ORIGINAL ARTICLE

Is the dental clinical learning environment suitable? A survey of Khyber Pakhtunkhwa, Pakistan

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Abstract

Objective: To assess the clinical learning environment in dental institutes of Khyber Pakhtunkhwa.

Methods: The multi-centre cross-sectional survey was conducted from January to May 2017, and comprised students of three institutes affiliated with three different universities in Khyber Pakhtunkhwa province of Pakistan. These included the public-sector Khyber Medical University and two in the private sector: Gandhara University and Riphah International University. A validated Dental Clinical Learning Environment Instrument was distributed among the undergraduate and postgraduate students who were asked to record their perceptions using a six-item Likert scale. Data was analysed using non-parametric statistics.

Results: Of the 700 students approached, 553(79%) responded. Of them, 345(62.4%) were females. The mean score for the public-sector institute was 56.69% ± 26.88 (moderate) and 60.53% ± 27.94 (borderline-good) and 62.76% ± 26.02 (borderline-good) for the two private institutes respectively. Clinical teachers were significantly more approachable in private than public sector ($p<0.05$). The participants from public-sector institute reported lack of vigour, infrastructure, clinical resources and research opportunities. Those from the private sector felt more satisfied and confident about their clinical training but reported having patients for their appointments as a challenge. There were significant differences among those having different gender and levels of training ($p<0.05$). All participants found clinical seminars helpful.

Conclusion: Clinical learning environment was slightly positive than negative but borderline. The students from private institutes had higher satisfaction than those in public.

Keywords: Undergraduate dental education, Postgraduate dental training, Dental students/graduates, Clinical environment. (JPMA 68: 359; 2018)

Introduction

Dental education is a complex, demanding and often stressful pedagogical experience.[1] A productive dental environment is conducive for learning, and offers wide-ranging authentic care-giving experiences.[1,2] It should provide the learners a controlled and gradual shift towards unsupervised clinical practice in terms of prevention, diagnosis and effective management of dental patients.[2]

There has been a rapid mushroom growth of dental schools in Pakistan. The quality of dental training is being compromised and not monitored effectively.[3] Various appalling incidences of negligence and incompetence have also been reported.[3] This has resulted in an increased emphasis on dental education reforms in Pakistan, more specifically in Khyber Pakhtunkhwa (KP) province.[4] Dental institutes are expected to provide their undergraduate/postgraduate students with necessary theoretical, clinical and interpersonal competencies in an environment that promotes learning in a positive way.[1]

In medical education, the most commonly used instruments for assessing learning environments are Dundee Ready Education Environment Measure (DREEM),[5] Surgical Theatre Educational Environment Measure[6] and Postgraduate Hospital Educational Environment Measure.[7] Dental educators mostly use the generic instrument such as DREEM[8] or others such as Dental Student Learning Environment Survey[9] that were originally developed for medical education and not specifically updated for dental education.[10] Kossioni et al.[11] developed a 24-item Dental Clinical Learning Environment Instrument (DECLEI) based on extensive literature review of items relevant to the dental clinical learning environment and validated it using contemporary psychometric standards.

The literature search identified only one study on educational environment of dental institutes from Punjab, Pakistan, and that too used DREEM.[8] They found the private institutes to be better than those in the public sector. However, their sample only included undergraduate dental students (n=197) from institutes

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affiliated with the same university. The current study was planned to overcome the limitations of the previous study[8] with a bigger cohort including both the undergraduates and postgraduates from different dental institutes from both public and private sectors.

Subjects and Methods

The multi-centre cross-sectional survey was conducted from January to May 2017, and comprised students of three institutes affiliated with three different universities in the KP province of Pakistan. These included the public-sector Khyber Medical University and two in the private sector: Gandhara University and Riphah International University. The target population was all the dental students in clinical years i.e. third and final year, and graduates doing house job and specialty training.

A validated DECLEI[11] was used after permission. The instrument includes 24 items, scored on a six-item Likert scale: 0-Strongly disagree, 20-Disagree, 40-Slightly disagree, 60-Slightly agree, 80-Agree, 100-Strongly agree. The items broadly assessed organisation and learning opportunities, professionalism and communication, and satisfaction and commitment to the dental studies. To reduce acquiescence bias, four items were negatively worded. Overall DECLEI score interpretation was: ≤19.9-Very poor, 20-39.9-Poor, 40-59.9-Moderate, 60-79.9-Good, ≥80-Excellent.

Demographic questions and open-ended area for comments were added to the questionnaire. The questionnaire was validated in local context by three experts and piloted (n=10) to clarify issues related to comprehension and layout. Some items were modified e.g. the term 'clinics' was replaced with hospital or wards or clinical work and 'folders' with records. No identifying data was requested to encourage freedom in responses.

Ethical and administrative approval was obtained from each of the three dental institutes. All the target students/graduates were invited to participate. The study purpose and its benefits were discussed. Those who volunteered were included.

Each questionnaire was sequentially numbered (R#). Quantitative data was entered into SPSS23. Initially descriptive statistics were calculated. The data was found to be not normally distributed (Shapiro Wilk test p=0.000) therefore non-parametric tests such as Mann-Whitney U and Kruskal-Wallis were used to identify the significant differences ($p<0.05$) among subgroups.[12] The reliability of DECLEI, in this study was 0.751, indicating high internal consistency with our population. The total DECLEI score for each institute was calculated by the mean of the 24 mean item scores of all the participants. A score below 39.9% was interpreted as a negative educational environment that required radical changes in most areas. A score between 40-59.9% was interpreted slightly positive than negative with specific areas for improvement, whereas a score above 60% was interpreted as a positive clinical environment.[11] Content analysis was carried out on the qualitative data.[13]

Results

Of the 700 students approached, 553(79%) responded. Of them, 345(62.4%) were females. Of the total, 112(20%) were Trainee Medical Officers and they were equally distributed in terms of gender. As for the level of studies, 298(54%) were undergraduates and the rest were postgraduates. The public-sector institute had more postgraduate trainees than the two private institutes combined (Table-1). The respondents choosing not to answer certain questions resulted in missing data.

The mean scores for each item, the total DECLEI mean

Table-1: Demographic characteristics.

Characteristics		College 1 (Public-KMU) (n=249)	College 2 (Private-GU) (n=201)	College 3 (Private-Riphah) (n=103)
Gender	Male	80 (32.1%)	76 (37.8%)	3 (2.9%)
	Female	145 (58.2 %)	107 (53.2%)	93 (90.3%)
Age	Under 25 Years	144 (57.9 %)	121 (60.2%)	81 (78.6%)
	25 - 30 Years	76 (30.5 %)	40 (19.9%)	11 (10.7%)
	Above 30 Years	12 (4.8 %)	4 (2.0%)	0 (0.0%)
Training Level	Undergraduate			
	Third Year	61 (24.5%)	65 (32.3%)	11 (10.7%)
	Final Year	66 (26.5%)	54 (26.9%)	41 (39.8%)
	Postgraduate			
	House Job	42 (16.9%)	42 (20.9%)	36 (35.0%)
	Trainee	70 (28.1%)	35 (17.4%)	7 (6.8%)

KMU: Khyber Medical University
GU: Gandhara University.

Table-2: Evaluation of the Dental Clinical Environment broken down by institutes, gender and levels of training.

Items	Institute One (n=249) Mean (SD)	Institute Two (n=201) Mean (SD)	Institute Three (n=103) Mean (SD)	I1-I2-I3	p value Male-Female	Undergrad-Postgrad
I feel I can freely ask any question I have	58.29 (30.05)	60.20 (30.87)	63.33 (30.71)	0.295	0.001*	0.037*
My clinical teachers are approachable	67.02 (23.32)	65.17 (27.95)	75.69 (20.99)	0.003*	0.994	0.628
In wards, there is a feeling of mutual respect between teachers & students	68.37 (24.17)	66.16 (28.65)	66.67 (29.29)	0.979	0.682	0.068
The dental study programme prepared me adequately for the clinical work	59.17 (27.01)	62.78 (28.10)	67.13 (25.86)	0.017*	0.201	0.836
I undertake patients with similar demands & difficulties as my colleagues	67.85 (22.45)	67.44 (25.28)	68.51 (21.23)	0.943	0.165	0.501
I am learning a sufficient amount of clinical techniques	67.24 (23.79)	68.80 (25.33)	70.59 (24.16)	0.291	0.182	0.109
The clinical infrastructure of the school is satisfactory	54.20 (28.18)	63.42 (26.45)	67.20 (23.70)	0.000*	0.346	0.038*
My association with my patients leads to minimal problems^	57.94 (26.85)	55.48 (29.09)	59.60 (24.82)	0.533	0.041*	0.924
I am confident that this year I will complete my clinical responsibilities	64.65 (25.27)	66.73 (27.84)	68.71 (25.05)	0.297	0.036*	0.535
I adequately organize my patients' folders/records	54.67 (30.89)	59.80 (27.71)	55.64 (27.51)	0.254	0.109	0.988
We use up-to-date materials and equipment in the hospital	38.97 (31.64)	45.61 (31.10)	53.86 (31.97)	0.000*	0.000*	0.000*
The patients are polite towards the students	62.23 (23.08)	61.82 (24.78)	59.21 (26.52)	0.681	0.246	0.241
The topics in the clinical seminars helped me in my clinical training	54.73 (27.69)	58.61 (26.96)	61.21 (23.70)	0.166	0.338	0.463
The dental units' technical problems are quickly dealt with	40.43 (30.33)	45.23 (31.65)	54.34 (28.86)	0.001*	0.975	0.099
The patients are on time for their appointments	53.10 (25.81)	49.44 (30.07)	48.82 (26.49)	0.338	0.451	0.377
I am satisfied with the community service that I provide as a dentist	57.61 (26.12)	65.83 (24.88)	65.36 (24.10)	0.002*	0.249	0.268
The clinical teachers fulfil their duty and uphold the work-hours of hospital	56.58 (27.47)	62.18 (28.46)	61.19 (27.97)	0.068	0.762	0.000*
I systematically self-evaluate my progress	61.90 (24.02)	62.86 (25.86)	60.80 (23.77)	0.431	0.949	0.649
The clinical teachers are chosen with strict and proper criteria	48.03 (29.88)	62.04 (27.32)	57.84 (26.98)	0.000*	0.652	0.009*
I have great research opportunities in my college	34.55 (31.75)	46.60 (32.12)	63.73 (25.75)	0.000*	0.001*	0.014*
The clinical cases which I handle adequately prepare me for my profession	72.09 (21.19)	70.00 (25.42)	72.48 (22.06)	0.885	0.284	0.307
I am too energized to be able to work effectively in the clinics/wards^	46.26 (27.93)	51.33 (29.08)	54.51 (29.54)	0.050	0.661	0.099
The teachers are adequately prepared for their class/demonstration^	63.02 (27.59)	72.59 (26.80)	64.51 (26.83)	0.000*	0.753	0.000*
I am satisfied with my overall study experience^	51.60 (28.54)	62.64 (28.88)	65.35 (26.52)	0.000*	0.098	0.000*
Overall Dental Clinical Environment	56.69(26.88)	60.53(27.94)	62.76(26.02)	0.000*		

SD: Standard deviation

* The differences are significant (p<0.05)

^ Four statements were originally negative, therefore reversed.

score and the significant differences among institutes, genders and levels of training were calculated (Table-2).The mean DECLEI score for the public-sector institute was 56.69% SD 26.88 (moderate) and of the two private institutes were 60.53% SD 27.94 (borderline-good) and 62.76% SD 26.02 (borderline-good) respectively. The participants across all genders and levels of training found clinical teachers approachable, significantly more so in private than public institute (p<0.05). The public-sector students reported significantly low energy levels, clinical infrastructure, resources and research opportunities (p<0.05 each). One student reported: 'We are still living in the 1950s dental era'. Another mentioned: 'Students should be encouraged do research but there is no faculty that can help'. Those from the private institutes felt significantly more satisfied and confident about their clinical training, infrastructure, equipment, materials and community service, but reported having patients as a challenge (p<0.05). The participants across all genders and levels of training felt that dental units' technical problems are not dealt with promptly. The females rated themselves significantly higher in completion of their clinical responsibilities and maintaining records but less so in asking questions from the teachers (p<0.05). One house officer said: 'They better should cross the barrier of superiority complex of being the boss of their trainees'. All the participants found the patients polite and clinical seminars helpful. The undergraduates, particularly from the private colleges, felt confident about the selection, abilities and professionalism of their teachers/supervisors. A student said: 'After every lecture of his we come out educated, humbling and inspired to do good'. The students from public-sector institute reported lack of satisfaction from their faculty: 'Teachers do not consult each other or make a study plan for us. Everyone teaches different techniques … there is a constant confusion'. For most items, the undergraduates significantly rated their clinical learning experience higher than the postgraduates (p<0.05). However, the postgraduates rated their abilities to systematically self-assess better.

Discussion

This is the first multi-centre assessment of the dental clinical environment in Pakistan using DECLEI and provides new insights into cross-cultural issues. The study evaluated the differences among participants by institutes, gender and level of training in terms of favourable and unfavourable perceptions. It show that the DECLEI, validated in Europe[11] and Saudi Arabia,[14] is applicable to dental institutes of Pakistan as well. Our study had higher number of respondents than the previous DREEM-based study from Pakistan,[8] which can be attributed to the increased interest of the learners in improving their clinical learning environment.

The mean total DECLEI score for the public-sector institute was 56.69% (moderate) and two private-sector institutes were 60.53% (borderline-good) and 62.76% (borderline-good) respectively. These scores are higher than those reported in Europe[11] (56.1%) but lower than those reported in Saudi Arabia[14] (64.1%). Various significant differences were found between public- and private-sector institutes. These differences are expected and support the discriminant validity of DECLEI.[11] Findings are similar to those from Ali et al,[8] where the private institutes were found to be better. The respondents from public institutes also felt that their teachers are less approachable. An interactive educational training environment is essential for learners' engagement and effective clinical learning experience.[11] Even though, research opportunities were ranked lower, those from private institutes perceived themselves better. It may be because private institutes conduct regular symposiums to encourage research. The respondents valued the opportunities to join clinical seminars and workshops. Goldszmidt et al.[15] also found such interactions with experts and collaborative learning beneficial. Private-institute students felt satisfied with the community services they provide. This is because of the lack of efficient public oral healthcare system in Pakistan and a lot of patients go to these teaching hospitals because of their affordability and subsidised care. The results indicated that dental units' technical problems are not dealt with promptly. This may suggest a need for hiring engineers or technicians in the dental institutes or inclusion of a basic course or training in biomedical engineering in the curriculum.

The differences between public and private institutes can be explained.[8] First, the private institutes have complete administrative and financial autonomy, which is not the same in public-sector institutes. Second, they have stronger faculties as they attract more qualified and experienced faculty from the public-sector by lucrative offers. They also have a better student to dental assistant ratio than the public institutes. Third, they charge a high tuition fee and are thus obliged to address the students' concerns more promptly. Fourth, there are wide differences in curriculum organization and tools for dental education. On the other hand, it may be possible that the students in the public institutes undervalue the privileges they experience e.g. better access (central location), the availability of patients, subsidized tuition fee and patient care unlike those from private.[14]

For public institutes, we recommend administrative and financial autonomy without bureaucratic pressures, along with market-based salaries/incentives for the faculty. They should also improve their infrastructure and curriculum, and make their clinical teachers more approachable. Moreover, the private institutes should take measures for improving their accessibility for the patients and further subsidise their services.

We also found many gender-related significant differences in our results unlike the study conducted in Europe[11] that reported none and similar to studies from Saudi Arabia,[14] Pakistan[8] and Yemen.[16] These differences may be related to the specific socio-cultural environment and deep-rooted gender inequalities in the region, specifically Pakistan.[17] Men tend to hold positions of power, while women are adversely affected in all spheres of life.[18] There is a need for proactive measures ensuring equity into institutional policies and practices.

In our study, undergraduate students rated their clinical learning experience higher than the postgraduates, significantly so for many items. This suggests that the current structure in these institutes fulfil the needs of undergraduates but may not be sufficient for postgraduates. The transition towards practice is very critical because it involves a change in perceived status, role and working patterns.[19,20] The low perceptions of the postgraduates regarding their environment might be related to that.[14]

The postgraduates did rate their abilities to systematically self-assess themselves higher from the undergraduates. This ability is a key to self-regulation and improvement.[21] However, we are not sure if the postgraduate curriculum is encouraging their development as self-directed learners or if it is a coping mechanism for challenging and stressful learning experiences.[22,23] Previous studies from Pakistan reported the effect of age on the dental students' perceptions of the educational environment;[8] however, these did not compare or study the differences in the undergraduates versus the postgraduates per se.

In terms of limitations, there is a lack of previously published studies using DECLEI, therefore, comparison of

all aspects of the results was difficult. The study is not generalisable as it is relevant only to the institutes of KP, yet its potential value is that it helped in identifying gaps in clinical learning environment in the most developed institutes affiliated with three different universities of the country. The self-reported nature of DECLEI is another concern. In higher education, student ratings through questionnaires have been widely used to monitor and evaluate. They are known to be multidimensional, valid, reliable and useful for the faculty and administration.[24] The unequal faculty and students/trainees' strength among the institutes is another limitation. However, these colleges are recognised by Pakistan Medical and Dental Council (PMDC) and College of Physicians and Surgeons Pakistan (CPSP), therefore, meet the minimum faculty requirements in all their undergraduate and postgraduate programmes.

Future research should compare our findings with dental clinical environment in other provinces of Pakistan and from other stakeholder groups e.g. teachers/supervisor and dental assistants. There is also a need to explore the clinical learning environment in-depth using qualitative methods.

Conclusion

Clinical learning environment was slightly positive than negative but borderline. It met the needs of undergraduates but seemed deficient for postgraduates. The students from private institutes had higher satisfaction than those in public.

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