

Assessment of Academic Learning Environment of Government Medical Colleges of Bangladesh

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Abstract

Introduction: The academic learning environment encompasses educational, physical, social and psychological aspects influencing students' professional and moral development, as well as teaching-learning effectiveness. This study aimed to assess the academic learning environment of government medical colleges (MCs) in Bangladesh.

Methods: A cross-sectional descriptive study was conducted among 589 randomly selected undergraduate students from 10 government MCs between September 2022 and August 2023. Data were collected using the self-administered DREEM questionnaire, supplemented with student suggestions. Analysis was done using SPSS version 22.0.

Results: The mean total DREEM score across all MCs was 120.65 ± 22.74 (60.33%), interpreted as "More positive than negative." Scores ranged from 109.98 to 137.95 out of 200. Rajshahi MC ranked highest (137.95 ± 21.28 , 68.98%), followed by Khulna (130.47 ± 5.10 , 65.24%) and Mugda (124.27 ± 26.69 , 62.14%). The lowest score was observed in Sir Salimullah MC (109.98 ± 20.22 , 54.99%). ANOVA revealed significant differences in mean DREEM scores among colleges ($p < 0.001$). Students highlighted the need for more dedicated teachers and better classroom, library, and hostel facilities to enhance learning environments.

Conclusion: Government MCs in Bangladesh achieved a status of "More positive than negative," one level below the "Excellent" category. Student feedback identified key areas requiring improvement, which should be addressed by authorities to further upgrade the academic learning environment to an excellent level.

Keywords: Academic learning environment, DREEM, Government medical colleges, Bangladesh

Introduction

Medical education aims to prepare future physicians with the requisite knowledge, skills, and professional attitudes across the cognitive, affective, and psychomotor domains (Salsali, 2005).

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Achieving this goal depends heavily on a supportive and stimulating learning environment, which plays a central role in shaping students' academic performance, professional development, and well-being (McAleer & Roff, 2001). The educational environment - comprising academic, social, psychological, and physical dimensions - has been shown to significantly influence students' motivation, satisfaction, and learning outcomes (Arzuman, Yusoff & Chit, 2010).



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A positive learning environment enhances student achievement and satisfaction, whereas a negative environment is associated with poorer academic performance and disengagement (Hamid, Faroukh & Hosein, 2013). Recognizing its importance, the World Federation for Medical Education (WFME) identified the learning environment as a core criterion for evaluating medical education programs (WFME, 1998). Furthermore, evidence indicates that a favorable institutional climate benefits not only students but also faculty, improving morale, motivation, and teaching quality (Cross *et al.*, 2006).

As the learning environment is modifiable, systematic assessment provides a valuable diagnostic tool for institutional improvement. The Dundee Ready Education Environment Measure (DREEM) is the most widely used instrument for this purpose. Developed through an international Delphi process, DREEM is a validated, culturally non-specific, 50-item questionnaire designed to assess students' perceptions of their educational environment (Roff, 2005).

Students' perceptions are crucial for identifying strengths and areas requiring improvement. Accordingly, this study aimed to evaluate the learning environment in government medical colleges of Bangladesh using the DREEM questionnaire to inform educational planning and policy development.

Methods

Study design, place and duration

This cross-sectional descriptive study was conducted among 589 randomly selected undergraduate medical students, who had completed or appeared in professional examinations of phase I–IV, from September 2022 to August 2023. There are 37 government MCs in Bangladesh. From those top ten government MCs were included purposively: Dhaka Medical College (DMC), Sir Salimullah Medical College (SSMC), Shaheed Suhrawardy Medical College (ShSMC), Mugda Medical College (MugMC), Mymensingh Medical College (MMC),

Rajshahi Medical College (RjMC), Rangpur Medical College (RpMC), Khulna Medical College (KMC), Sylhet MAG Osmani Medical College (SOMC), and Chattogram Medical College (CMC).

Data collection

MBBS students of four phases (I–IV) from selected medical colleges in Bangladesh were included following systematic random sampling. They were briefed on study objectives, voluntary participation, and confidentiality. After informed verbal consent, data were collected using the self-administered, globally accepted DREEM questionnaire (50 statements, total score 200). Responses were on a 5-point Likert scale (0=strongly disagree to 4=strongly agree).

Additionally, socio-demographic, course-related information, and student suggestions for improving the learning environment were collected.

Data analysis

Data were checked for completeness and consistency, then entered into SPSS Version 22.0. DREEM results were analyzed at three levels: 1) individual items, 2) subscales, and 3) overall score. Item scores were summed for each participant to obtain subscale scores, and their means were calculated. These were further summed for the overall DREEM score. Chi-square test, t-test, and one-way ANOVA were used to compare averages of the five subscales across characteristics. Subscale and mean DREEM scores of medical colleges were also compared.

Scoring system and Interpretation

The DREEM questionnaire was scored as per McAleer & Roff, (2001). Each item was rated 0–4: 0 (Strongly disagree/SD), 1 (Disagree/D), 2 (Uncertain/U), 3 (Agree/A), 4 (Strongly agree/SA). Nine negative items (12, 15, 16, 21, 23, 35, 39, 45, 49) were reverse scored (0=SA to 4=SD). The maximum score is 200.

Individual score

Items with mean ≥ 3.5 =true positive points; ≤ 2.0 =problem areas; 2.0–3.0=aspects needing improvement.

Domain wise score

The DREEM questionnaire was divided into five domains, each with score ranges that reflect varying levels of satisfaction or experience.

1. Students' Perceptions of Learning (SPL) scores from 0 to 48.
2. Students' Perceptions of Teachers (SPT) scores of 0 to 44.
3. Students' Academic Self-Perceptions (SASP) scores from 0 to 32.
4. Students' Perceptions of Atmosphere (SPA) scores from 0 to 48.
5. Students' Social Self-Perceptions (SSSP) scores from 0 to 28.

Overall or DREEM total score

Interpretation of overall scores: 0–50=very poor, 51–100=plenty of problems, 101–150=more positive than negative, 151–200=excellent.

Ethical implications

No physical or psychological risk was associated with the study. Informed verbal consent was taken from all the participants prior to collection of data. Ethical clearance was obtained from the Institutional Review Board (IRB) of Mymensingh Medical College, Bangladesh (Memo no. MMC/IRB/2021/350; Date: 17.08.2021).

Results

Among 589 students, 301 (51.1%) were males and 288 (48.9%) females, with no significant sex-wise variation ($p=0.097$). Phase completion: I—157 (26.7%), II—155 (26.3%),

III—156 (26.5%), IV—121 (20.5%). Most were Bangladeshi (558, 94.7%); other included students were from Nepal 14 (2.4%), India and Bhutan 5 each (0.8%), Malaysia 4 (0.7%), Pakistan 2 (0.3%), and Italy 1 (0.2%). Urban students predominated (401, 68.1%) over rural (188, 31.9%). Hostel residence was highest (414, 70.3%), while 134 (22.8%) lived in own homes, 35 (5.9%) in mess, and 6 (1.0%) with relatives.

Data analysis revealed significant differences among students of different medical colleges regarding scoring category ($p<0.001$). Only 3 (0.5%) students scored “very poor (0-50)” from DMC, ShSMC, and CMC. A total of 94 (16.0%) students scored “plenty of problems (51-100),” with highest proportions from SSMC (17; 29.3%), ShMC (15; 23.1%), DMC (14; 24.1%), SOMC (13; 21.7%), CMC (11; 20.4%), MugMC (8; 15.7%), MMC (7; 11.3%), RpMC (6; 10.0%), and RjMC (3; 4.9%). The majority, 454 (77.1%), scored “more positive than negative (101-150).” An “excellent (151-200)” score was obtained by 38 (6.5%) students, notably higher in RjMC (13; 21.3%) (Table 1).

Total mean DREEM scores ranged from 109.98 to 137.95 out of 200, all within the 'More positive than negative' range (101–150). RjMC scored highest at 137.95 (68.98%), followed by KMC 130.47 (65.24%), MugMC 124.27 (62.14%), SOMC 120.42 (60.21%), RpMC 120.28 (60.14%), MMC 118.84 (59.42%), CMC 115.96 (57.98%), ShSMC 115.40 (57.70%), DMC 112.60 (56.30%) and SSMC 109.98 (54.99%). ANOVA showed significant inter-college differences ($p<0.001$). The overall mean was 120.65 ± 22.74 (60.33%), interpreted as 'More positive than negative,' just below 'Excellent' (150–200) (Table 2). The mean DREEM scores were similar for males (120.58 ± 24.43) and females (120.73 ± 20.87), with no significant difference ($p=0.936$). In this study no significant variation was found across phases (I-IV) of MBBS study.

Table 1: Distribution of students of all medical colleges by overall scoring category (n=589)

Name of Medical College	Overall scoring category				Total n (%)
	Very poor (0-50) n (%)	Plenty of problems (51-100) n (%)	More positive than negative (101-150) n (%)	Excellent (151-200) n (%)	
DMC	1 (1.7)	14 (24.1)	42 (72.4)	1 (1.7)	58 (100.0)
SSMC	0 (0.0)	17 (29.3)	41 (70.7)	0 (0.0)	58 (100.0)
ShSMC	1 (1.5)	15 (23.1)	41 (63.1)	8 (12.3)	60 (100.0)
MugMC	0 (0.0)	8 (15.7)	39 (76.5)	4 (7.8)	51 (100.0)
MMC	0 (0.0)	7 (11.3)	53 (85.5)	2 (3.2)	62 (100.0)
RjMC	0 (0.0)	3 (4.9)	45 (73.8)	13 (21.3)	61 (100.0)
RpMC	0 (0.0)	6 (10.0)	51 (85.0)	3 (5.0)	60 (100.0)
KMC	0 (0.0)	0 (0.0)	60 (100.0)	0 (0.0)	60 (100.0)
SOMC	0 (0.0)	13 (21.7)	42 (70.0)	5 (8.3)	60 (100.0)
CMC	1 (1.9)	11 (20.4)	40 (74.1)	2 (3.7)	54 (100.0)
Total	3 (0.5)	94 (16.0)	454 (77.1)	38 (6.5)	589 (100.0)

Table 2: Comparison of mean total DREEM scores of all medical colleges (n=10)

Name of medical college	Number of students	Total score Mean±SD	Percentage (%) of mean DREEM score out of 200	p value (ANOVA)
RjMC	61	137.95±21.28	68.98	<0.001
KMC	60	130.47±5.10	65.24	
MugMC	51	124.27±26.69	62.14	
SOMC	60	120.42±21.78	60.21	
RpMC	60	120.28±18.11	60.14	
MMC	62	118.84±18.77	59.42	
CMC	54	115.96±22.38	57.98	
ShSMC	65	115.40±28.30	57.70	
DMC	58	112.60±23.30	56.30	
SSMC	58	109.98±20.22	54.99	
Total	589	120.65±22.74	60.33	

In response to suggestions, 589 students made 24 comments with multiple responses, for improving academic learning environment. The highest number 295 (50.10%) of students emphasized teachers being more student-friendly. Ensuring hostel safety and facilities was noted by 128 (21.73%), while 121 (20.54%) wanted more classrooms and

teachers, and 117 (19.86%) sought better library and classroom facilities. Recess in routine was suggested by 94 (15.96%), syllabus with practical/clinical focus by 84 (14.26%), smaller groups in practical classes by 81 (13.75%), and better exam schedules by 81 (13.75%). Other demands included action against auto-vacation (13.58%), better

practical rooms (13.07%), hostel food (11.71%), fair exams (10.53%), counselling (10.02%), banning politics (9.84%), friendlier staff (5.26%), extracurricular (4.07%), well-prepared teachers (1.86%), and checking

proxies (1.36%). Foreign students requested Bangla courses and English-based teaching, while others asked for pre-professional exams, quality viscera, better RFST, study tours, and campus cleanliness (Table 3).

Table 3: Suggestions made by the students of different medical colleges to improve academic learning environment (n=589)

Sl. No	Suggestions made by the students	Frequency	Percentage
01	Teachers should be more student friendly	295	50.10
02	Ensuring student safety and facilities in the hostels	128	21.73
03	Increasing class rooms and maintaining teacher-student ratio	121	20.54
04	Improving library and classroom facilities and WiFi	117	19.86
05	Introducing a recess period in the class routine	94	15.96
06	Making syllabus more practical and clinical oriented	84	14.26
07	Group of practical and clinical classes should be smaller	81	13.75
08	Comfortable examination routine with preparatory leave & gap	81	13.75
09	Taking steps against auto-vacation	80	13.58
10	Improving condition and instruments of practical room	77	13.07
11	Increasing quality of food in the hostels	69	11.71
12	Ensuring proper assessment in the examination	62	10.53
13	Counseling the irregular or depressed students	59	10.02
14	Banning student politics in the campus	58	9.84
15	Ensuring a friendly college authority and staff	31	5.26
16	Organizing more extracurricular activities	24	4.07
17	Teachers should be well-prepared in the class	11	1.86
18	Checking proxy attendances	8	1.36
19	Starting a Bangla language learning course for foreign students	3	0.51
20	Taking a pre-professional examination	3	0.51
21	Ensuring good quality viscera	3	0.51
22	Teachers should take classes fully in English	3	0.51
23	Organizing Day Visits, Residential Field Site Training and Study Tour properly	3	0.51
24	Maintaining clean environment	3	0.51

*Multiple responses

Discussion

This study represents one of the first nationwide assessments of the academic learning environment of Bangladeshi medical colleges using a standardized DREEM framework with representation from multiple

institutions. The overall mean DREEM score was 120.65 ± 22.74 (60.33%), indicating a learning environment that is “more positive than negative.” This score is higher than that reported in Iran (113.5; 56.75%) (Bakhshialiabad et al., 2015) and falls within

the commonly reported international range of 101–150.

Marked inter-institutional variation was observed. Rajshahi Medical College achieved the highest score (137.95; 68.98%), followed by Khulna Medical College (130.47; 65.24%), whereas Dhaka Medical College (112.60; 56.30%) and Sir Salimullah Medical College (109.98; 54.99%) scored lower. Similar findings from a previous Bangladeshi study further support that most institutions are perceived as more positive than negative (Ferdous *et al.*, 2021).

Comparable DREEM scores have been reported internationally in Sri Lanka, Nepal, Nigeria, Saudi Arabia, the UK, Chile, Malaysia, Sweden, Jamaica, and Trinidad (McAleer & Roff, 2001). Higher scores documented in selected institutions, particularly in the UK and nursing colleges in Malaysia and China, are often associated with student-centered and innovative curricula, whereas conventional lecture-based systems generally score lower (McAleer & Roff, 2001).

No significant gender difference was identified, consistent with reports from Sri Lanka, India, and the Middle East (Abraham *et al.*, 2008). However, significant differences existed among colleges ($p < 0.001$). Most students (77.1%) perceived their environment as more positive than negative, while only a small proportion reported major problems.

No variation was found across MBBS phases, unlike reports from Iran and Malaysia showing declining perceptions in later years (Bakhshialiabad *et al.*, 2015).

Overall, Bangladeshi medical colleges offer a generally positive learning environment, though targeted improvements—particularly through student-centered teaching approaches—could further enhance educational quality.

Conclusion

Overall mean DREEM score of medical colleges of Bangladesh was 120.65 ± 22.74

(60.33) out of 200 indicating the status of academic learning environment as “A more positive than negative”. This was just a level below the highest category of achievable scores (150–200) “Excellent”. The findings of the study can be used as a baseline data for a quality assessment of perception of students for academic learning environment of medical colleges of Bangladesh.

The results of the study can also help the policy makers and authorities to improve academic learning environment by taking necessary actions for enhancing the students’ ability of learning, motivation, academic progress and sense of well-being.

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