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Original Article

Students' Perception of the Educational Environment Using the Dundee Ready Education Environment Measure (DREEM) at TMSS Medical College, Bogura, Bangladesh

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Abstract

Background: The educational environment is a critical determinant of students' learning experiences, academic success, and professional development in medical education.

Objective: To assess students' perception of the educational environment using the Dundee Ready Education Environment Measure (DREEM) questionnaire at TMSS Medical College, Bogura, Bangladesh.

Materials and Methods: A cross-sectional descriptive research with a quantitative approach was conducted among undergraduate medical students and the population was all the medical students (batch 11 to 15) of TMSS medical college (N 722). A convenience sampling method was applied. Data were collected using the validated DREEM questionnaire and analyzed using SPSS version 26. Descriptive statistics were applied to determine overall, domain-wise, and item-wise scores.

Results: A total of 593 students participated giving a response rate of 82%. The highest percentage of the students were in 3rd year 145(25%); and lowest in 5th year 98(16%). The research included 593 participants, consisting of 339 females (57%) and 254 males (43%). Geographically, the majority were from Bangladesh (339, 57%), followed by India (200, 34%), and Nepal (54, 9%). The overall DREEM score was 131/200 (mean 2.63, SD 0.93), and as per DREEM interpretation guidelines, a total score ranging from 101 to 150 indicates that the educational environment is perceived as "more positive than negative" by the students. The highest score was observed among 3rd year students (144/200), while the lowest was among 5th year students (116/200). All domains showed positive perception, though several items indicated areas requiring improvement. Out of 50 items eleven items scored > 3 and identified as the strong areas of Educational Environment. Only two items scored < 2 and identified as problematic areas of the Educational Environment of TMSS medical college. Majority thirty-seven items scored within 2-3 indicate areas need to improve further with targeted intervention.

Conclusion: Although the educational environment is perceived positively by the students, targeted improvements are needed, particularly in student support systems and clinical learning environment.

Keywords: Perception, Medical students, Educational environment, Dundee Ready Education Environment Measure (DREEM).

Introduction

The educational environment is considered one of the most important components of contemporary medical education because it directly influences students' learning experiences, academic achievement, professional development, and psychological

well-being.^{1,2} The concept of educational environment extends beyond physical infrastructure and teaching facilities and includes the overall academic atmosphere, interpersonal relationships, institutional culture, teaching methodologies, and support systems

that collectively shape students' educational experiences.³ A progressive educational environment helps motivation, critical thinking, self-directed learning, and skilled growth, whereas a hostile environment may contribute to stress, displeasure, exhaustion, and poor academic performance.^{4,5}

Over the years, medical education has experienced considerable transformation from traditional teacher-centered approaches toward competency-based, student-centered, and outcome-oriented learning models.^{6,7} In this changing educational landscape, continuous assessment of the education environment has become increasingly important to safeguard the effectiveness and quality of medical training. Students' perceptions of the educational environment are recognized as valuable indicators of institutional strengths and weaknesses and could provide significant feedback for curriculum development and educational reform. Many studies have revealed considerable associations between educational environment, academic success, student satisfaction, and emotional health among medical students.^{7,8}

Among the existing tools, the Dundee Ready Education Environment Measure (DREEM) has arisen as one of the most widely used and internationally validated instruments for assessing the educational environment in medical and health professional institutions. Developed by Roff et al⁹, and later further described by McAleer and Roff,¹⁰ the DREEM tool consists of 50 items spread across five domains: students' perceptions of learning (SPoL), students' perceptions of teachers (SPoT), students' academic self-perception (SASP), students' perceptions of atmosphere (SPoA), and students' social self-perception (SSSP).^{9,10} Because of its universal applicability and cultural adaptability, the DREEM questionnaire has been extensively used in medical schools across different countries, allowing comparisons between institutions, curricula, and educational systems.¹¹⁻²⁰

Studies conducted in various countries have reported considerable variation in DREEM scores, reflecting

differences in curriculum structure, teaching strategies, institutional support systems, and sociocultural contexts.¹²⁻²⁰ Several studies have consistently demonstrated that students' perceptions tend to decline during the senior clinical years of medical education because of increased academic pressure, clinical workload, stress, and exposure to demanding healthcare environments.¹⁶⁻¹⁹ Similar concerns have also been reported in South Asian medical institutions, where traditional teaching methods and examination-oriented learning continue to influence the educational process.¹⁸⁻²⁰

In Bangladesh, medical education has grown rapidly over recent years, mainly in the private sector. But the methodical assessment of the educational environment remains quite limited, especially in private medical colleges.^{19,21,22} Assessment of the educational environment is vital to confirm quality medical education and to produce capable, ethical, and sympathetic healthcare professionals capable of meeting national healthcare demands. Despite being a well-established private medical institution, TMSS Medical College, Bogura, has not previously undergone a comprehensive evaluation of its educational environment using a standardized international instrument such as DREEM. Therefore, assessing students' perceptions may provide valuable baseline information for identifying institutional strengths and weaknesses and for guiding future educational improvements and policy development.

Objective of the Research

The present research was conducted to assess students' perception of the educational environment using the Dundee Ready Education Environment Measure (DREEM) questionnaire at TMSS Medical College, Bogura, Bangladesh, and to provide baseline data for future quality improvement initiatives.

Materials and Methods

This cross-sectional descriptive research with a quantitative approach was conducted at TMSS Medical College, Bogura, Bangladesh, to assess students' perceptions of the educational environment.

The research was carried out over a period of twelve months among undergraduate medical students from first to fifth academic years.

Research Population and Sampling

The research population were all undergraduate medical students (session 2018-19, 2019-20, 2020-21, 2021-22 and 2022-23) and they represented first to fifth academic years, with a total student population of 722. Efforts were made to include all available students to obtain a comprehensive representation of students' perceptions regarding the educational environment.

The minimum required sample size was calculated using the single population mean formula based on the standard deviation reported in previous DREEM research conducted by Arzuman et al.¹⁹

Considering a 10% non-response rate, the minimum required sample size was estimated to be 227. However, to increase representativeness and reliability of the findings, all available students of the selected batches were invited to participate in the research. Therefore, a convenience sampling approach was adopted.

Data Collection Procedure

Data were collected in classroom settings immediately after lecture sessions. Prior to distribution of questionnaire, students were informed about the objectives and procedures of the research. They were assured about their voluntary participation and that all responses would remain anonymous and confidential. Certain words in the questionnaire, such as "authoritarian" and "ridicule," were explained to ensure clarity and accurate understanding.

The questionnaires were collected immediately after completion to minimize data loss. The average time required to complete the questionnaire was around 15–20 minutes. Students who were present during the data collection sessions and consented to participate were included in the research, whereas students who were absent or submitted incomplete questionnaires were excluded from the final analysis.

Research Instrument

Students' perceptions of the educational environment were assessed using the English version of the Dundee Ready Education Environment Measure (DREEM), a globally validated instrument widely used in medical and health professional education. The DREEM questionnaire was developed by Roff et al.⁹ and later further described by McAleer and Roff.¹⁰

The questionnaire consists of 50 items gives a global score of 200 covering five domains of the educational environment: Students' Perceptions of Learning (SPoL), Students' Perceptions of Teachers (SPoT), Students' Academic Self-Perception (SASP), Students' Perceptions of Atmosphere (SPoA) and Students' Social Self-Perception (SSSP). Each item is scored 0–4 on a 5-point Likert scale (4 -strongly agree, 3 -agree, 2-unsure, 1- disagree, and 0-strongly disagree): higher score indicates an agreement with the item whereas there are nine negatively worded items were reverse scored and higher score in negative items indicate disagreement with the item (4 -strongly disagree, 3 - disagree, 2-unsure, 1- agree, and 0-strongly agree) (Items 4, 8, 9, 17, 25, 35, 39, 48, and 50). The guidelines for inferring the overall DREEM score are 0–50 very poor; 51–100 many problems; 101–150 more positive than negative; and 151 - 200 excellent. Higher scores indicate a more positive perception of the educational environment. Demographic variables including age, gender, academic year, and country of origin were included in the first section of the questionnaire. DREEM individual item interpretation guideline as per Arzuman et al.¹⁹

Mean score	Interpretation
≥ 3	Positive
2-3	Could be enhanced or improved
< 2	Problematic area

Data Analysis

The Statistical Package for Social Sciences (SPSS V 26) was used to analyse the data. All collected questionnaires were cleaned and coded by given a number and data was entered according to Likert Scale

score from 0 to 4 for each item. The scoring was reverse from 4 to 0 for negative items. The missing data was coded as 999. Descriptive statistical analyses, including frequencies, percentages, means, and standard deviations, were calculated for demographic variables, overall DREEM scores, domain-wise scores, and individual item scores. The overall and domain scores were interpreted according to established DREEM interpretation guidelines.

Results

The total number of respondents were N 722 and 593 respondents responded to the questionnaire, resulting in a response rate of 82%, which is considered satisfactory for survey-based educational research and reflects a high level of student participation. Figure 1 illustrates the distribution of the study participants according to year of study, along with the corresponding normal distribution curve. The histogram demonstrates that the collected data followed an approximately normal distribution, with

no noticeable skewness or severe deviation from symmetry. The mean year of study was 2.91 ± 1.354 , indicating that the participants were predominantly distributed around the third academic year, with moderate variability across the different academic years. The standard deviation of 1.354 reflects an acceptable dispersion of observations around the mean.

Figure 1: Distribution of Data

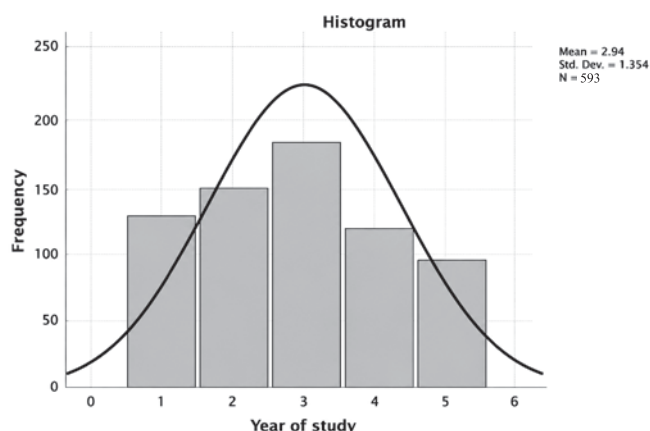


Table I: Profile of the Respondents (n = 593)

Variables	Total number (N)	Number of student responded (%)
Session 2022- 23 (batch 15)	1st year (150)	116 (20)
Session 2021-22 (batch 14)	2nd year (150)	125 (21)
Session 2020-21 (batch 13)	3rd year (151)	145(25)
Session 2019- 20 (batch 12)	4th year (159)	109(18)
Session 2018 -19 (batch 11)	5th year (112)	98 (16)
Gender	Male	254(43)
	Female	339 (57)
Nationality	Bangladesh	339(57)
	India	200 (34)
	Nepal	54 (9)

The highest percentage of respondents were from 3rd academic year (25%), followed by the 2nd year (21%), 1st year (20%), 4th year (18%), and 5th year (16%). Female students were the majority (57%), whereas male students were 43% of the research population.

As of nationality, the majority of respondents were from Bangladesh (57%), followed by India (34%) and Nepal (9%). This distribution reveals the diverse and multicultural student population of TMSS Medical College.

Table II: Perceived DREEM Global mean score of TMC (n = 593)

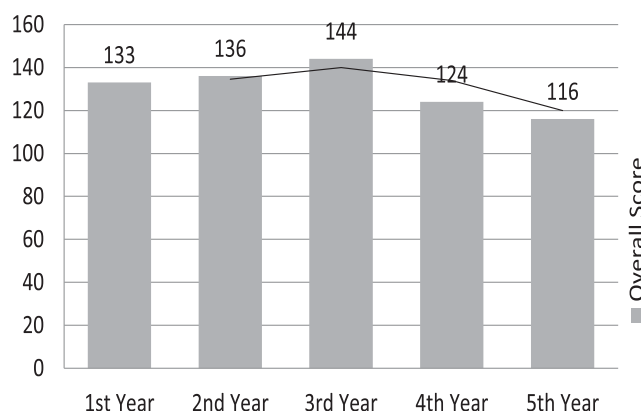
Total DREEM Score	Overall score (mean)	Standard Deviation (SD)
200	131 (2.63)	± 0.933

The overall Dundee Ready Educational Environment Measure (DREEM) score was 131 out of a maximum possible score of 200, with a mean of 2.63 and a SD of 0.933 (Table II). According to the DREEM interpretation guidelines, a total score ranging from 101 to 150 indicates that the educational environment is perceived as “more positive than negative.”

Therefore, the findings of the present research suggest that the students of TMSS Medical College generally had a favorable perception of their educational environment.

The year-wise comparison of overall DREEM scores showed (Figure 2) noticeable variations among

students across different academic years. Third-year students reported the highest perception score (144/200), indicating a more positive perception whereas fifth-year students demonstrated the lowest score (116/200), suggesting relatively less satisfaction of the educational environment.

Overall perception score as per year (total score 200)**Figure 2: Perceived Global mean score of DREEM as per year (n = 593)****Table III: Domain wise analysis of the DREEM (n = 593)**

Domains	Obtained score	Mean	Standard Deviation
1 : Students' Perceptions of Learning (SPoL 48)	30	2.50	.824
2: Students' Perceptions of Teachers (SPoT 44)	30	2.64	.912
3: Students' Academic Self- Perceptions (SASP 32)	22	2.80	.882
4: Students' Perceptions of Atmosphere (SPoA 48)	32	2.70	.972
5: Students' Social Self- Perceptions (SSSP 28)	17	2.44	1.078
Total obtained Score	131	2.62	.933

The DREEM questionnaire consists of five domains evaluating different aspects of the educational environment. The highest mean score was observed in the domain of Students' Academic Self-Perception (mean 2.80), indicating that students felt relatively confident regarding their academic competence and professional preparation. This was followed by Students' Perception of Learning (mean 2.50) and Students' Perception of Atmosphere (mean 2.70), reflecting positive views regarding teaching-learning activities and institutional atmosphere.

The domain Students' Perception of Teachers (mean 2.64), suggesting that students mostly considered their teachers knowledgeable and supportive, although certain areas required improvement. The lowest mean score was found in Students' Social Self-Perception (mean 2.44), indicating comparatively shakier perceptions regarding social support, stress management, and social well-being. Collectively, all domains mean score >2, indicating that students held an overall favorable perception in all domains of the educational environment at TMSS Medical College.

Table IV: Individual item analysis as per Domain of DREEM (n=593)

No	Items	Mean	Standard Deviation (SD)
Domain 1: Students' Perception of Learning (SPoL - score 48)			
1	I am encouraged to participate during teaching sessions	3.40	.669
7	The teaching is often stimulating	2.45	.801
13	The teaching is student centred	2.40	.887
16	The teaching helps to develop my competence	2.30	.857
20	The teaching is well focused	3.15	.760
22	The teaching helps to develop my confidence	2.25	.921
24	The teaching time is put to good use	3.00	.754
25	The teaching over emphasizes factual learning (*negative)	1.47	.837
38	I am clear about the learning objectives of the course	3.06	.775
44	The teaching encourages me to be an active learner	2.57	.888
47	Long term learning is emphasized over short term learning	2.20	.931
48	The teaching is too teacher centered (*negative)	1.75	.824
Total Mean Score		30 /48 mean 2.50	
Domain 2: Students' Perception of Teachers (SPoT- score 44)			
2	The teachers are knowledgeable	3.54	.597
6	The teachers adopt a patient centered approach to consulting	3.05	.766
8	The teachers ridicule the students (*negative)	2.28	1.060
9	The teachers are authoritarian (*negative)	2.69	.962
18	The teachers have good communication skills	3.11	.833
29	The teachers are good at providing feedback to students	2.97	.867
32	The teachers provide constructive criticism here	2.18	1.041
37	The teachers give clear examples	2.22	1.085
39	The teachers get angry in teaching (*negative)	2.38	1.214
40	The teachers are well-prepared for their teaching sessions	3.20	.753
50	The students irritate the teachers (*negative)	2.00	.912
Total Mean Score		30/44 mean 2.64	
Domain 3: Students' Academic Self-Perception (SASP- score 32)			
5	Learning strategies which worked for me before continue to work for me now	2.51	.921

No	Items	Mean	Standard Deviation (SD)
10	I am confident about my passing this year	3.26	.757
21	I feel I am being well prepared for my profession	2.96	.855
26	Last year work has been a good preparation for this year work	2.83	.828
27	I am able to memorize all I need	2.42	1.023
31	I have learnt a lot about empathy in my profession	2.92	.892
41	My problem solving skills are being well developed here	2.75	.974
45	Much of what I have to learn seems relevant to a career in healthcare	2.92	.790
Total Mean Score		22/32 Mean 2.80	SD .882
Domain 4: Students' Perception of Atmosphere (SPoA- score 48)			
11	The atmosphere is relaxed during ward teaching	2.55	1.073
12	This college is well timetabled	3.11	1.014
17	Poor management is a problem in this college (*negative)	2.13	1.240
23	The atmosphere is relaxed during lectures	2.78	1.039
30	There are opportunities for me to develop my interpersonal skills	2.48	1.193
33	I feel comfortable in teaching sessions socially	3.00	.785
34	The atmosphere is relaxed during lecture and tutorials	2.82	.976
35	I find the experience disappointing (*negative)	2.41	1.067
36	I am able to concentrate well	2.75	.879
42	The enjoyment outweighs the stress of the course	2.28	1.180
43	The atmosphere motivates me as a learner	2.76	.982
49	I feel able to ask the questions I want	2.88	1.003
Total Mean Score		32/48 Mean 2.70	SD .972
Domain 5 : Students' Social Self-Perception (SSSP- score 28)			
3	There is a good support system for students who get stressed	2.42	1.158
4	I am too tired to enjoy the course (*negative)	2.25	1.198
14	I am rarely bored in this course	2.08	1.140
15	I have good peers in this course	2.90	.831
19	My spiritual and social life is good	2.83	.994
28	I seldom feel lonely	2.00	1.315
46	My accommodation is pleasant	2.65	1.073
Total Mean Score		17/28 mean2.44	SD .933

Detailed item-wise analysis was conducted to identify the strengths and weaknesses of the educational environment. Among the 50 DREEM items, eleven items achieved a mean score >3 , indicating strong areas within the educational environment. These included students being encouraged to participate during teaching sessions, teachers being knowledgeable, good communication skills of teachers, well-focused teaching sessions, and effective academic timetabling.

On the other hand, two items scored < 2 , indicating problematic areas that require attention. These included excessive emphasis on factual learning and teacher-centered teaching methods,

The majority of items (37 out of 50) scored between 2 and 3, indicating aspects of the educational environment that could be improved further to enhance the overall quality of medical education at TMSS Medical College

Table V: Items Scored > 3 (Strong Areas of the Educational Environment)

No	Items	Mean ≥ 3	Standard Deviation
1	I am encouraged to participate during teaching sessions	3.40	.669
20	The teaching is well focused	3.15	.760
24	The teaching time is put to good use	3.00	.754
38	I am clear about the learning objectives of the course	3.06	.775
2	The teachers are knowledgeable	3.54	.597
6	The teachers adopt a patient centred approach to consulting	3.05	.766
18	The teachers have good communication skills	3.11	.833
40	The teachers are well-prepared for their teaching sessions	3.20	.753
10	I am confident about my passing this year	3.26	.757
12	This college is well timetabled	3.11	1.014
33	I feel comfortable in teaching sessions socially	3.00	.785

Eleven items scored >3 and were identified as strong areas of the educational environment at TMSS Medical College. These findings specify that students

particularly valued teacher competence, communication skills, student participation in teaching sessions, and academic organization within the institution.

Table VI: Items scored < 2 (Problematic areas of the Educational Environment)

No	Items	Mean	Standard Deviation
25	The teaching over emphasizes factual learning(*negative)	1.47	.837
48	The teaching is too teacher centered (*negative)	1.75	.824

Two items are low scored indicate weaknesses within the educational environment. As per DREEM guidelines, these areas should be listed for enhancement through the implementation of

student-centered teaching approaches, decrease excessive factual learning, and development of teacher–student interactions to foster a more reassuring and effective educational environment

Discussion

This research provides a complete assessment of the educational environment at TMSS Medical College using the Dundee Ready Education Environment Measure (DREEM) tool. The overall DREEM score of 131/200 specifies that students perceived the educational environment as “more positive than negative” according to DREEM interpretation guidelines. Similar findings have been reported in studies conducted in Bangladesh, Sri Lanka, India, and Malaysia, where overall DREEM scores generally ranged between 101 and 150, indicating satisfactory but improvable educational environments.^{13-20,23-27}

The overall DREEM score observed in the present research was comparable to findings from Sri Lanka reported by Jiffry et al., where the mean score was 108/200, and from Kasturba Medical College, India, where Mayya and Roff reported a score of 107/200.^{13,25} However, the score in the present research was slightly lower than scores reported from institutions with more integrated and student-centered curricula, such as Monash University, Australia, and Dundee Medical School, where comparatively higher perceptions of the educational environment were observed.^{15,16} These differences may be related to variations in curriculum structure, teaching methodologies, faculty development practices, academic support systems, and availability of student-centered learning opportunities.

In Bangladesh, Arzuman et al.¹⁹ reported a reasonably positive perception of the educational environment among medical students at Universiti Sains Malaysia using the DREEM questionnaire, while Nahar et al.²¹ identified moderate satisfaction levels among Bangladeshi medical students. The present research findings are largely consistent with these interpretations, suggesting that although the educational environment at TMSS Medical College is generally favorable, there remains considerable scope for improvement, particularly in the areas of student support and active learning approaches.

One of the important findings of this research was the difference in DREEM scores across academic years. Third-year students demonstrated the highest scores,

whereas fifth-year students reported the lowest scores. Similar declines in perception during the clinical years have been documented in previous studies.^{16,22,26} Increased academic workloads, clinical responsibilities, examination pressure, and stress associated with patient care may contribute to lower perceptions among senior students. In addition, exposure to the hidden curriculum and stressful clinical environments may negatively affect students' motivation and professional satisfaction.^{4,17}

Domain-wise analysis showed relatively favorable perceptions regarding teachers' knowledge, preparedness, and communication skills. These findings are comparable to studies conducted in Saudi Arabia and India, where students positively assessed faculty competence and teaching commitment.^{25,27,28} However, concerns regarding authoritarian attitudes and limited feedback mechanisms were also identified in the present research, similar to findings reported in several South Asian medical institutions.^{13,25} These findings highlight the continuing influence of traditional teacher-centered educational approaches within medical education systems in developing countries.

Compared to other domain, the lower score in the Students' Social Self-Perception (SSSP) is an important concern. Jamaiah²³ and Sohail²⁹, also identified stress, fatigue, and psychological burden as major challenges among clinical year medical students. Medical education is naturally demanding, and inadequate emotional and institutional support may contribute to burnout, anxiety, and reduced academic fulfilment. The findings of the present research therefore emphasize the need for stronger student counseling services, mentorship programs, stress management initiatives, and supportive learning environments.

Item-wise analysis recognized problematic areas related to disproportionate factual learning and teacher-centered teaching. Similar findings have been reported in studies from India, Sri Lanka, and Saudi Arabia, where students expressed concerns about memorization-based learning and limited active

participation.^{13,27-29} Modern medical education highlights competency-based, learner-centered approaches that promote critical thinking, problem-solving skills, and self-directed learning. Therefore, curriculum refinement and faculty development programs focusing on interactive teaching approaches and formative feedback may further improve the educational environment at TMSS Medical College.

Overall, the research findings indicate that TMSS Medical College has established a reasonably supportive educational environment comparable to many other medical institutions within South Asia. However, targeted interventions are necessary to enhance the clinical learning environment, strengthen student support systems, and promote more student-centered educational methods to achieve a higher-quality educational atmosphere.

Conclusion

The research has given a full assessment of the educational environment at TMSS Medical College. Strengths were identified in areas related to teaching quality, teacher preparedness, student participation, and academic organization.

Yet, concerns remain regarding excessive factual learning, teacher-centered approaches, stress management, social support systems and low perception scores among senior students.

These issues indicate the need for targeted interventions during the clinical years of medical education, attention to student support systems and stress management,

Continuous monitoring and evidence-based educational reforms are essential to optimize the educational environment and enhance the quality of undergraduate medical education to ensure competent, confident, and well-supported future medical professionals for the country.

Future Directions

The findings provide baseline information for future research and institutional improvement. Future studies

may adopt longitudinal and qualitative approaches for better understanding in students' perceptions and experiences over time. Comparative studies involving multiple medical colleges may help to identify wider educational trends and best practices in Bangladesh. The findings may also guide faculty development program, curriculum improvement, and strengthening of student support services. Regular

Ethical Considerations

Ethical values were strictly upheld throughout the research process. Permission was taken from the relevant institutional authority of TMSS Medical College. Participation in the research was entirely voluntary, and all students were informed about the objectives, procedures, and significance of the research. Confidentiality and anonymity of the participants were ensured at every stage of the research, and no identifying information was collected. The responses were used only for academic and research purposes. Students were also assured that their participation or non-participation would not affect their academic standing. Completion and submission of the questionnaire were considered as implied consent to participate in the research.

Limitations

This research has some limitations that should be considered while interpreting the findings. As it was conducted in only one private medical college, the results could not be generalizable to other institutions, particularly public medical colleges. It also relied on self-reported data, which could be influenced by response bias and individual perceptions. In addition, the cross-sectional design reflects perceptions at a single point in time and cannot determine causal relationships or changes over time. Although the DREEM questionnaire provides a complete quantitative assessment, qualitative methods could further explore students' experiences in greater depth.

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Conflict of Interest

The authors confirm that there is no conflict of interest among the authors.

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