RESEARCH ARTICLE

Assessment of educational environment using DREEM in a Pakistani medical college: A cross-sectional study

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Abstract

Objective: To evaluate the medical educational environment of an institution using integrated medical curriculum.

Method: The cross-sectional study was conducted from September 1 to November 1, 2024, at Gujranwala Medical College, Gujranwala, Pakistan, and comprised of medical students regardless of age, gender and academic year. Data was collected using the validated Dundee Ready Education Environment Measure questionnaire, covering five domains of the educational environment. Data was analysed using SPSS 28.

Results: Of the 265 students, 88 (33.2%) were males and 177 (66.8%) were females. By year of study, 89 (33.6%) were first year, 77 (29.1%) second year, 32 (12.1%) third year, 34 (12.8%) fourth year, and [n=33 (12.5%)] final year. Regarding residence, 77 (29.1%) were day scholars and 188 (70.9%) were hostelites. The total mean DREEM score was 120.2±22.2 (60%), reflecting moderately positive perceptions. Subscale analysis revealed highest scores in Students' Perception of Learning (28.6±6.2) and lowest in Social Self-Perception (15.9±4.4). Significant differences across academic years were observed for all subscales ($p<0.05$). Regression analysis demonstrated that progression through academic years was significantly associated with declining scores in SPL, SASP, SPA, and SSSP ($R^2=0.06–0.15$). No significant differences were noted by gender or residence status. Internal consistency was acceptable (Cronbach's alpha=0.86; standardized=0.89).

Conclusion: The evolving educational needs of students must be acknowledged through curricular adjustments to enhance student engagement, social support and professional competence.

Keywords: Education, Medical, Learning environment, Students, Psychology, educational measurement, educational assessment. (JPMA 76: 206; 2026) **DOI: https://doi.org/10.47391/JPMA.22658**

Introduction

In accordance with Pakistan Medical and Dental Council (PMDC) directives[1] and its affiliation with the University of Health Sciences (UHS),[2] which introduced a modular integrated curriculum in 2023, the Gujranwala Medical College (GMC) has adopted a fully integrated curriculum. The educational environment — encompassing physical, psychological, social and cultural aspects — plays a vital role in shaping student learning, motivation and satisfaction.[3] A positive environment is essential for the success of integrated curricula by promoting active learning and engagement.[4]

The Dundee Ready Education Environment Measure (DREEM) is a globally recognised tool for evaluating educational environments, providing insights into student perceptions that can help institutions improve curricula and teaching methods.[5] Despite its global use, research applying the DREEM questionnaire in Pakistan, particularly in fully integrated institutions like GMC, is limited.

For the first time in Pakistan, a medical university has introduced a series of pioneering reforms in assessment, including the elimination of internal examiners, implementation of 100% observed Objective Structured Practical Examinations (OSPEs), replacement of traditional viva voce with Objective Structured Viva Examinations (OSVEs), and the conduct of examinations at entirely neutral venues for both public and private sector affiliated medical colleges across Punjab.[6]

The perspective of medical students across various years has the potential to identify strengths and areas for improvement to inform future curricular adjustments.[7] Such findings contribute valuable insights to the literature on medical teaching environments in Pakistan, addressing a gap that remains underexplored compared to allied health and nursing education.[8]

The current study was planned to evaluate the medical educational environment at GMC which follows an integrated medical curriculum.

Subjects and Methods

The cross-sectional study was conducted from September

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1 to November 1, 2024, at GMC, Gujranwala, Pakistan, and comprised of medical students regardless of age, gender and academic year. After approval from the institutional ethics review committee, the sample size was calculated using Cochran's[9] formula with 95% confidence interval (CI) and 5% margin of error, anticipating a 50% response rate. The sample was raised using convenience sampling technique. Non-consenting students were excluded from the analysis, and the final sample included only fully completed, consented responses.

After taking written informed consent from all the subjects, data was collected using the DREEM questionnaire that comprised 50 items across five subscales; Students' Perceptions of Learning (SPL; 12 items, max score 48), Students' Perceptions of Teachers (SPT; 11 items, max score 44), Students' Academic Self-Perception (SASP; 8 items, max score 32), Students' Perceptions of Atmosphere (SPA; 12 items, max score 48), and Students' Social Self-Perception (SSSP; 7 items, max score 28). The questionnaire was administered via Google Forms through WhatsApp class groups. A 5-point Likert scale (0-4) was used for scoring, with nine negatively-worded items reverse-scored. The maximum possible total score was 200. Scores 151-200 indicated excellent perception, 101-150 positive, 51-100 plenty of problems, and 0-50 very poor perception.[10]

Data was analysed using SPSS 28. Descriptive statistics, including mean, median and standard deviation values, were calculated for each subscale and total scores to identify overall trends in students' educational perceptions. Frequencies and percentages were used to classify questionnaire items into strengths, areas for enhancement, and areas of concern based on Likert scale responses. Internal consistency was evaluated using Cronbach's alpha, with a threshold of ≥0.70 indicating acceptable reliability. Reverse-scored items were appropriately adjusted prior to analysis to ensure data accuracy. Comparative analysis was done, as appropriate, using Kruskal-Wallis, chi-square and Mann Whitney U test. Level of statistical significance was set at $p<0.05$.

Results

Among the 265 participants, 88 (33.2%) were male and 177 (66.8%) were female. Distribution across academic years showed that 89 (32.8%) students were in the first year, 77 (29.1%) in the second year, 32 (12.5%) in the third year, 34 (13.2%) in the fourth year, and 33 (12.5%) in the final year.

In terms of residence status, 77 (29.1%) were day scholars, while 188 (70.9%) resided in hostels. (Figure 1).

The total mean DREEM score was 120.2±22.2 (60%), indicating moderately positive perceptions. Total and subscale scores were noted across all the five academic years (Table 1).

There were significant variations in across the years with respect to SPL, SASP, SPA, SPT and SSSP (Table 2).

Subscale analysis of individual domains was analysed across the academic years (Figures 2-4).

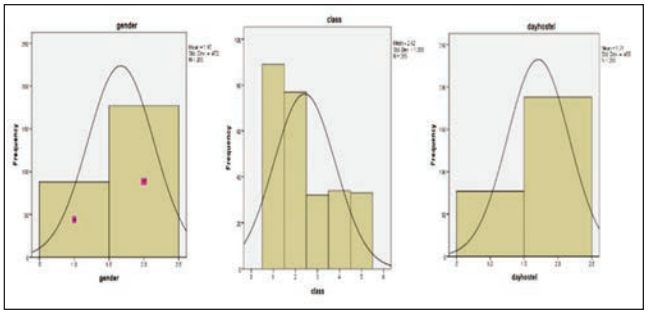

Figure-1: Distribution of students based on gender, academic year and accommodation type.

Table-1: Total and subscale scores of DREEM across the academic years.

Domain	1st year	2nd year	3rd year	4th year	Final year
Students Perception of learning(SPL)	30±5	30.6±5	27.5±6	26.3±4.6	24±6
Students Perception of Teachers(SPT)	27.3±4.8	28±4.7	28±3.4	25±5	27±4.7
Student Academic Self-perception (SASP)	21.3±5.2	21.5±5.8	20.6±3.3	18.6±4	21.3±5.2
Student perception of Atmosphere(SPA)	28±5.7	27.6.±6	26.6±4.4	25±5	28±5.8
Student Social Self Perception(SSSP)	17±4	17±3	15±3	24±6	16±4.4
Total DREEM Score	125.6±22.8	126.1±21.3	120.4±14.5	111.4±18.2	104.7±22.8

DREEEM: Dundee Ready Education Environment Measure.

Table-2: Perception of students as assessed by DREEM subscales.

Subscale	Mean±SD	Chi-square*	Significance
Student Perception of Learning (SPL)	28.65±6.4	45.1	<0.001
Students Perception of Teachers (SPT)	27.13±4.5	9.9	0.04
Student Academic Self-perception (SASP)	20.3±4.9	30.5	<0.001
Student perception of Atmosphere (SPA)	26.37±6.3	21.8	<0.001
Student Social Self Perception (SSSP)	15.97±4.4	36.5	<0.001

*Chi-square values reported are derived from the Kruskal-Wallis test;
DREEEM: Dundee Ready Education Environment Measure.

Table-3: Regression analysis of DREEM subscale scores and academic years.

Subscale	Unstandardised Coefficient (B)		R	*p*-value	R^2 (Model Fit)
Student Perception of Learning (SPL)	-1.63	0.24	0.38	<0.001	0.145
Students Perception of Teachers (SPT)	-0.6	0.2	0.184	0.003	0.03
Student Academic Self-perception (SASP)	-9.7	0.2	0.261	<0.001	0.065
Student perception of Atmosphere (SPA)	-1.2	0.24	0.3	<0.001	0.09
Student Social Self Perception (SSSP)	-0.5	0.13	0.24	<0.001	0.06

DREEEM: Dundee Ready Education Environment Measure.

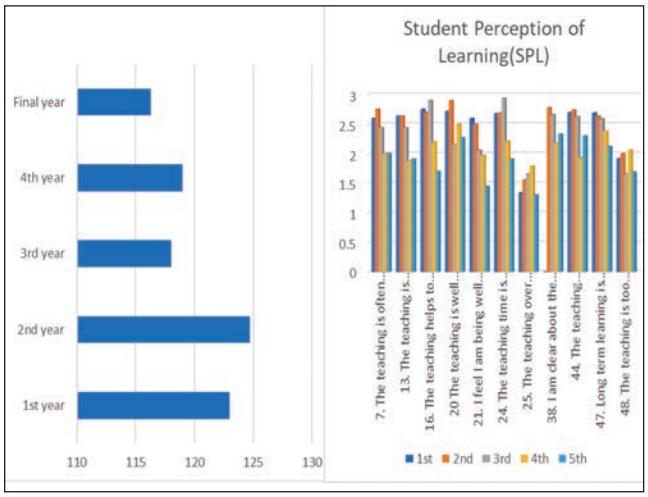

Figure-2: Dundee Ready Education Environment Measure (DREEM) scores of different academic years regarding the Student Perception of Learning (SPL) subscale.

Cronbach's alpha coefficient was 0.86, indicating acceptable reliability. After standardising the items, it was slightly higher at 0.89, suggesting that the items were adequately consistent.

Regression analysis showed that progression through academic years was significantly associated with declining scores across all subscales (Table 3). There was no significant difference in mean values between male and female respondents or between day scholars and hostilities (p>0.05).

Discussion

One of the most significant predictable and deterministic factors affecting student instruction, education and learning is the environment.[11] The current study showed that the overall learning environment at GMC was viewed more positively than negatively, as indicated by the aggregated DREEM score, which averaged 120.2 out of 200. Notably, it also marked an improvement from the 2018 study at GMC, which reported a DREEM score of 107.5/200 based on responses from 131 undergraduate students.[12] The enhanced score likely reflects not only the transition to a modular curriculum, but also improvements in learning resources, such as greater internet access and the use of tools based on artificial intelligence (AI). Additionally, faculty development and enhanced student support may have contributed to the positive outcome.[12]

Since GMC began implementing the integrated curriculum in 2022, a notable contrast has been noted compared to Dow University of Health Sciences (DUHS), Karachi, which developed its integrated curricula in 2009 and implemented it by 2011. A DUHS study, which had a significantly larger sample size, reported a mean DREEM

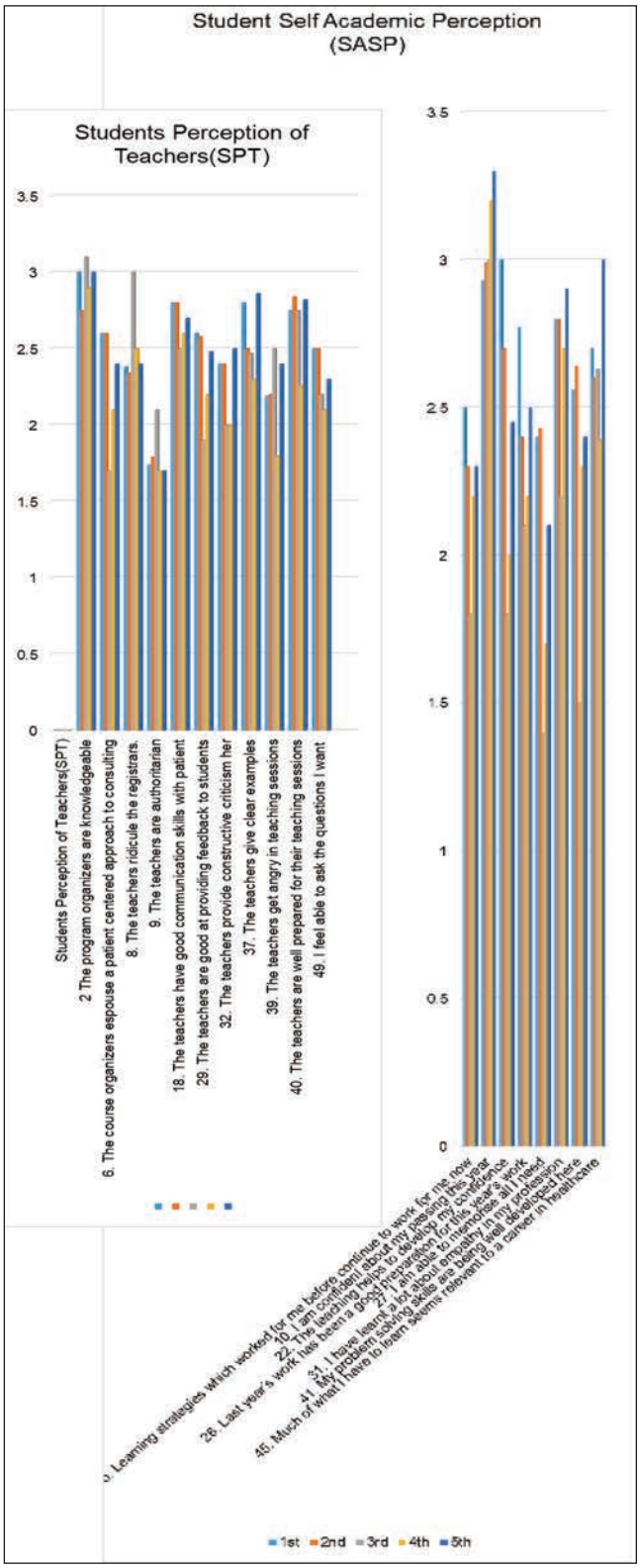

Figure-3: Dundee Ready Education Environment Measure (DREEM) scores of different academic years regarding the Students Perception of Teachers (SPT) and Student Self Academic Perception (SSAP) subscales.

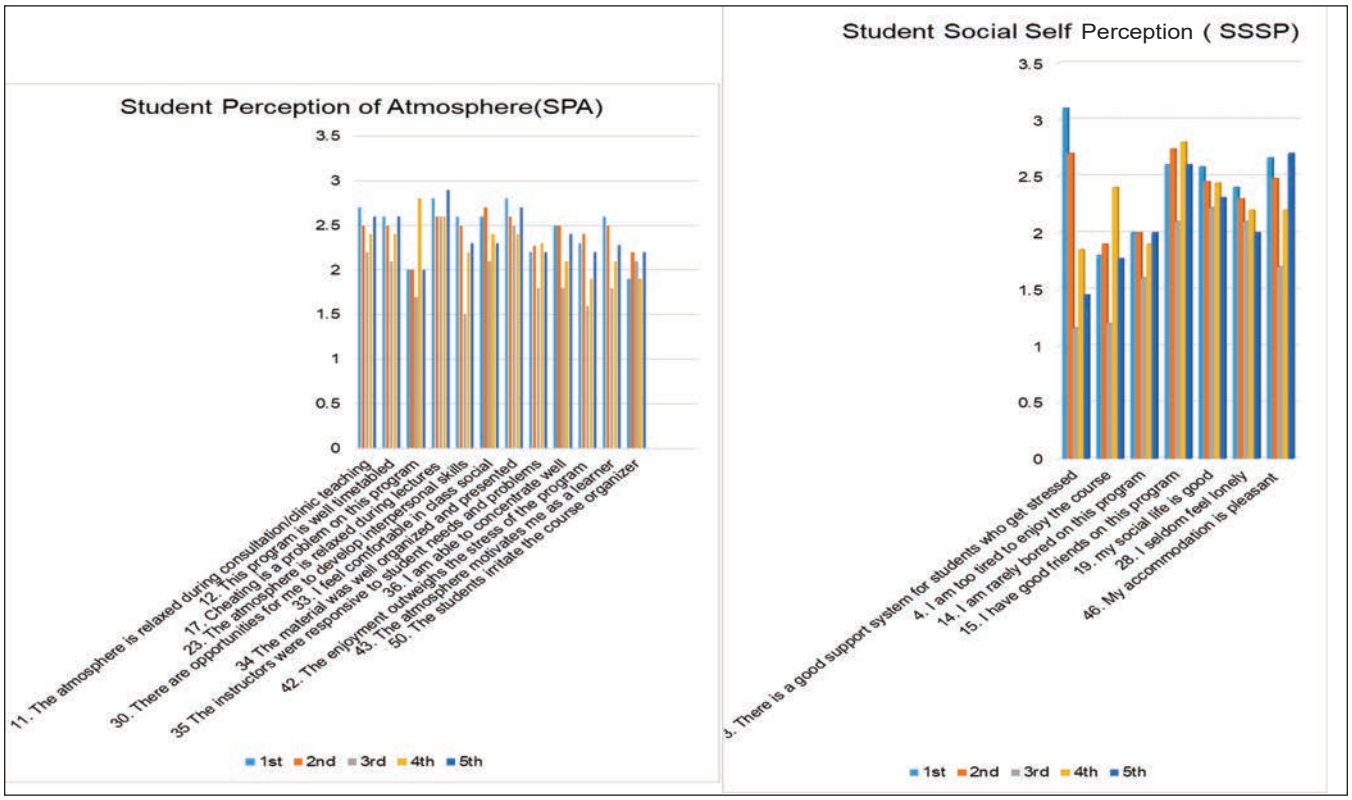

Figure-4: Dundee Ready Education Environment Measure (DREEM) scores of different academic years regarding the Student Perception of Atmosphere (SPA) and Student Social Self Perception (SSSP) subscales.

score of 100.[13] This finding suggests that it is not just the adoption of an integrated curriculum that matters, but the quality of its implementation. This significant gap between the two institutions underscores the importance of the sustained, thoughtful execution of the integrated curriculum, which likely accounts for the disparities in students' educational environment perceptions across the two institutions in Pakistan.

A study at the Indus University of Health Sciences from March to September 2023 showed that the overall DREEM score for 350 students was 138.[14] A study in Peshawar, where the integrated curriculum was in a hybrid mode, reported a DREEM score of 119. The study concluded that the success of an educational system depends more on its implementation than on whether it follows an integrated or traditional curriculum.[15] In Sahiwal, the mean DREEM score was 108.34±24.02.[16] Meanwhile, a survey at Poonch Medical College in Rawalakot, Azad Jammu and Kashmir (AJK) aimed at exploring the correlation between academic performance (based on scores from the last professional exam) and DREEM subscale scores. It incorporated a large proportion of third-year students, and the mean DREEM score was 96. Moreover, no significant correlation was found between academic performance and the DREEM scores (p>0.05).[17]

The result aligned with global trends observed in other medical institutions. It was almost similar to 124.58 in a medical college and hospital in India.[18] The mean DREEM score in another Indian institution was 111.76.[19] The similarity of the results could be due to similarity in the educational systems. The current study's total DREEM mean score was higher than the 90.5 reported from Morocco,[20] 85.23 from Brazil[21] and 101.82 from Nigeria.[22]

When analysing individual domains, the score for SPL at GMC was 28.6. In 2018, the SPL score at GMC was 25.45, reflecting a borderline "more positive" perception of the integrated modular system. This score only marginally increased in the current assessment, signalling that while some improvements have been made, there is still room for significant enhancement of the learning environment.[12] This was comparable to the SPL score reported for the paediatric unit of Khyber Teaching Hospital.[15] Other institutions showed similar scores, with 27 in AJK[17] and 25 in Sahiwal.[16] However, some institutions in other parts of the world outperformed GMC in this domain.[23,24] In the current study, the SPL domain ranked first. Scores below two points in SPL items indicated a teacher-centred learning environment, highlighting the need for more active, fact-based learning, competence development, and student-centred teaching approaches. These findings

emphasised the necessity of ongoing curriculum evaluation and adaptation to better address the evolving needs of medical students.

The score of SPT subscale in the present study was 27.1, indicating static maintenance. In comparison, the score was 23 in GMC in 2018,[12] 23.4 at DUHS in Karachi,[13] 25 in AJK,[17] 27 in Peshawar[15] and 22 in Sahiwal.[16]

The SASP score in the current study was 20.3, aligning closely with the 20.72 score reported in a DREEM study in Malaysia.[25] In 2018, the SASP score at GMC was 17.[12] Low scores in this domain were attributed to the current learning strategies at the institution. Providing more individual and group attention, along with detailed explanations and the use of case studies, could improve students' retention and problem-solving skills. Comparatively, SASP scores were 16 at DUHS in Karachi,[13] 21 in AJK,[17] 19 in Peshawar[15], and 18 in Sahiwal.[16]

The SPA score in the current study was 26.37, indicating a low level of interpersonal skills. In 2018, the SPA score at GMC was 24,[12] while recent scores have been reported as 27 at DUHS in Karachi,[13] 26 in Peshawar[13] and 25 in Sahiwal.[16] The current score was similar to the 27.33 recorded for medical students in Saudi Arabia.[26]

The SSSP score in the current study was 15.97 compared to 13 at DUHS in Karachi.[13] In 2018, the score at GMC was 1412. It was reported to be 15 in AJK, Peshawar and Sahiwal.[15-17] The current score was slightly lower than the 18.15 reported in an Indian study.[27]

In the current study, students in the initial years of the academic programme generally reported a positive learning experience, with active participation particularly noted in the third year with a mean score of 3.0. Clarity of learning objectives remained consistently high across the first three years with mean scores ranging from 2.58 to 2.78, while engagement in active learning ranged between 2.55 and 2.74. Competence development was emphasised in the fourth year with a mean score of 2.9. Additionally, the SPT domain reflected strong perceptions of faculty knowledge and communication skills across all the academic years. Academic self-confidence steadily increased, peaking in the final year, with students recognising the relevance of their studies to healthcare.

In contrast, significant weaknesses were identified in the senior years. Fifth-year students reported low preparedness for professional life with a mean score of 1.45, and concerns over excessive factual learning with a mean score of 1.3. Competence development also declined with mean score 1.7. Rising stress overshadowed enjoyment in the fourth year, showing a mean score of 1.6, with inadequate support for stressed students was particularly evident in the fourth and fifth years with mean values 1.16 and 1.45, respectively. Persistent fatigue and boredom in the middle years further contributed to declining satisfaction. These findings highlighted the need for curriculum enhancement, improved teaching strategies, and robust student support systems to optimise the educational experience across all academic years.

The current study has limitations, like its cross-sectional design, which captured perceptions at a single point in time, and may not reflect changes in the educational environment throughout the course of students' training. Additionally, the reliance on self-reported data through the DREEM questionnaire may have introduced response bias, as students could have provided socially desirable answers. The use of convenience sampling further limited the generalisability of the findings, as participants who were more accessible or motivated to respond may not fully represent the broader student population. However, efforts were made to ensure internet access during the survey period.

Conclusion

The educational climate at GMC was perceived as more positive than negative, with strengths and areas needing improvement, especially in social self-perception. Comparison with corresponding scores at the same institution in 2018 highlighted progress, emphasising that the learning environment depended more on the quality of implementation than the curriculum system itself.

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Conflict of Interest: None.

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Author Contribution:

SA: Concept, design, data acquisition, analysis, interpretation, drafting, revision and final approval.
UY: Discussion writing, data acquisition and proof reading.
UA: Data analysis and proof reading.
SY: Data acquisition.