Original Article

Benchmarking the Learning Environments: A DREEM Analysis of Private Medical Colleges In Islamabad

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Abstract

Objective: To assess the undergraduate medical students' perceptions regarding educational environments using DREEM across four private medical colleges in Islamabad.

Methodology: Four hundred and two undergraduate medical students participated in the cross-sectional study. The DREEM questionnaire was administered through Google Forms. Data was analyzed using SPSS version 27. Means and standard deviations were calculated for each domain and for the total DREEM score. The inter-domain correlation was assessed.

Results: The cumulative mean DREEM score was 124 ± 26.35, interpreted as "more positive than negative" for all medical colleges. Pearson correlation test demonstrated a strong correlation between the domains (SPL, SPA, SPT, ASP, SSP), hence indicating that all DREEM domains are strongly interrelated.

Conclusion: All four private medical colleges had a positive learning environment. Targeted faculty development programs, technology enhancement, and more sound student support systems are vital to further improve the learning environments across medical colleges.

Keywords: Medical Education, Undergraduate, Medical Students, Health Sciences.

Introduction

Medical education has been progressing by leaps and bounds, especially over the last decade. More emphasis is now given to developing better learning environments, which are more conducive to learning, leveraging technology in the process.[1] These changes are in accordance with the shifting global trends, with the introduction of competency-based curricula, with a focus on personalized learning and practical utility.[2] Moreover, hybrid learning implementation has resulted in better performance and improved satisfaction among students.[3]

To safeguard the effectiveness of educational initiatives, a periodic evaluation of the educational environment is necessary. One of the widely accepted and validated tools used for this purpose is the Dundee Ready Education Environment Measure (DREEM), which allows institutions to assess the students' perceptions across five domains, shown in Table I.[4] DREEM scores provide insights into an institution's strengths, areas needing improvement, and help benchmark the practices across similar teaching institutions.[5]

Different studies using the DREEM inventory have demonstrated that variations in student perceptions of educational environment depend upon teaching practices, infrastructure, and faculty engagement.[6] Private institutions using interactive teaching methods have been found to have higher scores in domains of SPL and SPT than their public counterparts.[7] These teaching strategies promote interdisciplinary learning approaches and support better student outcomes.[8]

Keeping the above in view, it becomes necessary to evaluate the performance of private sector medical colleges in Pakistan. This led to our study assessing the learning environment of four private medical colleges in Islamabad. By analyzing domain-wise as well as overall DREEM scores, we aim to highlight the areas requiring improvement. This research aims to contribute to the growing evidence needed for ongoing curriculum development and faculty training. Eventually, the improvements may produce medical

graduates who are academically sound and can thrive in ever-changing, dynamic healthcare environments.

Materials And Methods

This was a cross-sectional study conducted to assess students' perceptions of the learning setting within four private medical colleges in Islamabad. The data collection was carried out from June 2025 to August 2025. The Ethical Review Committee certificates were obtained from all institutions, as mentioned below.

The study population consisted of second-year students from the MBBS program enrolled in the following four medical colleges:

Bahria University College of Medicine (BUCM)(BUCM/ERC/2513)

Wah Medical College (WMC)(WMC/ERC/IRB/074)

Hitec Medical College (HITEC-IMS) (HITEC-IRB-60-2025)

NUST School of Health Sciences (NSHS)(ERC/NSHS/2025/006)

Students were informed about the purpose of the study, and informed consent was obtained. Data confidentiality and anonymity were ensured during the process. The questionnaire was administered through Google Forms, and data were collected electronically from all four medical colleges.

A total of 500 students were administered the DREEM questionnaire (100 – BUCM, 150-WMC, 150-HITEC-IMS, and 100-NSHS). However, only 402 completed forms were included in the study. Convenience sampling was used to collect data from students who were available and willing to participate.

MBBS students were currently enrolled in one of the four medical colleges, and students who had undertaken at least one academic year at the university were included in the study.

Students who were on extended leave or had dropped out and those with incomplete questionnaire responses were excluded from the study.

The Dundee Ready Education Environment Measure (DREEM) questionnaire (4) was used to assess students' perceptions. Permission was taken from the owner of the tool through email to use the tool for the study. The tool consists of 50 items grouped into 5 domains, as mentioned in Table I. Each item was rated using a 5-point Likert scale, where 0 = strongly disagree to 4= strongly agree. To ensure accurate interpretation, nine negatively worded items were reverse scored as per DREEM guidelines (Items 4,8,9,17,25,35,39,48, and 50). This was done according to DREEM guidelines to maintain consistency in interpretation, where higher scores are more favorable for the perceptions.

Table 1: DREEM domains and scores with their interpretation

Domains	No of Item	Maximum Score
Students' Perception of Learning (SPL)	12	48
Students' Perception of Teachers (SPT)	11	44
Student Academic Self Perception (ASP)	8	32
Students' Perception of Atmosphere (SPA)	12	48
Students' Social Self Perception (SSP)	7	28
Total	50	200

Scores	Score Interpretation
0-50	very poor
51-100	plenty of problems
101-150	more positive than negative
151-200	excellent

Data was analyzed using IBM SPSS version 27. After clearing the data for completeness and validity, a total of 402 students were included in the final analysis. Descriptive statistics (mean, standard deviation, minimum, maximum, and range) were calculated for the total DREEM score and its five domains. A p-value of less than 0.05 was considered statistically significant for all analyses.

Results

The data were obtained from 402 second-year MBBS medical students, 164 males (40.8%), 238 females (59.2%), across four medical colleges using Google Forms. All students have completed at least one academic year in the college, guaranteeing adequate exposure to their institutional learning environments. Independent t-tests revealed no significant gender-based differences in any of the DREEM domains ($p > 0.05$). The overall mean DREEM score was

124 ± 26.35, which fell in the scale of "more positive than negative." The detailed domain-wise score in the study population is shown in Table 2.

Table 2: Domain-wise score across all medical colleges (n=402)

Domain	Mean ±SD	Range
SPL	31.25 ± 7.28	6-47
SPT	27.37 ± 6.62	7-41
ASP	20.53 ± 6.46	0-32
SPA	29.00 ± 6.71	5-43
SSP	16.10 ± 4.55	0-26

Pearson correlation test showed a strong correlation between the domains (SPL, SPA, SPT, ASP, SSP), shown in Table III. Thereby demonstrating that all DREEM domains are moderately to strongly correlated and are also statistically significant (p<0.001).

Table 3: Pearson Correlation between domains

Domains	SPL	SPT	ASP	SPA	SSP
SPL	1	0.678	0.696	0.658	0.612
SPT	0.678	1	0.489	0.575	0.480
ASP	0.696	0.489	1	0.693	0.647
SPA	0.658	0.575	0.693	1	0.557
SSP	0.612	0.480	0.647	0.557	1

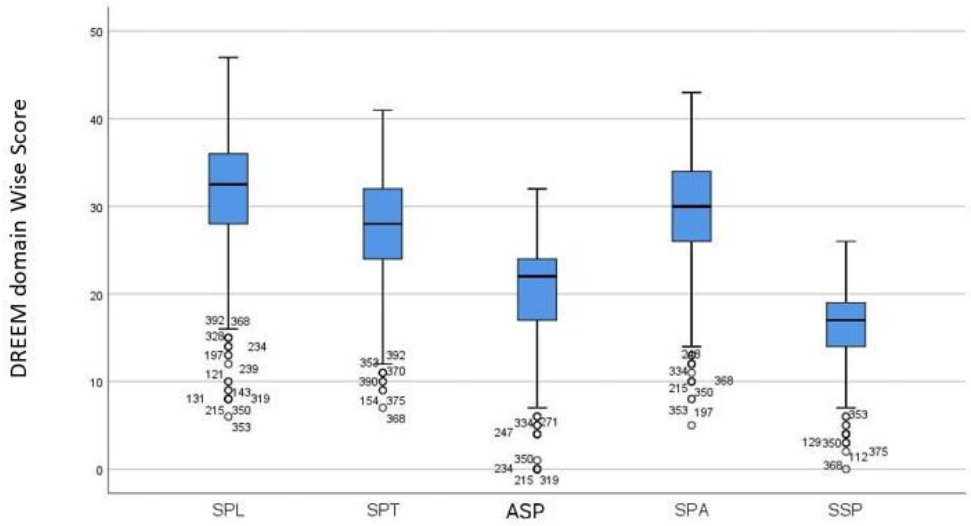

Figure 1: Box and Whisker plot for all five domains (SPL, SPT, ASP, SPA, SSP)

SPL and SPA domains demonstrated higher median scores with relatively narrow interquartile ranges, indicating consistent positive perceptions in these areas, as shown in Figure 1. SPT had a moderately high median, but displayed more variability, signifying mixed views about teaching methods. In contrast, ASP and SSP exhibited lower medians and wider spreads, with several outliers, reflecting greater variation and lower student satisfaction.

Discussion

Medical education is continuously evolving. More attention is on strategies to increase student engagement and learning. Technology-enabled learning (TEL), such as immersive simulation, has transformed traditional educational methods into interactive, learner-oriented experiences, thus enhancing student engagement and retention.[9-11] Within Pakistan, medical colleges are increasingly investing in blended and simulation-based teaching and learning to come up to par with their international counterparts.[12] These align with our study inference that the learning environment

showed predominantly positive trends, due to a technology-enabled and student-centric shift in the instructional methods.

The correlation matrix showed significant positive relationships across all five domains ($p< 0.01$). The strongest association was seen between SPL and ASP ($r=0.696$) and ASP and SPA ($r=0.6939$), indicating that students who rated their learning and teaching practices positively were also more confident about their academic abilities. This relationship is supported by the linkage between the pedagogical quality and the overall institutional climate.[13] Similar findings were observed in DREEM studies within Pakistan and internationally, where institutions with more structured curricula and active teaching methods scored higher in these domains.[14,15]

Moderate correlations between SSP suggest that it can reflect individual factors or cohort-specific influences – an observation aligned with previous studies reporting relatively narrow university-level variation in SSP.[16] Internationally, the comparisons between Pakistan and Turkish dental colleges found similarly low SSP scores and emphasized the requirement of changes in the social environment and the teaching methods.[15]

Gender comparisons were done via independent t-tests, which revealed no significant differences across the domains, which is consistent with prior Pakistani studies reporting equitable perceptions across both male and female students.[14,17] This supports our study findings that gender did not significantly influence the students' perceptions.

A large-scale nationwide Spanish study of 4374 medical students found that a poor academic climate (measured by DREEM) was significantly associated with higher levels of burnout, depression, and anxiety, particularly in public institutions. This highlights the mental health impact of negative learning environments and reinforces the need for a student-centric education system. [18]

Our study findings mirror the national DREEM studies that report better learning environment scores in private medical institutions compared to the public sector institutes. One of the probable reasons can be the adoption of technology-enabled integrated curriculum as well as continuous faculty development initiatives.

This study is limited by its cross-sectional design, which provides only a snapshot of students' perceptions and does not allow for the assessment of changes longitudinally. Additionally, reliance on participant-reported data may have introduced the potential of response bias, as the students' answers could be influenced by personal experiences, recent events, or individual interpretation of the questions.

Conclusions

Overall, student perception was “more positive than negative” regarding educational climate across four private medical colleges; however, variations were present, particularly in teaching and learning domains.

Continuous evaluation of the learning atmosphere is therefore paramount to improve student engagement and performance. Longitudinal design may be utilized in future research to better delineate variations in perceptions. The qualitative aspect is another aspect that may provide a deeper understanding of different factors influencing student perceptions. Moreover, the inclusion of public sector institutions in the study may lead to a better understanding of Pakistan's medical education landscape.

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