

## Assessment of the Educational Environment of Undergraduate Medical Education in Bangladesh

Waheed I<sup>1</sup>, Akter M<sup>2</sup>

### Abstract

Since the educational environment influences the academic outcomes of students, it is necessary to periodically measure it. This evaluation is based primarily on students' perceptions of the educational environment. The study aimed at measuring the educational environment of undergraduate medical education in Bangladesh, identifying problem areas, and suggesting ways for improvement. The DREEM inventory was used to conduct a cross-sectional survey of 255 medical undergraduates in different phases of their studies. The study revealed that the environment was 'more on the positive side' (score 108 out of 200). The mean score in the 'Students' Social Self-perception' subscale was 14, interpreted as 'not a nice place'. No significant difference was observed between perceptions of male and female undergraduates in different subscales. The study revealed that the fourth-year students perceived the atmosphere as worse than in other years. Out of the 50 total items, one had a mean score above 3, 36 had a mean score of 2-3, and 11 had a mean score of less than 2. Problematic areas have been identified and suggested remedies have been provided. The study has provided a comprehensive overview of undergraduate medical education's educational environment in Bangladesh and highlighted the areas requiring improvement.

**Keyword:** Educational environment, Medical undergraduate, DREEM

1. Dr. Md Imran Waheed, Instructor Class B, Reproduction Section, Army Medical Corps Centre and School, Shaheed Salahuddin Cantonment
2. Dr. Manowara Akter, Instructor of Anatomy, Armed Forces Medical College, Dhaka Cantonment

**Address of correspondence :** Dr. Md Imran Waheed, Instructor Class B, Reproduction Section, Army Medical Corps Centre and School, Shaheed Salahuddin Cantonment  
E-mail: imran52amc@gmail.com

### Introduction

The educational environment in an academic institution is important in determining students' academic success<sup>1</sup>. It includes the curriculum, instructors, clinicians and administrative staff, physical environment, and emotional and intellectual climate. The effectiveness of educational programs is indicated by the quality of the educational environment<sup>2</sup>. Again, Students'

motivation and learning outcomes are also influenced by the educational environment<sup>3</sup>. Therefore, measuring this environment is essential if an improvement is anticipated. Medical educators have undertaken several studies to measure the learning environment of their medical education programs using various tools, such as DREEM<sup>1-5</sup>, MATE<sup>6</sup>, PHEEM<sup>7</sup>, and ATEEM<sup>8</sup>.

In particular, the Dundee Ready Educational Environment Measure (DREEM) inventory

was developed to evaluate the environment of undergraduate medical education<sup>9</sup>. It is a widely recognized and often used instrument in this context<sup>10</sup>. The inventory has been proposed by Roff et al.<sup>11</sup> and developed by an expert panel of the Medical University of Dundee using the Delphi approach<sup>12</sup>. It is a generic, validated tool that can be used regardless of cultural background<sup>13</sup>. It has been used to measure the educational environment of different institutions and to compare between institutions, to compare the perceptions among different student groups, and to assess correlation with academic results<sup>12</sup>. Quantitative subscale results can provide information about certain learning environment elements and indicate potential solutions to problem areas<sup>9</sup>.

Researchers from many countries worldwide, including Pakistan<sup>14</sup>, India<sup>15</sup>, Sri Lanka<sup>5</sup>, Malaysia<sup>16</sup>, Iran<sup>17</sup>, Saudi Arabia<sup>18</sup>, South Africa<sup>19</sup>, and Australia<sup>10</sup>, utilized the inventory. With few exceptions, most studies using DREEM revealed that the perception was more on the positive side. After conducting a two-stage study among paramedic and midwifery students,

## Methods

It was a cross-sectional quantitative research. Participants were undergraduate

Bakhshialiabad et al.<sup>17</sup> reported that DREEM helped them identify problematic areas of the educational environment for improvement. Arzuman et al.<sup>16</sup> observed that scores for all five subscales reflected positive perceptions. However, they found that teachers were authoritarian and the students were experiencing considerable stress.

In Bangladesh, a few studies have been conducted to measure the educational environment<sup>1,20-23</sup>. Those were mostly cross-sectional, and most were conducted to gauge the educational environment of a certain institution. The perception was found to be 'more on the positive side' by all the researchers. However, it has been noted that there are a few areas needing improvement. The findings of these researches might be utilized to evaluate and implement modifications to the curricula, instruction, and physical environment<sup>1</sup>.

The present study aimed to identify the stronger and weaker areas of the educational environment of undergraduate medical education in Bangladesh and suggest remedial measures.

medical students from the first to fifth years in Bangladesh. In the study, dental students were not included. The participants were

selected using a convenience sampling method. The survey instrument was the Dundee Ready Educational Environment Measurement (DREEM) inventory. It was a 50-item questionnaire. It contained five subscales, as shown in Table 1. Negatively worded items 11, 12, 19, 20, 21, 23, 42, 43, and 46 received a reversed score. Each item was scored using a five-point Likert scale.

The data were collected using Google Forms, comprising the demographic section and the DREEM inventory. It was shared on a Facebook Group in November 2022 with a post mentioning the study's purpose and necessity, and the response was taken for a

## Results

A total of 255 medical undergraduates representing different years of study from both Government and private medical colleges around the country participated in this research. The summarized demography is shown in Table 1. The mean DREEM score was 108 out of 200, indicating a more positive than negative educational environment. The Cronbach's alpha was 0.944. The means, SD, interpretation of the score, and internal consistency for the five subscales are shown in Table 2. The highest total DREEM score (119.8) was from Year 5, and the lowest (95.9) was from Year 4. One-way ANOVA showed statistically significant differences in the perception of the atmosphere among students of different

month. Before the survey, students' permission was obtained via a consent form. The consent form clearly stated the study's aim and the preservation of participant and institution confidentiality. The data obtained from the survey were analyzed in SPSS version 22 software. Descriptive statistics were used to calculate each item's mean and standard deviation. Internal consistency was measured using Cronbach's alpha. One-way ANOVA and Independent Sample T-test were used to determine the difference in students' perceptions in different years of study and between male and female undergraduates, respectively.

years of study, as shown in Table 3. Fourth-year students scored lowest among all years in all five subscales. Post Hoc analysis revealed that the fourth-year students perceived the atmosphere more negatively (21.4 out of 48) than those of other years. No significant difference was found between the perceptions of male and female students in 5 subscales, as shown in Table 4. Table 5 illustrates descriptive statistics of 50 items of the questionnaire with highlighted areas of strengths and weaknesses of the educational environment.

**Table 1: Demographic data (n=255)**

Gender	Male - 115 (45.1%)
	Female - 140 (54.9%)
Year of study	Year 1 - 107 (42%)
	Year 2 - 70 (27.5%)
	Year 3 - 38 (14.9%)
	Year 4 - 32 (12.5%)
	Year 5 - 8 (3.1%)
Category of medical college	Government - 158 (62%)
	Private - 97 (38%)

Subscale	Mean	SD	Percentage	Rating*	Alpha
Perception of learning	26/48	8.7	55.1%	A more positive approach	0.879
Perception of teaching	25/44	5.9	56.8%	Moving in the right direction	0.729
Academic self-perception	17/32	6.1	54.8%	Feeling more on the positive side	0.860
Perception of atmosphere	25/48	8.7	53.6%	A more positive atmosphere	0.871
Social self-perception	14/28	4.8	50.1%	Not a nice place	0.656

**Table 2 : Descriptive statistics of DREEM subscales (n=255)**

**Table 3 : Comparison of DREEM statistics between students of different years of study (n=255)**

Category	Year 1	Year 2	Year 3	Year 4	Year 5	P value
Total DREEM	111.6	110.2	106.4	95.9	119.8	0.060
Perception of learning	27.7	25.9	25.5	23.9	28.2	0.203
Perception of teaching	26.0	25.0	24.4	22.4	24.6	0.055
Academic self-perception	17.2	18.2	17.5	15.9	22.0	0.110
Perception of atmosphere	26.4	26.3	25.5	21.2	30.5	0.018*
Social self-perception	14.2	14.7	13.5	12.4	15.0	0.213

Note: \*P <0.050

**Table 4: Comparison of DREEM statistics between male and female students (n=255)**

Category	Male	Female	P value
Total DREEM	107.0	110.1	0.713
Perception of learning	25.0	27.6	0.998
Perception of teaching	24.6	25.3	0.144
Academic self-perception	17.6	17.4	0.466
Perception of atmosphere	25.6	25.8	0.588
Social self-perception	14.1	13.9	0.547

**Table 5: Descriptive statistics of 50 items of DREEM (n=255)**

Sub scale	Serial	Item	Mean	SD
SPL	1	I am encouraged to participate in class.	2.79	1.104
	2	The teaching is sufficiently concerned to develop my confidence.	2.12	1.200
	3	The teaching encourages me to be an active learner.	2.26	1.183
	4	The teaching is well focused.	2.28	1.125
	5	The teaching is sufficiently concerned to develop my confidence.	2.23	1.108
	6	I am clear about the learning objectives of the course.	2.41	1.057
	7	The teaching is often stimulating.	2.36	1.033
	8	The teaching time is put to good use.	2.38	1.054
	9	The teaching is student-centered.	2.17	1.250
	10	Long-term learning is emphasized over short term.	2.35	1.217
	11	The teaching is too teacher-centered.*	1.49	1.038
	12	The teaching over-emphasizes factual learning.*	1.56	0.961
SPT	13	The teachers are good at providing feedback to students.	2.40	1.060
	14	The teachers have good communication skills with patients.	2.46	1.970
	15	The teachers are knowledgeable.	3.16	0.905
	16	The teachers give clear examples.	2.62	0.984
	17	The teachers are well prepared for their classes.	2.59	1.041
	18	The teachers provide constructive criticism here.	2.14	1.125
	19	The teachers ridicule the students.*	1.85	1.177
	20	The teachers get angry in class.*	1.73	1.166
	21	The teachers are authoritarian.*	1.47	0.999
	22	The teachers are patient with patients.	2.52	0.946
	23	The students irritate the teachers.*	2.05	1.094
	24	I am able to memorize all I need.	1.87	1.088
	25	Much of what I have to learn seems relevant to a career in medicine.	2.28	1.035
	26	I feel I am being well prepared for my profession.	2.01	1.079
	27	Last year's work has been a good preparation for this year's work.	2.17	1.039

SASP	28	My problem-solving skills are being well developed here.	2.11	1.114
	29	I am confident about passing this year.	2.38	1.112
	30	I have learned a lot about empathy in my profession.	2.51	1.100
	31	Learning strategies which worked for me before continue to work for me now	2.20	1.134
SPA	32	The atmosphere is relaxed during lectures.	2.29	1.159
	33	I feel able to ask the question I want.	2.32	1.116
	34	I feel comfortable in class socially.	2.482	1.093
	35	There are opportunities for me to develop interpersonal skills.	2.24	1.089
	36	The atmosphere is relaxed during seminars/tutorials.	2.24	1.114
	37	The enjoyment outweighs the stress of studying Medicine.	1.73	1.242
	38	The atmosphere motivates me as a learner.	1.93	1.175
	39	I am able to concentrate well.	2.02	1.084
	40	The atmosphere is relaxed during ward teaching.	1.92	0.961
	41	The school is well time-tabled.	2.36	1.259
	42	I find the experience disappointing.*	1.95	1.209
	43	Cheating is a problem in this school.*	2.20	1.009
SSSP	44	I have good friends in this school.	2.62	1.121
	45	There is a good support system for students who get stressed.	1.52	1.241
	46	I am too tired to enjoy this course.*	1.57	1.200
	47	I am rarely bored on this course.	1.71	1.164
	48	My accommodation is pleasant.	2.14	1.231
	49	My social life is good.	2.16	1.182
	50	I seldom feel lonely.	2.30	1.374

**Note:**

\*Negatively worded items were reverse scored.

‡ Mean scores over 3 were considered positive and score below 2 as problem areas. A score between 2 and 3 was considered as an area that needs improvement.

SPL=Students' Perception of Learning, SPT= Students' Perception of Teachers,

SASP= Students' Academic Self-Perceptions, SPA= Students' Perception of Atmosphere,

SSSP= Students' Social Self Perception.

## Discussion

The study was conducted among Bangladeshi medical undergraduate students to get a broad overview of the educational environment prevailing in undergraduate

medical education in the country. The study's participants included male and female students from government and private medical colleges of various regions of the country and studying in all five years of medical study.

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The DREEM overall score was 108 out of 200, indicating that the environment is 'more positive than negative'. The scores were found in mostly the same category by most researchers<sup>1,20,23</sup>. However, the results from Hafiza et al.<sup>20</sup> and Mostofa et al.<sup>23</sup>, who conducted their study on the students of private medical colleges in Bangladesh, showed relatively higher scores (120 and 130.4, respectively) than that of the current study.

Two problematic areas have been identified in the 'students' perception of learning' subscale. The students perceived that the teaching could have been less teacher-centered (mean 1.49), and the teacher overemphasized factual learning (mean 1.56). This finding corresponds with Nahar et al.<sup>1</sup> and Akhter et al.<sup>13</sup>. However, the finding differs from Mostofa et al.<sup>23</sup>. They found that the mean score in these two items was within 2-3.

In the 'students' perception of teachers' subscale, it was found in the present study that the teachers ridiculed the students and got angry in class. Nahar et al.<sup>1</sup> also pointed out a similar situation. In addition to that, most students felt that the teachers showed authoritarian behavior. According to the present study, these perceived problems are common to all groups of students. At the

same time, it might also be true that the students irritate the teachers somewhat (mean 2.05). The same fact has also been reported by Hafiza et al.<sup>20</sup>.

It was observed in the present study that the teachers overemphasized factual learning (mean 1.56). The finding is consistent with the finding of Nahar et al.<sup>1</sup>. The pattern of teaching-learning demanded rote memorization, and students faced difficulty coping with that trend. The students felt, to a lesser extent (mean 2.01), that they were being well-prepared for their profession. One reason is that the students were unsure that their problem-solving skills were being developed.

The mean score on the subscale for 'Students Social Self-perception' in the current research was 14 out of 28, interpreted as 'not a nice place'<sup>10</sup>. The result corresponds with the study conducted by Nahar et al.<sup>1</sup> Three items out of 7 of this subscale in the present study had scores below 2. Most of the students felt that they were undergoing tremendous stress. The finding is consistent with the finding of Nahar et al.<sup>1</sup> and Hafiza et al.<sup>20</sup> From these scores of the present study, it is evident that the students did not perceive a good support system to reduce their stress. Nahar et al.<sup>1</sup> and Hafiza et al.<sup>20</sup> suggested a support



system for students who are under stress. In addition to that, the course was perceived to be less enjoyable in the present study. Very often, the students were bored due to the course pattern. The finding is consistent with Nahar et al.<sup>1</sup>. Moreover, most students agreed that their social life was not that good.

Items having a mean score of 3.5 and over are the real positive point<sup>1</sup>. In this study, 36 items had mean scores within 2-3, indicating the aspects of the environment which can be enhanced. Thirteen items with mean scores below 2 are the problem areas<sup>1</sup>. These are the areas requiring special attention. In only one item, the mean score was above 3 ('teachers are knowledgeable'). Nahar et al.<sup>1</sup>, Hafiza et al.<sup>20</sup>, and Mostofa A, Hoque R, and Haque M<sup>16</sup> also found that the students perceived teachers as knowledgeable.

Although the total DREEM score was higher in females, the perception among males and females showed no significant difference in any subscale. The finding contradicts the finding of Mostofa et al.<sup>23</sup> in Bangladesh, Askari et al.<sup>14</sup> in Pakistan, and Atapatu et al.<sup>5</sup> in Sri Lanka. They found that students' social self-perception was higher in males than in females. Among 50 items, only two items ('I am encouraged to

participate in class' and 'the teaching is student-centered'), statistically significant differences were found between these two groups in the present study. Here, females perceived the environment more positively than males. However, in all other items, the perceptions were almost similar.

Fifth-year had the most positive perception of the educational environment among all five years, with a mean score of 119.8, and 4th-year had the least positive perception according to the present study. The finding contradicts the finding of Hafiza et al.<sup>20</sup>, Nahar et al.<sup>21</sup> and Mostofa et al.<sup>23</sup>. The number of fifth-year students participating in the present study was small. The finding might also vary in different institutions of the country. However, in 4 subscales, students' perceptions in different years did not vary significantly in the present study. 4th-year students have a more negative perception of the atmosphere than those of other years. In addition, fourth-year students had the lowest scores in all five subscales. In 8 items (35, 36, 37, 38, 39, 40, 42, and 43) of the perception of atmosphere subscale, the mean scores of 4th-year students were below 2. A huge academic load this year might have contributed to this perception.

## Conclusion



The educational environment of undergraduate medical education in Bangladesh is more 'on the positive side'. The mean score in the 'Students' Social Self-perception' subscale was 14, interpreted as 'not a nice place'. The study revealed that the fourth-year students perceived the atmosphere as worse than in other years. Many aspects of environment require improvement. It is anticipated that authorities will take note of these areas and implement measures to foster a pleasant and productive educational environment.

## References

1. Nahar N, Talukder MH, Khan MT, Mohammad S, Nargis T. Students' perception of educational environment of medical colleges in Bangladesh. *Bangabandhu Sheikh Mujib Medical University Journal*. 2010;3(2):97-102.
2. Ezeala CC, Moleki MM. Evaluation of the educational environments of undergraduate medicine and pharmacy programmes at the University of Zambia. *Research and Development in Medical Education*. 2018;7(1):14-20
3. Irum S, Iqbal MZ, Naumeri F. Perception of medical students regarding educational environment in a public sector medical college: A cross-sectional survey using the Dundee Ready Education Environment Measure (DREEM) questionnaire. *Annals of King Edward Medical University*. 2018 Apr 17;24(1):643-7.
4. Urimubenshi G, Songa J, Kandekwe F. Assessment of the educational environment of physiotherapy students at the University of Rwanda using the Dundee Ready Educational Environment Measure (DREEM). *African Journal of Health Professions Education*. 2017 Sep 1;9(3):103-6.
5. Atapattu NS, Kumari KK, Pushpakumara KK, Mudalige SK. Adoption of dundee dreem questionnaire to assess the educational environment of an agriculture degree programme. *Tropical Agricultural Research & Extension*. 2015 May;18 (1): 22-30.
6. Sidhu NS, Clissold E. Developing and validating a tool for measuring the educational environment in clinical anesthesia. *Canadian Journal of Anesthesia/Journal canadien d'anesthésie*. 2018 Nov;65(11):1228-39.
7. Córdova-León K, Fernández-Huerta L, Rojas-Vargas M. Perception of clinical educational environment by student of physiotherapy based on the Postgraduate Hospital Educational Environment Measurement Questionnaire in Chile. *Journal of Educational Evaluation for Health Professions*. 2019 Jun 14;16.
8. Koohpayehzadeh J, Mirzaei Z, Zahedi H, Alebouyeh MR, Moogari ZN. Psychometric properties of the Persian version of the Anesthetic Trainee Theatre Educational

- Environment Measure (ATEEM). Medical journal of the Islamic Republic of Iran. 2019;33:13.
9. Chan CY, Sum MY, Tan GM, Tor PC, Sim K. Adoption and correlates of the Dundee Ready Educational Environment Measure (DREEM) in the evaluation of undergraduate learning environments—a systematic review. *Medical teacher*. 2018 Dec 2;40(12):1240-7.
10. Vaughan B, Carter A, Macfarlane C, Morrison T. The DREEM, part 1: measurement of the educational environment in an osteopathy teaching program. *BMC medical education*. 2014 Dec;14(1):1-1.
11. Roff S, McAleer S, Harden RM, Al-Qahtani M, Ahmed AU, Deza H, Groenen G, Primparyon P. Development and validation of the Dundee ready education environment measure (DREEM). *Medical teacher*. 1997 Jan 1;19(4):295-9.
12. Roff S. The Dundee Ready Educational Environment Measure (DREEM) - a generic instrument for measuring students' perceptions of undergraduate health professions curricula. *Medical teacher*. 2005 Jun 1;27(4):322-5.
13. Akhter SM, Asaduzzaman AK, Talukder MH, Solaiman F, Begum A. Students' Perceptions on Educational Environment of Selected Dental Colleges in Bangladesh. *Bangladesh Journal of Medical Education*. 2020 Sep 17;11(2):27-33.
14. Askari H, Mansoori N, Saeed MZ, Riaz K, Mukhtar A, Rana MN, Mubeen SM. The Dundee ready education environment measure (DREEM): perception of educational environment and its impact on academic performance of medical and pharmacy students. *Ann Jinnah Sind*. 2018;4(2):59-63.
15. Sunkad MA, Javali S, Shivapur Y, Wantamutte A. Health sciences students' perception of the educational environment of KLE University, India as measured with the Dundee Ready Educational Environment Measure (DREEM). *J Educ Eval Health Prof*. 2015 Jun 27;12(12):37.
16. Arzuman H, Yusoff MS, Chit SP. Big sib students' perceptions of the educational environment at the school of medical sciences, Universiti Sains Malaysia, using Dundee Ready Educational Environment Measure (DREEM) Inventory. *The Malaysian journal of medical sciences: MJMS*. 2010 Jul;17(3):40.
17. Bakhshialiabad H, Bakhshi G, Hashemi Z, Bakhshi A, Abazari F. Improving students' learning environment by DREEM: an educational experiment in an Iranian medical sciences university (2011–2016). *BMC medical education*. 2019 Dec;19(1):1-0.
18. Khan SQ, Al-Shahrani M, Khabeer A, Farooqi FA, Alshamrani A, Alabduljabbar AM, Bahamdan AS, Alqathani MA. Medical students' perception of their educational environment at imam Abdulrahman bin Faisal University, Kingdom of Saudi Arabia.

- Journal of family & community medicine. 2019 Jan;26(1):45.
19. Gibbs A, Smalley S, Mlambo M, Pandya H, Dreyer A. Clinical Associate students' perception of the educational environment at the University of the Witwatersrand, Johannesburg. African Journal of Primary Health Care and Family Medicine. 2015 Jan 1;7(1):1-8.
20. Hafiza A, Al-Mahmood AK, Islam S, Afrin SF, Khan SA, Schofield SJ. Students perception of learning environment: A Base Line Study for identifying areas of concern at a Private Medical College, Bangladesh. Bangladesh Journal of Medical Science. 2016 Aug 10;15(2):234-42.
21. Nahar N, Talukder MH, Khan MT, Nargis T, Mohammad S, Akhter N. Climate study in different phases of medical students of medical colleges of Bangladesh. Bangladesh Journal of Medical Education. 2010;1(1):29-36.
22. Nahar N, Talukder MH, Khan MT. Perceptions of academic achievers and under achievers regarding educational environment of medical colleges in Bangladesh. Bangladesh Medical Journal. 2010;39(2):2-10.
23. Mostafa A, Hoque R, Haque M. Student-Based Analysis of Perception Regarding the Educational Environment Using the Dundee Ready Education Environment Measure Questionnaire at Chattagram Maa-O-Shishu Hospital Medical College, Bangladesh. Florence Nightingale hemsirelik dergisi. 2019 Oct;27(3):211.