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ORIGINAL ARTICLE

Lecture-based teaching in medical education: reform is the need of time.

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ABSTRACT... Objective: To assess medical students' perceptions of lecture-based teaching and the need for modification of traditional lectures with more effective instructional strategies. **Study Design:** Cross-sectional mixed method study. **Setting:** MBBS Students of Nishtar Medical University, Pakistan. **Period:** May 2025- July 2025. **Methods:** 374 MBBS students were given hard copy of a structured questionnaire to explore students' perceptions of lecture-based teaching and active learning methods. It consisted of biodata, 15 close ended and two open ended questions. Responses were measured on a three-point Likert scale ranging from disagree to agree. Quantitative data were analyzed using SPSS version 26. Descriptive statistical measures, including frequencies and percentages were computed to summarize the data. Qualitative data were examined through thematic analysis. **Results:** 340 students returned the filled questionnaire. The vast majority (85.3%) agreed that the lectures are helpful for understanding the fundamental concepts related to medical education and this is complemented by audio-visual aids used during delivery of lectures. Majority were of the opinion that the lecture-based teaching mainly promotes passive learning. However, a greater number agreed that the inclusion of interactive components improves engagement during lectures. About 71.5% students commented that the attention tends to decline during 45-60 minutes lecture duration. **Conclusion:** Lectures continue to play a vital role in medical education but require modernization to meet evolving learner needs. Emphasizing interactivity, clarity, and integration with active learning strategies can optimize their effectiveness and relevance in contemporary medical curricula.

Key words: Active Learning, Lecture, Learning, Medical Education, Medical Students, Questionnaires, Teaching Methods.

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INTRODUCTION

The word "lecture" originates from the Latin lectio ("reading") and lector ("reader").[1] Historically, teaching in Ancient Greece, Ancient Rome, and later in medieval European universities largely involved reading texts aloud with explanations and commentary.

In contemporary education, a lecture serves both as a structured teaching format and a method of instruction. It is a teacher-led, systematic presentation of knowledge in which concepts are explained logically and sequentially, often emphasizing core scientific principles.[2] Lectures remain one of the oldest and most widely used instructional methods in universities worldwide.[3,4] Despite rapid advances in information and communication technologies and the availability of innovative teaching strategies, lectures continue to occupy a central role in higher education.

In recent years, lecture-based teaching has faced criticism because of inadequate preparation and suboptimal learning outcomes. Nevertheless, it remains the predominant teaching strategy in many medical colleges, where large student cohorts can be taught with limited faculty and resources. A major limitation of lecture based teaching is the passive transmission of knowledge, with teachers speaking and students primarily listening, which may reduce interest and engagement.[5]

Lecture-based teaching offers several advantages. It enables efficient and concise delivery of large amounts of information, can be readily updated to reflect changes in guidelines, and helps address gaps when current textbooks are unavailable.[6] Lectures also allow instructors to organize complex topics, present diverse viewpoints, and foster listening, analytical, and synthesis skills.

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Furthermore, direct interaction between teachers and students provides motivational value, links theory to practice, and guides self-directed learning.

However, lectures also have notable limitations. They may not adequately address modern professional requirements where practical skills are as important as knowledge.[7] This approach can encourage rote learning, limit critical thinking, and place learners in a largely passive role. As students increasingly access information through digital resources, the teacher is no longer the sole source of knowledge. Lectures are also less adaptable to individual learning needs and may be less effective for maintaining engagement among diverse learners.[8]

In medical education, lecture attendance remains a matter of concern for both students and educators. Students often attend because of examination requirements, whereas educators face administrative pressure when attendance is poor. Lecture attendance is therefore a common topic of debate worldwide.[10] Although lectures continue to be a cornerstone of medical education, their ability to promote active engagement and deep learning is increasingly questioned.[11] Contemporary learners, accustomed to rapidly evolving technologies and diverse educational resources, frequently perceive lectures as passive and insufficiently stimulating.[12]

While global literature highlights a shift toward student-centered and interactive teaching approaches, there remains a paucity of context-specific evidence exploring medical students' perceptions of lectures within our setting. In particular, the underlying reasons for declining student interest and the extent to which lectures meet current learning needs have not been adequately examined. Generating such evidence is crucial to inform educational reforms and align teaching strategies with modern pedagogical standards. Therefore, this study was undertaken to critically explore medical students' perceptions of lecture-based teaching, identify factors contributing to their lack of interest, and evaluate the need for modification or transformation of the lecture based teaching.

OBJECTIVE

To assess medical students' perceptions of lecture-based teaching and the need for modification of traditional lectures with more effective instructional strategies.

METHODS

A cross-sectional mixed-methods study design was used to examine medical students' views on the effectiveness of traditional lecture-based teaching and the need for change in instructional strategies within medical education. The study was conducted at Nishtar Medical University, Pakistan, where undergraduate MBBS education is mainly delivered through lecture based teaching, The study spanned from May 2025 to July 2025. The study population comprised enrolled 3rd year, 4th year and final year MBBS students. Postgraduate trainees, house officers, and students who did not consent to participate were excluded. A total of 374 MBBS students were selected through convenience sampling, which was considered suitable for this type of perception-based educational research.

The required sample size was determined using the WHO sample size calculator for a single population proportion, with an anticipated proportion of 67%, a confidence level of 95%, and a margin of error of 5%. This resulted in a calculated sample size of 340 participants, which was increased to 374 after adding 10% for possible non-response.[13]

A structured, self-administered questionnaire was designed to explore students' perceptions of lecture-based teaching and active learning methods. The tool was developed after an extensive review of relevant literature in medical education. The questionnaire consisted of four components, including biodata (optional- 4 questions), views on traditional lectures (10 questions), perceived need for change (5 questions) and two open-ended questions. To establish content validity, the questionnaire was analyzed by two experts in the field. It was pilot tested on 15 students to evaluate clarity, relevance, and understanding. The internal consistency of the 15-item questionnaire was assessed using Cronbach's alpha. The instrument demonstrated acceptable reliability with a Cronbach's alpha of 0.759. Data collected during the pilot phase was not inclusive in the final analysis. Responses were measured on a three-point Likert

scale ranging from disagree to agree.

Prior to the commencement of the study, Institutional Review Board granted the ethical clearance (21452/NMU-9-12-24). Involvement in the study was completely voluntary, with rigorous safeguards in place to ensure confidentiality and anonymity. Participants were also made aware that they could discontinue their participation at any point without facing any adverse consequences. Students were recruited during their routine academic sessions, and written informed consent was obtained before initiating data collection. Questionnaires were distributed and collected on the spot to maximize the response rate.

Quantitative data were analyzed using SPSS version 26. Frequencies and percentages were calculated for descriptive analysis. Associations between categorical variables were assessed using Chi-square test, with $p < 0.05$ considered statistically significant. Qualitative data were analyzed through thematic analysis. Responses were reviewed repeatedly to achieve familiarization with the data. Initial codes were independently generated by the principal investigator and a faculty member experienced in medical education research. Similar codes were grouped into broader themes through iterative discussion. Any disagreements in coding or interpretation were resolved through consensus. Thematic saturation was considered achieved when no new themes emerged from subsequent responses. Final themes were refined collaboratively to ensure credibility and trustworthiness of the analysis.

RESULTS

The study consisted of 340 students. Regarding MBBS academic year, majority (52.1%) were from final year, 100 (29.4%) from 4th year and 63(18.5%) from 3rd year.

The vast majority (85.3%) agreed that the lectures are helpful for understanding the fundamental concepts related to medical education and this is complemented by audio-visual aids used during delivery of lectures. Most of them also assented that the teachers clarify the concepts clearly and these lectures are helpful to apply knowledge in clinical scenarios as well as preparation of exams. Majority were of the opinion that the lecture-based teaching mainly promotes passive learning. However, a greater number agreed that the inclusion of interactive components improves engagement during lectures. About 71.5% students commented that the attention tends to decline during 45-60 minutes lecture duration.

TABLE-I

Characteristics of participants

Characteristic		Frequency (%age)
Gender	Male	176 (51.8)
	Female	164 (48.2)
Academic year	3rd year	63(18.5)
	4th year	100 (29.4)
	Final year	177 (52.1)
Residence	Home	136(40)
	Hostel	204(60)

Regarding perceived need for change, a greater number were of the opinion that the lectures need not be replaced completely, rather modifications is the need of time. A high proportion (88.2%) agreed that the inclusion of case based discussions during lectures would be of great assistance to enhance understanding and learning outcomes. A similar proportion (88.2%) also endorsed that the teaching can be made more effective by adoption of blended approach combining lectures with active learning. A great preponderance also favoured the perspective that the duration of the lecture should be reduced. Similarly, a large number endorsed the conviction that the training of faculty is essential for effective utilization of lectures.

Thematic analysis of open-ended responses revealed a strong preference for interactive teaching (90%), followed by patient-based learning (48%) and group discussion (28%). Students emphasized shorter, focused lectures supplemented with clinical context, improved visual strategies, and active engagement methods.

Students strongly emphasized the importance of interactivity in lectures. One participant noted that ‘interactive lectures help to learn more as everyone participates actively and every query is explained at

the same time.' Another highlighted that 'lectures must be interactive and interesting rather than merely reading slides on multimedia presentations.' Similarly, a respondent remarked that 'interactive classes are so engaging that one cannot even blink for a second.' These responses collectively underscore the value of active participation in improving attention and understanding.

TABLE-II

Students' Views on Lecture-based teaching

Characteristics	Disagree Frequency(%)	Neutral Frequency(%)	Agree Frequency (%)	P- Value
Lectures facilitate understanding of fundamental medical concepts.	5 (1.5)	45 (13.2)	290 (85.3)	<0.001
Teachers explain concepts clearly during lectures.	40 (11.7)	90 (26.5)	210 (61.8)	<0.001
Lectures adequately prepare students for applying knowledge in clinical settings.	35 (10.3)	115 (33.8)	190 (55.9)	<0.001
Teaching aids (board, multimedia) improve my understanding.	46 (13.5)	60 (17.7)	234 (68.8)	<0.001
Lectures help me prepare for examinations.	50 (14.7)	60 (17.6)	230 (67.7)	<0.001
Information delivered through lectures is retained effectively for a long time.	110 (32.4)	95 (27.9)	135 (39.7)	0.022
I feel actively engaged during most lectures.	100 (29.4)	100 (29.4)	140 (41.2)	0.007
Lecture-based teaching mainly encourages passive learning.	30 (8.8)	95 (27.9)	215 (63.2)	<0.001
Inclusion of interactive components improves engagement during lectures.	10 (2.9)	40 (11.8)	290 (85.3)	<0.001
Student attention tends to decline during 45-60 minutes lecture sessions.	53 (15.6)	44 (12.9)	243 (71.5)	<0.001

TABLE-III

Students' perceived need for change

Characteristic	Disagree Frequency (%)	Neutral Frequency (%)	Agree Frequency (%)	P-Value
Traditional lectures require modification rather than complete replacement.	0 (0)	50 (14.7)	290 (85.3)	<0.001
Case-based discussions would enhance understanding and learning outcomes.	0 (0)	40 (11.8)	300 (88.2)	<0.001
A blended approach combining lectures with active learning is more effective.	10 (2.9)	30 (8.8)	300 (88.2)	<0.001
Lecture duration should be reduced.	10 (2.9)	60 (17.6)	270 (79.4)	<0.001
Faculty training is essential for effective utilization of lectures.	0 (0)	50 (14.7)	290 (85.3)	<0.001

Open-Ended Question

- Please suggest ways in which traditional lectures can be improved to enhance learning.
- What teaching method helps you learn best and why?

FIGURE-1

Suggested ways in which lecture-based teaching can be improved to enhance learning



DISCUSSION

Lectures remain a cornerstone of medical education because they provide a structured and efficient means of delivering knowledge to large groups of students. They facilitate understanding of complex concepts, integrate current evidence, and support examination preparation. However, their role is increasingly debated as medical education shifts toward learner-centered approaches. While critics argue that lectures encourage passive learning and limited retention, supporters emphasize their efficiency and value when delivered effectively and interactively.

Engaging contemporary learners has become increasingly challenging. Generation Z students, who are highly accustomed to digital technologies, generally prefer interactive, flexible, and technology-enhanced learning experiences over traditional didactic instruction.[14]

The study population included almost equal representation of males (51.8%) and females (48.2%). More than half of the participants were final-year students (52.1%), followed by fourth-year (29.4%) and third-year students (18.5%). First- and second-year students were excluded because of their limited exposure to clinical teaching.

Chi-square goodness-of-fit analysis demonstrated statistically significant differences in response distributions for all questionnaire items. Strong agreement was observed regarding the role of lectures in understanding fundamental concepts, the value of interactive components, and declining attention during prolonged lectures (all $p<0.001$). Responses concerning long-term retention of information ($\chi^2=7.62$, $p=0.022$) and active engagement during lectures ($\chi^2=9.80$, $p=0.007$) were also statistically significant, although less strongly than other questionnaire items.

The findings demonstrate strong student support for lectures as a teaching method. Most students agreed that lectures facilitate understanding of fundamental medical concepts (85.3%), improve examination preparation (67.7%), and are enhanced by teaching aids (68.8%). Similar importance of teaching aids has been reported by Gupta.[15] More than half of the respondents (55.9%) also believed that lectures assist in applying knowledge to clinical settings. These findings support evidence that lectures remain an effective method for delivering foundational knowledge, particularly in resource-constrained educational settings.

Nevertheless, a substantial proportion of neutral responses regarding lecture clarity and clinical applicability suggests variability in lecture quality. Contemporary literature indicates that learning outcomes depend more on instructional design, clarity, and interactivity than on the lecture format itself.[16]

Although 39.7% of students believed that lecture content is retained effectively, only 41.2% reported active engagement during lectures. Furthermore, 63.2% perceived lecture-based teaching as promoting passive learning. These findings are consistent with Alaagib et al., who reported active engagement in only 26.7% of medical students during lectures.[17] Dzaiy similarly emphasized the need for active teaching strategies to maximize learning.[18]

A notable finding was that 85.3% of participants believed that incorporating interactive elements improves engagement. Similar results were reported by Zulfiqar et al., who found an 85% satisfaction rate following the introduction of interactive strategies during lectures.[19] Evidence suggests that questioning, discussion, and audience-response activities significantly improve student attention and learning outcomes. These findings indicate that lectures should not be abandoned but redesigned to encourage active participation.

The results further showed a strong preference for modifying rather than replacing traditional lectures. Most students supported the inclusion of case-based discussions (88.2%) and blended learning approaches (88.2%). Contemporary research has demonstrated that blended and flipped learning models improve understanding and academic performance compared with lectures alone.[20] Bucklin et al. reported a 93.4% increase in knowledge gain and recall when active-learning components were incorporated into lectures.[21] Similar findings from Pakistan have shown improved assessment scores with blended teaching approaches.[22]

Students also preferred shorter lecture durations, with 79.4% agreeing that prolonged sessions reduce attention and engagement. This finding is supported by literature describing declining attention spans during lengthy lectures. In addition, 85.3% emphasized the need for faculty development and training in teaching methodologies. Comparable findings were reported by Bucklin et al.21 and Chika Eze[23], highlighting the importance of pedagogical competence in effective lecture delivery.

The study possesses several strengths. It included a relatively large sample of 340 medical students from different academic years, enhancing the reliability of the findings. The use of both closed-ended and open-ended questions enabled comprehensive assessment of student perceptions and provided deeper insight into recommendations for improving lecture-based teaching. Furthermore, the study addresses an important and contemporary issue in medical education and contributes valuable local evidence to the ongoing discussion on educational reform.

Some limitations should be acknowledged. The study was conducted at a single institution, which may limit generalizability. The use of self-reported perceptions introduces the possibility of response bias. In addition, only student perspectives were explored; inclusion of faculty viewpoints and objective measures of academic performance could have provided a more comprehensive evaluation of lecture effectiveness.

CONCLUSION

Lectures continue to play a vital role in medical education but require modernization to meet evolving learner needs. Emphasizing interactivity, clarity, and integration with active learning strategies can optimize their effectiveness and relevance in contemporary medical curricula. Overall, these findings suggest that lectures are not obsolete but must evolve into a more interactive, blended, and learner-centred format to remain relevant in modern medical education.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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AUTHORSHIP AND CONTRIBUTION DECLARATION	
1	**Shagufta Tabassum:** Data collection, drafting.