

Research Article

Preferences and Perceptions of Undergraduate Medical Students Regarding Teaching-Learning Methods at a Tertiary Teaching Hospital in South India: A Cross-Sectional Study

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ABSTRACT

Background: Medical education is increasingly adopting learner-centred teaching-learning strategies to promote active participation, critical thinking, problem-solving, and clinical reasoning. The implementation of competency-based medical education (CBME) in India has further emphasized the importance of understanding students' preferences and perceptions to optimize teaching methodologies.

Aim: To assess the preferences and perceptions of undergraduate medical students regarding various teaching-learning methods at a tertiary teaching hospital in South India.

Methods: A cross-sectional study was conducted among 252 undergraduate MBBS students across all academic phases at a tertiary teaching hospital in South India. Data were collected using a structured, paper-based questionnaire adapted from a previously published study. The questionnaire assessed demographic characteristics, preferences for different teaching methods, perceived effectiveness in maintaining attention and promoting interaction, preferred teaching aids, optimal teaching-session duration, and awareness of newer teaching methodologies. Data were analysed using SPSS, with descriptive statistics used to summarize the findings.

Results: Among the 252 participants, 52.8% were female and 63.5% were aged 18-20 years. Problem-based learning (PBL) received the highest mean preference score (3.98 ± 0.77), followed by small-group discussions (SGDs; 3.96 ± 0.90), while didactic lectures received a mean score of 3.18 ± 1.08 . Maintained or strong focus was reported by 77.8% of students for PBL and 75.0% for SGDs, compared with 47.6% for didactic lectures. SGDs received the highest rating for teacher-student interaction, with 81.7% reporting likely or very likely interaction. Models, charts, and specimens were the most preferred teaching aids (39.3%), and 43.7% preferred 40-minute teaching sessions. Furthermore, 72.6% of participants reported being unaware of newer teaching methodologies.

Conclusion: The illustrative findings suggest favourable student perceptions of interactive teaching approaches, particularly PBL and SGDs, regarding preference, attention, and teacher-student interaction. These findings may inform the integration of learner-centred approaches into undergraduate medical education. However, the results presented here are based on simulated data and must be replaced with verified findings from the actual study before publication.

Keywords: Teaching-Learning Methods, Competency-Based Medical Education, Problem-Based Learning, Small-Group Discussion, Student Perceptions.

INTRODUCTION

Medical education is undergoing a transition from predominantly teacher-centred instruction towards learner-centred approaches that emphasize active

participation, critical thinking, problem-solving, and the practical application of knowledge. Traditional didactic lectures remain an important method of delivering theoretical content; however, interactive teaching–

learning strategies, including problem-based learning (PBL) and small-group discussions (SGDs), provide opportunities to enhance student engagement and facilitate meaningful learning.^{1, 2}

In India, the introduction of competency-based medical education (CBME) has emphasized the development of competencies required for effective medical practice, including the application of knowledge, clinical reasoning, communication, professionalism, and lifelong learning.³ Achieving these competencies requires the appropriate selection and integration of teaching-learning methods that encourage students to progress beyond passive acquisition of information towards active knowledge construction and application. Problem-based learning promotes self-directed learning and analytical thinking, whereas small-group discussions facilitate peer interaction, clarification of doubts, and collaborative learning. The acceptability and perceived effectiveness of these approaches may vary according to the educational environment, teaching objectives, faculty facilitation, and students' previous learning experiences.^{4, 5}

Understanding undergraduate medical students' preferences and perceptions is important for evaluating the acceptability of different teaching methodologies and identifying opportunities for educational improvement. Students' perspectives regarding teaching aids, session duration, classroom interaction, attention, and understanding of complex concepts can provide useful feedback for curriculum planning. Awareness of newer teaching methodologies is also relevant because familiarity with innovative approaches may influence students' willingness to engage in different learning activities. Integrating conventional teaching with appropriate interactive strategies may help accommodate diverse learning requirements while maintaining alignment with curricular objectives.⁶

Although learner-centred approaches are increasingly emphasized in contemporary medical education, institution-specific assessments remain valuable because students' experiences and preferences may differ across educational settings and academic phases. Evaluating these preferences at a tertiary teaching hospital can provide contextual evidence to guide the selection of teaching methods and identify

areas requiring improved student orientation or faculty development.

Against this background, the present study was conducted to assess the preferences and perceptions of undergraduate MBBS students across all academic phases regarding various teaching-learning methods at a tertiary teaching hospital in South India. The study also sought to evaluate students' perceptions of the effectiveness of different teaching approaches and examine associations between selected demographic characteristics and their preferences.

Aim

Aim: To assess the preferences and perceptions of undergraduate MBBS students regarding various teaching-learning methods at a tertiary teaching hospital in South India.

Objectives

1. To assess undergraduate medical students' preferences for different teaching-learning methods.
2. To evaluate students' perceptions of the effectiveness of these methods in promoting attention, interaction, clarification of doubts, and understanding of complex concepts.
3. To examine associations between selected demographic characteristics and students' preferences and perceptions.

METHODOLOGY

Study Design: A cross-sectional observational study was conducted to assess the preferences and perceptions of undergraduate medical students regarding various teaching-learning methods.

Study Setting: The study was conducted at a tertiary teaching hospital in South India providing undergraduate Bachelor of Medicine and Bachelor of Surgery (MBBS) education.

Study Population: The study population comprised undergraduate MBBS students enrolled across all academic phases at the selected institution.

Sample Size

The sample size was estimated using the formula for a single population proportion:

$$n = Z^2 p(1 - p) / d^2$$

Where, n = required sample size; Z = 1.96 at a 95% confidence level; p = anticipated proportion (50%); and d = absolute precision (6.2%).

Substituting the values:

$$n = (1.96)^2 \times 0.50 \times (1 - 0.50) / (0.062)^2$$

$$n = 3.8416 \times 0.25 / 0.003844$$

$$n = 249.84 \approx 250$$

Therefore, the minimum estimated sample size was approximately 250 participants. A total of 252 undergraduate medical students from all MBBS academic phases were included in the study

Study Duration: The study was conducted over a period of 3 months.

Sampling Technique: Simple random sampling was employed to select participants from the eligible undergraduate MBBS student population. The sampling frame, method of random sequence generation, and procedure used to select participants were.

Data Collection Instrument: Data were collected using a structured paper-based questionnaire adapted from a previously published study assessing medical students' preferences and perceptions regarding teaching-learning methods. The questionnaire was adapted to the context of the study institution.

The Questionnaire Assessed the Following Domains

- Sociodemographic characteristics, including age, gender, and academic phase.
- Preferences for different teaching-learning methods, including didactic lectures, problem-based learning (PBL), and small-group discussions (SGDs).
- Perceived effectiveness of teaching methods in maintaining attention and concentration.
- Opportunities for asking questions, clarifying doubts, and interacting with faculty.
- Perceived promotion of lateral thinking and understanding of complex concepts.
- Preferences regarding teaching aids and instructional resources.
- Preferred duration of teaching sessions.
- Preferred teaching methods for Attitude, Ethics and Communication (AETCOM) modules, where assessed.
- Awareness of newer teaching methodologies and perceptions regarding their implementation.

Data Collection Procedure

Eligible participants selected through simple random sampling were invited to participate in the study. Data were collected using paper-based questionnaires. The procedures followed for participant information, informed consent, questionnaire administration, retrieval of completed questionnaires, and handling of incomplete responses were [to be specified according to the study records]. Confidentiality was maintained in accordance with the documented study procedures.

Study Variables

The primary outcome variables were students' preferences for different teaching-learning methods and their perceptions of the effectiveness of these methods. Additional variables included preferred teaching aids, optimal teaching-session duration, awareness of newer teaching methodologies, and selected demographic characteristics.

Statistical Analysis

Data were entered, coded, and analysed using the (SPSS), version 26. Categorical variables were summarized using frequencies and percentages.

RESULTS

A total of 252 undergraduate MBBS students were included in the study. Females constituted 52.8% of participants, while 63.5% were aged 18–20 years. Problem-based learning received the highest mean preference score (3.98 ± 0.77), closely followed by small-group discussions (3.96 ± 0.90), compared with didactic lectures (3.18 ± 1.08). Regarding attention, 77.8% of students reported maintaining or strong focus during problem-based learning, followed by 75.0% during small-group discussions. Small-group discussions were associated with the highest reported likelihood of teacher-student interaction (81.7%). Models, charts, and specimens were the most frequently preferred teaching aids (39.3%), while 43.7% preferred 40-minute teaching sessions. Notably, 72.6% of participants were unaware of newer teaching methodologies. These are simulated values and must be replaced with actual findings.

Table 1. Sociodemographic characteristics of participants (N=252)

Characteristic	Category	n	%
Age	18–20 years	160	63.5
	21–23 years	85	33.7
	24 years or older	7	2.8

Gender	Female	133	52.8
	Male	119	47.2
Academic phase	Phase I	74	29.4
	Phase II	69	27.4
	Phase III Part I	53	21.0
	Phase III Part II	56	22.2

Table 2. Student preferences for teaching-learning methods

Teaching method	Mean score (SD)	Agree/strongly agree n (%)	Neutral n (%)
Didactic lectures	3.18 (1.08)	97 (38.5)	100 (39.7)
Problem-based learning	3.98 (0.77)	192 (76.2)	51 (20.2)
Small-group discussions	3.96 (0.90)	184 (73.0)	53 (21.0)

Scoring: 1–5, with higher scores indicating greater preference

Table 3. Perceived effectiveness in maintaining attention

Teaching method	Low focus n (%)	Neutral n (%)	Maintained/strong focus n (%)
Didactic lectures	28 (11.1)	104 (41.3)	120 (47.6)
Problem-based learning	15 (6.0)	41 (16.3)	196 (77.8)
Small-group discussions	18 (7.1)	45 (17.9)	189 (75.0)

Table 4. Perceived opportunities for teacher-student interaction

Teaching method	Unlikely n (%)	Neutral n (%)	Likely/very likely n (%)
Didactic lectures	56 (22.2)	108 (42.9)	88 (34.9)
Problem-based learning	16 (6.3)	57 (22.6)	179 (71.0)
Small-group discussions	17 (6.7)	29 (11.5)	206 (81.7)

Table 5. Teaching aids, session duration, and awareness

Domain	Category	n	%
Teaching aid	Models/charts/specimens	99	39.3
	LCD/multimedia	69	27.4
	Whiteboard/marker	52	20.6
	Blackboard/chalk	32	12.7
Session duration	30 minutes	23	9.1
	40 minutes	110	43.7
	45 minutes	99	39.3
	60 minutes	20	7.9
AETCOM method	Problem-based learning	75	29.8
	Role play	70	27.8
	Small-group discussion	56	22.2
	Didactic lecture	51	20.2
Awareness of newer methods	Aware	69	27.4
	Not aware	183	72.6
Implementation of newer methods	Yes	105	41.7
	Maybe	116	46.0
	No	31	12.3

DISCUSSION

Preferences for Teaching-Learning Methods

In the illustrative dataset, problem-based learning (PBL) received the highest mean preference score (3.98 ± 0.77), closely

followed by small-group discussions (SGDs; 3.96 ± 0.90), whereas didactic lectures received a lower mean score (3.18 ± 1.08). This pattern is consistent with the cross-sectional study by Papanna and colleagues at Kasturba Medical College, Mangalore, in which

students expressed favourable perceptions of PBL. These findings support the educational relevance of combining interactive and conventional teaching methods rather than relying exclusively on one instructional approach.^{7,8}

Attention, Concentration, and Learning Engagement

In the illustrative dataset, 77.8% of students reported maintaining or strong focus during PBL, compared with 75.0% during SGDs and 47.6% during didactic lectures. These proportions suggest a possible advantage for interactive learning approaches in sustaining attention. However, perceived concentration should not be interpreted as objective evidence of improved knowledge retention or academic performance. Studies from Indian medical colleges have also reported favourable student perceptions of participatory approaches.^{9,10}

Teacher-Student Interaction and Clarification of Doubts

The illustrative findings indicate that SGDs received the highest rating for teacher-student interaction, with 81.7% of participants reporting that interaction was likely or very likely, followed by PBL at 71.0%. These patterns are educationally plausible because smaller learning groups can provide greater opportunities for discussion, feedback, and clarification of doubts. Indian studies comparing discussion-based teaching with lectures provide relevant context for evaluating these preferences.^{7,11}

Teaching Aids and Instructional Preferences

In the illustrative dataset, models, charts, and specimens were the most frequently preferred teaching aids (39.3%), followed by LCD or multimedia presentations (27.4%). Indian studies have reported variation in preferences for PowerPoint presentations and chalkboard-based teaching, suggesting that no single teaching aid is necessarily optimal for every topic or learner. A combination of demonstrations, physical models, board-based explanations, and multimedia resources may be appropriate, depending on instructional objectives.^{9,12}

Preferred Session Duration and Newer Teaching Methodologies

In the illustrative dataset, 43.7% of students preferred a 40-minute session and 39.3%

preferred a 45-minute session. Session-duration preferences alone do not establish an optimal duration for learning. The illustrative dataset also showed that 72.6% of students were unaware of newer teaching methodologies. Indian literature examining innovative learning activities supports the importance of introducing students to varied pedagogical approaches.^{13,14}

Implications for Undergraduate Medical Education

The overall pattern in the illustrative results suggests that PBL and SGDs may be perceived favourably for preference, attention, and interaction. Indian literature also reports preferences for discussion-based and clinically contextualized teaching approaches. Teaching methods should be selected according to intended learning outcomes, and their effectiveness should be evaluated using actual learning outcomes rather than student preferences alone.¹⁵

Strengths and limitations

The proposed study covers undergraduate students across all MBBS academic phases and examines multiple aspects of teaching-learning preferences within a tertiary teaching hospital. Nevertheless, the cross-sectional design limits causal interpretation, and a single-institution setting may restrict generalizability. Self-reported perceptions may be influenced by response bias. The validity and reliability of the adapted questionnaire should be documented. The synthetic tables included in this draft are not empirical evidence and must be replaced with actual study findings.

CONCLUSION

Understanding undergraduate medical students' preferences and perceptions regarding teaching-learning methods is important for developing responsive and effective educational strategies. The proposed study examines students' perspectives across all MBBS academic phases at a tertiary teaching hospital in South India, with particular attention to interactive teaching methods, perceived learning engagement, teaching aids, session duration, and awareness of newer pedagogical approaches. The findings from the verified study dataset should guide the final conclusions regarding the relative acceptability of problem-based learning, small-group discussions, and didactic lectures. Integrating appropriate interactive

methods with conventional teaching, supported by faculty development and student orientation, may help strengthen undergraduate medical education within the competency-based medical education framework. Further multicentre studies incorporating objective measures of knowledge acquisition and academic performance are recommended to determine whether students' preferred teaching methods translate into improved educational outcomes.

REFERENCES

1. Prince M, Felder RM. Inductive teaching and learning methods: definitions, comparisons, and research bases. *J Eng Educ*. 2006;95(2):123–138.
2. Mann KV, Boelen C, Hafferty FW. The role of the medical teacher in improving the educational environment. *Med Teach*. 2009;31(9):829–834.
3. Kumar S, Aggarwal R, Jain S. Students' perception of teaching methodologies in medical education: a cross-sectional study from India. *J Educ Health Promot*. 2020;9:42.
4. Hew KF, Cheung WS. Use of Web 2.0 technologies in higher education: a review of the literature. *Educ Technol Soc*. 2014;17(4):80–94.
5. Antepohl W, Herzig S. Problem-based learning versus lecture-based learning in a course of basic pharmacology: a controlled, randomized study. *Med Educ*. 1999;33(2):106–113.
6. Michel MC, Bischoff A, Jakobs KH. Comparison of problem- and lecture-based pharmacology teaching. *Trends Pharmacol Sci*. 2002;23(4):168–170.
7. Papanna KM, Kulkarni V, Tanvi D, Lakshmi V, Kriti L, Unnikrishnan B, et al. Perceptions and preferences of medical students regarding teaching methods in a medical college, Mangalore, India. *Afr Health Sci*. 2013;13(3):808–813. doi:10.4314/ahs.v13i3.41.
8. Nanda B, Manjunatha S. Indian medical students' perspectives on problem-based learning experiences in the undergraduate curriculum: one size does not fit all. *J Educ Eval Health Prof*. 2013;10:11. doi:10.3352/jeehp.2013.10.11.
9. Joshi KP, Robins M, Yanadi Reddy M. Perception and preferences of teaching and learning methods in community medicine: a cross-sectional study. *Int J Community Med Public Health*. 2018;5(7):2821–2824. doi:10.18203/2394-6040.ijcmph20182597.
10. Usha Rani C, Aruna Devi S. Perceptions of undergraduate medical students about teaching-learning methods adopted by faculty members in community medicine. *Int J Community Med Public Health*. 2019. doi:10.18203/2394-6040.ijcmph20193484.
11. Joshi KP, Padugupati S, Robins M. Assessment of educational outcomes of small group discussion versus traditional lecture format among undergraduate medical students. *Int J Community Med Public Health*. 2018;5(7):2766–2769. doi:10.18203/2394-6040.ijcmph20182419.
12. Mahanta P, Kalita D, Phukon C, Konwar R, Das K, Ullah MK, et al. Indian medical undergraduates' perceptions of effective teaching methods: a cross-sectional study. *Adv Med Educ Pract*. 2021;12:339–347. doi:10.2147/AMEP.S306598.
13. Manu G, Padmanabha TS, Chandrakantha T, Neha K. Perception and preferences of teaching and learning methods among second year medical students: a cross-sectional survey in a rural tertiary care teaching hospital. *Int J Basic Clin Pharmacol*. 2016;5(3):1006–1010. doi:10.18203/2319-2003.ijbcp20161560.
14. Ramya C, Sandhya VK, Ramya P, Renuka IV, Atchyuta M, Anusha M, et al. A study on perception of students regarding newer teaching methods in medical education. *J Clin Diagn Res*. 2020;14(8):JC01–JC04. doi:10.7860/JCDR/2020/44221.13925.
15. Holambe VM, Thakur NA, Giri PA. Students' preferences for learning in medical education. *Int J Community Med Public Health*. 2015;2(3):328–330. doi:10.18203/2394-6040.ijcmph20150491.
16. Basu M, Das P, Chowdhury G. Introducing integrated teaching and comparison with traditional teaching in undergraduate medical curriculum: a pilot study. *Med J DY Patil Univ*. 2015;8:431–438.