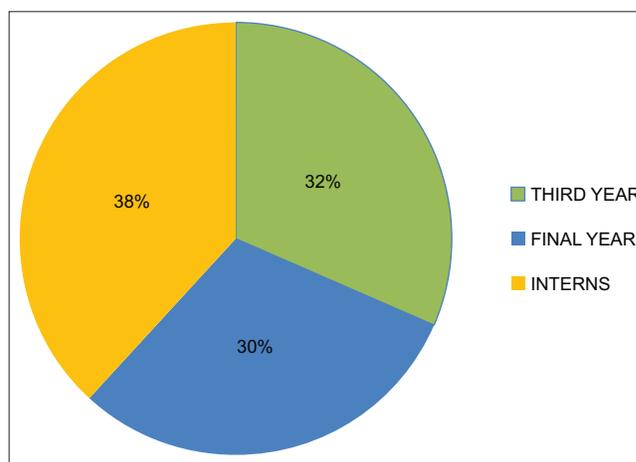


Figure 2: Ratio of 3<sup>rd</sup> year, final year, and interns.

difficult to communicate with patients in their mother tongue, which was also least problematic for students as for Question 2, about 6 (2.5%) students faced difficulties in handling and sterilizing instruments before and after treatment of patients. Maintaining a correct posture and position of dentist while treating patients is essential, leading to which Question 3, 11 (4.5%) of participants found it difficult to adjust the chair position during treatment of the patients. Question 4, 5, 6, and 7 were based on the prime reason why any patient visits a dental clinic, and as these steps are leading to one another, the author came to a conclusion that 10 (4.1%) participants faced difficulties in interpreting the chief complaints of the patients, 21 (8.7%) of participants found it difficult to make the correct diagnosis of the patients, 16 (6.6%) of them found it difficult to interpret the radiographs, and 35 (14.5%) of them faced difficulties in formulating the treatment plan for the patient, respectively.

Treatment of maxillary teeth is a challenge for any student as one has to rely on indirect vision. This can be made easier

**Table 1:** Percentage of students having difficulties in certain clinical procedures.

S. No.	Question	Never (%)	Rare (%)	Sometimes (%)	Frequent (%)
1.	Difficulty in communicating with patients in their mother-tongue	103 (42.8)	66 (27.4)	67 (27.8)	5 (2.0)
2.	How to handle instruments for sterilization before and after treatment of patients	58 (24.1)	99 (41.1)	78 (32.3)	6 (2.5)
3.	Chair positioning difficulties during procedure	46 (19.1)	69 (28.9)	115 (47.8)	11 (4.5)
4.	Difficulty in interpreting chief complaints of patients	29 (12.0)	86 (35.6)	116 (48.1)	10 (4.1)
5.	Difficulty in making correct diagnosis	9 (3.7)	49 (20.3)	162 (67.2)	21 (8.7)
6.	Difficulty in reading the radiographs	9 (3.7)	59 (24.4)	157 (65.1)	16 (6.6)
7.	Formulating a proper treatment plan	2 (0.8)	72 (29.8)	132 (54.7)	35 (14.5)
8.	Indirect vision (visibility and accessibility while doing procedures in maxillary arch)	17 (7.0)	63 (26.1)	128 (53.1)	33 (13.6)
9.	Following the principles of cavity preparation during restorative procedures	13 (5.3)	68 (28.2)	130 (53.9)	30 (12.4)
10.	Handling hysterical type of patients	14 (5.8)	36 (14.9)	147 (60.9)	34 (14.1)
11.	Difficulty in communicating with pediatric patients during treatment procedures	23 (9.5)	50 (2.0)	135 (56.0)	33 (13.6)
12.	Difficulty during manual scaling of wax on mounted casts and using hand scalers on patients	30 (12.4)	62 (25.7)	125 (61.8)	24 (9.9)
13.	Difficulty in choosing the appropriate impression material for recording the tissues of the oral cavity.	20 (8.2)	76 (31.5)	134 (55.6)	11 (4.5)
14.	Having difficulties with manipulation of the impression material	31 (12.8)	89 (36.9)	108 (44.8)	13 (5.3)
15.	Difficulty in recording jaw relation	6 (2.4)	58 (24.0)	147 (60.9)	30 (12.4)
16.	Difficulty in adapting and delivery of the acrylic denture to the patients	19 (7.8)	67 (27.8)	97 (40.2)	15 (6.2)
17.	Difficulty in educating patients regarding post insertion denture instructions	35 (14.5)	84 (34.8)	98 (40.6)	24 (9.9)
18.	Difficulty in palpating the landmarks during local anesthesia administration	14 (5.8)	68 (28.2)	129 (53.5)	30 (12.4)
19.	Difficulty faced during extraction of teeth	9 (3.7)	55 (22.8)	132 (54.7)	45 (18.6)
20.	Difficulty in using instruments and controlling bleeding during extraction	13 (5.3)	61 (25.3)	129 (53.5)	38 (15.7)

when students practice on phantom heads in preclinics and apply the same principles and technique in treating patients with complaint in maxillary teeth. As found from Question 8, 33 (13.6%) of students found difficulty in working in indirect vision for treatment of maxillary teeth. Related to it was Question 9, where 30 (12.4%) of them struggled with following the principles of cavity preparation during restorative procedures. As per the responses, for Question 10, 34 (14.1%) students found it tough to deal and treat hysterical type of patients. Dealing with pediatric patients requires a lot of patience and skill. Having said that, for Question 11, 33 (13.6%) of students found it hard to communicate with patients. Although hand scalers are not used in modern times, one should be able to master that skill. By looking at Question 12, 24 (9.9%) of students struggled with manual scaling of wax on mounted casts as well as using hand scaling instruments on patients. Eleven (4.5%) of participants found difficulty in choosing the appropriate impression material for recording the tissues for oral cavity in Question 13. As the steps are related, we can analyze Question 14, 15, 16, and 17 together with 13 (5.3%)

students faced challenges in manipulation of impression material, 30 (12.4%) students in recording jaw relation, 15 (6.2%) in adapting and delivery of acrylic dentures to patients, and 24 (9.9%) in educating the patients about the post insertion denture instructions. The last segments of questions, Questions 18, 19, and 20 can be summed up as, 30 (12.4%) of students found it stressful to palpate the landmarks during administration of local anesthesia, 45 (18.6%) which is the highest percentage of students found it strenuous during the procedure of extraction of teeth, and lastly, 38 (15.7%) students were facing difficulty in using instruments and controlling bleeding during extraction.

To find out the statistical significance between 3<sup>rd</sup> year, final year students, and interns, they were divided into three groups and the mean value and standard deviation were calculated. The online OpenEpi calculator was used to evaluate *P*-value, as shown in [Tables 2-5] which was found to be non-significant.

The two-sample independent *t*-test was applied between 3<sup>rd</sup> year and final year students, as shown in [Table 2].

Independent *t*-test results between final year students and interns were applied, as shown in [Table 3].

Independent *t*-test results between interns and 3<sup>rd</sup> year students were applied, as shown in [Table 4].

Analysis of variance test for 3<sup>rd</sup> year, final year, and interns was applied, as shown in [Table 5].

As *P*-values from the independent *t*-tests were more than standard *P*-value, concluding the data are statistically non-significant.

## DISCUSSION

This study focuses on the transitional procedures when students enter clinical practice to highlight the opportunities for betterment. To master this field, students must focus and practice the skill. Precision and detailing hold importance in dentistry, which is very well taught in preclinics. However, some students might require more attention and training for the same. As every patient is a new experience, students get to relate and apply the preclinical knowledge into practice.

**Table 2:** Independent *t*-test applied between 3<sup>rd</sup> year and final year.

Year of study	Sample size	Mean	Std. deviation	<i>t</i> -test results
3 <sup>rd</sup> year	76	52.3816	8.53442	<i>P</i> -value
Final year	73	53.137	6.41464	0.01609

**Table 3:** Independent *t*-test results between final year students and interns.

Year of study	Sample size	Mean	Std. deviation	<i>t</i> -test results
Final year	73	53.137	6.41464	<i>P</i> -value
Intern	92	51.2717	7.45551	0.1792

**Table 4:** Independent *t*-test results between interns and 3<sup>rd</sup> year students.

Year of study	Sample size	Mean	Std. deviation	<i>t</i> -test results
3 <sup>rd</sup> year	76	52.3816	8.53442	<i>P</i> -value
Intern	92	51.2717	7.45551	0.2218

**Table 5:** Analysis of variance test for 3<sup>rd</sup> year, final year students, and interns.

Year of study	Sample size	Mean	Std. deviation	<i>t</i> -test results
3 <sup>rd</sup> year	76	52.3816	8.53442	<i>P</i> -value
Final year	76	53.137	6.41464	0.2218
Intern	92	51.2717	7.45551	

Goal-setting, planning, self-monitoring, and self-reflection are examples of self-regulated learning techniques that students can use to achieve their academic goals and expand their expertise.<sup>[1]</sup> As a result, focusing on the development of these skills early in a student's education may be beneficial for a smooth transition.

As in the present study, around 4.1% of students faced difficulties in interpreting the subjective and objective symptoms of the patients, 6.6% of students faced difficulty in reading the radiographs, and 4.5% faced difficulty in chair positioning of the patient. Whereas, from the published study of Mary *et al.*,<sup>[3]</sup> 3.3% of students faced difficulties in interpreting the subjective and objective symptoms of the patients, 7% of students faced difficulty in reading the radiographs, and 11.3% of students faced difficulty in chair positioning of the patient.

Clinical supervisors are also recognized as key players in the organization's attempts to improve transition. Students experienced stress and uncertainty as a result of supervisors' differing approaches to patient difficulties, which is consistent with prior findings. Receiving different perspectives from supervisors about patient management may generate disorientation, heightened anxiety, and a surface approach to students' learning due to the multitasking nature of the clinical situation. As a result, clinical directors may want to consider supervisor training and evaluation on a regular basis to ensure that good practice is maintained, which is critical for the seamless transfer of dental students/trainees.<sup>[2]</sup>

The authors would like to comment on that as most of the institutes, our institute also conduct varied type of innovative teaching such as problem-based learning, early clinical exposure, objective-structured practical examination, and objective-structured clinical examination regularly for the undergraduate students and interns. That could be a reason for getting less difficulty for the participants of the present study when they shift from preclinical to clinical years.

## CONCLUSION

This study concluded that the transition period was not as much stressful to the present study participants. There were difficulties encountered by students especially during some clinical procedures such as formulating a proper treatment plan, during extraction of teeth and controlling bleeding during extraction where the concentration should be given by both students as well as educators. The interns of the present study were at a disadvantage as their 3<sup>rd</sup> year and final year academics were held online due to pandemic, giving them less exposure to clinicals and patients.

## Limitations

The limitations of the study include – study sample of only one institute was taken into consideration, biased answers, and no comparison between male and female due to their poor ratio.

### **Acknowledgment**

The author expresses their gratitude to the dean of our college, study participants for sharing their time, and experiences with the researchers.

### **Declaration of patient consent**

Patient's consent not required as there are no patients in this study.

### **Financial support and sponsorship**

Nil.

### **Conflicts of interest**

There are no conflicts of interest.

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**How to cite this article:** Chichghare RP, Kahar A, Joshi J. Evaluation of experiences and challenges faced by dental students during their transition from preclinical to clinical year of study. *J Adv Dental Pract Res* 2023;2:2-6.