



Evaluation of Learning Environment among First year MBBS and BDS Students at a Private Malaysian University

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Background: The learning environment has a significant impact on the academic success and learning process of students. Implementing a high-quality, student-centered curriculum demands an assessment of the educational environment. The focus of this study was to compare the learning environments of first-year medical and dental students at a private Malaysian University using the Dundee Ready Educational Environment Measure (DREEM) questionnaire, a validated method for evaluating educational environments.

Methodology: A cross-sectional analytical study was undertaken with students who agreed to participate. The trial lasted three months. After obtaining consent from students for participation, demographic information was gathered. Students in the lecture hall were given physical copies of the DREEM questionnaire to assess their learning environment. A total of 225 students participated, and IBM SPSS version 23 was used to analyze the data. The Chi-square and Student t tests were employed to establish the existence of an association or difference between two variables.

Result: A total of 225 students were involved in this study showing 100% response rate. The total

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score indicated that the majority (84%) regarded the educational environment was outstanding, 15.56 percent had a more promising opinion, and a very small percentage (0.44%) believed the educational environment was terrible. In this study with noteworthy findings, medical students were happier with their lecturers and with their own academic abilities than dental students. The weakest 19 questions were identified. Most respondents had extremely favorable attitudes toward the educational environment, followed by a moderately favorable opinion. Less than 1% of pupils exhibited a negative attitude.

Conclusion: In this study, perceptions of the educational environment was satisfactory for both medical and dental students, but more positive for medical students. Measures must be taken to improve the scores and ensure that the scores are consistent across both faculties.

Keywords: Learning environment; DREEM questionnaire; medical students; dental students.

1. INTRODUCTION

The learning environment has a considerable influence on student achievement [1]. Indeed, it has been acknowledged as crucial to analyzing the educational environment to provide high-quality medical education [2]. In 1998, the World Federation of Medical Schools [3] designated the learning environment as a criterion for evaluating medical education programs. The educational environment's influence on medical students' attitudes, knowledge, skills, advancement, and behaviors are generally recognized among medical educators [4]. Along with more apparent characteristics such as scheduling, testing, and instruction, several factors contribute to the student's experience, such as the quality of feedback and social bonds with peers [5]. The importance of the learning environment on student learning has been universally recognized since it contributes to optimizing pupils' learning capacity. A supportive, challenging, and enjoyable educational environment is commonly viewed as necessary for successful learning [6]. Students are motivated to study effectively when the learning environment is appropriately modelled, promoting a safe setting with defined learning standards.

The Dundee Ready Education Environment Measure (DREEM) was developed to evaluate the educational environment for medical schools and other disciplines, including health care. It was designed over two decades ago with the assistance of a Delphi panel comprised of academic experts from international medical schools and health professions and then validated by students from multiple countries [7]. The DREEM questionnaire is used to assess five aspects of the learning environment based on students' perceptions: students' perceptions of learning (SPoL), students' perceptions of

teaching (SPoT), students' academic self-perception (SASP), students' perceptions of the atmosphere (SPoA), and students' social self-perception (SSSP). The scope of the DREEM questionnaire covers these five critical criteria, which can be applied to any degree program and thus utilized to examine the educational environment of other fields [6]. Thus, the DREEM questionnaire was used to analyze the current study's learning environment to enhance students' motivation to generate knowledge through their learning process by creating a conducive learning environment. This study aimed to compare the learning environments of first-year medical and dental students at a private Malaysian University.

2. material and methods

2.1 Research Design

The present analytical cross-sectional survey was conducted among first year MBBS and BDS students at a Private Malaysian University by the administration of a validated questionnaire using universal sampling. Our samples included all 150 MBBS students and 75 BDS students, and the data was collected in the Faculty of Medicine and Dentistry's lecture theatre. The study period was between 03/2019 and 05/2019.

The inclusion criteria for this study were all first-year MBBS and BDS program students who attended class on the days of data collection, regardless of ethnicity or gender. Students who did not volunteer to participate in the study and students who disliked the content of the questions were excluded. The research hypothesis states that differences in learning environment exist among first year MBBS and BDS students at a Private Malaysian University.

Table 1. Domains of DREEM Questionnaire

Item	Number of questions	Maximum DREEM score
Students' perception of learning	12	48
Students' perceptions of teachers	11	44
Students' academic self-perceptions	8	32
Students' perceptions of atmosphere	12	48
Students' social self-perceptions	7	28
	50	200

2.2 Research Sampling Criteria

2.2.1 Inclusion criteria

Students in the first year of the MBBS and BDS programs, regardless of ethnicity or gender, who were in class on the day of data collection.

2.2.2 Exclusion criteria

Students who did not volunteer to be a part of the research.

Students who are not present on the data collection day.

Students who were unhappy with the questionnaire.

2.3 Procedure and Research Tool

The participants received an information sheet outlining the study's purpose and the fact that participation was voluntary. They were advised that all data collected would be kept entirely confidential, and they were asked to sign a consent form provided with the questionnaire to affirm their willingness to participate in the study.

The participants completed the demographic information, including their name, age, gender, address, year of study, and discipline of study.

In this study, the DREEM questionnaire was used. The DREEM questionnaire is a 50-item self-report questionnaire that uses the Likert scale. It is widely used and freely available online. These 50 items are classified into one of five subscales, as shown in Table 1.

The maximum score on the DREEM is 200, which represents an ideal educational environment. The DREEM questionnaire was distributed to participants in printed copies to examine their learning approach. Participants were only allowed to select one score for each question. The questionnaire took roughly 20-25 minutes to complete.

2.4 Statistical Analysis

IBM SPSS software version 23 was used for data entry, verification, and analysis. Pearson Chi-square test was used to assess the relationship between the overall DREEM score and the categories of faculties. The independent t-test was used to analyze perception on several domains based on the faculties. Descriptive statistics were used to determine the distribution of DREEM sub-scales. The mean scores for all domains items were compared using an independent t-test between medical and dental students.

3. RESULTS AND DISCUSSION

3.1 Overall Score on Educational Environment Reported by the Students'

The study enrolled 66.7% of MBBS students and 33.3% of BDS students for 225 participants. The total result indicated that the majority (84%) regarded the educational environment as outstanding, 15.56% had a more favorable opinion, and a tiny fraction (0.44%) believed it was awful. However, the chi-square test revealed that respondents' course of study was unrelated to their total educational environment ($\chi^2(2, N=225)=0.514, p=0.773$) as in Table 2.

Independent t-tests were used to determine any mean differences in perceptions of learning, teachers, academic skills, learning environment, and social environment between medical and dental students. There were noted differences in students' perceptions of teachers and academic skills. The overall score on students' perceptions of teachers was higher in MBBS students than in BDS students, with a difference of 1.3 points and a p-value of $0 < 0.05$ ($t_{205}=2$). Academic self-perception also demonstrated a significant difference in an overall score of 0.638, and it was significantly higher in MBBS registrars than in BDS registrars ($p\text{-value} < 0.05, t_{223}=2.079$). In this study, medical students were happier with their lecturers and their own academic abilities than dental students were.

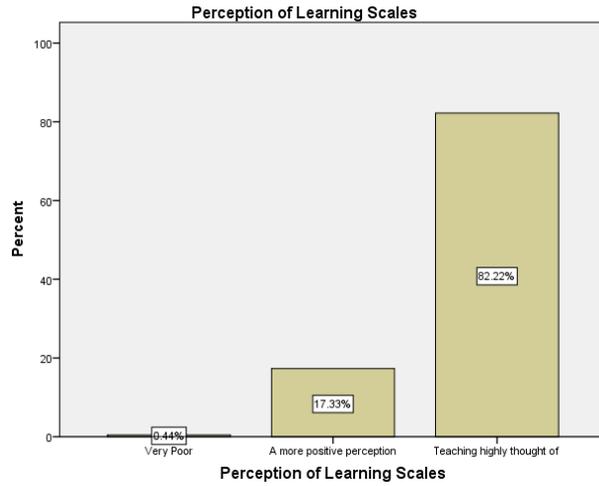


Fig. 1a



Fig. 1b

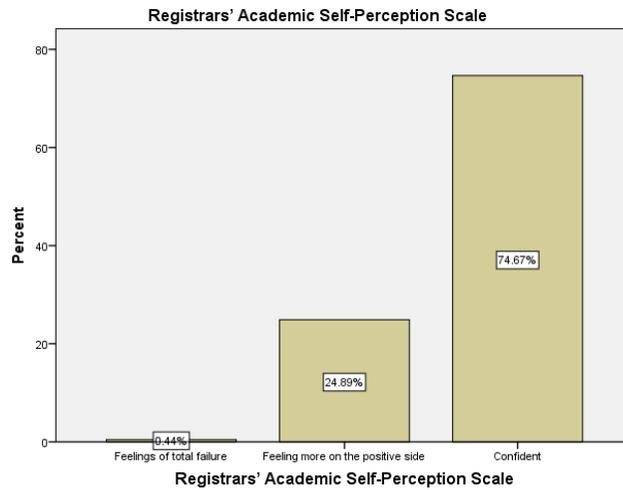


Fig. 1c

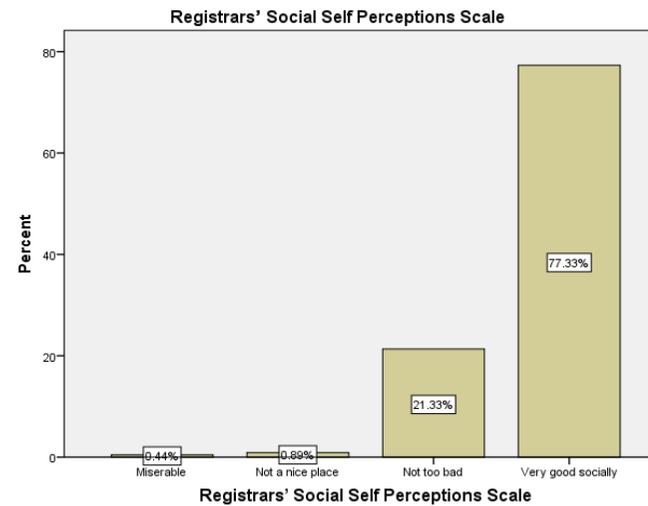


Fig. 1d

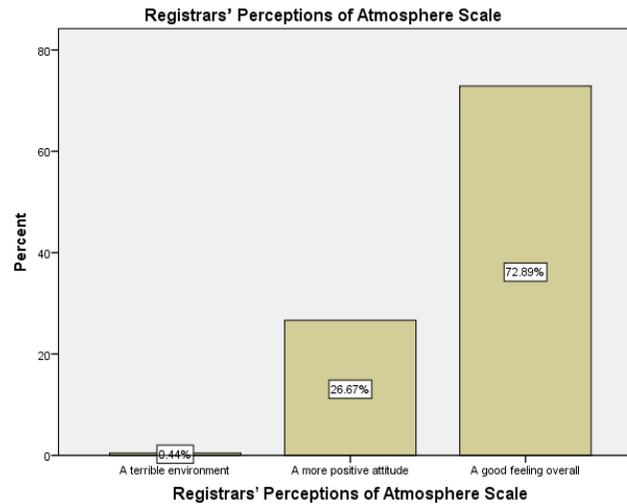


Fig. 1e

Fig. 1. Distribution of the DREEM sub-scales

Table 2. Overall mean score given by each faculty

Item	Course of respondents	Mean	t(df)	P-value	Mean difference
Students' Perception of Learning	MBBS	42.73	0.870(208)	.385	.660
	BDS	42.07			
Students' Perception of teachers	MBBS	38.13	2(205)	.047*	1.267
	BDS	36.87			
Students' Academic Self-Perception	MBBS	28.37	2.079(223)	.039*	.638
	BDS	27.04			
Students' Perceptions of Atmosphere	MBBS	40.47	1.704(197)	.090	1.327
	BDS	39.15			
Students' Social Self Perceptions	MBBS	23.65	-0.297(191)	.767	.449
	BDS	23.79			

*p < 0.05, statistically significant

3.2 Distribution of the Dreem Subscales

In this study, a majority (ranging from 72% to 82%) of the respondents revealed highly positive thoughts and perceptions followed by a more positive attitude (ranging from 17% to 27%). Less than 1% response was seen in those students with a negative attitude.

The DREEM overall score was composed of five sub-scales: students' perceptions of learning, students' perceptions of teachers, students' perceptions of academic skills, students' perceptions of learning environment, and students' perceptions of social environment. The prevalence of each sub-scale recorded by registrars is depicted in Fig. 1a, 1b, 1c, 1d, 1e.

In terms of students' perceptions of learning, 82% indicated that instruction was highly regarded, whereas 17.33% had a more favourable opinion. Only 0.44% had a negative opinion of learning. According to the findings, 80% of students viewed teachers as model course organizers, 19.56% said professors guided them in the appropriate way, and 0.44% believed teachers did an abysmal job. In terms of students' opinions of academic skills, nearly three-fourths (74.67%) express confidence, one-quarter (24.89%) express optimism, and 0.44% express absolute failure. Regarding the learning environment, 72.89% of students rated it as a good one, 26.67% rated it as a good one, and 0.44% rated it as bad. Regarding how students evaluated their social environment, 77.33%

perceived it to be excellent, 21.33% perceived it to be adequate, and 0.44% perceived it to be terrible.

Most respondents (72% to 82%) had highly optimistic thoughts and impressions, followed by a more positive attitude (ranging from 17% to 27%). Less than 1% of students with a negative attitude responded.

3.3 Mean Dreem Scores per Item and Different Courses for Each Domain

The DREEM can identify the educational climate's strengths and flaws by examining the mean score for each question. A mean score of 3.5 or above is deemed positive; a score of between 2 and 3 indicates that the item could be enhanced or improved. A mean score of less than two can be deemed a problem region. Students responded positively to most items in this study, with an average score of greater than 3.5. They revealed no areas of concern in the educational climate.

3.3.1 Domain 1: Students' perceptions of learning

In terms of students' impressions of learning, a substantial score difference is observed in Q21, and medical students considered that education aided in their confidence development more than dental students (3.51 vs 3.31) as in Table 3. In general, students' perceptions of learning are good in this study.

Table 3. Mean DREEM scores per item and different courses for Students' Perceptions of Learning

Perceptions of Learning Questions	MBBS	BDS	P value
1.I am encouraged to participate in teaching sessions	3.76	3.76	1.000
7. The teaching is often stimulating	3.48	3.39	0.439
13.The teaching is registrar centered	3.51	3.57	0.552
16.The teaching helps to develop my competence	3.67	3.68	0.963
20.The teaching is well focused	3.63	3.60	0.777
21.The teaching helps to develop my confidence	3.56	3.31	0.021*
24.The teaching time is put to good use	3.67	3.49	0.121
25.The teaching over emphasizes factual learning	3.56	3.31	0.066
38.I am clear about the learning objectives of the course	3.97	3.85	0.288
44.The teaching encourages me to be an active learner	3.21	3.32	0.408
47.Long term learning is emphasized over short term learning	3.62	3.57	0.679
48.The teaching is too teacher centered	3.09	3.21	0.284

* $p < 0.05$, statistically significant

Table 4. Mean DREEM scores per item and different courses for Students' Perceptions of teachers

Students' perceptions of teacher's questions	MBBS	BDS	P value
2.The course organisers are knowledgeable	4.14	4.08	0.533
6.The course organisers espouse a patient centered approach to consulting	3.28	3.32	0.689
8.The course organisers ridicule their registrars	2.93	2.77	0.248
9.The course organisers are authoritarian	3.12	3.35	0.104
18.The course organisers appear to have effective communication skills with patients	3.50	3.48	0.888
29.The course organisers are good at providing feedback to registrars	3.69	3.31	0.000***
32.The course organisers provide constructive criticism here	3.47	3.19	0.016*
37.The course organisers give clear examples	3.74	3.53	0.059
39.The course organisers get angry in teaching sessions	3.93	3.52	0.002**
40.The course organisers are well prepared for their teaching sessions	3.79	3.84	0.618
49.The registrars irritate the course organisers	3.55	3.48	0.557

* $p < 0.05$, statistically significant, ** $p < 0.005$ statistically significant, *** $p < 0.0005$ statistically significant

Table 5. Mean DREEM scores per item and different courses for students' perceptions of their academic skills

Students' perceptions of academic skills Questions	MBBS	BDS	P value
5.Learning strategies which worked for me before continue to work for me now	4.14	4.08	0.624
10.I am confident about passing this year	3.28	3.32	0.002**
22.I feel I am being well prepared for my profession	2.93	2.77	0.125
26.Last year's work has been a good preparation for this years work	3.12	3.35	0.088
27.I am able to memorize all I need	3.50	3.48	0.010*
31.I have learned a lot about empathy in my profession	3.69	3.31	0.001**
41.My problem-solving skills are being well developed here	3.47	3.19	0.067
45.Much of what I have to learn seems relevant to a career in healthcare	3.74	3.53	0.341

* $p < 0.05$, statistically significant, ** $p < 0.005$ statistically significant

3.3.2 Domain 2: Students' Perceptions of teachers

Table 4 contains the results about students' perceptions of lecturers, and Q29, Q32, and Q39 indicate the significant difference score between medical and dental students. In general, medical students have a more favorable attitude toward instructors than dentistry students do. The area that requires improvement is Q8, and students perceived professors to be mocking their registrars.

3.3.3 Domain 3: Students' perceptions of their academic skills

According to Table 5, most findings indicate a favourable attitude toward academic talents, with a mean score of 3.5 or more. However, one area

for improvement is that both medical and dental students feel underprepared for their careers, with scores between 2 and 3. (2.93 vs 2.77). Significant differences in scores are observed for Q10, Q27, and Q31, with medical students scoring higher than dental students.

3.3.4 Domain 4: Students' perceptions of their learning atmosphere

Students' perceptions of the learning environment score lower than the other domains in the table 6. Significant score differences may be noted in Q33 and Q35, with medical students having a better score than dental students. Dental students perceived the learning environment as less disappointing than medical students (2.51 vs 2.81), which should be addressed for development.

Table 6. Mean DREEM scores per item and different courses for Students' Perceptions of their Learning Atmosphere

Students' perceptions of learning atmosphere Questions	MBBS	BDS	P value
11.The atmosphere is relaxed during consultation teaching.	3.54	3.37	0.160
12.The course is well timetabled	3.37	3.29	0.557
17.Cheating is a problem in this course	3.02	2.91	0.515
23.The atmosphere is relaxed during lectures	3.59	3.37	0.107
30.There are opportunities for me to develop interpersonal skills	3.87	3.65	0.055
33.I feel comfortable in teaching sessions socially	3.81	3.56	0.037*
34.The atmosphere is relaxed during seminars/tutorials	3.77	3.60	0.164
35.I find the experience disappointing	2.81	2.51	0.037*
36.I am able to concentrate well	3.49	3.63	0.236
42.The enjoyment outweighs the stress of studying medicine	3.06	2.97	0.497
43.The atmosphere motivates me as a learner	3.36	3.52	0.212
50.I feel able to ask the questions I want	2.79	2.76	0.801

* $p < 0.05$, statistically significant**Table 7. Mean DREEM scores per item and different courses for Students' Perceptions of Social Environment**

Students' perceptions of social environment	MBBS	BDS	P value
3.There is a good support system for registrars who get stressed	3.25	3.28	0.823
12.I am too tired to enjoy this course	3.15	2.93	0.146
14.I am rarely bored on this course	3.09	3.07	0.850
15.I have good friends in this course	3.87	4.31	0.000***
19.My social life is good	3.52	3.75	0.041*
28.I seldom feel lonely	3.34	3.63	0.019*
46.My accommodation is pleasant	3.43	2.83	0.000***

* $p < 0.05$, statistically significant, *** $p < 0.0005$ statistically significant

Additionally, Q50 indicates that students in both courses had trouble asking questions if they want (2.79 vs 2.76). Additionally, cheating in the dentistry course (Q17) should be addressed, as evidenced by the lower score of 2.91. However, medical students with a mean score of 3.02 did not perceive cheating as an issue in their course.

3.3.5 Domain 5: Students' perceptions of social environment

Q15, Q19, Q28, and Q48 indicate significant disparities between medical and dentistry students. Based on their social milieu, medical students are considered more positively than dental students. According to Q12 of table 7, dentistry students should pay particular attention since they indicated that they were too fatigued to enjoy the course with a score of 2.93. In this study, the overall perceived score for the social environment is favorable.

4. DISCUSSION

The DREEM questionnaire was utilized to assess first-year medical and dentistry students' perceptions of the learning environment in this

study. The students' worldwide DREEM ratings suggested more optimistic than negative perceptions of their learning settings [8]. On the other hand, medical students had a more favorable impression of the two categories of students.

Scores for all five subscales indicated that both medical and dental students had good perceptions. The higher scores reflect that the undergraduate program has more positive aspects [9]. Four questions earned the lowest score compared to the other questions, showing that the learning environment had some issues. However, dentistry students scored lower than medical students in practically all domains and questions, indicating a perception gap.

Question 50 has the lowest score (2-3), indicating that students are hesitant to offer inquiries. This could be because they are still in their first year and are presumably timid. Building a good rapport with the professors over time may enhance their confidence levels. In addition, teachers must encourage students to be more curious by welcoming interactive sessions. Item

35 (2-3) is a source of concern for both groups of students, with dentistry students being more dissatisfied than medical students. To make the learning experience memorable and enjoyable, it is critical to recognize potential stressors and address them as soon as feasible. Question 22(2-3) demonstrates that both medical and dentistry students believe they are underprepared for their careers. The only probable reason is that they are still in their first year and are still learning the fundamental sciences. Therefore, they do not have the opportunity to interact with patients. They are also still naive and do not understand how to connect basic sciences to clinical practice. According to their responses to Question 8 (2-3), students believe the professors are mocking them. This is a widespread issue in other campuses as well [10]. Students are discouraged and lose passion when they are subjected to open criticism and rudeness. Lecturers must allow students time to orient themselves and absorb the knowledge they are studying. Students' academic performance and self-esteem will increase if they are treated politely. The University should implement faculty development initiatives to strengthen teachers' communication with students [8].

All the other questions received good scores ranging from 3 to 4, suggesting positive characteristics of the learning environment. Question 5, i.e., course organizers are knowledgeable, received the highest score, demonstrating the University's strength.

The University curriculum is student-centered and integrated. Various teaching-learning methods such as PBL, TBL, and others make learning exciting and interactive, contributing to a healthy learning environment like that of other universities with high DREEM scores such as Nepal, Saudi Arabia, Nigeria, Sri Lanka, the United Kingdom, Kuwait, Sweden, Korea, India, and Pakistan to name a few [11,12].

Overall, the medical program outperforms the dentistry program, but there is a statistical difference only on a few questions. This research may be used to create a highly favorable learning environment for students to boost their learning capacity, inspire and engage them, raise their self-esteem, and achieve academic achievement.

5. LIMITATIONS

1. The study was done at a single University; its findings cannot be generalized to all students.
2. Evaluations have been conducted on only two of the courses.
3. The study involved only one group of students.
4. There has been no year-to-year comparison.

6. CONCLUSION

Overall assessment of the educational environment is satisfactory as rated by the students across both the faculties, but medical students had more positive perception. However, there is scope for improvement in all the domains of perception, with an immediate attention to the most problematic ones.

ETHICAL APPROVAL

The Ethical Committee of the Faculty of Medicine approved this study in 2018.

CONSENT

As per international standard or university standard, Participants' written consent has been collected and preserved by the authors.

DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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