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# Perceptions of BDS Students Toward the Preclinical Restorative Dentistry Course: A Cross-Sectional Study at CMH Lahore Medical College

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## ABSTRACT

**Objective:** To evaluate students' perceptions regarding curriculum effectiveness, teaching quality, workload, and preparation for clinical practice in the preclinical restorative dentistry course. **Study Design:** Descriptive cross-sectional study. **Settings:** Institute of Dentistry and CMH Lahore Medical College. **Duration:** January to June 2023. **Methods:** It was conducted on dental students who have attended the Preclinical Restorative Dentistry Course in their 2nd Year of the Bachelor's in Dental Surgery from the same Institute. A specially designed questionnaire was used to record students' perspectives on the Preclinical Restorative Dental Course. Data were analyzed using SPSS version 23. Descriptive statistics (frequencies and percentages) were calculated. **Results:** Out of 180 dental students, 50 (27.8%) were males and 130 (72.2%) were females. Mean participant age was 21.57±0.98 years (age range of 20 – 24 years). 171 (95.0%) respondents reported that the preclinical restorative dentistry course provided a valuable addition to their clinical practice. There were 175 out of 180 (97.2%) respondents who suggested that this course was beneficial for improving their psychomotor skills. More than 85% of students were satisfied with the course curriculum, teaching strategies, and assessment methodology. However, 21.7% reported the course workload to be extensive. **Conclusion:** Student-centered evaluation of preclinical restorative dental curriculum was found to be positive. However, improvements regarding reducing stress levels and better workload manageability are required. Further studies need to be carried out in other dental colleges too.

**Keywords:** Preclinical course, Restorative dentistry, Student perception.

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## INTRODUCTION

Dental education is a combination of didactic and hands-on training. Undergraduates participating in lengthy dental programs are required to acquire a distinct and varied set of competencies.<sup>1</sup>

Dental students' progress through the educational process in stepwise stages, beginning with the theoretical portion, then moving on to the pre-clinical portion, and concluding with the clinical portion. This ensures that students acquire the skills and knowledge required to become dentists with the capacity to practice safely throughout their careers.<sup>2</sup>

In dental schools, preclinical courses can serve as the cornerstone of instruction in restorative dentistry. Preclinical courses help students strengthen their psychomotor skills and

acquire knowledge about the treatment-related factors of restoring broken teeth.<sup>3,4</sup>

In preclinical training, these foundational abilities are taught through lectures and simulated activities using either artificial or extracted natural teeth, before starting real patient handling in the clinics. Thus, for every dental student, it is desirable that their preclinical training is utilized as a safety tool for starting patient care.<sup>5</sup>

Preclinical restorative dentistry courses are part of the second-year BDS course program of dentistry at the Institute of Dentistry and CMH Lahore Medical College. The preclinical restorative dental education program aims to lay down the foundation of the two major fields of clinical dentistry, i.e., Operative dentistry and Prosthodontics. It focuses on dental

ergonomics, safe instrument use, cavity designs, and tooth restorations using phantom teeth on a mannequin model. During preclinical training, students gain knowledge and improve their psychomotor skills in the setting of teeth, clasp making, and all the laboratory aspects of fabricating removable partial and complete denture prosthesis.

Although its importance is recognized, it is reported that students' perceptions and experiences of their dental preclinical training are not adequately reported in the literature. It is also mentioned that dental students experience high levels of stress and emotional exhaustion during their education. Additionally, it is noted that dental students are not entirely satisfied with the standard of their dental education and curriculum design, while others stated that they had positive experiential reports about their dental education experience.<sup>6,7</sup>

In a study conducted by Collin V, it was stated that 35% of dental students were identified to show increased levels of psychological anxiety and burnout.<sup>8</sup> If stresses are not effectively managed, they can lead to diminished efficiency of dental students' performance throughout their dental careers.<sup>9</sup>

The rationale of the current study was to gain insight into dental students' perspectives on their preclinical restorative courses and their preparation for future clinical practice in restorative dentistry.

The objective of the study was to record the perception of dental students about their preclinical restorative dentistry course currently running in the Institute of Dentistry and CMH Lahore Medical College.

## METHODS

It was a descriptive cross-sectional study conducted among dental students at the Institute of Dentistry and CMH Lahore Medical College over six months, following approval from the Institutional Ethical Review Committee (Case Number: 678/ERC/CMH/LMC, dated 30/3/2022). It was completed through Google Forms by students of the second, third, and final year BDS. A sample size of 169 was calculated using the Open Epi calculator with a confidence interval of 95%, a margin of error of 5%, and an anticipated frequency of 50% by using the formula:

$$n = \frac{[DEFF * Np(1-p)]}{[(d2/Z21-\alpha/2*(N-1)+p*(1-p)]}$$

A survey of Dikbas et al. was modified and subsequently validated to create a specially designed online self-administered questionnaire.<sup>11</sup> The validity of the questionnaire was tested by presenting it to four experts from the faculty of dentistry, and accordingly, minor modifications were made. A pilot study was conducted on 20 students over one week to assess the reliability and validity of the questionnaire. In the statistical analysis, Cronbach's alpha was calculated to be 0.925 on SPSS, which indicates an excellent score. The questionnaire was disseminated via a Google Form after getting ethical approval from the institutional review board. The questionnaire comprises three sections, i.e., demographic details, preclinical restorative course assessment, and feedback section. Questions were both open-ended and closed-ended.

Those included were 2nd-year BDS students at the end of the academic year, 3rd-year, and 4th-year BDS students. Exclusions included 1st year BDS students, 2nd year BDS students at the start of the academic year, and students from other institutions were excluded to ensure homogeneity of the preclinical curriculum experienced by participants.

Response to questionnaires was analyzed using SPSS version 23.0. Mean and standard deviation were calculated for the quantitative variables, such as age. For qualitative variables, such as gender, frequency, and percentage, were calculated. Percentages were obtained for each question, and inferential statistics were not applied as the study primarily focused on descriptive analysis.

## RESULTS

A total of 180 dental students participated in this study, with a mean age of  $21.57 \pm 0.98$  years. The majority of participants were female (72.2%). Demographic details are provided in Table 1.

**Table 1: Summary characteristics of study respondents (n=180)**

Characteristics	Frequency (n)	Percentage (%)
Age in years (mean $\pm$ SD)	21.57 $\pm$ 0.98 years	N/A
Age range	20 – 24	N/A
Gender		
Male	50	27.8%
Female	130	72.2%
Year of study		
Second year	71	39.4%
Third year	54	30.0%
Fourth year	55	30.6%

Regarding the preclinical restorative course, 93.3% of participants agreed that it should be conducted at the second-year level of the BDS program. However, opinions on the course duration varied: 48.3% believed one year was sufficient, while 45.0% felt a longer duration was needed. Over half (64.4%) of the participants found the course stressful, and a detailed summary is provided in Table 2.

As for course content, most participants (95.6%) felt the learning objectives were clear, and 92.8% agreed that the course structure—comprising lectures, tutorials, and practical demonstrations—was well-balanced. A small minority (7.2%) disagreed with this balance. While 86.1% of participants found the material easy to follow, 12.8% struggled with its clarity. Similarly, while 77.8% felt the workload was manageable, 21.7% found it overwhelming (Table 3).

Most participants reported positive experiences with teaching methods and the learning environment. A strong majority (95.0%) felt that audiovisual aids were used effectively, and 90.0% felt they received sufficient attention from instructors. Additionally, 93.9% had ample opportunities to ask questions. Regarding the facilities, 88.3% found the skills laboratory comfortable and conducive to learning, and 94.4% agreed that the timetable for demonstrations and practice was strictly

followed. However, 10.6% felt they did not have enough practice time.

Concerning assessments, 93.9% of participants found the assessment tools appropriate, and 92.8% believed the level of

difficulty was suitable. Most respondents (95.0%) felt the course would enhance their future clinical practice, with nearly all (97.2%) agreeing it would improve their psychomotor skills. (Table 4)

**Table 2: Responses of study participants to questionnaire regarding perceptions on preclinical restorative course (n=180)**

	Questions	Responses n (%)
Preclinical restorative course	Do you think preclinical restorative courses should be conducted at the level of second year BDS?	
	Strongly agree	74(41.1%)
	Agree	94 (52.2%)
	Neutral	0 (0%)
	Disagree	4 (2.2%)
Preclinical restorative course	In your opinion, one year length/duration of this preclinical restorative course is sufficient?	
	Strongly agree	63 (35.0%)
	Agree	24 (13.3%)
	Neutral	12 (6.7%)
	Disagree	38 (21.1%)
Preclinical restorative course	In your opinion, the preclinical restorative course was stressful.	
	Strongly agree	36 (20.0%)
	Agree	80 (44.4%)
	Neutral	20 (11.1%)
	Disagree	6 (3.3%)
	Strongly disagree	38 (21.1%)

**Table 3: Responses of study participants regarding course structure and content (n=180)**

	Questions	Responses n (%)
Learning objectives	The learning objectives of the preclinical restorative course were clear.	
	Strongly agree	35 (19.4%)
	Agree	137 (76.1%)
	Neutral	2 (1.1%)
	Disagree	5 (2.8%)
Learning objectives	The course was well structured with a good balance of lectures, tutorials and practical demonstrations.	
	Strongly agree	34 (18.9%)
	Agree	133 (73.9%)
	Neutral	4 (2.2%)
	Disagree	3 (1.7%)
Course material	The course material was easy to follow.	
	Strongly agree	33 (18.3%)
	Agree	122 (67.8%)
	Neutral	2 (1.1%)
	Disagree	14 (7.8%)
Course material	The course workload was manageable.	
	Strongly agree	24 (13.3%)
	Agree	116 (64.4%)
	Neutral	1 (0.6%)
	Disagree	9 (5.0%)
	Strongly disagree	30 (16.7%)

**Table 4: Responses of teaching methods, facilities & environment, assessment, and feedback in the preclinical restorative course**

	Questions	Responses n (%)
Teaching methods	Did the facilitator utilize audiovisual aids efficiently during the whole course?	
	Strongly agree	47 (26.1%)
	Agree	124 (68.9%)
	Neutral	0 (0%)
	Disagree	8 (4.5%)
	Strongly disagree	1 (0.6%)

Instructor style and delivery	Do you think you received enough attention by your facilitator? Strongly agree Agree Neutral Disagree Strongly disagree	44 (24.4%) 118 (65.6%) 2 (1.1%) 9 (5.0%) 7 (3.9%)
Instructor style and delivery	Did you have ample opportunity to ask questions and receive answers? Strongly agree Agree Neutral Disagree Strongly disagree	57 (31.7%) 112 (62.2%) 0 (0.0%) 4 (2.2%) 7 (3.9%)
Facility and environment	Environment of skills laboratory was comfortable and conducive for learning. Strongly agree Agree Neutral Disagree Strongly disagree	54 (30.9%) 105 (58.3%) 2 (1.1%) 9 (5.0%) 10 (5.6%)
Facility and environment	Structured time table of demonstrations and practice session was strictly followed. Strongly agree Agree Neutral Disagree Strongly disagree	52 (28.9%) 118 (65.6%) 0 (0.0%) 2 (1.1%) 8 (4.4%)
Facility and environment	Adequate practice time was provided by the facilitator during laboratory practice sessions. Strongly agree Agree Neutral Disagree Strongly disagree	55 (30.6%) 104 (57.8%) 2 (1.1%) 10 (5.6%) 9 (5.0%)
Facility and environment	Resources for learning in the skills laboratory were sufficient? Strongly agree Agree Neutral Disagree Strongly disagree	35 (19.4%) 126 (70.0%) 1 (0.6%) 6 (3.3%) 12 (6.7%)
Assessment	The tools of assessment used to test my knowledge and skills were adequate. Strongly agree Agree Neutral Disagree Strongly disagree	43 (23.9%) 126 (70.0%) 5 (2.8%) 2 (1.1%) 4 (2.2%)
Assessment	The level of difficulty in assessment items was appropriate. Strongly agree Agree Neutral Disagree Strongly disagree	38 (21.1%) 129 (71.7%) 5 (2.8%) 3 (1.7%) 5 (2.8%)
Feedback	Do you feel that the course of preclinical restorative dentistry provides a valuable addition in your clinical practice in future? Strongly agree Agree Neutral Disagree Strongly disagree	55 (30.6%) 116 (64.4%) 0 (0.0%) 3 (1.7%) 6 (2.8%)
Feedback	Would you suggest this course is beneficial for improving your psychomotor skills? Strongly agree Agree Neutral Disagree Strongly disagree	42 (23.3%) 133 (73.9%) 0 (0.0%) 2 (1.1%) 3 (1.7%)

## DISCUSSION

Preclinical restorative courses lay the foundation for undergraduate students in critical clinical areas such as Operative Dentistry and Prosthodontics. By teaching these subjects early, students can build key concepts and psychomotor skills that support their clinical performance later

on.<sup>12</sup> This study explores students' perceptions of preclinical restorative courses to evaluate their effectiveness, identify potential benefits, and highlight areas for improvement.

The course is interactive, encouraging students to ask questions, clarify doubts, and provide feedback to improve the teaching process. Of the respondents, 95.0% felt the course added value

to their clinical practice, and 93.3% agreed that such courses should be offered in the second year of BDS. These findings align with a study by Gul M., where over 80% of students noted that the preclinical course improved their understanding of the subject.<sup>13</sup> Similarly, Ayar conducted a study on dental students' perceptions of the preclinical restorative dentistry course at Biruni University, reporting comparable findings regarding students' attitudes toward preclinical training.<sup>6</sup>

Preclinical dental courses are often stressful, impacting students' overall well-being.<sup>14</sup> In our study, 64.4% of students reported stress, which aligns with a 2017 study by Ersan et al.<sup>17</sup>, which found moderate stress levels among preclinical dental students in a Turkish dental school. This anxiety may stem from time constraints and heavy workloads. While 45.0% of our participants perceive insufficient time to adequately develop psychomotor skills, a study by Ferguson et al. found that 65% preferred a shorter course<sup>15</sup>. This discrepancy may reflect differences in institutional contexts, course structures, or individual student expectations and learning paces. Our findings suggest that some students feel the course is rushed, impeding their ability to fully master the required skills. Analysis of open-ended responses revealed that students felt the duration was too short. This reflects a positive perception and motivation among students.<sup>16</sup> In our study, 21.7% of students disagreed that the workload was manageable, indicating that many found it overwhelming. Further research is needed to identify the specific factors contributing to this stress. One potential solution could be to extend the preclinical courses over two years (2nd and 3rd BDS), which would help distribute the workload more evenly and reduce stress levels.<sup>17</sup>

Additionally, learning objectives play a critical role in guiding students through their preclinical restorative courses and assessing their progress. Instructors should ensure that students are not only aware of these objectives but are also able to achieve them in a structured and efficient manner. In this study, 94.6% of students agreed that the course's learning objectives were clear, suggesting that students recognize the value of the knowledge gained and its relevance to their future clinical practice.

The learning environment plays a crucial role in skill development and practice<sup>18</sup>. In our study, 88.3% of students agreed that the studying environment at CMH Lahore Medical and Dental College was conducive to both learning and skill enhancement. Similarly, the teaching method and lecture delivery significantly influence student engagement and their ability to absorb knowledge<sup>19</sup>. In this study, 95.0% of participants agreed that facilitators effectively utilized audiovisual aids throughout the course.

In preclinical course, there are three facilitators for a batch of 74 students. Regarding the instructors' teaching style and delivery, 90.0% of participants felt they received adequate attention from their facilitator. In a similar study by Ayar MK, two instructors were responsible for a group of 85 students, and 74.7% of respondents reported receiving sufficient attention. These findings suggest that increasing the number of facilitators could improve the level of attention students receive.<sup>6</sup>

Well-crafted assessments help teachers measure the levels of student understanding. It helps the teacher identify the students' shortcomings and provide the instruction needed to advance their thinking and learning.<sup>20</sup> In the current study, 93.9% of respondents agreed that the tools used for assessment were adequate to their knowledge and skills.

The transition from preclinical training to patient care is challenging for many students. Preclinical courses help strengthen foundational knowledge and refine clinical skills through lab exercises and practice, improving understanding of key concepts.<sup>15</sup> Feedback helps in gauging student perception regarding the courses and should be taken at regular intervals to improve the quality of the courses and to overcome the shortcomings.<sup>21</sup> Regarding overall feedback about the course, 95.0% respondents felt that the course of preclinical restorative dentistry provided a valuable addition to their clinical practice. Preclinical courses help students better correlate their academic knowledge with clinical application, and this integration will result in a better understanding of the subject.

These findings suggest that at CMH Lahore Medical College, the preclinical restorative curriculum is largely well-received. However, course coordinators should consider redistributing the workload across two years and institutionalizing regular student feedback to drive ongoing curriculum improvement.

## CONCLUSION

This survey represents the first study regarding the perception of students about preclinical restorative dentistry courses at CMH Lahore Medical and Dental College. Measuring students' perception of the preclinical dental course would help improve course quality and identify students' reservations about the subject. Based on the results, students expressed a positive perception of the preclinical restorative dentistry curriculum. However, stress levels were noted in students, and focus should be placed on better workload distribution. One suggestion would be to carry out the course over a period of two years, as this would result in less workload burden and better outcomes.

## LIMITATIONS

This study was limited to CMH Lahore Medical College and the Institute of Dentistry.

## SUGGESTIONS / RECOMMENDATIONS

Future multicenter studies are recommended to validate the findings and assess the impact of curriculum modifications on student outcomes.

## CONFLICT OF INTEREST / DISCLOSURE

We declare no conflict of interest in the conduct of this study.

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