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Original Research Article

Faculty perceptions on barriers affecting small group teaching in undergraduate medical education

Wincy E. Wilson[1]*, Vidya G. S.[1], Priyanka Singh[2], Ramya M. P.[1], Chandrakala C.[1], Srividya V.[1]

[1]Department of Community Medicine, Rajarajeswari Medical College and Hospital, Bengaluru, Karnataka, India
[2]Department of Physiology, Co-convenor of Medical Education Unit, Rajarajeswari Medical College and Hospital, Bengaluru, Karnataka, India

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***Correspondence:**
Dr. Wincy E. Wilson,
E-mail: wincyselvin@gmail.com

ABSTRACT

Background: Small group teaching (SGT) is a central instructional strategy within competency-based medical education (CBME) by NMC, formally implemented in undergraduate medical education in India in 2019. SGT promotes active learning, critical thinking, collaboration, and self-directed learning. However, despite curricular emphasis, effective implementation remains inconsistent across institutions due to behavioral, curricular, and contextual challenges. Hence, the present study was conducted to assess faculty perceptions on barriers affecting small group teaching in undergraduate medical education.

Methods: A cross-sectional mixed-methods study was conducted among 100 teaching faculty members and postgraduate tutors involved in undergraduate teaching at a tertiary care medical college, Bengaluru. A validated self-administered questionnaire assessed perceived barriers across four domains: student-related, faculty-related, curriculum-related, and infrastructure-related. Responses were recorded on a five-point Likert scale. Quantitative data were analyzed using descriptive statistics and expressed as frequencies, percentages, and mean Likert scores. Qualitative responses were analyzed using thematic analysis.

Results: Student-related barriers were perceived as the most significant challenge (76%). Infrastructure-related barriers showed moderate agreement (57%), followed by curriculum-related barriers (56.1%). Faculty-related barriers were the least perceived (50.9%). Student unpreparedness (79.8%) was the most frequently reported barrier. Perceptions were largely consistent across designation, years of teaching experience, and CBME training status. Thematic analysis demonstrated that student-related concerns constituted 46% of qualitative responses.

Conclusions: Faculty perceive student preparedness and motivation as the primary barriers affecting SGT. Addressing these modifiable factors through structured orientation, curricular alignment, and institutional support is essential to strengthening CBME implementation.

Keywords: Competency-based medical education, Faculty perception, Small group teaching, Undergraduate medical education

INTRODUCTION

Competency-based medical education (CBME) represents a fundamental shift from traditional time-based training toward outcome-oriented learning that emphasizes clearly defined competencies and measurable performance standards.[1] This reform aims to ensure that graduates are not merely knowledgeable, but demonstrably capable of delivering safe, ethical, and patient-centred care. In India, CBME was formally introduced for undergraduate medical education in 2019 by the National Medical Commission with the vision of producing an "Indian medical graduate" equipped to address evolving healthcare needs.[2] The curriculum underscores integration across disciplines, early clinical exposure, formative assessment, and learner-centred pedagogies.

Within this framework, small group teaching (SGT) has emerged as a core instructional strategy. SGT typically involves structured, interactive sessions conducted in smaller batches of students- often 8 to 15 learners- facilitated by a faculty member to encourage discussion, collaborative problem-solving, peer interaction, and reflective learning.[3] Unlike conventional didactic lectures, SGT promotes active participation and accountability, enabling learners to engage deeply with clinical concepts and apply knowledge in context. Theoretical models such as experiential learning theory highlight the importance of active engagement and reflection in meaningful learning processes.[4] Similarly, constructive alignment emphasizes coherence between learning objectives, instructional strategies, and assessment methods to enhance educational outcomes.[5]

Evidence from health professions education supports the effectiveness of active learning strategies. Studies have demonstrated that interactive teaching methods improve academic performance and reduce failure rates when compared with traditional lectures.[6] Problem-based learning literature further suggests that structured small group environments stimulate deeper cognitive processing and long-term retention.[7] However, successful implementation depends on adequate facilitation, learner preparation, and institutional support. Faculty development initiatives have been shown to improve educators' ability to adopt learner-centred approaches, yet sustained change often requires systemic reinforcement beyond isolated workshops.[8]

Despite strong theoretical and empirical support, the practical implementation of SGT within CBME remains variable. Logistical challenges, curricular misalignment, and student-related factors may influence its effectiveness. Learner motivation and preparedness are particularly critical in small group settings, as participation quality directly affects learning outcomes.[9] Assessment frameworks also shape learning behaviour, determining the extent to which students prioritize interactive formats.[10]

While small group methodologies are widely endorsed, empirical evidence examining faculty-perceived systemic barriers within the Indian CBME context remains limited. Faculty members serve as primary facilitators, translating curricular mandates into classroom practice. Understanding their perceptions is essential for identifying modifiable challenges and strengthening institutional strategies for effective SGT implementation. Therefore, the present study aimed to assess faculty perceptions regarding barriers affecting small group teaching in undergraduate medical education.

METHODS

A cross-sectional mixed-methods study was conducted between October 2025 and December 2025 at a tertiary care teaching hospital and medical college in south India. The study population comprised teaching faculty members and postgraduate tutors actively involved in undergraduate medical education and SGT sessions under the competency-based medical education (CBME) curriculum. Institutional ethics committee approval was obtained prior to commencement of the study. Written informed consent was secured from all the participants, and confidentiality of responses was maintained throughout the research process.

A purposive sampling approach was adopted. All eligible faculty members and postgraduate tutors involved in undergraduate teaching during the study period were invited to participate.

Data were collected using a structured, self-administered questionnaire developed after an extensive review of medical education literature on small group teaching and CBME implementation. The tool consisted of two sections.

The first section captured participant characteristics, including designation, years of teaching experience, and prior CBME/SGT training. The second section included 20 Likert-scale items distributed across four predefined domains: student-related barriers, faculty-related barriers, curriculum-related barriers, and infrastructure-related barriers. Responses were recorded on a five-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (5). For analytical purposes, responses of "agree" and "strongly agree" were categorized as indicative of perceived barriers.

In addition to structured items, open-ended questions explored faculty perceptions regarding major barriers and suggested strategies for improvement. These responses were used for qualitative thematic analysis.

Quantitative data were entered into Microsoft Excel and analysed. Descriptive statistics were calculated and presented as frequencies, percentages, means, and standard deviations.

RESULTS

A total of 100 faculty members and postgraduate tutors participated in the study. The participants were distributed across academic designations: 25% were postgraduate tutors, 27% assistant professors, 25% associate professors, and 23% professors.

With respect to teaching experience, one-quarter (25%) had less than one year of experience, while 23% had more than ten years of teaching experience. Nearly two-thirds of the participants (62%) reported having received prior training in CBME or small group teaching (Table 1).

Table 1: Socio-demographic characteristics of study participants (n=100).

Variables	Category	Frequency	Percentage
Designation	Postgraduate tutor	25	25.0
	Assistant Professor	27	27.0
	Associate Professor	25	25.0
	Professor	23	23.0
Years of teaching experience	<1 year	25	25.0
	1-3 years	18	18.0
	3-5 years	9	9.0
	5-10 years	25	25.0
	>10 years	23	23.0
CBME / SGT training received	Yes	62	62.0
	No	38	38.0

Quantitative findings

Student-related barriers emerged as the predominant challenge to effective SGT, with 76% overall agreement. Infrastructure-related barriers showed moderate agreement (57%), reflecting constraints such as large group size and limited learning spaces. Curriculum-related barriers accounted for 56.1% agreement, indicating partial misalignment between SGT activities and assessment strategies. Faculty-related barriers were least perceived (50.9%), suggesting relatively higher confidence in faculty capability (Table 2).

Table 2. Domain-wise faculty agreement on barriers affecting small group teaching.

Domain	Agreement (%)	Mean Likert score±SD
Student-related	76.0	3.9±0.6
Infrastructure-related	57.0	3.4±0.5
Curriculum-related	56.1	3.3±0.5
Faculty-related	50.9	3.1±0.4

Table 3: Item-wise faculty agreement on major student-related barriers.

Barrier item	Agreement (%)
Student unpreparedness	79.8
Dependence on the teacher	74.8
Unequal participation in groups	73.8
Difficulty in self-directed learning	73.8
Low student motivation	72.8

Item-wise analysis within the student-related domain revealed that student unpreparedness was the most frequently reported barrier (79.8%). This was followed by dependence on the teacher (74.8%), unequal participation within groups (73.8%), difficulty in self-directed learning (73.8%), and low student motivation (72.8%) (Table 3).

Perceptions of barriers were largely similar across designation categories, years of teaching experience, and CBME training status, indicating consistency in faculty perceptions irrespective of professional role or experience.

Qualitative findings (thematic analysis)

Thematic analysis of open-ended responses yielded four major themes (Table 4).

Table 4: Thematic analysis of faculty-perceived barriers.

Theme	Key issues identified	Proportion (%)
Student-related	Lack of preparation, passive learning	46
Infrastructure-related	Space constraints, large group size	34
Curriculum-related	Time allocation, unclear objectives	12
Faculty-related	Workload, time constraints	8

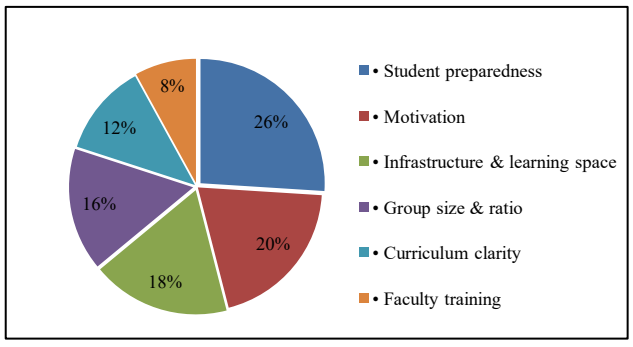

Figure 1: Thematic distribution of faculty-perceived barriers.

Thematic analysis of responses to open-ended questions yielded four major themes corresponding to the predefined domains. Student-related concerns constituted the largest proportion (46%) of qualitative responses. Faculty frequently described passive learning attitudes,

lack of preparation, and limited engagement during discussions. Infrastructure-related issues accounted for 34% of responses and primarily reflected space constraints and large batch sizes. Curriculum-related barriers comprised 12% of responses, highlighting inadequate time allocation and unclear session objectives. Faculty-related concerns were least frequently mentioned (8%) and centred on workload and competing responsibilities.

Overall, the qualitative findings were concordant with quantitative results, reinforcing that student-related factors were perceived as the dominant barriers affecting the effective implementation of small group teaching.

DISCUSSION

The present study examined faculty perceptions regarding barriers affecting small group teaching (SGT) within the competency-based medical education (CBME) framework. The findings demonstrate that student-related factors were perceived as the most significant impediments, followed by infrastructure- and curriculum-related challenges, while faculty-related barriers were comparatively less prominent. These observations highlight that although pedagogical reforms have been formally introduced, their effectiveness depends largely on learner engagement and institutional readiness.

Student unpreparedness emerged as the most frequently reported concern. Faculty described inadequate prior reading, passive participation, and dependence on teachers as major issues compromising the quality of discussion. Similar findings have been reported in empirical studies evaluating active learning environments. In a randomized crossover study, interactive engagement methods significantly improved conceptual understanding compared with traditional instruction, but the benefit was strongly linked to student preparation and participation.[12] In another controlled study among medical students, team-based and small group strategies improved performance only when students engaged in structured pre-class preparation.[13] These findings suggest that SGT effectiveness is contingent upon learner accountability and readiness.

Low motivation and unequal participation within groups were also widely perceived barriers. Research examining small-group dynamics has demonstrated that group cohesion, individual accountability, and clarity of roles significantly influence learning outcomes.[14] A quasi-experimental study comparing lecture-based teaching with small group discussions in undergraduate medical students found superior knowledge retention in the SGT group, but noted variability in outcomes depending on student engagement levels.[15] Similarly, studies assessing peer-assisted and collaborative learning models have shown that unequal contribution within groups can dilute the intended benefits of interactive teaching.[16] These observations align with the present findings that the success of SGT is closely tied to active and equitable participation.

Infrastructure-related barriers, particularly large batch sizes and inadequate physical space, were the second most frequently cited concerns. An institutional study evaluating implementation of small group methods in resource-constrained settings found that overcrowding and limited breakout rooms reduced opportunities for individualized feedback and interaction.[17] Another multicentric survey reported that optimal student-to-faculty ratios were strongly associated with higher satisfaction and perceived effectiveness of small group sessions.[18] These findings reinforce that structural constraints can undermine pedagogical innovations, even when faculty are motivated to implement them.

Curriculum-related barriers, including insufficient time allocation and misalignment with assessment systems, were also identified. Empirical evidence suggests that assessment drives learning behaviour. A prospective cohort study evaluating formative assessment integration in undergraduate medical education demonstrated improved student participation in interactive sessions when assessments were aligned with higher-order competencies.[19] Likewise, a controlled educational intervention showed that embedding structured evaluation within small group activities significantly enhanced preparation rates and participation quality.[20] These studies support the need for aligning SGT objectives with competency-based assessment strategies to sustain student engagement.

Interestingly, faculty-related barriers were least perceived in this study. This may reflect increasing exposure to faculty development initiatives during CBME implementation. A longitudinal study assessing the impact of faculty training programs on interactive teaching skills reported sustained improvements in facilitation competence and confidence among medical educators.[21] Another mixed-methods evaluation of CBME rollout found that trained faculty were more likely to adopt learner-centred strategies and perceive fewer personal barriers.[22] The relatively lower emphasis on faculty constraints in the present study may therefore indicate growing institutional adaptation to CBME principles.

The consistency of perceptions across designation and years of teaching experience further suggests that the identified barriers are systemic rather than individual. Student preparedness, infrastructural adequacy, and curricular alignment appear to represent interconnected domains influencing SGT effectiveness. Addressing these challenges requires structured student orientation toward self-directed learning, incorporation of accountability mechanisms, improved faculty-student ratios, and integration of competency-based assessments that reward active participation.

Overall, the findings underscore that, while SGT is widely endorsed as an effective strategy in medical education, its success within CBME depends on coordinated efforts to target learner behaviour, institutional infrastructure, and curricular coherence. Strengthening these components is essential to translating policy-level reforms into meaningful educational outcomes.

CONCLUSION

Faculty perceive student preparedness and motivation as the most significant barriers affecting Small Group Teaching in undergraduate medical education. Infrastructure and curricular alignment also influence implementation, while faculty-related challenges appear comparatively less prominent. The consistency of perceptions across designation and experience levels indicates that barriers are primarily systemic. Structured student orientation programs, reinforcement of self-directed learning skills, improved learning environments, and strengthened curricular alignment are essential to enhance the effectiveness of SGT within the CBME framework.

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