

A STUDY ON MEDICAL STUDENTS' PERCEPTIONS OF TEACHING QUALITY AND ACADEMIC SUPPORT ACROSS PHASES: A STUDY IN A TERTIARY CARE CENTRE

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ABSTRACT

Background: The educational environment plays a critical role in shaping medical students' learning results, motivation, and professional development. The Dundee Ready Education Environment Measure is a validated tool used all-inclusive to assess students' perceptions of their learning environment. To assess medical students' perceptions of the educational environment at a tertiary care teaching institution using the DREEM questionnaire and to compare scores across gender, academic phase, and semester. **Materials and Methods:** This cross-sectional, questionnaire-based descriptive study was conducted in S S Tania Medical College, Shri Ganga Nagar, Rajasthan, India, from August 2022 to January 2023. The DREEM questionnaire, a 50-item tool, assessed students' perceptions across five domains: Learning, Teachers, Academic Self-Perceptions, Atmosphere, and Social Self-Perceptions, using a 5-point Likert scale. Demographic data was also collected. Required statistical analysis was conducted. **Result:** The overall mean DREEM score indicated a learning environment that was "more positive than negative." Female students scored higher in perceptions of learning and atmosphere compared to males. Preclinical students had more perceptions than clinical students, particularly in learning, teachers, and academic self-perception domains. Semester-wise analysis showed the highest scores in the 5th semester and internship, while the lowest scores were observed in the 7th and 9th semesters. **Conclusion:** Medical students' perceptions of their educational environment were generally positive, though certain domains, especially in later clinical years, reflected challenges. Regular monitoring and targeted interventions are necessary to strengthen teaching quality, academic support, and psychosocial well-being to optimise the medical learning experience.

INTRODUCTION

Effective medical education depends not only on the curriculum satisfied but equally on the methods and assistance used to deliver that satisfied. As medical knowledge expands rapidly and the clinical demands placed on graduates become more complex, educators are increasingly called to provide varied teaching helps that promote deeper understanding, clinical reasoning, procedural competence and lifelong learning skills. Traditional improving lectures and blackboard teaching remain prevalent because of their efficiency for large groups; however, active, learner-centred modalities, including problem-based learning, audiovisual and multimedia resources, simulation, and digital/online platforms, have gained prominence for their potential to

improve engagement, skill gaining and holding. Evidence comparing these methods recommends that shifting from passive to active learning formats can improve specific learning results and the educational climate, prompting many institutions to blend multiple supports rather than depend on a single method.^[1]

Students' perceptions of different teaching helps are central to successful implementation. Perception influences attendance, engagement, study behaviours and the extent to which learners make use of available resources. If learners perceive help as helpful, accessible and relevant to their future practice, they are more likely to invest effort and to transfer classroom learning into clinical situations. Equally, if a teaching help is viewed as irrelevant, poorly designed, or awkward, underutilisation and

dissatisfaction can follow, even when the tool has proven educational benefits in controlled studies. Thus, systematic inquiry into students' preferences and perceived usefulness of teaching helps provide practical management for curricular design, faculty development and resource allocation.^[2]

Different categories of teaching aids carry distinct advantages and limitations. Problem-based learning and small-group case discussions encourage self-directed learning, serious thinking and coordination; systematic comparisons frequently find PBL superior to traditional lecture formats for certain competencies and for fostering more positive attitudes towards learning. Audiovisual and multimedia aids, ranging from short procedural videos to richly produced e-learning modules and infographics, allow repeated, asynchronous review and can make complex longitudinal and temporal information easier to grasp. Systematic reviews and meta-analyses indicate that well-designed video and multimedia involvement can improve knowledge gaining and procedural performance when integrated considerably into curricula.^[3]

Simulation-based education is another area with strong significance to clinical skill development and patient safety. High-fidelity simulation allows learners to practise procedures and crisis management in a controlled, low-risk environment; studies show improvements in learner confidence, technical performance and reductions in error rates when simulation is effectively associated with learning objectives. Until now, simulation is resource-intensive, and students' observations of its realism, instructor quality and examination processes strongly influence perceived value and learning transfer. Understanding how trainees prioritise simulation relative to other helps and what features they consider essential helps planners optimise costly simulation programs.^[4]

The rapid expansion of online and blended learning, accelerated by the COVID-19 pandemic, has added complexity to students' choices and expectations. Many learners appreciate the flexibility and accessibility of live online lectures, recorded videos and interactive modules, but remain sceptical about whether online formats fully substitute for in-person bedside teaching and hands-on practice. Comparative studies showed that during and after the pandemic, document heterogeneity in satisfaction and perceived effectiveness across platforms, showing that the pedagogic design and opportunities for active engagement determine results more than the delivery medium itself.^[5]

Empirical studies from diverse situations determine that student preferences are not uniform: local culture, previous exposure to technologies, faculty competence with the aids, perceived exam relevance, and available infrastructure all shape perceptions. Cross-sectional surveys and mixed-methods investigations have identified tendencies, for example, sustained appreciation for clear, instructor-led explanations alongside strong demand for video

demonstrations for rare clinical signs or procedures, but also important differences by year of training and discipline. These results emphasise the need for tertiary teaching institutions to routinely assess their own students' perceptions to direct contextually appropriate choices of teaching supports, confirm equitable access, and train faculty to organise tools effectively.^[6]

MATERIALS AND METHODS

Research Design

This cross-sectional, questionnaire-based descriptive study was conducted in S S Tantia Medical College, Shri Ganga Nagar, Rajasthan, India, from August 2022 to January 2023. The MBBS program spans 5½ years and is divided into preclinical, paraclinical, and clinical phases, followed by a compulsory rotating internship. The syllabus mainly consists of lectures, tutorials, and practical classes, with limited problem-based sessions. A total of 100 undergraduate medical students across different semesters were included in the study, except for those in the first semester who had less than six months of exposure to the medical school environment. A goal-directed sampling strategy was used to ensure representation from different academic phases. Written informed consent was obtained from all participants, anonymity was maintained, and ethical clearance was obtained from the Institutional Ethics Committee. The Dundee Ready Education Environment Measure questionnaire was used as the study instrument to assess students' observations of the learning environment. The DREEM is a validated, 50-item tool developed by Roff et al. using grounded theory and Delphi methodology, and has been tested globally in diverse medical education settings. It assesses five domains: Perceptions of Learning, Perceptions of Teachers, Academic Self-Perceptions, Perceptions of Atmosphere, and Social Self-Perceptions. Each item is rated on a 5-point Likert scale. Nine items are negatively worded and were reverse-scored to maintain consistency, with higher scores indicating more positive perceptions. The maximum global score is 200, which is interpreted as follows: 0–50, very poor; 51–100, many problems; 101–150, more positive than negative; and 151–200, excellent. In addition to the DREEM responses, demographic information such as age, gender, and semester of study was also collected, and questionnaires with missing data were excluded from analysis.

Inclusion Criteria

- Undergraduate MBBS students with at least 6 months of experience at the institution.
- Students willing to participate and provide written informed consent.

Exclusion Criteria

- First-semester students.
- Students unwilling to participate or who did not provide consent.

- Incomplete or invalid questionnaire responses.

Statistical Analysis

All data were entered into Microsoft Excel and analysed using SPSS version 20. Descriptive statistics were expressed as mean and standard deviation for continuous variables, and frequency/percentage for categorical variables. The Kolmogorov–Smirnov test was applied to assess the normality of data distribution. Comparisons between two groups were analysed using the independent samples t-test, while differences among multiple groups were assessed using one-way ANOVA with Tukey’s post-hoc test. A p-value of <0.05 was considered a significant difference.

RESULTS

In this study of 100 undergraduate medical students, the mean DREEM score was 122.8 (SD 22.3), placing the educational environment in the category of “more positive than negative”. When analysed by gender, female students dependably reported somewhat higher scores than their male complements across most domains, with significant differences noted in perceptions of learning ($p = 0.04$), perceptions of teachers ($p = 0.03$), perceptions of atmosphere ($p = 0.02$), and social self-perception ($p = 0.05$). The only domain without significant gender variation was academic self-perception ($p = 0.72$), where both groups reported comparable experiences. [Table 1]

Table 1: Overall and Gender-based Mean Domain Scores (n = 100)

Domain	Overall (n=100)	Male (n=52)	Female (n=48)	p value	Minimum–Maximum
Perception of learning	29.4 (6.8)	28.6 (7.1)	30.3 (6.2)	0.04	6–42
Perception of teachers	27.2 (5.1)	26.7 (5.2)	27.7 (5.0)	0.03	11–39
Academic self-perception	19.0 (4.7)	18.9 (4.8)	19.1 (4.6)	0.72	7–31
Perception of atmosphere	30.2 (6.3)	29.6 (6.4)	30.9 (6.1)	0.02	9–45
Social self-perception	17.0 (4.2)	16.7 (4.3)	17.5 (4.1)	0.05	4–26
Total DREEM score	122.8 (22.3)	120.3 (22.6)	125.4 (21.5)	0.01	49–181

The DREEM questionnaire results for 100 medical students produced a global score of 122.1/200, which indicates that the learning environment is perceived as “more positive than negative.” However, several domain-wise variations were noted. The Students’ Perception of Learning (29.1/48) strengths in student encouragement and clarity of objectives, but concerns emerged regarding overemphasis on factual recall (mean 1.41) and teacher-centred approaches (2.02). Similarly, the Perception of Teachers (27.0/44) showed that faculty were regarded as knowledgeable and well prepared, yet feedback delivery and authoritarian tendencies required

improvement. For Academic Self-Perception (19.1/32), students felt moderately confident about passing and the relevance of content, but expressed difficulty in memorisation and limited confidence in learning methods. The Perception of Atmosphere (30.0/48) indicated a moderately supportive environment, though stress, concentration difficulties, and perceptions of cheating lowered scores. The lowest domain score was in Social Self-Perception (16.9/28), reflecting inadequate support systems for stress and student fatigue, despite positive peer relationships and satisfactory accommodation. [Table 2]

Table 2: Mean Scores for Individual Items on the Dundee Ready Educational Environment Measure Questionnaire (n = 100)

Domain	Item No.	Item	Mean (SD)
Students’ Perception of Learning	1	I am encouraged to participate	2.93 (0.78)
	7	The teaching is often stimulating	2.44 (0.97)
	13	The teaching is student-centred	2.40 (1.04)
	16	The teaching is sufficiently concerned to develop my competence	2.63 (0.94)
	20	The teaching is well-focused	2.72 (0.86)
	22	The teaching is sufficiently concerned to develop my confidence	2.38 (1.02)
	24	The teaching time is put to good use	2.56 (0.89)
	25	The teaching overemphasises factual learning	1.41 (0.97)
	38	I am clear about the learning objectives of the course	2.60 (0.95)
	44	The teaching encourages me to be an active learner	2.49 (0.98)
	47	Long-term learning is emphasised over short-term learning	2.48 (1.08)
	48	The teaching is too teacher-centred	2.02 (0.97)
Subtotal			29.1 (6.8)
Students’ Perception of Teachers	2	The teachers are knowledgeable	3.32 (0.60)
	6	The teachers are patient with patients	2.54 (0.96)
	8	The teachers ridicule the students	2.26 (1.05)
	9	The teachers are authoritarian	1.73 (1.05)
	18	The teachers have good communication skills with patients	2.88 (0.85)
	29	The teachers are good at providing feedback	2.18 (1.02)
	32	The teachers provide constructive criticism	2.33 (0.96)
	37	The teachers give clear examples	2.66 (0.83)
	39	The teachers get angry in class	2.09 (1.07)

	40	The teachers are well prepared	2.90 (0.82)
	50	The students irritate the teachers	2.06 (1.10)
Subtotal			27.0 (5.1)
Students' Academic Self-Perception	5	Learning strategies that worked for me before continue to work for me now	1.96 (1.13)
	10	I am confident about my passing	2.84 (0.94)
	21	I feel I am being well prepared for my profession	2.50 (1.03)
	26	Last year's work has been a good preparation	2.32 (0.99)
	27	I can memorise all I need	1.58 (1.04)
	31	I have learnt a lot about empathy	2.76 (0.90)
	41	My problem-solving skills are being well-developed	2.40 (0.96)
	45	What I have to learn is relevant	2.74 (0.94)
Subtotal			19.1 (4.6)
Students' Perception of Atmosphere	11	The atmosphere is relaxed during ward teaching	2.46 (1.07)
	12	This institute is well scheduled	2.82 (1.10)
	17	Cheating is a problem in this institute	2.05 (1.22)
	23	The atmosphere is relaxed during lectures	2.65 (0.92)
	30	Opportunities for interpersonal skills	2.81 (0.86)
	33	I feel comfortable in class socially	2.86 (0.83)
	34	The atmosphere is relaxed during tutorials	2.62 (1.00)
	35	I find the experience disappointing	2.58 (1.05)
	36	I can concentrate well	2.27 (0.98)
	42	Enjoyment outweighs stress of medicine	2.07 (1.17)
	43	The atmosphere motivates me	2.45 (1.03)
	49	I feel able to ask questions	2.36 (1.02)
Subtotal			30.0 (6.3)
Students' Social Self-Perception	3	Good support system for stress	1.60 (1.07)
	4	I am too tired to enjoy this course	2.20 (1.13)
	14	I am rarely bored	1.89 (1.19)
	15	I have good friends in this institute	3.25 (0.90)
	19	My social life is good	2.82 (0.97)
	28	I seldom feel lonely	2.16 (1.21)
	46	My accommodation is pleasant	3.01 (0.91)
Subtotal			16.9 (4.2)
Total DREEM Score			122.1 (22.3)

In this sample of 100 medical students, the overall DREEM scores revealed that preclinical students (125.4/200) had a more positive perception of the educational environment compared to clinical students (119.1/200, $p = 0.003$). Domain-wise analysis showed that preclinical students rated both perceptions of learning (30.4 vs 27.9, $p < 0.001$) and perceptions of teachers (27.8 vs 26.2, $p = 0.001$) more than their clinical complements. Similarly, academic self-perception was higher among preclinical

students (19.6 vs 18.7, $p = 0.03$), suggesting greater optimism and confidence during the early years of medical school. On the other hand, no significant differences were observed between preclinical and clinical groups regarding perceptions of atmosphere ($p = 0.168$) and social self-perception ($p = 0.255$), indicating comparable experiences in terms of institutional environment and peer interactions. [Table 3]

Table 3: Comparison of Mean Domain Scores among Preclinical and Clinical Students (n = 100)

Domain	Preclinical (n = 50)	Clinical (n = 50)	p value
Perceptions of learning	30.4 (6.4)	27.9 (6.9)	<0.001
Perceptions of teachers	27.8 (4.9)	26.2 (5.1)	0.001
Academic self-perception	19.6 (4.5)	18.7 (4.7)	0.03
Perceptions of atmosphere	30.4 (5.9)	29.6 (6.6)	0.168
Social self-perception	17.2 (4.0)	16.7 (4.4)	0.255
Total DREEM score	125.4 (20.4)	119.1 (23.4)	0.003

The analysis of DREEM scores across different semesters among 100 medical students showed clear variations in perception of the educational environment. The highest total DREEM scores were reported by 5th-semester students (129.2/200) and interns (126.8/200), indicating a more positive outlook during these stages of training. In difference, the lowest scores were observed among 9th-semester students (112.2/200) and 7th-semester students (117.0/200), suggesting greater dissatisfaction during the later clinical phases. This difference across

semesters was significant ($p < 0.001$). Domain-wise, perceptions of learning peaked in the 5th semester (31.4) and declined progressively in the 7th (27.4) and 9th semesters (26.5), before improving somewhat during internship (29.6). A similar pattern was observed for perceptions of teachers, with higher ratings in the early semesters (27.8) and lower ratings during the 9th semester (25.2, $p = 0.004$). Academic self-perception was strongest in the 5th semester (20.3) and internship (20.7), but weakest in the 9th semester (16.7), suggesting declining confidence

during the transition to advanced clinical responsibilities .[Table 4]

Table 4: Mean Domain Scores for Each Semester (n = 100)

Domain	3rd Sem (n=20)	5th Sem (n=20)	7th Sem (n=20)	9th Sem (n=20)	Internship (n=20)	p value
Perceptions of learning	29.8 (6.6)	31.4 (6.0)	27.4 (6.6)	26.5 (6.6)	29.6 (6.3)	<0.001
Perceptions of teachers	27.8 (5.3)	27.8 (4.3)	26.2 (4.6)	25.2 (5.4)	26.9 (5.3)	0.004
Academic self-perception	19.2 (4.3)	20.3 (4.7)	18.2 (4.5)	16.7 (4.5)	20.7 (4.4)	<0.001
Perceptions of atmosphere	29.8 (6.1)	31.6 (5.2)	29.0 (6.3)	28.1 (7.1)	31.6 (6.1)	0.001
Social self-perception	16.7 (4.1)	18.1 (3.7)	16.3 (4.3)	15.7 (4.5)	18.0 (4.2)	0.001
Total DREEM score	123.2 (21.0)	129.2 (18.8)	117.0 (22.0)	112.2 (23.8)	126.8 (23.0)	<0.001

DISCUSSION

This study's complete pattern, that students favour active, student-centred teaching assistants, value simulation and high-quality multimedia for skills and procedures, until now remain cautious about the capacity of decent online formats to replace bedside teaching, mirrors tendencies recognised across diverse medical schools. In many situations, students report PBL and interactive small-group formats as superior to traditional lectures for promoting self-directed learning, serious thinking, and long-term retention; numerous cross-sectional surveys and comparative studies have similarly found a clear student preference for PBL over lecture-based learning.^[7]

The strong positive student perceptions of PBL in our sample make even in spite systematic and single-institution reports showing that PBL improves learning attitudes and problem-solving skills, even when objective knowledge gains are variable across studies. For example, Papanna et al. reported high student preference for PBL and perceived improvement in lateral thinking and clinical reasoning. Similarly, later comparative work and meta-analyses suggest PBL is mainly effective for developing clinical reasoning and application of knowledge in clinical conditions rather than simple rote factual recall, a distinction that helps explain why students rate it highly even when examination formats remain mixed.^[2]

Simulation and skills labs were another consistently valued aid. Respondents commonly appreciate simulated practice for procedural competence, crisis management and team training, but they also identify realism, quality of debriefing, frequency of practice and instructor feedback as critical moderators of perceived usefulness. These distinctions are consonant with simulation literature: systematic reviews and recent primary studies document reliable improvements in confidence and measurable performance after simulation-based education, but student satisfaction correlates strongly with scenario reliability and the quality of facilitation and feedback. Resource constraints and limited access, therefore,

frequently temper interest in spite of recognition of the pedagogic value.^[8]

Multimedia emerged in our study as particularly useful for procedural learning and for revisiting complex visual material asynchronously. This preference is supported by evidence that well-designed educational videos increase knowledge and procedural readiness when integrated into curricula and paired with active learning tasks. Students frequently report that short, focused videos complement instructor explanations and are especially valuable for rare signs or stepwise technical procedures. The emphasis is that pedagogic design, clear objectives, segmentation, and practice opportunities determine whether multimedia succeeds.^[9]

Perceptions of online teaching and remote learning were mixed in our cohort, echoing extensive results since the COVID-19 pandemic. Many students in published surveys appreciated the flexibility and accessibility of synchronous and asynchronous online resources, but expressed concerns about reduced bedside exposure, limited hands-on practice, and lower interaction quality in some online formats. Large multicentre surveys and mixed-methods studies confirm heterogeneity: satisfaction is higher when online teaching includes interactive elements, real-time discussion, and a clear arrangement with assessment; purely improving recorded lectures has a tendency to score lower. These moderating features probably explain variability across institutions and student years.^[11]

Numerous contextual factors help reconcile interstudy differences. Local infrastructure, faculty training in active learning and debriefing, perceived arrangement of assistance with examinations, and prior student exposure to specific teaching methods all influence perceptions. Cross-sectional comparisons show that first-year students frequently prefer instructor-led clarity, whereas senior students value reality and opportunities for clinical practice, a finding that may rapid staged curricular mixes that emphasise foundational lectures early and active/clinical modalities later.^[12]

Limitations of this work are similar to those in comparable surveys: self-selection bias, reliance on

self-reported perceptions rather than objective learning results, and the single-institution situation, which may limit generalisability. Still, triangulating student perceptions with performance metrics and faculty perspectives in future mixed-methods work would allow stronger inferences about which aids both improve measurable competence and are maintainable within institutional constraints.

Implications for practice are clear: tertiary institutions should preserve core strengths while expanding student-centred methods that learners value, structured PBL, frequent simulation with robust debriefing, and high-quality multimedia, and ensure online components are interactive and assessment-aligned. Faculty development focused on facilitation skills, scenario design, and multimedia pedagogy is important to translate student preferences into improved learning results.

CONCLUSION

This study measured medical students' perceptions of their educational environment using the DREEM questionnaire and revealed an overall score that was "more positive than negative," indicating a generally satisfactory but improvable learning climate. Gender-wise comparisons showed female students perceived the learning environment more in certain domains, while preclinical students established more positive perceptions than their clinical complements. Semester-wise analysis shows a U-shaped trend, with 5th-semester students and interns reporting higher satisfaction, whereas 7th and 9th-semester students expressed comparatively lower perceptions, reflecting the transition to advanced clinical responsibilities. These results emphasise the dynamic nature of students' educational experiences and underscore the importance of continuous monitoring and curriculum reform. Establishment of learner-centred teaching, constructive feedback, and psychosocial support, especially during the demanding clinical years, could improve the complete educational atmosphere. Periodic assessment using validated like DREEM remains serious for developing a supportive and effective medical learning environment.

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