An Evaluation of Educational Environment Across the Phases of MBBS Course in Non-Government and Government Medical Colleges in Bangladesh

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Abstract

Background: Medical education has evolved from teacher-centered to student-centered models, yet the undergraduate curriculum in Bangladesh remains traditional. Acknowledging the pivotal role of educational environment in shaping effective curriculum, educators strive to foster student-friendly environment while maintaining educational quality. This study compares students' perceptions of educational environments in government and non-government medical colleges across MBBS phases, aiming to provide insights into quality of educational environment in both sectors.

Materials and methods: This cross-sectional study included 400 MBBS students from 4 government and non-government institutions. Within each institution, 25 students were selected from each phase of MBBS course. SPSS software was used to analyze the data and independent t-test compared scores between both groups, with significance set at 'p' < 0.05.

Results: Non-government students scored higher across all MBBS phases, with significant differences in phase 1 (DREEM score-p 0.00, SPL-p 0.00 and SPA-p 0.00), and phase 3 (SPL- p 0.04, SSSP- p 0.04). No significant differences were observed in phases 2 and 4.

Conclusion: Students in non-government medical colleges perceive educational environment more positively thangovernment counterparts across all phases of MBBS course, necessitating targeted interventions for improvement.

Key words: Educational environment; Medical colleges; Under graduate student.

Introduction

Medical education has evolved from a traditional teacher-centered and discipline-based approach to a student-centered and problem-based approach over last few decades. Modern medical curricula prioritize integrating disciplines and fostering self-learning skills for deep understanding over rote memorization.[1] The undergraduate medical curriculum in Bangladesh remains predominantly conventionalwith minimal integration among relevant subjects.[2] This approach impedes students' learningand practical application of knowledge.[3] Therefore, medical curriculum in Bangladesh is evolving with an aim to produce competent doctors who can interpret knowledge into practice.[4]

Identifying and addressing weaknesses in educational environment allows for necessary adjustmentsto create an effective curriculum.[5,6] Student-friendly environment and quality learning are priorities of medical educators worldwide.[7] Consequently, a thorough understanding of students' perspectives becomes vital to evaluate the efficacy of curriculum.[8] The Dundee Ready Education Environment Measure (DREEM) is a widely accepted method to evaluate the educational environment, which measures students' perception on five domains.[9] The domains are : Students' Perception of Learning (SPL) Students' Perceptions of Teachers (SPT) Students' Academic Self-Perceptions (SASP) Students' Perceptions of Atmosphere (SPA) and Students' Social Self-Perceptions (SSSP).[10]

There are a total of 109 recognized medical colleges in Bangladesh, comprising 37 government and 72 non-government institutions.[11] Some government and non-government insitutions established within the last two decades face challenges such as insufficient infrastructure, funding and teaching staff, which may affect the educational quality andenvironment.[12] Thefive year under graduate medical course in Bangladesh is divided into four phases. Previous studies in Bangladesh compared the students' perception of educational environment among students of different phases within the same medical college.[13,14] To the best of our knowledge, no

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studies have yet attempted to compare the educational environment in each phase of MBBS course among students of non-government and government medical colleges. Therefore, the objective of present study is to compare students' perceptions of various aspects of the educational environment between these two groups of institutions to identify the areas of concern in each phase.The findings of the study may serve as a starting point for discussions among stakeholders from both public and private sectors to address the challenges present in each sector.

Materials and methods

This cross-sectional study was conducted over a period of 1 year. It included 400 students of phases1, 2, 3 and 4 of MBBS course on voluantary basis from 2 government and 2 non-government medical colleges. The non-government institutions were Marine City Medical College and Southern Medical College, Chattogram. The government institutions were Rangamati Medical College and Cox's Bazar Medical College.100 students were selected from each medical college by random sampling. Out of 100 students,25 students were selected from each phase. The ethical approval was obtained from the Institutional Review Board of Marine City Medical College.Those who were not willing to participate or absent on the day of data collection were excluded. Researchers explained the study's purpose, ensured confidentiality and obtained written informed consent. Participants were given Dundee Ready Education Environment Measure (DREEM) questionnaires during scheduled lecture classes.

Participants completed the 50-item questionnaire using a five-point Likert scale ranging from 0 to 4 (0 = strongly disagree, 1 = disagree, 2 = unsure, 3 =agree, 4=strongly agree). The DREEM questionnaire yields total score of 200 which interpretes as follows: 0-50: "Very Poor", 51-100: "Plenty of Problems", 101-150: "More Positive than Negative" and 151-200: "Excellent". The 50 items in DREEM questionnaire are categorized into 5 domains: SPL (12 items), SPT (11 items), SASP (8 items), SPA(12 items), and SSSP (7 items).[5,6] Interpretations of domain scores are provided in Table I.

The collected data underwent processing, compilation and analysis utilizing SPSS software. Mean scores for each domain, and the overall DREEM score were computed. An independent t-test was conducted to compare the scores between the two study groups, with a significance level set at a 'p' value of less than 0.05.

Table I Interpretation of Domain scores

Domain	Score	Interpretation
Students Perceptions of Learning (SPL)	0-12 13-24 25-36 37-48	Very Poor Teaching is viewed negatively A more positive perception Teaching highly thought of
Students Perceptions of Teaching (SPT)	0-11 12-22 23-33 34-44	Abysmal In need of some retraining Moving in the right direction Model teachers
Students Academic Self-perceptions (SASP)	0-8 9-16 17-24 25-32	Feelings of total failure Many negative aspects Feeling more on the positive side Confident
Students Perceptions of Atmosphere (SPA)	0-12 13-24 25-36 37-48	A terrible environment There are many issues which need changing A more positive attitude A good feeling overall
Students Social Self-perception SSSP	0-7 8-14 15-21 22-28	Miserable Not a nice place Not too bad Very good socially

Results

Table IIa showed that non-government group scored higher than the government group in all domain scores and DREEM score. The differences were highly significant for total DREEM score (p 0.00) SPL (p 0.00) and SPA (p 0.00) domain scores. There were no significant differences in SPT, SASP and SSSP domains.

Table IIa Comparison of domain scores and total DREEM scores between Phase 1 students of non-government and government medical colleges

Domain	Non-government (n=50) Mean (SD)	Government (n=50) Mean (SD)	p (t test)
SPL	37.28 (4.69)	34.18 (5.58)	0.00**
SPT	32.1 (4.75)	30.42 (4.98)	0.09 ns
SASP	22.96 (2.86)	21.7 (4.12)	0.08 ns
SPA	34 (4.20)	30.22 (6.42)	0.00**
SSSP	16.98 (3.77)	16.34 (3.16)	0.36 ns
DREEM score	142.64 (16.22)	133.08 (18.31)	0.00**

● DREEM: Dundee Ready Education Environment Measure, p<0.005**, highly significant, ns: not significant.

Table IIb revealed that phase 2 students of non-government group scored higher than the government group in all domain scores and DREEM score though the differences were not significant in any category.

Table IIb Comparison of domain scores and total DREEM scores between Phase 2 students of non-government and government medical colleges

Domain	Non-government (n=50) Mean (SD)	Government (n=50) Mean (SD)	p (t test)
SPL	35.8 (4.74)	34.62 (5.39)	0.3 ns
SPT	32.58 (4.46)	31.04 (5.30)	0.12 ns
SASP	23.4 (2.77)	22.3 (4.84)	0.17 ns
SPA	33.1 (5.23)	32.06 (5.79)	0.35 ns
SSSP	17.02 (2.77)	16.5 (3.50)	0.41 ns
DREEM score	141.9 (15.82)	136.48 (19.79)	0.13 ns·

● p<0.05*, significant, ns: not significant.

Table IIc showed that the mean scores of phase 3 students of non-government group were higher in all categories. The differences were found significant only in SPL (p 0.04) and SSSP (p 0.04) domains.

Table IIc Comparison of domain scores and total DREEM scores between Phase 3 students of non-government and government medical colleges

Domain	Non-government (n=50) Mean (SD)	Government (n=50) Mean (SD)	p (t test)
SPL	33.46 (4.60)	31.18 (6.08)	0.04*
SPT	29.64 (4.18)	29.14 (4.06)	0.55 ns
SASP	21.64 (3.85)	20.2 (3.74)	0.06 ns
SPA	30.38 (4.8)	29.6 (5.34)	0.44 ns
SSSP	16.76 (2.25)	15.52 (3.59)	0.04*
DREEM score	131.88 (16.1)	125.64 (18.11)	0.07 ns·

● p<0.05*, significant, ns: not significant.

Table IId showed that phase 4 students of non-government group scored higher than the government group in all domain scores and DREEM score but the differences were not significant in any category.

Table IId Comparison of domain scores and total DREEM scores between Phase 4 students of non-government and government medical colleges

Domain	Non-government (n=50) Mean (SD)	Government (n=50) Mean (SD)	p (t test)
SPL	31.94 (5.64)	31.04 (4.43)	0.38 ns
SPT	29.22 (4.86)	28.46 (4.64)	0.43 ns
SASP	20.86 (4.04)	20.32 (3.18)	0.46 ns
SPA	29.7 (6.09)	27.74(5.71)	0.1 ns
SSSP	16.26 (3.06)	15.68 (3.24)	0.36 ns
DREEM score	127.98 (20.48)	123.24 (16.31)	0.2 ns·

● p<0.05, significant, ns: not significant.

Discussion

There are four phases to Bangladesh's five-year undergraduate medical curriculum. Phase 1 consists of preclinical study; phases 2 and 3 consist of paraclinical study; and phase 4 of 1.5 years of clinical study. The students begin clinical ward classes from phase 2 of their study along with para clinical studies. Therefore, phase 1 students are considered as preclinical and rest of the phases can be considered as clinical.[15]

The phase 1 or preclinical students of non-government group scored higher than government group in all domain and DREEM score (Table IIa). The differences were highly significant for total DREEM score, SPL and SPA domain scores. In SPL domain, non-government students (Score 37.28) thought of the learning environment highly while phase 1 students of government institutions (Score 32.76) had a positive perception. The teacher-centric instruction in Bangladesh might be responsible for lower scores in SPL domain in government medical colleges Modern students prefer active involvement in learning, favoring practical training over theory-based lectures. The problem-based instruction reduces factual, teacher-centric learning while fostering critical thinking and aptitude to handle real-world scenarios.[16] The switch from Bengali to English as language of instruction may create a communication barrier for many students. English proficiency training could resolve this issue. Policymakers may prioritize faculty development emphasizing support, inspiration, feedback and communication skills for effective student-centered learning..[17] Therefore, transition toward a more student-centric approach with a focus on faculty development in government medical colleges may improve the perception of learning and atmosphere.

Based on the mean scores of SPL domain, phase 3 students at both government (Score 31.18) and non-government students (Score 33.46) institutions had a positive perception but the differences were significant. In Bangladesh, the clinical faculty members perform dual roles as teachers and consultants. The inadequate student-to-teacher ratio and overwhelming patient load is often challenging for faculties in government medical colleges. Their inability to provide the

students with adequate supervision, prompt feedback and constructive criticism are detrimental to a congenial student-faculty relationship. These factors are related to stress in students, indicative of poor learning environment. Teachers can boost student-faculty relationships by allowing students autonomy for self-learning, self-assessment and goal-setting. These may reduce burden on teachers, fostering self-reliance and confidence in students.[18]

In SSSP domain, both government (score 15.52) and non-government (score 16.76) students of phase 3 felt that they were not in a bad place socially (Table IIc). However, the differences were significant. The phase 3 students in Bangladesh are required to study paraclinical subjects alongside clinical ward trainings. The demands of the academic and clinical programs with frequent examinations during clinical years may influence the perceptions of students. Increased perception of problems in SSSP led to a greater number of low achievers.[19] Social self-perception is one of the determinants for happiness. Hence, institutions should cultivate supportive environment for both academic growth and personal well-being.[20] Future interventions aimed at enhancing the social perception of government medical students may involve a non-threatening environment, strong social and academic support, fewer class hours, and scope for extracurricular activities.[21]

Among phase 2 (Table IIb) and phase 4 (Table IId) students, the non-government group scored higher than the government group in all domain scores and DREEM score, however, the differences were not significant. By the time they reach phase 2, the students become comfortable with the teaching methodology and the use of English as language of instruction. By phase 4, students adapt to clinical settings, finding previous challenges with insufficient facilities and long working hours less daunting.[22] These factors may have may reduce disparities between government and non-government students in phases 2 and 4.

The DREEM scores for non-government and government categories were 142.64 and 133.08 in phase 1, 141.09 and 136.08 in phase 2, 131.88 and 125.64 in phase 3, 127.98 and 123.24 in phase 4 respectively in the present study. These scores of both government and non-government group across all phases are within the same range recorded by other studies in Bangladesh and India.[14, 23] In the present study, DREEM scores gradually decreased as the students progressed though the clinical phases which is dissimilar with findings of Kaur et al.[23] Other studies performed in India and Pakistan did not find a consistent increase in domain scores as students advanced through the phases which are in agreement of present study.[7, 24, 25] Phase 1 students in Bangladesh receive limited to almost no clinical exposure. From phase 2 onward, students encounter challenges such as patient death and suffering, long study hours, and limited resources, potentially altering their perception compared to preclinical phases.[26]

Limitations

- Individual items within each domain have not been analyzed.
- The number of students from each phase was limited.

Conclusion

An optimum educational environment is a necessity in today's world to fulfill the country's need for skilled doctors. It is essential to improve educational environment so that the medical students can develop lifelong learning habit to cope up with evolving medical science. The findings of this study indicate better perceptions of the educational environment among non-government medical college students across all phases of MBBS course. There is clearly a need for intervention in few domains of educational environment to provide a better environment for the students. The assessments in this study may serve as a baseline for future discussions and strategic planning among stakeholders of private and public sector.

Recommendations

Future studies may explore the item-wise strengths and weaknesses of government and non-government medical colleges with a larger sample size.

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Contribution of authors

SB-Conception, data collection, data analysis, script writing & final approval.

RRC-Data collection, interpretation of data, critical review & final approval.

ZA-Data collection, data analysis, script writing & final approval.

Disclosure

All the authors declared no competing interest.

References

1. Negash TT, Eshete MT and Hanago GA. Anesthesia students' perception of the educational environment and academic achievement at Debre Tabor University and University of Gondar, Ethiopia: A comparative crosssectional study. BMC Medical Education. 2022; 22:552.
https://doi.org/10.1186/s12909-022-03611-4 (Accessed on January 29, 2023).

2. Ahmed TS, Rashid TJ, Huda S, Sultana N, Billah AM. Perception of Medical Students on Current Medical Education in Bangladesh. Bangladesh Journal of Medical Education. 2022; 13(02): 13 - 25.
https://doi.org/10.3329/bjme.v13i2.60941(Accessed on 3rd March, 2023).

3. Al-Hazimi A, Al-Hyiani A, Zaini R, Hassan N, Gunaid A et.al. Educational Environment in Traditional and Innovative Medical Schools: A Study in Four Undergraduate Medical Schools. Education for Health. 2004; 17 (2):192–203.
www.educationforhealth.net (Accessed on February 27, 2023).

4. MBBS Curriculum Update -2021.
https://www.bmdc.org.bd/docs/curriculum/2021/1.FrontPage.pdf (Accessed on 2 March, 2023).

5. Tripathy S, Dudani S. Students' perception of the learning environment in a new medical college by means of the DREEM inventory. Int J Res Med Sci. 2013; 1(4):385-391.

6. Yusoff MSB, Ja'afar R, Arzuman H, Arifin WN, Pa MNM. Perceptions of medical students regarding educational climate at different phases of medical training in a Malaysian medical school. Education in Medicine Journal. 2013; 5(3): 30-41.

7. KohliV, Dhaliwal U. Medical students' perception of the educational environment in a medical college in India: a cross-sectional study using the Dundee Ready Education Environment questionnaire. Journal of Educational Evaluation for Health Professions. 2013.
http://dx.doi.org/10.3352/jeehp.2013.10.5 (Accessed on February 23, 2023).

8. Khalaf H, Almothafar B, Alhalabi N. Acta Inform Med. 2022; 30(2): 105-109.
doi: 10.5455/aim.2022.30.105-109.

9. Dunne F, McAleer S and Roff S. Assessment of the undergraduate medical education environment in a large UK medical school. Health Education Journal. 2006; 65(2):149–158.

10. Karim J, Al-Halabi B, Marwan Y, Sadeq H, Dawas A, Al-Abdulrazzaq D. The educational environment of the undergraduate medical curriculum at Kuwait University. Advances in Medical Education and Practice. 2015; 6: 297–303.

11. Health Bulletin 2019. Government of the People's Republic of Bangladesh Ministry of Health and Family Welfare. 2022:1-356.

12. Amin Z, Samarasekera DD, Eng KH.A Compelling Call for Quality in Medical Education.Journal of Bangladesh College of Physicians and Surgeons. 2007; 25(1).

13. Mohsena M, Debsarma S, Haque M. Determining the Quality of Educational Climate in a Private Medical College in Bangladesh via the 'Dundee Ready Education Environment Measure' Instrument. J Young Pharm. 2016; 8(3): 266-274.

14. Ferdous J, Islam M, Khan MK Phase wise evaluation of academic learning environment of selected medical colleges of Bangladesh. Journal of Dental and Medical Sciences. April. 2021; 20(4) Ser.11: 53-63.

15. Mostafa A, Hoque R, Haque M. Student-Based analysis of perception regarding the educational environment using the DREEM questionnaire at Chattagram Maa-O-Shishu Hospital Medical College, Bangladesh. FNJN Florence Nightingale Journal of Nursing, 2019; 27(3):211-221.
https://doi.org/10.5152/FNJN.2019.19025 (Accessed on 17 January, 2023).

16. Tarafdar MA. Perception of the medical students in Bangladesh regarding quality of education. Journal of Z H Sikder Women's Medical College. 2023; 502.
doi: https://doi.org/10.47648/zhswmcj.2023.v0502.10.

17. Shahzad S, Wajid G. How different is the Learning Environment of Public and Private Sector Medical Colleges in Lahore, Pakistan? Pak J Med Sci. 2023 ;39(3):757-763.
doi: 10.12669/pjms.39.3.6202. PMID: 37250554; PMCID: PMC10214775.

18. Karani R. Enhancing the Medical School Learning Environment: A Complex Challenge. J Gen Intern Med. 2015;30(9):1235-1236.
doi: 10.1007/s11606-015-3422-3. PMID: 26173534; PMCID: PMC4539337.

19. Aldowsari MK, Al-Ahmari MM, Aldosari LI, Al Moaleem MM, Shariff M, Kamili AM, Khormi AQ, Alhazmi KA. Comparisons Between Preclinical and Clinical Dental Students' Perceptions of the Educational Climate at the College of Dentistry, Jazan University. Adv Med EducPract. 2021;12:11-28. doi: 10.2147/AMEP.S287741. PMID: 33469403; PMCID: PMC7810588.

20. Yoo D, Kim D. The relationship between students' perception of the educational environment and their subjective happiness. BMC Medical Education. 2019; 19:409.
https://doi.org/10.1186/s12909-019-1851-0 (Accessed on 25th July, 2022).

21. Nahar N, Talukder MHK, Khan MTH, Mohammad S, Nargis T. Students' Perception of Educational Environment of Medical Colleges in Bangladesh. BSMMU J. 2010; 3(2): 97-102.

22. Ellawala A, Marasinghe RB. Measuring the educational environment in a Sri Lankan medical school following curricular revision. BMC Medical Education. 2021; 21: 187.
doi: https://doi.org/10.1186/s12909-021-02625-8.

23. Kaur M, Sidhu TK, Mahajan R, Kaur P. Evaluation of the institutional educational environment by using the dundee ready educational environment measure. Int J App Basic Med Res. 2021; 11:85-89.

24. Naik SM, Singh A. A rapid appraisal of educational environment of an evolving medical school in northern India. Int J Med Sci Public Health. 2017;6:1467 1472.

25. Raza A, Khaliq T. Students DREEM from Pre-Clinical To Clinical Years–A Cross Sectional Analysis from Rehman Medical College, Peshawar. J Ayub Med Coll Abbottabad. 2022; 34(1): 145-153.

26. Melaku L Bulcha G. Evaluation and Comparison of Medical Students Stressors and Coping Strategies among Undergraduate Preclinical and Clinical Year Students Enrolled in Medical School of Arsi University, Southeast Ethiopia. Education Research International- Hindawi. 2021.
doi:10.1155.