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# A Mixed-method Study of the Relationship between Students' Interaction and Motivation in Medical Students

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## ABSTRACT

**Objective:** The objective of this study was to explore the factors influencing medical students' learning experiences, with a specific focus on the role of teachers in the relationship between students' interaction and motivation in medical students. **Methods:** A mixed-methods sequential explanatory design was employed. In the quantitative phase, 185 MBBS students from Shifa College of Medicine completed a structured questionnaire assessing factors affecting their learning. Data were collected for the duration of six months, from January 2024 to June 2024 and were analyzed using descriptive statistics. The qualitative phase involved two focus group discussions with volunteer students to explore their perceptions in greater depth. Thematic analysis was used to interpret qualitative data. **Results:** Quantitative results showed that 68.5% of students agreed or strongly agreed that teachers inspired them to learn, while 64% felt burdened by the extensive curriculum. Only 34.5% of students reported that classroom environments were conducive to learning. Emotional and peer support factors scored higher in mean values compared to teacher-related factors. Qualitative findings echoed these results, highlighting the critical role of enthusiastic teachers, the challenges posed by curriculum overload, the negative impact of poor physical facilities, and the importance of peer networks for emotional well-being. **Conclusion:** Teachers play a vital role in motivating medical students; however, effective learning also depends on manageable curricular loads, supportive physical environments, and strong emotional and peer support systems. Addressing these areas collectively can enhance student satisfaction, motivation, and academic performance in medical education settings.

## INTRODUCTION

Medical education has evolved from being teacher-centered and content-heavy to a more student-centered, interactive approach. As future healthcare professionals are expected to be critical thinkers and collaborative problem-solvers, it is essential to understand the factors that influence their learning experience.[1,2] Among these, student interaction with both peers and instructors has emerged as a significant element shaping academic motivation and overall engagement. Despite this, the dynamics between interaction and motivation remain underexplored, especially in the context of medical education, where the intensity of the curriculum often leaves little room for meaningful collaboration.[3]

Globally, there is increasing recognition of how classroom interaction influences motivation. For instance, a survey conducted across medical schools in the United States found that students who engaged in frequent peer discussions and collaborative learning activities were 34% more likely to report higher intrinsic motivation and satisfaction with their studies. Similarly, research from the United Kingdom and Australia indicates that interactive learning environments are positively associated with academic persistence and reduced burnout. [4] These findings imply the importance of interpersonal connections within medical education settings. However, such statistics mostly reflect Western academic structures, leaving a gap in understanding how interaction and motivation intersect in low- and middle-income countries, where medical education systems often differ in teaching styles, resources, and student expectations.[5]

In many countries, particularly in South Asia, the traditional lecture-based system still dominates, often minimizing opportunities for students to interact freely. Yet, anecdotal evidence suggests that even in these settings, students crave meaningful interaction as a source of support, encouragement, and motivation. This raises important questions: How do medical students

perceive interaction in their academic environment? Does it genuinely enhance their motivation, or are other factors more influential? Moreover, are these patterns consistent across different years of study or genders?[6,7,8]

This study aims to explore these questions through a mixed-methods design, combining the breadth of quantitative data with the depth of qualitative insights. By examining how students' interactions both formal and informal relate to their motivation, this research hopes to generate a more nuanced understanding of how educational environments can be tailored to meet the psychological and academic needs of future healthcare providers. The findings could offer evidence-based recommendations for curriculum designers, educators, and policy-makers striving to enhance student engagement and learning outcomes in medical schools worldwide.

## METHODS

This mixed-methods research followed a sequential explanatory design, a model that integrates both quantitative and qualitative approaches in two distinct phases. Initially, quantitative data was collected from fourth and final year MBBS students at Shifa College of Medicine, for the duration of six months, from January 2024 to June 2024 to identify the primary factors influencing their learning experiences. The results from this phase served as the foundation for the second, qualitative phase, where in-depth student perspectives were gathered to better understand how teachers impact their motivation and learning. The idea was not only to explore what influences learning but also to dig deeper into how those influences are shaped by the role of teachers, especially in the demanding environment of medical education.

Medical students are adult learners with diverse academic needs and learning styles. They often face unique challenges, such as overcrowded classrooms, limited individual attention from faculty, and time constraints due to an intense academic schedule. With these realities in mind, the purpose of this research was to identify the key factors that affect students' learning and understand how teachers can play a meaningful role in supporting or enhancing that process. The choice of a mixed-methods design was driven by the need to look beyond mere numbers and explore personal experiences and perceptions.

The quantitative phase involved the distribution of a structured questionnaire among 200 students from the two selected classes. The questionnaire included a series of close-ended questions rated on a five-point Likert scale, ranging from "strongly disagree" to "strongly agree." These items were designed to assess variables such as students' motivation, learning environment, faculty engagement, and individual learning challenges. Additional demographic details such as year of study, gender, and residence status (hostel or home)—were also collected. Before large-scale data collection began, a pilot study was conducted to ensure the clarity and validity of the questionnaire items.

Once the study results were analyzed, participants for the qualitative phase were selected based on a theoretical sampling approach. This allowed the researchers to deliberately choose students who could provide rich, diverse insights into the patterns observed in the quantitative data. A total of 24 students participated in this phase, evenly drawn from the fourth and final year cohorts. These students were invited to attend focus group discussions aimed at uncovering their thoughts on how faculty interactions, teaching strategies, and institutional dynamics influenced their academic motivation and learning behaviour. Each discussion was audio-recorded, transcribed, and subjected to thematic analysis to extract recurring themes and sub-themes.

The data analysis for the quantitative phase involved descriptive statistics, such as means and standard deviations as well as inferential analyses using SPSS Version 22 to examine possible associations between different learning factors. For the qualitative data, the research team employed a systematic thematic analysis approach, identifying central themes around the influence of teacher behaviour, communication styles, availability, and support mechanisms on student learning.

This study was grounded in the pragmatic research paradigm, which acknowledges that no single methodological approach can fully address complex educational questions. By using both quantitative and qualitative tools, this study sought to offer a more holistic view of the challenges and supports influencing medical students' learning. Ethical considerations were strictly followed throughout the research process. Informed consent was obtained from all participants, and measures were taken to maintain the confidentiality and anonymity of the data. Participation in both phases of the study was entirely voluntary.

The data collection process was conducted over three months following ethical approval. While quantitative data was gathered through questionnaires, the qualitative data came from recorded group interviews. Together, these two strands of data helped build a deeper, more contextualized understanding of how learning unfolds for medical students and what role teachers play in shaping that journey.

## RESULTS

A total of 200 medical students (n=98, 49.0% 4$^{th}$ year and n=102, 51.0%) were included in this study. Out of total, 115 (57.5%) students were male and 85 (42.5%) females. The detail response of questionnaire of the study participant shown in Table-I.

1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree

**Table I**

*Response of study Participant (n=200)*

| Question | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| I don't face any difficulty in learning medical subjects | 16 (8.0%) | 67 (33.5%) | 51 (25.5%) | 61 (30.5%) | 5 (2.5%) |
| Few subjects are easier for me to learn than other | 1 (0.5%) | 11 (5.5%) | 19 (9.5%) | 127 (63.5%) | 42 (21.0%) |
| If I were given an opportunity I would have opted for other profession | 22 (11.0%) | 74 (37.0%) | 50 (25.0%) | 35 (17.5%) | 19 (9.5%) |
| I feel course is too lengthy | 2 (1.0%) | 27 (13.5%) | 43 (21.5%) | 91 (45.5%) | 37 (18.5%) |
| I feel there are few assessments than required | 47 (23.5%) | 71 (35.5%) | 41 (20.5%) | 33 (16.5%) | 8 (4.0%) |
| I feel syllabus is organized from easy to difficult in a logical manner | 20 (10.0%) | 48 (24.0%) | 54 (27.0%) | 71 (35.5%) | 7 (3.5%) |
| I feel it would have been easier for me to understand the subject if curriculum would have been in my mother tongue | 56 (28.0%) | 79 (39.5%) | 45 (22.5%) | 10 (5.0%) | 10 (5.0%) |
| I feel the medical curriculum is dry and bore | 0 (0%) | 78 (39.0%) | 52 (26.0%) | 41 (20.5%) | 29 (14.5%) |
| I feel that instructional methods(Lectures, Group discussion etc.) are faulty | 0 (0%) | 57 (28.5%) | 68 (34.0%) | 47 (23.5%) | 28 (14.0%) |
| I am sick most of the time that affects my learning | 0 (0%) | 103 (51.5%) | 31 (15.5%) | 47 (23.5%) | 19 (9.5%) |
| I feel my IQ is low and it affects my learning | 0(0%) | 102 (51.0%) | 58 (29.0%) | 27 (13.5%) | 13 (6.5%) |
| I feel I am not taking balance diet and it is affecting my learning | 0(0%) | 26 (13.0%) | 42 (21.0%) | 31 (15.5%) | 101 (50.5%) |
| f I study long , my eyes hurt and It affects my learning | 25 (12.5%) | 58 (29.0%) | 24 (12.0%) | 93 (46.5%) | 0 (0%) |
| I feel light and happy most of the time | 32 (16.0%) | 57 (28.5%) | 58 (29.0%) | 53 (26.5%) | 0 (0%) |
| My interest in medicine is increasing day by day | 13 (6.5%) | 24 (12.0%) | 63 (31.5%) | 100 (50.0%) | 0 (0%) |
| I like to help my colleagues whenever they need me | 0 (0%) | 78 (39.0%) | 52 (26.0%) | 41 (20.5%) | 29 (14.5%) |
| I feel like I am supported by my colleagues whenever I need | 0 (0%) | 57 (28.5%) | 68 (34.0%) | 47 (23.5%) | 28 (14.0%) |
| I feel like I am liked and respected by my colleagues | 0 (0%) | 103 (51.5%) | 31 (15.5%) | 47 (23.5%) | 19 (9.5%) |
| I felt disapproved by my colleagues at some stage | 9 (4.5%) | 47 (23.5%) | 72 (36.0%) | 55 (27.5%) | 17 (8.5%) |
| I feel teachers organize learning activities that best suites our demands | 11 (5.5%) | 46 (23.0%) | 62 (31.0%) | 73 (36.5%) | 8 (4.0%) |
| I feel my teachers have set standards to follow | 7 (3.5%) | 16 (8.0%) | 39 (19.5%) | 121 (60.5%) | 17 (8.5%) |
| I feel I have teachers who have inspired me | 10 (5.0%) | 15 (7.5%) | 38 (19.0%) | 90 (45.0%) | 47 (23.5%) |
| I feel teachers create a light and enthusiastic environment in class | 16 (8.0%) | 25 (12.5%) | 67 (33.5%) | 79 (39.5%) | 13 (6.5%) |
| Teachers show sympathy towards the class | 18 (9.0%) | 22 (11.0%) | 66 (33.0%) | 84 (42.0%) | 10 (5.0%) |
| I feel classrooms are well designed and comfortable to learn | 38 (19.0%) | 37 (18.5%) | 49 (24.5%) | 69 (34.5%) | 7 (3.5%) |
| I feel our textbooks are concise, relevant, colorful and easy to understand | 23 (11.5%) | 58 (29.0%) | 64 (32.0%) | 53 (26.5%) | 2 (1.0%) |
| I feel the computer, internet and online resource of learning are adequate for me to learn | 6 (3.0%) | 13 (6.5%) | 39 (19.5%) | 107 (53.5%) | 35 (17.5%) |
| I feel the hostel accommodation/home environment is conducive to learning | 31 (15.5%) | 27 (13.5%) | 50 (25.0%) | 71 (35.5%) | 21 (10.5%) |
| I feel the design of my college building is such that it supports my learning | 54 (27.0%) | 55 (27.5%) | 58 (29.0%) | 25 (12.5%) | 8 (4.0%) |
| Assessment methods are relevant | 9 (4.5%) | 9 (4.5%) | 45 (22.5%) | 127 (63.5%) | 10 (5.0%) |
| My assessments are improving my learning | 8 (4.0%) | 16 (8.0%) | 49 (24.5%) | 112 (56.0%) | 15 (7.5%) |
| Assessment environment is comfortable | 14 (7.0%) | 22 (11.0%) | 60 (30.0%) | 94 (47.0%) | 10 (5.0%) |
| I have enough time to see patients during my clinical rotations | 5 (2.5%) | 15 (7.5%) | 30 (15.0%) | 116 (58.0%) | 34 (17.0%) |
| Number of patients were adequate to learn relevant skills | 9 (4.5%) | 32 (16.0%) | 42 (21.0%) | 84 (42.0%) | 33 (16.5%) |
| I have enough time for hands on practice of skills I need to learn | 13 (6.5%) | 25 (12.5%) | 40 (20.0%) | 106 (53.0%) | 16 (8.0%) |
| Skill lab facilities enhanced my learning | 4 (2.0%) | 12 (6.0%) | 53 (26.5%) | 104 (52.0%) | 27 (13.5%) |

**Table II**

*Descriptive statistics of Questionnaire on Teacher Interaction (n=200)*

| Parameters | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|
| Personal Perception | 8.00 | 20.00 | 13.29 | 1.97 |
| Assessment Factors | 4.00 | 20.00 | 12.89 | 2.83 |
| Curriculum Design Effect | 4.00 | 13.00 | 8.28 | 1.76 |
| Instructional Strategies effect | 2.00 | 5.00 | 3.23 | 1.01 |
| Physical Factors | 8.00 | 20.00 | 14.28 | 2.74 |
| Emotional Factors | 10.00 | 24.00 | 17.07 | 2.34 |
| Teachers Factors | 5.00 | 25.00 | 16.94 | 3.61 |
| Effect of Infrastructure | 5.00 | 25.00 | 14.88 | 3.45 |
| Skill Learning Factors | 4.00 | 20.00 | 14.42 | 2.85 |

The average score of QTI was 115.31 ± 10.56 range from (76.00 to 143.00). Skill Learning Factors had higher mean score (14.42±2.85) followed by Physical Factors (14.28±2.74), Personal Perception (13.29±1.97) and Assessment Factors (12.89±2.83). However, Emotional Factors was increased (17.07±2.34) among students as compare to teacher factors (16.94±3.61) and Effect of Infrastructure (14.88±3.45).The mean score of Curriculum Design Effect was 8.28 ± 1.76 and Instructional Strategies effect was 3.23±1.01.The Descriptive statistics of Questionnaire on Teacher Interaction shown in Table-II.

The thematic analysis of focus group discussions revealed two overarching themes: *Teacher Influence on Motivation and Learning* and *Institutional and Environmental Challenges*. Within the first theme, students consistently highlighted pivotal role, the teachers play in shaping their learning experiences. A recurring sub-theme was *Inspiration through Teacher Role Models*, where participants mentioned that teachers who demonstrated passion and empathy significantly boosted their academic interest. As one fourth-year student expressed, *"When a teacher genuinely shows excitement about a topic, it makes you want to study harder too."* Another sub-theme was *Supportive and Organized Teaching Strategies*, with students appreciating instructors who structured learning logically and were available for guidance. Reflecting the quantitative data where 45% agreed and 23.5% strongly agreed that teachers had inspired them, one final-year student shared, *"Our best teachers make difficult subjects manageable by breaking things down step-by-step — it feels like they're on our side."*

The second theme, *Institutional and Environmental Challenges*, encompassed barriers like curriculum overload, physical discomfort, and inadequate infrastructure. Students frequently voiced frustration over the lengthy and content-heavy syllabus, correlating with the 64% agreement in the survey that the course felt too lengthy. A participant lamented, *"Sometimes it feels like we are just memorizing endless lists without understanding the course is overwhelming."* Sub-themes under this included *Physical Discomfort and Learning Fatigue*, where students mentioned factors like poor classroom environments and long study hours affecting their health and motivation. Supporting the finding where 46.5% reported eye strain from long study hours, one student stated, *"After studying for hours, my eyes hurt and I just can't absorb anything anymore."* Environmental concerns were also raised, with several noting that poorly designed hostel and college spaces hindered their focus.

A third theme, *Peer and Emotional Support Systems*, emerged, reflecting the survey's emotional factors findings (mean score 17.07±2.34). Students emphasized the importance of a positive peer environment in sustaining motivation. While some felt respected and supported by colleagues, others shared experiences of disapproval or competition. One participant described, *"Having friends who help you when you're stressed makes all the difference otherwise, it's easy to feel isolated."* However, some students expressed that despite occasional peer support, the emotional toll of medical education remained high. Overall, the qualitative insights complemented the quantitative results by illustrating how both the presence of supportive teachers and the mitigating of environmental stressors are critical in enhancing medical students' motivation and learning experiences.

## DISCUSSION

This study sought to explore the factors influencing medical students' learning experiences, with a particular emphasis on the role of teachers. Using a mixed-methods sequential explanatory design allowed a comprehensive understanding of not just the measurable patterns but also the deeper student perceptions that underlie these patterns. The quantitative findings highlighted that while a significant proportion of students found certain subjects easier to learn and felt motivated by their teachers, challenges related to curriculum overload, physical discomfort, and emotional stress persisted. The qualitative phase further elaborated on these findings, bringing forward the voices of students who described how teacher engagement, institutional environments, and peer dynamics collectively shaped their learning journeys.

Our findings reinforce the central role of teachers in fostering student motivation, aligning with earlier research conducted by Artino et al. in 2012, which emphasized that instructor enthusiasm and clarity significantly predict medical students' intrinsic motivation.[9] In our study, nearly 68.5% of students agreed or strongly agreed that they had teachers who inspired them, and this was echoed in focus group discussions where participants repeatedly shared that passionate and empathetic teachers enhanced their interest in the subject matter. Similar sentiments were reported by Kusurkar et al. in 2013, they found that students are more likely to experience autonomous motivation when they perceive their teachers as supportive and inspiring.[10] Our students' acknowledgment of the role teachers play in simplifying difficult topics and maintaining a positive learning environment is consistent with these earlier observations.

However, despite the positive role of teachers, a significant number of students reported feeling burdened by the curriculum, finding it lengthy and sometimes overwhelming. This perception mirrors the findings of Yusoff et al. in 2011, they noted high levels of stress among Malaysian medical students, attributing it largely

to academic overload.[11] In our study, 64% of students agreed that the course content was too extensive, and focus group discussions illustrated how students sometimes felt they were "memorizing endless lists" rather than engaging meaningfully with the material. This disconnect between curriculum design and student-centered learning has been widely criticized in medical education literature, where calls for integrated, problem-based curricula are increasingly prominent.[12,13] It is clear that while effective teaching strategies can mitigate some of the stress associated with heavy content, a more fundamental restructuring of curricular demands may be necessary.[14,15]

The physical environment also emerged as a notable influence on learning outcomes. Many students reported discomfort with classroom and hostel facilities, with 34.5% agreeing that classrooms were conducive to learning and a slightly lower percentage feeling positively about hostel accommodations. These findings are in line with studies like that of Goh and Sandars et al. in 2020, they emphasized that the learning environment including physical infrastructure, plays a significant role in either supporting or hindering medical education. [16] Our qualitative data added depth to this, as students spoke about how poor lighting, overcrowded spaces, and inadequate rest areas compounded their academic fatigue. In an already demanding field like medicine, the cumulative effect of environmental stressors should not be underestimated.

Another critical insight from this study concerns emotional and peer support. The mean score for emotional factors was higher than that for teacher-related factors, indicating that peer relationships and emotional well-being play substantial roles in the educational experience. This finding resonates with research by Dyrbye et al. In 2005, they found that medical students with strong peer networks and emotional resilience reported lower levels of burnout. [17] In our focus groups, students expressed that having a supportive peer group often compensated for academic pressures and helped sustain their motivation. However, there were also mentions of feelings of disapproval and competitiveness among peers, suggesting that while peer support can be a buffer against stress, it is not universally experienced.[18]

While our results largely align with existing literature, one unique aspect highlighted by our study was the comparatively lower dissatisfaction with teaching strategies themselves. Only a small proportion of students strongly agreed that instructional methods were faulty. This might reflect a shift in teaching practices at institutions like Shifa College of Medicine, where active learning methods and faculty development programs are increasingly prioritized. It contrasts with older studies, such as that by Mokahal et al. in 2021, which documented widespread dissatisfaction with traditional lecture-based approaches among medical students.[19]

This study is not without limitations. Being conducted at a single institution may limit the generalizability of the findings to other contexts with different curricular structures or student demographics. Additionally, while the mixed-methods approach enriched the data, the relatively small number of focus group participants means that some perspectives may have been underrepresented. [20] Nevertheless, the convergence between our quantitative and qualitative findings strengthens the validity of the results.

## CONCLUSION

In conclusion, our study reinforces that while good teaching practices are critical, they must be supported by rational curricular design, conducive learning environments, and emotional support systems to truly enhance medical students' learning experiences. Teachers who are enthusiastic, empathetic, and organized can significantly inspire students, but institutional reforms addressing environmental and curricular challenges are equally necessary to sustain student motivation and academic success.

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