

An insight into the clinical learning environment of dental institutes: a study in the twin cities of Pakistan

Muhammad Muhammad¹, Zaina Ahmad², Fatima Shahzad³, Ahsan Sethi⁴

Abstract

Objective: To assess the perceptions of dental students regarding their clinical learning environment in an urban setting.

Method: This descriptive, cross-sectional survey was conducted from March 2020 to May 2021 after approval from the ethics review committee of Islamic International Dental College, Islamabad, Pakistan. It comprised of clinical year students, house officers and postgraduate trainees from 6 dental teaching hospitals of Rawalpindi and Islamabad. Data was collected using a pre-validated instrument assessing the dental clinical learning environment. Data was analysed using SPSS 24.

Results: Of the 1030 students approached, 561(54.4%) responded. Of them, 448(80%) were girls, 234(41.7%) were 3rd year students, 110(19.6%) were 4th year students, 120(21.4%) were house officers and 97(17.3%) were postgraduate trainees. Female students had a better patient attitude and were more confident in their abilities to keep up with their peers ($p < 0.05$). The students were content with the performance of their clinical teachers, with a mean score of 70.99 ± 16.0 , while the lowest score of 54.67 ± 22.9 was for clinical infrastructure and materials. Students of Islamabad pointed out the lack of clinical materials and maintenance of equipment but noted better research opportunities compared to their Rawalpindi counterparts ($p < 0.05$).

Conclusion: The clinical learning environment for Islamabad and Rawalpindi cities individually was good. Overall, students were satisfied with their clinical teachers, learning and training experience. Dental materials, infrastructure and maintenance factors scored the lowest.

Key Words: Dental education, Dental graduate education, University hospital, Health facility environment, Clinical clerkship. (JPMA 74: 277; 2024) DOI: <https://doi.org/10.47391/JPMA.8629>

Introduction

The importance of the healthcare system had never been as critical as it was in the active phase of the coronavirus disease-2019 (COVID-19). The backbone of a healthcare system is its medical professionals who undergo years of training to keep the system running efficiently. This training consists of theoretical and clinical components. For undergraduate medical and dental students, the clinical component plays a huge role in future prevention, management, and diagnosis of dental problems¹ Students' feedback holds immense value when it comes to evaluating the factors that either enhance or deteriorate the clinical learning environment.² Students' feedback is invaluable for multiple reasons. As primary stakeholders, their experiences significantly impact learning outcomes. Their feedback provides valuable insights into the strengths and weaknesses of a learning

environment.³ The feedback provided by students can also be instrumental in assessing the standard of clinical teaching methods, as perceived by the students themselves. Sufficient clinical training is considered an undeniable prerequisite before a license to practice is handed to a dentist. For that reason, it is important to develop an environment that is conducive to producing dental practitioners who are equipped with dental skill and interpersonal competence.⁴

Globally, questionnaires utilising Likert-type scales are used to measure the medical educational environment in healthcare institutes. Widely used instruments include the Dundee Ready Education Environment Measure (DREEM), the Postgraduate Hospital Educational Environment Measure (PHEEM) and the Surgical Theatre Educational Environment Measure (STEEM). The Clinical Learning Environment Inventory (CLEI) focuses on the clinical aspects of nursing students.⁵⁻⁸

The absence of a dedicated instrument for evaluation of the learning environment in dentistry prompted Kossioni et al. to develop the Dental Clinical Learning Instrument (DECLI), a 24-item questionnaire that specifically assesses the clinical learning environment of dental institutions.⁹ DECLI utilises well-established

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¹⁻³Islamic International Dental College, Riphah International University, Islamabad, Pakistan, ⁴QU Health, Qatar University, Doha, Qatar

Correspondence: Zaina Ahmad. Email: zainaahmad198@gmail.com

ORCID ID. 0000-0003-3240-7887

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psychometric standards, such as reliability and validity testing, to measure the students' self-perception of their clinical learning environment. These rigorous standards ensure the accuracy, consistency and appropriateness of the assessment tool in line with current best practices. This instrument has been validated through studies carried out in different parts of the world, including Europe, the United States and Brazil, and has also been applied to dental institutions in the Saudi Arabian city of Riyadh as well as in the Khyber Pakhtunkhwa (KP) province of Pakistan.¹⁰⁻¹³ Only one localised study in Pakistan has examined the dental clinical learning environment, and it was conducted in KP.¹³ As such, the findings may not be representative of the entire country. The current study was planned to assess the perceptions of dental students regarding their clinical learning environment in an urban setting.

Subjects and Methods

The descriptive cross-sectional survey was conducted in the twin cities of Rawalpindi-Islamabad, Pakistan, from March 2020 to May 2021. After approval from the ethics review committee of the Islamic International Dental College (IIDC), Islamabad, the sample size was calculated using OpenEpi 3.01 with an anticipated frequency of 50% with 99.9% confidence interval (CI) and 5% absolute precision.¹⁴ The sampling technique used was universal sampling. All institutions in Islamabad-Rawalpindi meeting the predetermined inclusion criteria, were included in the sample population for the study. The sample was raised from the complete population of 6 private-sector institutions based in Islamabad and Rawalpindi with duly accredited undergraduate and postgraduate training programmes. Those included were clinical year dental students, house officers (HOs) and postgraduate trainees (PGTs) from IIDC, Margalla Institute of Health Sciences (MIHS), Islamabad Medical and Dental College (IMDC), Rawal Institute of Health Sciences (RIHS),

Foundation University College of Dentistry (FUCD) and Army Medical College (AMC). Institutions that did not fit the inclusion criteria of having of their roll undergraduates, as well as HOs and PGTs were excluded.

The survey was distributed either through physical hard copies, or through Google Forms that were sent via email and social media chat groups. Informed consent was diligently obtained from all participants involved in this study, ensuring that they were fully informed about the research objectives, procedures, and the guarantee of anonymity. The survey tool was the pre-validated DECLEI,⁹ which addresses the shortcomings of DREEM and is made specifically for the study of dental clinical learning environment.⁵ DECLEI comprises 24 questions that address various aspects contributing to the clinical learning environment, and are scored on a 6-point Likert scale: 0 = strongly disagree, 20 = disagree, 40 = slightly disagree, 60 = slightly agree, 80 = agree, and 100 = strongly agree.⁹ Overall DECLEI score interpretation was: <19.9 = very poor, 20-39.9 = poor, 40-59.9 = moderate, 60-79.9 = good, >80 = excellent.⁹ The instrument has already been piloted and validated in the Pakistani context.¹³

The original questionnaire indicated a similarity between items of the questionnaire,⁹ and the common items were divided into four subgroups in the current study: teacher satisfaction, clinical training and education, patient interaction, and infrastructure and materials.

Data was analysed using SPSS 24. Shapiro Wilk test was used to check data normality. Kruskal Wallis test and Mann Whitney U test were run for analysing the non-normally distributed data. $P < 0.05$ was considered significant.

Results

Of the 1030 students approached, 561 (54.4%) responded. Of them, 448 (80%) were girls, 234 (41.7%) were 3rd year students, 110 (19.6%) were 4th year students, 120 (21.4%)

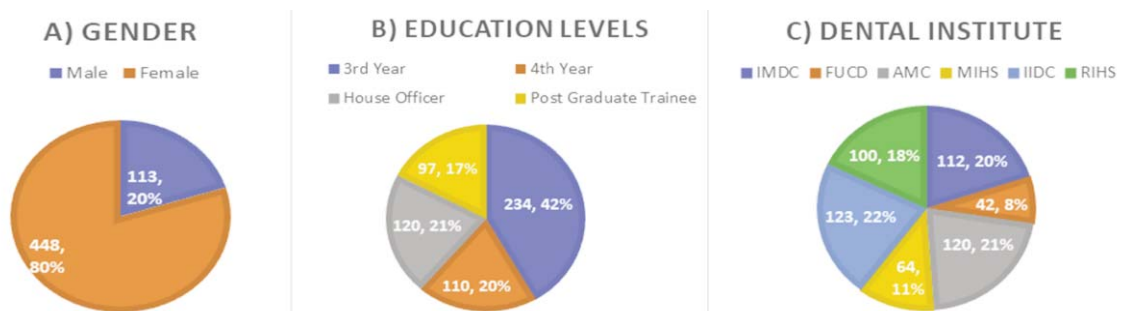


Figure: Demographic distribution of the sample.

a) Gender, b) Education levels, c) Dental institutions

IMDC: Islamabad Medical and Dental College, FUCD: Foundation University College of Dentistry, AMC: Army Medical College, MIHS: Margalla Institute of Health Sciences, IIDC: Islamic International Dental College, RIHS: Rawal Institute of Health Sciences.

were house officers and 97(17.3%) were postgraduate trainees, and most of the subjects belonged to IIDC (Figure).

The mean DECLEI score indicated that female students had a better patient attitude and were more confident in their abilities to keep up with their peers ($p<0.05$). There were significant differences in multiple items related to the subjects' year of study (Table 1).

Table-1: Mean DECLEI score.

	MDS (SD)	Median	p-value M/F	p-value YOE	p-value Isl/Rwp
I feel I can freely ask any question I have	70.77(23.4)	80.00	0.767	0.023*	0.627
My clinical teachers are approachable	75.01(20.8)	80.00	0.289	0.001*	0.488
In wards, there is a feeling of mutual respect between teachers & students	71.98(25.0)	80.00	0.366	0.039*	0.289
The dental study programme prepared me adequately for the clinical work	65.44(23.0)	60.00	0.161	0.000*	0.401
I undertake patients with similar demands & difficulties as my colleagues	68.52(21.1)	80.00	0.048*	0.040*	0.275
I am learning a sufficient amount of clinical techniques	66.36(24.1)	80.00	0.123	0.001*	0.276
The clinical infrastructure of the school is satisfactory	57.76(28.0)	60.00	0.565	0.000*	0.101
My association with my patients leads to minimal problems^	64.97(23.5)	80.00	0.223	0.079	0.115
I am confident that this year I will complete my clinical responsibilities	63.12(26.2)	60.00	0.268	0.000*	0.530
I adequately organize my patients' folders/records	62.78(25.9)	80.00	0.144	0.075	0.004*
We use up-to-date materials and equipment in the hospital	54.61(29.0)	60.00	0.444	0.001*	0.000*
The patients are polite towards the students	63.06(23.0)	60.00	0.028*	0.003*	0.502
I am satisfied with my overall study experience^	61.18(26.0)	60.00	0.729	0.068	0.738
The topics in the clinical seminars helped me in my clinical training	63.94(21.7)	60.00	0.194	0.000*	0.332
The dental units' technical problems are quickly dealt with	51.55(29.1)	60.00	0.385	0.002*	0.000*
The patients are on time for their appointments	51.65(25.1)	60.00	0.230	0.119	0.005*
I am satisfied with the community service that I provide as a dentist	68.26(19.8)	80.00	0.510	0.000*	0.422
The clinical teachers fulfill their duty and uphold the work-hours of hospital	71.37(21.3)	80.00	0.843	0.017*	0.471
I systematically self-evaluate my progress	69.35(20.0)	80.00	0.444	0.085	0.686
The clinical teachers are chosen with strict and proper criteria	67.58(23.8)	80.00	0.402	0.000*	0.133
I have great research opportunities in my college	53.79(26.7)	60.00	0.464	0.000*	0.035*
The clinical cases which I handle adequately prepare me for my profession	72.46(19.3)	80.00	0.934	0.000*	0.317
I am too energized to be able to work effectively in the clinics/wards^	52.42(27.6)	60.00	0.875	0.006*	0.233
The teachers are adequately prepared for their class/demonstration^	69.09(24.0)	80.00	0.834	0.158	0.206

DECLEI: Dental Clinical Learning Instrument, MDS: Mean DECLEI score, SD: Standard deviation, /F: Males;females, YOE: Year of education, Isl: Islamabad, Rwp: Rawalpindi.

*statistically significant differences ($p<0.05$)

^ Originally negative statements that have been reversed.

Table-2: Mean DECLEI scores of subgroups.

	Mean(SD)	Median
Teacher Satisfaction	70.99(16.0)	73.33
Clinical Training and Education	63.03 (13.3)	64.44
Patient Interaction	59.90(15.3)	60.00
Infrastructure and Materials	54.67(22.9)	60.00

DECLEI: Dental Clinical Learning Instrument, SD: Standard deviation.

The students were content with the performance of their clinical teachers, with a mean DECLEI score of 70.99+/-16.0. The lowest score of 54.67+/-22.9 was for clinical infrastructure and materials (Table 2).

Students of Islamabad pointed out the lack of clinical

materials and maintenance of equipment but noted better research opportunities compared to their Rawalpindi counterparts ($p<0.05$).

Discussion

The current study evaluated the dental clinical learning environment as per the perception of students. This is the first study to collect data regarding the dental clinical learning environment using the instrument DECLEI in the

twin cities of Rawalpindi-Islamabad, and the second such study in Pakistan after the first one in the KP province.¹³

The overall mean DECLEI score was 64.05 which fell in the category of good. Approachability of clinical teachers had the highest score (70.99).

Although items pertaining to teacher satisfaction (Table 2) exhibited an overall high mean DECLEI score, students appeared to express concerns regarding the selection criteria of clinical teachers. This concern may stem from a shortage of clinical demonstrators, leading the students to heavily rely on residents for guidance in the clinical setting.¹³ Similarly, other studies have emphasised the

crucial role of clinical teachers in shaping the quality of clinical learning environments, yet a significant number of clinical teachers lacked proper training in teaching methods.¹⁵

Items under the category of clinical training (Table 2) and education also had a high mean score (63.03). Studies have shown that quality clinical training has an impact on the confidence of healthcare professionals.¹⁶ The factors associated with patient interactions demonstrated a borderline good score (59.90). Fostering positive patient-provider relationships is a mutually beneficial process that also contributes to establishing a favourable learning environment.¹⁷ Effective communication and mutual respect are key determinants of a healthy patient-provider relationship. The lower score in the patient interaction category can be attributed to the diverse backgrounds of patients seeking care in the twin cities, which presents challenges in achieving effective communication either due to language barrier, cultural differences, health literacy or implicit biases.

Items related to infrastructure and materials scored the lowest, with a mean DECLEI scored of 54.67, falling in the moderate category. In order to improve clinical setups, infrastructure has been identified in some studies as an important factor.¹⁸ Another study suggested there was no correlation between the two.¹⁹ The lack of availability of latest materials poses a threat to future practice, as the focus shifts to newer materials and techniques compared to conventional ones, like amalgam filling.²⁰

The students regardless of gender held similar perceptions about their clinical learning environment, but female students felt more confident about handling difficult cases and reported a better patient attitude. This observation may potentially stem from the ability of the female students to humanise their practice, which could contribute to their increased confidence and patient-centred approach.²¹

Results with regards to the level of education showed a trend of similar scores of 3rd and 4th year students, owing to the fact that both were at the undergraduate level. An increase in mutual respect between teachers and students, along with a greater sense of competence in the skills required for clinical work was observed with higher levels of education. PGTs felt better about the clinical infrastructure. In terms of materials provided, 3rd year students and PGTs scored better compared to 4th year students and HOs. There was no significant difference between energy levels across the years. The mean DECLEI scores for the latter fell in the category of borderline good except for 3rd year scores that were moderate.

Maintenance of dental units and patient punctuality scored the lowest overall and across all levels of education.

The mean DECLEI score of institutions based in Islamabad and Rawalpindi showed that students from both found their teachers to be welcoming and responsible in terms of fulfilling their duties (Table 1). However, they also felt an overall lack of research opportunities, with those in Rawalpindi showing a significantly lower score compared to students in Islamabad. Participants from Islamabad reported a lack of new materials and maintenance of dental units. They also scored comparatively lower patient punctuality and patient recordkeeping scores.

The study had a similar overall DECLEI score for the twin cities (good) which was higher than the moderate-to-good Score reported by the study in KP¹³. There was a significant difference relating to the use of new materials and maintenance of dental units, with institutions in KP reporting a substantially better response. Gender-related differences in clinical learning experiences were more pronounced in KP compared to the twin cities.¹³

The use of a validated instrument allowed comparison with other studies conducted internationally. The overall dental clinical learning environment of the twin cities was found to be better than that reported by a study in Greece ((56.1), at par with institutions in Saudi Arabia (64.1), and lower than that reported by a study in Fiji (70.83).^{9,12,22}

The current study had limitations. The data collection was interrupted due to the COVID-19 pandemic during which there was a major shift in the education system, consequently affecting learning in clinics and hospitals. This may have transformed the opinions of students regarding their clinical learning environments pre-pandemic and post-pandemic. Furthermore, compromised clinical training of 3rd and 4th year students due to COVID-19 lockdowns may have impacted their perception of the clinical learning environment.

Also, the lack of previously published studies using DECLEI may have limited the interpretation value of the findings, leaving little room for comparison. Another limitation of the current study is the lack of subgroup comparisons which may hamper the understanding of potential variations within the studied population. Yet another limitation is that the DECLEI does not address the role of dental assistants who play a crucial role in contributing to a clinical learning environment.

Despite the limitations, however, the current study has paved the way for future research in other regions of the country.

Conclusion

The dental clinical learning environment in Islamabad and Rawalpindi have been reported as favourable, both on an individual basis and collectively. Overall, students were satisfied with their clinical teachers, learning and training experience. Future research should explore these areas in depth qualitatively.

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Author's Contributions

ZA, FS, MM and AS: Conception and design.

MM and AS: Supervised the study.

ZA and FS collected the data.

All the authors were involved in data analysis and interpretation, writing, critical revising, final approval and accountable for all aspects of the work.