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# Educational Environment and Learning Motivation among Undergraduate Health Professions Students in Hilly India

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# Abstract

**Background:** The quality of the educational environment is a critical determinant of students' motivation, learning behaviours, and academic success, particularly in health sciences where training is intensive and outcomes directly impact future patient care. Despite its importance, limited evidence exists regarding the relationship between perceived educational environment and motivational learning strategies among undergraduate health sciences students in India.

**Methods:** A quantitative descriptive correlational study was conducted among 264 undergraduates enrolled in medicine, nursing, and allied health sciences at a premier institute in Rishikesh, India. Participants were selected using proportionate stratified random sampling. Data were collected in October 2024 using the Dundee Ready Education Environment Measure (DREEM) and the Motivational Strategies for Learning Questionnaire (MSLQ). Statistical analysis was performed using SPSS version 25.

**Results:** The mean age of participants was 21.33 ± 1.7 years, and 57% were female. The educational environment was perceived as moderately positive (median DREEM score: 121; IQR: 100–135), while motivational learning strategies were high (median MSLQ score: 203; IQR: 180–223). Motivation differed significantly across disciplines ($p < 0.001$), with nursing and allied health students reporting higher levels than medical students. A significant moderate positive correlation was observed between perceived educational environment and motivational learning strategies ($\rho = 0.489$, $p < 0.01$). Residence, living arrangements, discipline, academic performance, and self-study habits were significantly associated with both variables.

**Conclusion:** A more positive educational environment was associated with higher motivation among undergraduate health sciences students. Strengthening supportive learning environments may enhance student engagement, motivation, and educational outcomes across health professions programs.*Bottom of Form*


# Introduction

Health sciences education worldwide has undergone substantial transformation in recent decades, with a growing emphasis on student-centred learning, competency-based curricula, and quality assurance frameworks. Within this evolving paradigm, increasing attention has been directed toward understanding students' perceptions of their educational environment. The educational environment encompasses physical, social, psychological, and academic dimensions, all of which play a critical role in shaping students' learning experiences, behaviours, motivation, and academic success. A supportive learning environment enhances engagement, fosters motivation, and promotes better academic outcomes, whereas a negative environment may hinder learning and reduce student performance.

Evidence from global studies highlights a strong association between the educational environment and student outcomes such as engagement, satisfaction, and academic achievement. A cross-sectional study in the United Arab Emirates reported that the educational environment significantly influenced emotional (48%), behavioural (28%), and cognitive engagement (39%), with engagement mediating academic achievement(1). Similarly, studies in India have demonstrated that underperforming students perceive the learning environment less favourably than high achievers, underscoring the importance of aligning educational strategies with student perceptions to improve outcomes(2).The educational environment also influences professional values, attitudes, and career preferences, making it a key consideration in curriculum development and evaluation(3).

Regional studies, including those conducted in Uttarakhand, India, further emphasize that supportive teaching behaviours, a positive learning atmosphere, and structured academic engagement contribute significantly to student achievement (4). A collaborative and student-friendly environment enhances confidence, satisfaction, and readiness for professional practice, whereas stressful or authoritarian settings may negatively affect learning engagement.

In addition to environmental factors, motivation and learning strategies are critical determinants of academic success in health sciences education. Students who demonstrate higher engagement and effective learning strategies tend to exhibit better problem-solving abilities, resilience, and professional competence(5).Effective study habits have been positively associated with academic performance, as shown in studies among Indian students(6). Furthermore, student-centred and constructivist learning approaches enhance intrinsic and extrinsic motivation and support the development of self-regulated learning strategies(1). Motivation is particularly important in health sciences programmes, where academic demands and clinical responsibilities require sustained effort and adaptability(7).

With the implementation of competency-based education by regulatory bodies such as the National Medical Commission and Indian Nursing Council, there is an increasing need to evaluate the educational environment from the students' perspective. Incorporating student feedback can inform improvements in teaching methodologies, curriculum design, and institutional support systems. Self-regulated learning has been strongly linked to academic achievement, self-efficacy, and reduced anxiety, highlighting its importance in professional education(8, 9). Moreover, a positive educational environment contributes to enhanced motivation, critical thinking, and meaningful learning experiences(10).

Studies have also reported variations in students' perceptions across different academic phases and disciplines. For instance, preclinical students have been found to report more positive perceptions compared to those in clinical phases, possibly due to increasing academic and clinical demands(11). Additionally, research across various countries indicates that motivational beliefs and self-regulated learning strategies are significantly associated with academic performance among health sciences students(5).

Despite substantial global evidence, there is limited research in the Indian context comparing perceptions of the educational environment and motivational learning strategies across different undergraduate health sciences disciplines. Understanding these differences is essential for identifying discipline-specific needs and developing targeted interventions to enhance student motivation, engagement, and academic performance. Therefore, this study aims to assess the relationship between perception of the educational environment and motivational learning strategies among undergraduate students of health sciences.

# Methods

A cross-sectional descriptive study was conducted at the Institute of National Importance in Uttarakhand, India, in October 2024, to determine the relationship between perceptions of the educational environment and motivational learning strategies. Ethical Permission was obtained from the Institutional Ethics Committee (IEC) to carry out the study with Ref No. AIIMS/IEC/24/134. Formal written permission was also obtained from the Dean of Academics, the Dean of Allied Health Sciences, and the Principal of the College of Nursing. Every study

participant was assured of anonymity and confidentiality of the information during the study & informed about their freedom of choice.

**Sample Size and Sampling**

In accordance with the STROBE (2007) guidelines, a total of 1,028 students were enrolled in the institute, of which 264 participants meeting the inclusion and exclusion criteria were selected using proportionate stratified random sampling. The sample size was calculated using a standard deviation-based formula. Assuming a 95% confidence level (Z = 1.96) and a standard deviation of 0.58 derived from a previous study(12), with a precision of 0.07 (estimated from the standard error of the mean), the final sample size was calculated as 264 participants. Participants were stratified by course, with 129 from MBBS, 95 from Nursing, and 40 from Allied Health Sciences.

**Sampling Criteria**

All undergraduate students from MBBS (I–IV year), B.Sc. (H) Nursing, and Allied Health Sciences who were **18 years or older,** able to **read and write English,** and **willing to participate** were included in the study. Students who were **unwilling or uncooperative, absent during data collection,** or had a **history of diagnosed physical or psychiatric illness** were excluded.

**Measurements**

Data collection was done using the selected tools during the month of October 2024 at the Institute of National Importance in Rishikesh, Uttarakhand. Data collection was conducted using a paper-and-pencil method, ensuring clarity and comprehension among participants. The research tool consisted of three parts, each targeting a specific aspect of the study.

**Socio-demographic Data Sheet:**

Collected information on personal and academic variables, including age, gender, religion, residence, family type, parental occupation, education, and monthly income. Socioeconomic status was classified using the modified Kuppuswamy scale. Academic variables included program, year of study, percentage of marks, medium of instruction, self-study hours, extracurricular participation, and motivation for choosing health sciences.

**Dundee Ready Education Environment Measure (DREEM) Scale (McAleer & Roff, 2001):**

The DREEM scale evaluates students' perceptions of their educational environment. It contains 50 items scored on a 5-point Likert scale (0–4), assessing five domains: students' perceptions of learning, teachers, academic self-perception, atmosphere, and social self-perception. The total score (0–200) reflects the overall quality of the educational environment, with higher scores indicating more positive perceptions. The central elements include views on learning, opinions about teachers, self-assessments of academic abilities, perceptions of the environment, and social self-assessments, which are calculated by aggregating the scores and demonstrate strong reliability (Cronbach's alpha = 0.94)(13).

**Motivated Strategies for Learning Questionnaire (MSLQ) (Pintrich et al., 1991):**

The MSLQ assesses motivational beliefs and self-regulated learning strategies. It includes 44 items rated on a 7-point scale, covering components such as self-efficacy, intrinsic value, test anxiety, cognitive strategy use, and self-regulation. It has good reliability with a Cronbach's alpha value of 0.70(14).

**Data Analysis**

Data were analyzed using IBM SPSS Statistics (Version 27). Descriptive statistics included frequencies and percentages for categorical variables, and median with interquartile range (IQR) for continuous variables. Normality was assessed using the Shapiro-Wilk test, which indicated significant deviations ($p < 0.05$); hence, non-parametric tests were applied.

## Results

# Baseline Characteristics of Health Sciences Students

Among the 264 participants, most were aged 21–23 years (mean 21.33 ± 1.7), with a female predominance (57.2%). The majority were Hindu, from urban backgrounds, belonged to nuclear families, and resided on campus, providing important contextual factors for interpreting educational environment perceptions and motivation. Socioeconomically, most participants came from educated families engaged in professional or skilled occupations, with nearly half belonging to the upper-middle class as per the Modified Kuppuswamy Scale.

Academically, medical students constituted the largest group, followed by nursing and allied health sciences students. Participants were distributed across all academic years, with the highest proportion in the first year (27.3%), followed by second (26.5%), third (25.4%), and fourth year (20.8%). The mean percentage obtained in the 12th standard was 91.7 ± 23. The majority of participants had studied in private schools (73.1%), while 23.1% and 3.8% were from government and semi-government schools, respectively. Most participants reported English-medium schooling and 2–3 hours of daily self-study. Engagement in extracurricular activities was common. Motivation for choosing health sciences was predominantly driven by career aspirations and personal interest, with only 12% reporting parental influence in choosing the medical stream. (Table 3)

**Perception of Educational Environment and Motivational Learning Strategies among Students of Health Sciences.**

Table 1 presents the comparison of median scores of the Dundee Ready Education Environment Measure (DREEM) and the Motivated Strategies for Learning Questionnaire (MSLQ) among MBBS, nursing, and allied health sciences students. Overall, participants demonstrated a positive perception of the educational environment and a good level of learning motivation. However, variations in median scores were observed across the three groups, indicating differences in perceived learning environments and motivational strategies.

The overall DREEM score (median = 121.0, IQR = 100–135) indicates a favourable environment. Students reported positive views on learning, teaching, teachers, and academic self-confidence, along with a supportive atmosphere. However, social self-perception was lower, indicating issues with peer interaction and emotional support.

For motivation (MSLQ), Nursing and Allied Health Science students had higher scores in self-efficacy, intrinsic value, and learning strategies than MBBS students ($p < 0.001$). Self-regulation was similar across groups, but overall motivation remained higher among Nursing and AHS students. Overall, while the environment is positive, improvements in social support and teacher–student interaction could further enhance student outcomes.

Table 2 presents the correlation between the domains of the educational environment (DREEM) and motivational learning strategies (MSLQ). Most DREEM domains showed positive and statistically significant correlations with motivational learning strategies ($p < 0.01$). The strongest associations were observed between Academic Self-Perception and Overall Motivational Strategies for Learning ($\rho = 0.553$), followed by Cognitive Strategy Use ($\rho = 0.529$) and Overall Self-Regulated Learning Strategies ($\rho = 0.518$). In contrast, Test Anxiety did not show any significant correlation with the DREEM domains ($p > 0.05$). Overall, these findings indicate that students who perceive their educational environment more positively tend to demonstrate higher motivation and better self-regulated learning strategies. Among all domains, academic self-perception had the strongest relationship with motivational learning outcomes, whereas test anxiety appeared unrelated to perceptions of the educational environment.

Table 1
Comparison of DREEM and MLSQ Median Scores among MBBS, Nursing, and Allied Health Science Students (N = 264)

| Variables | | | MBBS | Nursing | AHS | KW Test Value | *p*-Value |
|---|---|---|---|---|---|---|---|
| | | | Median (IQR) | | | | |
| **Domains & Subdomains of DREEM SCALE** | | *Student's Perception of Learning* | 26 (21–31) | 31 (27–34) | 31 (24–35) | 26.304 | 0.0001** |
| | | *Student's Perception of Teachers* | 25 (21–27) | 26 (22–29) | 26 (22–32) | 5.933 | 0.051 |
| | | *Student's Academic Self-Perception* | 20 (16–23) | 23 (21–25) | 22 (19–26) | 25.904 | 0.0001** |
| | | *Student's Perception of Atmosphere* | 28 (21–32) | 31 (26–35) | 31 (26–35) | 16.789 | 0.0001** |
| | | *Student's Social Self-Perception* | 15 (12–17) | 16 (13–19) | 16 (14–19) | 6.791 | 0.034* |
| | | *Overall Educational Environment* | 115 (93–127) | 128 (109–139) | 128 (113–146) | 21.204 | 0.0001** |
| **Domains & Subdomains of MLSQ SCALE** | **Motivational Beliefs** | *Self-Efficacy* | 39 (33–46) | 45 (39–50) | 44 (36–51) | 19.022 | 0.0001** |
| | | *Intrinsic Value* | 41 (33–49) | 47 (43–54) | 48 (36–49) | 18.922 | 0.0001** |
| | | *Test Anxiety* | 17 (13–21) | 15 (12–18) | 18 (15–24) | 18.966 | 0.0001** |
| | | *Overall Motivational Belief* | 96 (84–112) | 108 (93–117) | 108 (88–124) | 16.383 | 0.0001** |
| | **Regulated Learning Strategies** | *Cognitive Strategy Use* | 57 (51–64) | 65 (59–71) | 64 (54–70) | 28.673 | 0.0001** |
| | | *Self-Regulation* | 39 (36–42) | 39 (37–43) | 40 (36–49) | 2.728 | 0.256 |
| | | *Self-Regulated Learning Strategies* | 95 (87–106) | 104 (97–115) | 109 (88–115) | 19.202 | 0.0001** |

**Significant p < 0.01 *p < 0.05

| | | | | | | |
|---|---|---|---|---|---|---|
| | *Overall Motivational Strategies for Learning* | 194 (173–213) | 215 (191–229) | 219 (188–235) | 21.528 | 0.0001** |
| **Significant p < 0.01 *p < 0.05 | | | | | | |

Table 2
Correlation between Domain-wise Scores of DREEM and MSLQ (N = 264)

| Variables | | Domains of Student Perception of Educational Environment "rho(ρ)" &*p* value | | | | | |
|---|---|---|---|---|---|---|---|
| | | *Learning* | *Teachers* | *Academic Self Perception* | *Atmosphere* | *Social Self Perception* | *Total DREEM Score* |
| **Domains of Motivational Learning Strategies** | **Self-efficacy** | 0.354** (0.0001) | 0.215** (0.0001) | 0.430** (0.0001) | 0.350** (0.0001) | 0.320** (0.0001) | 0.386** (0.0001) |
| | **Intrinsic value** | 0.404** (0.0001) | 0.311** (0.0001) | 0.402** (0.0001) | 0.365** (0.0001) | 0.310** (0.0001) | 0.409** (0.0001) |
| | **Test anxiety** | 0.007 (0.909) | 0.114 (0.064) | 0.078 (0.206) | 0.106 (0.087) | 0.053 (0.391) | 0.084 (0.172) |
| | **Overall Motivational belief** | 0.397** (0.0001) | 0.296** (0.0001) | 0.457** (0.0001) | 0.388** (0.0001) | 0.343** (0.0001) | 0.430** (0.0001) |
| | **Cognitive strategy use** | 0.415** (0.0001) | 0.295** (0.0001) | 0.529** (0.0001) | 0.444** (0.0001) | 0.293** (0.0001) | 0.456** (0.0001) |
| | **Self-regulation** | 0.234** (0.0001) | 0.217** (0.0001) | 0.370** (0.0001) | 0.282** (0.0001) | 0.258** (0.0001) | 0.316** (0.0001) |
| | **Overall, self-regulated learning strategies** | 0.396** (0.0001) | 0.299** (0.0001) | 0.518** (0.0001) | 0.426** (0.0001) | 0.308** (0.0001) | 0.449** (0.0001) |
| | **Overall motivational strategies for learning** | 0.448** (0.0001) | 0.292** (0.0001) | 0.553** (0.0001) | 0.442** (0.0001) | 0.374** (0.0001) | 0.489** (0.0001) |

**Significant p < 0.01

The scatter plot (Fig. 1) demonstrates a clear positive relationship between students' perception of the educational environment and their motivational learning strategies. An upward trend is evident, indicating that improved perceptions of the learning environment are associated with increased use of motivational strategies. The data points show moderate clustering around the line of best fit, reflecting a significant moderate positive

correlation (ρ = 0.489, p = 0.0001). This suggests that students who perceive their environment as supportive and engaging are more likely to exhibit higher motivation, better self-regulation, and effective learning behaviours, reinforcing the strong link between educational environment and motivational engagement.

Table 3

*Association of MSLQ and DREEM with Student Characteristics* (N = 264)

| Variables | f (%) | DREEM Median (IQR) | KW Test Value (p-value) | MSLQ Median (IQR) | KW Test Value (p-value) |
|---|---|---|---|---|---|
| **Age(Years)** | | | | | |
| • 18–20 | 85 (32.2) | 115 (95,134) | 5.084 (0.079) | 202 (179,217) | 1.173 (0.556) |
| • 21–23 | 155 (58.7) | 123.5 (103.25,136.75) | | 203 (180.25,223) | |
| • ≥ 24 | 24 (9.1) | 118 (100.5,130) | | 223 (175.5,237.5) | |
| **Gender** | | | | | |
| • Male | 113 (42.8) | 119 (100,135) | 8131 (0.594)# | 200.5 (179,226) | 80.18 (0.473)# |
| • Female | 151 (57.2) | 121 (100,135) | | 205 (181,223) | |
| **Residence** | | | | | |
| • Urban | 175 (66.3) | 117 (96.5,134) | 6.107 (0.004)**# | 202 (176,220) | 6.458 (0.023)*# |
| • Rural | 89 (33.7) | 126.5 (111.25,136) | | 209 (188.25,231.75) | |
| **Living Arrangements** | | | | | |
| • On-campus | 218 (82.6) | 119 (99,134) | 3824.5 (0.007)**# | 202 (178.5,221.5) | 4010.5 (0.022)*# |
| • Off-campus | 46 (17.4) | 129 (113,147) | | 218 (189,234) | |
| **Socioeconomic Status** | | | | | |
| • Upper middle (II) | 129 (48.9) | 123 (100.5,132) | 13.515 (0.004)** | 193 (172,216.5) | 5.854 (0.119) |
| • Lower middle (III) | 72 (27.3) | 128 (114,145.75) | | 212 (189.5,230.5) | |
| • Upper lower (IV) | 43 (16.3) | 116.5 (92.25,133) | | 202.5 (179.25,222) | |
| • Lower (V) | 20 (7.6) | 109.5 (95.25,133.5) | | 204.5 (183.25,219) | |
| **Course** | | | | | |
| • MBBS | 128 (48.5) | 114 (93,126) | 21.249 (0.0001) ** | 194 (172,212) | 21.236 (0.0001) ** |

**Significant $p < 0.01$, *$<p0.05$, #Mann Whitney Test value

| Variables | f (%) | DREEM<br>Median (IQR) | KW Test Value (p-value) | MSLQ<br>Median (IQR) | KW Test Value (p-value) |
|---|---|---|---|---|---|
| **Age(Years)** | | | | | |
| • B.Sc. (H) Nursing | 96 (36.4) | 128 (109,139) | | 215 (191,229) | |
| • Allied Health Sciences | 40 (15.2) | 129 (113,147) | | 219 (188,235) | |
| **12th Grade Percentage** | | | | | |
| • ≤ 60% | 19 (7.2) | 119 (103.5,131) | 2.209 (0.331) | 189 (171,207) | 13.136 (0.001)* |
| • 61–75% | 193 (73.1) | 119 (99.5,134) | | 202 (180,223) | |
| • > 75% | 52 (19.7) | 128 (100,140) | | 215 (191.75,235) | |
| **Self-Study Hours** | | | | | |
| • < 1 hour | 49 (18.6) | 117 (93,128) | 5.079 (0.079) | 187 (170,206) | 11.088 (0.004)* |
| • 2–3 hours | 174 (65.9) | 121 (100.75,137) | | 207 (183,225) | |
| • > 5 hours | 41 (15.5) | 122.5 (106.25,135.75) | | 207.5 (183,227.5) | |
| **Motivation for Choosing Health Science Courses** | | | | | |
| • Career Goals | 116 (43.9) | 121 (104,135) | 9.160 (0.010)* | 205 (181,220) | 16.402 (0.0001)* |
| • Personal Interest | 115 (43.6) | 121 (100.5,144.5) | – | 210 (186.5,229.5) | – |
| • Parental Decision | 33 (12.5) | 104 (90,123.5) | | 177 (165,196) | – |

**Significant $p < 0.01$, *$<p0.05$, #Mann Whitney Test value

Table 3 indicates that educational environment perception and learning motivation were not significantly associated with age or gender. However, residence and living arrangements had a significant influence, with rural and off-campus students reporting more favourable perceptions and higher motivation. Socioeconomic status affected educational environment perception but not motivation. The course of study significantly influenced both outcomes, with Nursing and Allied Health Sciences students scoring higher than MBBS students. Academic performance and self-study hours were associated with motivation but not with environmental perception. Additionally, motivation for choosing the course was significantly related to both variables, with students driven by personal interest demonstrating more positive perceptions and higher motivation than those influenced by external factors such as parental decisions

## Discussion

The majority of participants were aged 21–23 years (mean 21.33 ± 1.7), which aligns with the typical age profile of undergraduate health science students and reflects a stage associated with increased academic engagement and self-regulated learning (15, 16). A higher proportion of female students was observed, consistent with trends in health-related disciplines; however, while some studies report better educational environment perception among females, others suggest minimal gender differences, indicating that institutional factors may be more influential (15, 17).

Most participants were from urban backgrounds (66.3%), which may facilitate better access to academic resources and support systems, although evidence remains mixed regarding its direct influence on educational environment perception(18). A notable finding in this study is the high proportion of students residing on campus (82.6%). On-campus living may facilitate stronger peer interaction, collaborative learning, and social integration, all of which are key components of a supportive educational environment.

# Comparison of Educational Environment and Learning Motivation across Health Disciplines

The present study demonstrates statistically significant differences in students' perceptions of the educational environment and learning motivation across Medical, Nursing, and Allied Health Sciences (AHS) programs, underscoring the influence of disciplinary context on academic experiences. Nursing students reported more favourable perceptions of learning and overall educational environment, whereas AHS students exhibited comparatively higher academic self-confidence and social self-perceptions. These findings align with recent evidence suggesting that supportive pedagogical practices, structured clinical exposure, and closer faculty–student interactions in nursing education contribute to more positive learning environments(19–22)

In contrast, MBBS students demonstrated relatively lower median scores across most DREEM and MLSQ domains, particularly in learning perception and academic self-confidence. This pattern is consistent with studies from Indian and international medical schools, which report higher academic stress, competitive environments, and curriculum intensity as factors negatively influencing medical students' perception of the educational climate(23). The non-significant difference in students' perception of teachers across disciplines suggests a relatively uniform faculty performance or institutional teaching standards, a finding also reported in multicentric DREEM-based studies (23–25).

With respect to motivation (MSLQ), Nursing and AHS students exhibited significantly higher self-efficacy and intrinsic value scores, indicating stronger internal motivation and confidence in learning. These findings corroborate the work of Pintrich(14), who emphasized that self-efficacy and intrinsic motivation are key predictors of academic engagement and performance. Conversely, medical students reported lower motivational beliefs and higher test anxiety compared to nursing students, echoing prior evidence that medical training is associated with increased psychological burden and performance pressure (Farooq et al., n.d.; Khosrozadh et al., 2025; Ngwira et al., 2018; Tavakoli et al., 2020;

Interestingly, no significant difference was observed in self-regulation across groups, suggesting that despite variations in motivation and environment, students may develop comparable self-regulatory skills over time.

This finding is partially supported by studies indicating that self-regulated learning strategies are influenced more by individual traits and institutional learning support systems than by discipline alone (28). Overall, the significant intergroup differences in both DREEM and MLSQ domains highlight the need for discipline-sensitive educational strategies.

## Correlation between Perception of Educational Environment and Motivational Learning Strategies

The present study demonstrates a consistent and statistically significant positive correlation between students' perception of the educational environment (measured by DREEM domains) and motivational learning strategies. Stronger associations were observed with academic self-perception, learning, and atmosphere, particularly in relation to self-efficacy (ρ = 0.430), intrinsic value (ρ = 0.402), and overall motivational strategies (ρ = 0.553). These findings suggest that students who perceive their academic environment as supportive and stimulating are more likely to exhibit higher confidence, internal motivation, and effective learning strategies. In contrast, test anxiety showed no significant correlation, indicating that emotional distress related to assessment may operate independently of environmental perceptions.

These results are consistent with prior research indicating that a positive educational climate enhances motivation and self-regulated learning. For instance, (31) reported that favourable perceptions of the educational environment were significantly associated with higher self-efficacy and intrinsic motivation among health profession students. The stronger correlations observed with academic self-perception in the present study align with contemporary evidence suggesting that students' beliefs about their academic competence play a central role in shaping motivation and engagement.as academic self-perception and atmosphere are key predictors of deep learning approaches and strategic learning behaviors(32–34). Overall, the findings corroborate global and Indian literature that emphasizes the critical role of a conducive educational environment in fostering motivation and effective learning strategies.

## Association of MSLQ and DREEM with Student Characteristics

The present study identified no significant differences across age and gender, suggesting a relatively uniform perception of the educational environment and motivational strategies among students. This finding is consistent with earlier Indian and international studies that reported minimal gender-based differences in DREEM scores(8, 35). However, in contrast, some recent studies have reported gender-based variations in motivation and engagement, indicating that contextual and cultural factors may influence these associations (1).

Significant differences were observed with respect to residence and living arrangements, where rural and off-campus students demonstrated higher DREEM and MSLQ scores. This contrasts with some prior findings suggesting that on-campus environments foster better academic engagement due to structured support systems(4). However, the current findings may reflect greater autonomy and self-regulation among students living off-campus, aligning with self-regulated learning theory (28)and recent evidence highlighting the role of independent learning contexts in enhancing motivation (5).

With regard to socioeconomic status, students from lower middle groups reported relatively higher perceptions of the learning environment. This partially contrasts with earlier studies where higher socioeconomic status

was linked to better academic perceptions(2). The observed variation may indicate adaptive motivation and resilience among students from modest backgrounds, as supported by emerging literature on academic thriving(33).

Significant differences across courses (MBBS, Nursing, and Allied Health Sciences) revealed that Nursing and Allied Health students reported higher DREEM and motivational scores compared to MBBS students. This is consistent with previous studies showing variability in learning environment perceptions across disciplines(19, 32), possibly due to differences in curriculum structure, teaching approaches, and student support systems. Conversely, some Indian studies have reported comparable perceptions across disciplines, indicating institutional influence(23) .

Academic factors such as 12th-grade percentage and self-study hours showed significant associations with motivational strategies but not consistently with DREEM scores. This supports the view that prior academic performance and study habits are more closely linked to motivation than environmental perception(11, 30). Additionally, students engaging in more self-study hours demonstrated higher motivation, aligning with evidence on self-regulated learning and strategic study behaviors(6).

Importantly, motivation for choosing health science courses significantly influenced both educational environment perception and motivational strategies. Students driven by personal interest and career goals reported higher scores compared to those influenced by parental decisions. This finding strongly aligns with contemporary motivation theories, particularly the role of intrinsic motivation in enhancing deep learning and academic success (16, 34). It also supports recent evidence that intrinsic motivation and internalized goals are key predictors of academic engagement and learning strategies.

Overall, the findings both align with and extend existing literature by highlighting the complex interplay between contextual, demographic, and motivational factors in shaping students' perceptions of the educational environment. While traditional factors such as gender and age showed limited influence, variables related to autonomy, academic background, and intrinsic motivation emerged as more critical determinants in this cohort.

This study is limited by its cross-sectional design, single-institution setting, and reliance on self-reported data, which may affect causal interpretation and generalizability. However, being conducted in an institute of national importance with diverse health science students enhances its contextual relevance.

The findings highlight the need for a supportive, student-centred environment, with improved teacher–student interaction, academic support, and social connectedness. In clinical settings, a structured and low-stress environment can aid the application of theory to practice. Future research should use longitudinal and multicentre designs and focus on interventions to strengthen motivation, especially intrinsic motivation and self-regulation, while considering socio-cultural influences.

## Conclusion

This study shows that undergraduate health science students have a **moderately positive view of their educational environment** and **high motivation for learning.** A significant positive correlation between the two highlights the importance of a supportive academic setting. Nursing and allied health students showed higher motivation, indicating the role of curriculum and context. Factors such as residence, living arrangements,

course, academic performance, and self-study habits influenced both perception and motivation, while age and gender had little effect. Overall, improving a **student-centred and supportive learning environment** can further enhance motivation and academic outcomes.

# Declarations

**CRediT Authorship Contribution Statement**

*XBC* contributed to conceptualization, methodology, development of research questions, formal analysis, supervision, and validation, and was responsible for drafting and critically revising the manuscript (writing—review and editing). *GVAM, MK, and DJ* contributed to conceptualization, data curation, supervision, validation, and manuscript preparation (original draft and review). *PG, PP, PN, PR and PY* contributed to literature search, data collection, formal analysis, and drafting of the manuscript. *PG, PC and PK* contributed to data collection as part of their undergraduate group work and are acknowledged for their support. All listed authors read and approved the final manuscript.

**Human Ethics and Consent to Participate Declarations:**

The study was approved by the Institutional Ethics Committee of AIIMS Rishikesh (Ref. No. AIIMS/IEC/24/134). The study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki and all relevant institutional and national guidelines and regulations governing research involving human participants. Written informed consent was obtained from all participants prior to data collection. Participation was voluntary, and participants were informed of their right to withdraw from the study at any time without any consequences. The anonymity and confidentiality of participants were maintained throughout the study, and all data were coded to prevent participant identification.

**Declaration of Competing Interest:** The authors declare that there are no conflicts of interest**.**

**Clinical Trial Number:** Not Applicable.

**Funding:** The authors declare that no funding was received for this study.

**Data Availability**:

The datasets generated and/or analyzed during the current study are not publicly available to protect participant confidentiality and due to institutional policy, but are available from the corresponding author on reasonable request.

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## Figures

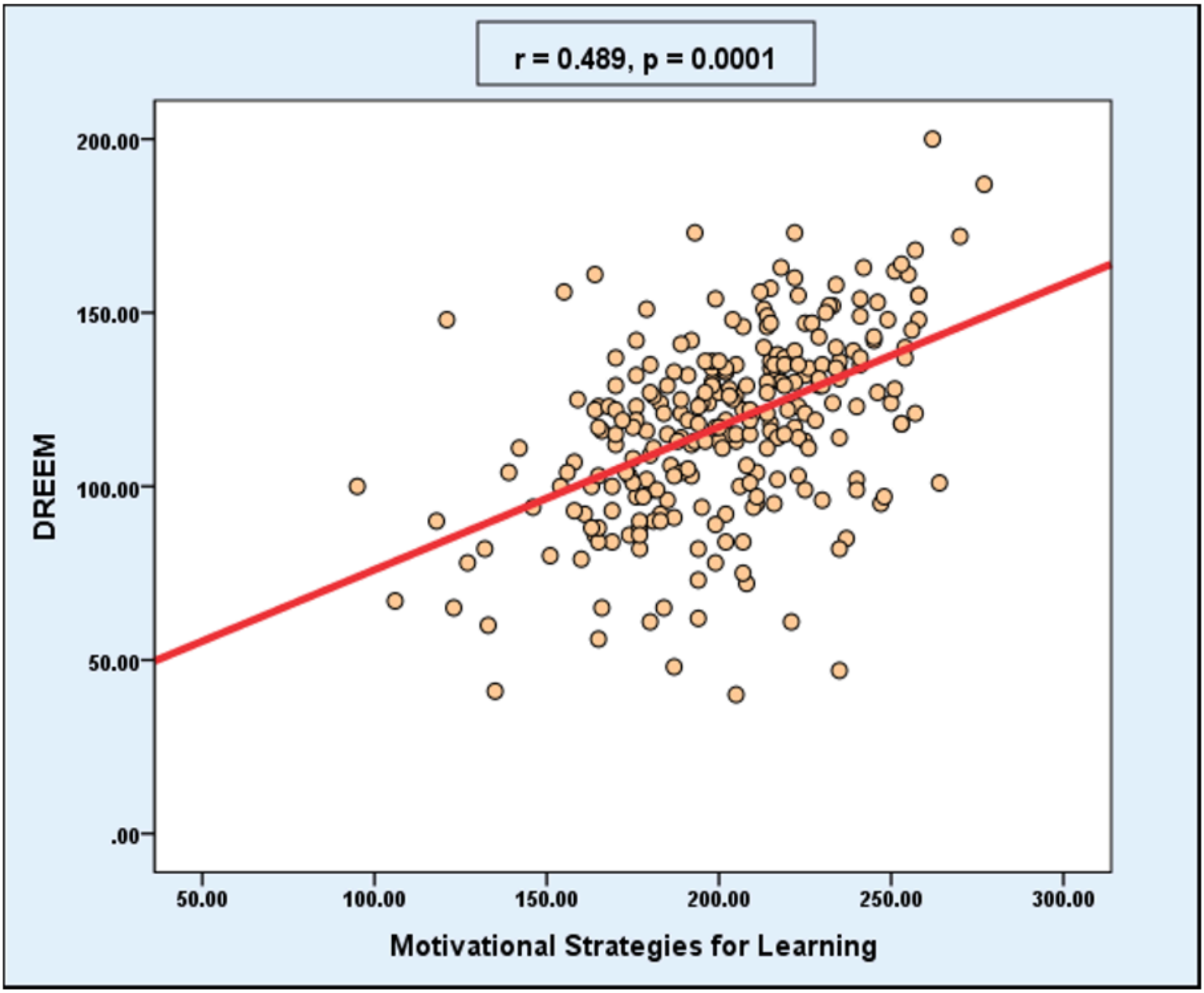



Figure 1

***Correlation Between Motivational Learning Strategies and Educational Environment: A Scatter Diagram Analysis (N=264)***