

BRIEF REPORT

Assessment of the learning environment in prosthodontic department based on Dental College Learning Environment Survey by the graduates of a dental institute in India

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The purpose of this study was to determine dental graduates' perceptions of learning environment in a prosthodontic department in a dental institute in India. The 60-item closed-ended, cross-sectional questionnaire with five options was completed by the dental graduates and the dentists. The data obtained was analyzed using statistical software. The mean, SD, frequency and percentages were calculated wherever appropriate. The questionnaire was answered by 242 dentists and dental graduates. Of the seven Dental College Learning Environment Survey scales, the highest mean scores were for student to student interaction (2.76 ± 0.53) followed by meaningful learning experience (2.67 ± 0.39). The lowest scores were for flexibility (2.26 ± 0.51) followed by supportiveness (2.40 ± 0.59). The lowest mean scores obtained for the 'flexibility scale' conveys that the opportunity for the faculty and students to modify the learning environment are less than for the other categories, and there is thus a need to modify the learning environment. Faculty should also increase their support to the students by contributing to an effective and meaningful interaction by creating a congenial environment.

Key Words: *Cross-sectional studies; Curriculum; Questionnaires; Students; Dental education; Learning environment*

Learning environment includes social, psychological and pedagogical influences on student achievements including attitudes [1]. In the 1970s, a number of survey-based instruments were developed to assess students' perceptions of their learning experiences and the overall environment within a school. The catalyst for a number of instruments was the Medical School Learning Environment Survey (MSLES). The MSLES was modified to create a parallel instrument for dental school known as the Dental School Learning Environment Survey (DSLES). "The DSLES consists of the same categories as the MSLES: flexibility, student-to-student interaction, emotional

climate, supportiveness, meaningful experience, organization, and breadth of interest" [2]. Future restorative needs will definitely increase and the restorative options will become challenging to the fresh dental graduate in view of developing technologies and to an extent because of improved patient awareness [3]. A literature search found few studies related to dental graduates' perception of the learning environment in the Indian scenario [4,5]. Therefore, the present study aims to determine dental graduates' and dentists perceptions of their learning environment, intellectual climate, and teacher-student relationships in a dental institute in India.

This cross-sectional questionnaire survey was carried out in Modern Dental College and Research Centre, Indore, Madhya Pradesh State, India, which is a private dental college. Clearance was obtained from the ethical committee of the College before conducting the study. The dental graduates who were

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willing to participate were included in the study. Data collection took place in four months from June to September, 2009. The pre-validated and pretested questionnaire developed by Henzi et al. [2] was modified for this study. The original questionnaire consisted of 55 items to which five items specific to the prosthodontic department were added. The 60 items belonged to one of the seven categories (Table 1) [2]. A pilot study was carried out on 10 graduates to check the feasibility of the study and the questions were modified to suit the Indian scenario and the graduates who were the study subjects. The same 10 graduates were requested to complete the modified questionnaire on 2 separate events to check the reliability of the questionnaire. They were excluded from the final sample. The content validity was assessed by giving the questionnaire to 5 experts and asking them to assess the questions. In India, the dental education institutes are called dental colleges and not dental schools. Therefore, the DSLES would be referred to as Dental College Learning Environment Survey (DCLES). For each DCLES item, graduates responded using a five-point scale: 0, insufficient information; 1, seldom; 2, occasionally; 3, more often than not; and 4, very often. "Some items were stated in the positive form e.g., faculty try out new teaching methods and materials, and others in the negative form e.g., the educa-

tional experience makes students feel depressed. Score reversals were done where necessary so that all positive attributes received high scores" [2]. The study sample comprised of two groups: one was the recent graduates who were doing their internship and the other was the graduates who finished graduation within or almost five years back from this institute and currently were doing either post-graduation or private practice. The recent graduates enrolled in Modern Dental College and Research Centre, Indore were invited to participate in the study. Those interns who gave informed consent were asked to assemble in a single hall and the purpose of the study was explained to them. They were ensured anonymity would be maintained. Eighty-one graduates agreed to participate. For the second group, the email addresses and the phone numbers of the passed out graduates was retrieved from the college records and the questionnaire was mailed to them. The questionnaire was explained to them on phone in a similar way as was done for the first group. Two reminder calls at an interval of two days each were given to complete and send the questionnaire. After two calls, if there was no reply from the participant he/she was eliminated from the study. Finally, 161 dentists responded. Approximately 300 graduates were contacted and 242 completed the questionnaire. The data obtained was analyzed using statistical software SPSS ver. 11.0 (SPSS Inc., Chicago, IL, USA). A Cronbach's alpha value was obtained as a measure of the reliability of the DCLES data. The mean, SD, frequency, and percentages were calculated whenever appropriate.

The age of the dentists ranged from twenty-two to thirty-two years (mean age, 25.19 ± 2.12 years). Of the seven DCLES scales, the highest mean scores were for student interaction (2.76 ± 0.53) followed by meaningful learning experience (2.67 ± 0.39). The lowest scores were for flexibility (2.26 ± 0.51) followed by supportiveness (2.40 ± 0.59) (Table 2). Among the 60 individual items the highest mean score was 3.29 for prosthetic work helping to develop artistic skills, followed by 3.23 for multiple prosthetic appointments helping to understand the psychology of the patient in a better way. The lowest mean score was 1.86 for students being called upon to actively put

Table 1. DCLES category and its item number used for assessment of the learning environment in prosthodontic by the graduates of a dental institute in 2009, India, of which precise item description is in Table 3

DCLES category	No. of items	Items within category
Flexibility	6	1, 2, 16, 18, 30, 39
Student to student interaction	6	7, 15, 22, 31, 48, 52
Emotional climate	8	5, 23, 27, 33, 41, 43, 46, 50
Supportiveness	9	11, 13, 20, 26, 28, 29, 36, 47, 49
Meaningful experience	15	9, 12, 17, 19, 24, 35, 37, 40, 45, 55, 56, 57, 58, 59, 60
Organization	9	4, 6, 10, 14, 21, 25, 42, 51, 54
Breadth of interest	7	3, 8, 32, 34, 38, 44, 53
Total	60	

DCLES, Dental College Learning Environment Survey.

Table 2. Mean and SD of Dental College Learning Environment Survey category values used for assessment of the learning environment in prosthodontic by the graduates of a dental institute in 2009, India

Variable	Category	Mean ^a ± SD
Flexibility	Opportunities for faculty & students to modify the learning environment	2.26 ± 0.51
Student interaction	Extent to which students mix socially and academically	2.76 ± 0.53
Emotional climate	The way in which students' experience affects their perceptions of dental education	2.57 ± 0.53
Faculty support	Degree of concern expressed & support provided by faculty for students	2.40 ± 0.59
Meaningful experience	Extent to which structured learning activities are perceived to be relevant to the practice of dentistry	2.67 ± 0.39
Organization	Degree of coherence of educational experiences within the curriculum	2.63 ± 0.54
Breadth of interest	Extent to which students are encouraged to develop a variety of activities within and outside regular coursework	2.56 ± 0.54

^aMaximum 4, minimum 0.

Table 3. Mean and SD of each item of Dental College Learning Environment Survey used for assessment of the learning environment in prosthodontic by the graduates of a dental institute in 2009, India

No.	Items	Mean ^{a)} ± SD
1	Faculty tries out new teaching methods and materials.	2.36 ± 0.86
2	Students are able to shape their academic program to fit their individual needs and preferences.	2.34 ± 0.99
3	A background in the behavioral sciences is seen as important in the development of a dentist.	2.67 ± 1.19
4	Instructors outline course objectives at the beginning of their courses.	2.62 ± 1.15
5	The educational experience makes students feel depressed.	2.87 ± 1.08
6	The emphasis given to a particular content area on an exam is in proportion to the emphasis given to that content in the course.	2.66 ± 1.13
7	Students in the college are distant with each other.	2.83 ± 1.05
8	Faculty emphasizes the personal as well as the technical aspects of health care.	2.63 ± 1.01
9	Students feel that they are learning what they need to learn in order to become competent dentists.	2.74 ± 0.95
10	Classes progress systematically from week to week.	2.88 ± 0.96
11	Faculties are reserved and distant with students.	2.77 ± 1.06
12	Exams emphasize understanding of concepts rather than memorization of facts.	2.51 ± 1.07
13	Students hesitate to express their opinions and ideas to the faculty.	2.19 ± 1.05
14	Syllabus is vague and unclear.	3.02 ± 1.08
15	Students in the college get to know each other well.	3.06 ± 1.06
16	The environment of the college allows for interests outside of dentistry.	2.10 ± 1.03
17	The educational experience tends to make students feel a sense of achievement.	2.81 ± 0.94
18	Curricular and administrative policies are inflexible.	2.29 ± 1.14
19	Students are called upon to actively put methods and ideas to use in new situations.	1.86 ± 0.91
20	Faculty and administrators give personal help to students having academic difficulty.	2.34 ± 0.99
21	Instructors explain what students should get out of their courses, and why the material is important.	2.67 ± 1.01
22	Students gather together in informal activities.	2.64 ± 1.09
23	The educational experience makes students feel frustrated.	2.77 ± 1.05
24	The relationship between basic science and clinical material is not clear.	2.81 ± 1.12
25	Students have difficulty integrating course material into a cohesive whole.	2.31 ± 1.25
26	Student complaints are responded to with meaningful action.	2.24 ± 0.99
27	Students' anxiety hinders them from achieving up to their full potential.	2.09 ± 0.95
28	Faculty exhibit enthusiasm for the subject matter of their special field.	2.61 ± 0.98
29	The college takes an interest in the personal welfare of the students.	1.87 ± 0.96
30	Assignments (work allotment) are given out well in advance so students can plan their time accordingly.	2.64 ± 0.98
31	Students spend time assisting each other.	2.81 ± 0.93
32	Faculty tries to get students interested in the broad social context of oral health care.	2.17 ± 1.03
33	Students talk about leaving college.	2.83 ± 1.21
34	Students have difficulty finding time for family and friends.	2.80 ± 0.99
35	Courses emphasize memorization of minute details.	2.17 ± 0.96
36	When giving criticism or answering a question, faculty are genuinely interested in helping the student.	2.68 ± 0.91
37	Students can see the relationship between what they are studying and the kinds of patient care situations they will meet when they graduate.	2.85 ± 0.95
38	Students are so preoccupied with their studies that they lack time for recreation.	2.54 ± 0.99
39	Students participate in decisions that affect their academic life at the college.	1.86 ± 1.11
40	Courses emphasize the interdependence of facts, concepts, and principles.	2.59 ± 1.09
41	Students are uncomfortable around the faculty.	2.55 ± 1.04
42	Students are uncertain as to what will be expected of them on examinations.	2.32 ± 1.05
43	Competition for marks is intense.	1.87 ± 0.94
44	Courses develop skills in formulating and testing hypotheses, and drawing conclusions.	2.31 ± 1.08
45	Courses are dull and tedious.	2.81 ± 1.06
46	The educational experience makes students feel anxious.	2.63 ± 0.96
47	Faculty is helpful to students seeking advice not directly related to academic matters.	1.94 ± 1.02
48	There are tensions among students that interfere with learning.	2.54 ± 1.16
49	Faculty regards their teaching responsibilities as a burden.	2.97 ± 1.27
50	The educational experience makes students value themselves.	2.98 ± 0.93

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Table 3. Continued

No.	Items	Mean ^{a)} ± SD
51	Examinations provide a fair measure of student achievement.	2.41 ± 1.06
52	Students are reluctant to share with each other problems they are having.	2.67 ± 1.11
53	Faculty encourages an understanding of the psychological aspects of patients when they visit the dentist due to oral disease.	2.81 ± 0.99
54	There is lack of consistency between stated course objectives and what is actually taught.	2.80 ± 1.07
55	The educational experience tends to make students feel confident of their academic abilities.	2.82 ± 0.93
56	Students are able to correlate the work done between preclinical to clinical scenarios.	3.05 ± 0.82
57	Students find understanding the actual patient situation in the preclinical laboratory before entering the clinics difficult.	2.40 ± 0.99
58	Laboratory work is cumbersome and time consuming.	2.07 ± 1.02
59	Multiple appointments with the patient helps to understand the psychology of the patient in a better way in prosthodontics compared to other departments.	3.23 ± 0.92
60	Prosthetic work helps to develop artistic skills.	3.29 ± 0.88

^{a)}Maximum 4, minimum 0.

methods and ideas to use in new situations and their participation in decisions that affect their academic life at college followed by 1.87 for college taking an interest in the personal welfare of the students and for an intense competition for marks (Table 3). The Cronbach's alpha value of the questionnaire used was found to be 0.891.

In the present study, the highest mean score was for 'student interaction' which is the extent to which students mix socially and academically. The next high mean score was for 'meaningful learning experience' which showed that the students were able to correlate the learning activity with the clinical aspect of dentistry e.g., while introducing dental plaster to the first year students they should be allowed to make any object of their choice and later the concept of precision should be brought in. The results of our study are in agreement with those of Stewart et al. [6] who reported high scores for 'student-student interaction' and 'meaningful learning experience.' The lowest mean obtained for the 'flexibility scale' may indicate that there is limited scope for faculty members to modify the learning environment as educational policies and guidelines are often made by the higher authorities. The results of our study are in agreement with those of Jain et al. [4] where the preclinical and clinical students rated the student to student interaction as the most favorable while the lowest score was given for flexibility. The next low mean was for 'faculty supportiveness' which is the degree of concern expressed and support provided by faculty for students. This suggests that the students were not satisfied with the amount of support received from faculty. To motivate students instructors need to be approachable, open to questions, willing to give guidance and feedback [7]. The results of our study are in agreement with those of Henzi et al. [2] where 'faculty supportiveness' was given low ratings by students. In a study by Thomas et al. [5] in an Indian dental school students perceived that the teachers were authoritarian. This study used DREEM (Dundee Ready

Educational Environment Measure) questionnaire to gain information regarding the educational environment of the institute. Among the individual items the highest mean score was obtained for prosthetic work helping to develop artistic skills. A student can be trained by doing an exercise repeatedly. But we cannot create an artist in prosthodontics. To excel a student should have artistic skills with a scientific vision. The next high mean was for multiple prosthetic appointments helping to understand the psychology of the patient in a better way which is true for complete denture patients.

Graduates felt that group discussions which facilitate better understanding and improve learning also allow students in the college to get to know each other well because of time spent together. Gaining theoretical knowledge and applying it practically on patients made students feel that they could correlate the work done between preclinical to clinical scenarios. The literature suggests that the educational content should be made available to students through a variety of methods, because individual learning styles and preferences vary considerably [8]. The findings of the present study can serve as the basis for developing individual or group faculty development to improve the learning environment in the institute. Since this study was conducted in a single dental institute these results cannot be extrapolated as perceptions of all Indian students. Hence we recommend to conduct the study including students from other institutes.

In conclusion, the highest mean scores were for 'student interaction' highlighting the extent to which students mix socially and academically, and 'meaningful learning experience' showing that the students were able to correlate the learning activity with the clinical aspect of dentistry. The low 'flexibility scale' suggests that faculty and students have limited opportunities to modify the learning environment.

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CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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SUPPLEMENTARY MATERIAL

Audio recording of the abstract.

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