

PERCEPTION OF MBBS STUDENTS ON SMALL GROUP DISCUSSION VERSUS LECTURE AS LEARNING METHODS IN COMPETENCY-BASED MEDICAL EDUCATION

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ABSTRACT

Background: Competency-Based Medical Education (CBME) emphasizes learner-centered, interactive teaching strategies to promote higher-order competencies among undergraduate medical students. Small Group Discussions (SGDs) have increasingly been integrated alongside traditional lectures; however, student perception remains a critical indicator of their effectiveness within the CBME framework.

Objectives: To assess and compare MBBS students' perceptions of Small Group Discussions versus traditional lectures as learning methods under CBME and to identify factors associated with high SGD satisfaction.

Methods: A cross-sectional analytical study was conducted over three months among 250 Phase III (Part I) MBBS students exposed to both lectures and structured SGDs. Data were collected using a validated, self-administered questionnaire employing a five-point Likert scale. Descriptive statistics summarized perception scores. Comparative analysis between lectures and SGDs was performed using appropriate inferential tests. Univariate and multivariate logistic regression analyses were conducted to identify predictors of high SGD satisfaction (score ≥ 4). A p-value < 0.05 was considered statistically significant.

Results: Lectures were perceived as superior for structured content coverage (4.12 ± 0.78 vs. 3.68 ± 0.82 ; $p < 0.001$). However, SGDs demonstrated significantly higher scores in knowledge retention (4.23 ± 0.71 vs. 3.24 ± 0.91), engagement (4.31 ± 0.68 vs. 2.87 ± 0.96), understanding of clinical cases (4.42 ± 0.64 vs. 3.15 ± 0.88), communication skills (4.18 ± 0.73 vs. 2.56 ± 0.94), opportunity to clarify doubts (4.36 ± 0.69 vs. 2.68 ± 1.02), and overall satisfaction (4.28 ± 0.72 vs. 3.34 ± 0.87) ($p < 0.001$ for all). Independent predictors of high SGD satisfaction included attending more than four SGDs per month (aOR 5.92; 95% CI: 2.18–16.08) and regular pre-reading before sessions (aOR 3.68; 95% CI: 1.89–7.16).

Conclusion: While lectures remain effective for content delivery, SGDs are perceived as superior for engagement, retention, clinical reasoning, and communication skills within CBME. Regular exposure and student preparedness significantly enhance satisfaction. A blended approach integrating structured lectures with well-facilitated SGDs may optimize undergraduate medical education outcomes.

KEYWORDS: Competency-Based Medical Education; Small Group Discussion; Lecture Method; Medical Students; Student Perception; Active Learning; Undergraduate Medical Education.

INTRODUCTION

Medical education has undergone major reforms over the last decade, with a strong global movement toward outcome-based training and measurable competencies. The World Federation for Medical Education revised its global standards in 2020, emphasizing quality assurance, learner-centered approaches, and accountability in undergraduate medical training [1]. These reforms align with the broader philosophy of Competency-Based Medical Education (CBME), which focuses on ensuring that graduates demonstrate predefined competencies in knowledge, clinical skills, communication, professionalism, and ethics. In India, the National Medical Commission formally implemented the Competency Based Undergraduate Curriculum for the Indian Medical Graduate, redefining the expected outcomes of undergraduate medical training and shifting the emphasis from time-based instruction to competency attainment [2]. The Implementation Guide for CBME further operationalized this framework by detailing structured teaching-learning methods, integration strategies, and assessment mechanisms designed to promote active engagement of learners [3]. The updated 2024 CBME guidelines reinforced small group learning, early clinical exposure, and competency mapping as essential curricular components [4]. Parallel global policy frameworks, including the World Health Organization's updated strategy on human resources for health, have emphasized the need for transforming health professions education to prepare graduates capable of functioning effectively within evolving healthcare systems [5]. Faculty development initiatives introduced by the

Medical Council of India also recognize that successful implementation of CBME requires educators to transition from traditional didactic roles to facilitative and learner-centered teaching approaches [6].

Within this reform landscape, teaching-learning strategies have increasingly shifted from passive lectures toward interactive formats such as small group discussions (SGDs), team-based learning, and problem-based learning. Evidence supporting active learning methodologies is substantial. Freeman et al., in a large meta-analysis across science and health disciplines, demonstrated that students exposed to active learning approaches showed significantly improved examination performance and reduced failure rates compared to those taught through traditional lectures [7]. Such findings have influenced curricular design globally, strengthening the argument that passive transmission of information is insufficient for competency development. Burgess et al. reported that structured team-based learning enhances student accountability, engagement, and collaborative reasoning, all of which are integral to competency-based frameworks [8]. Similarly, Rahman et al. highlighted that students perceive small group sessions as more effective when facilitators adopt supportive, discussion-oriented roles rather than authoritative, lecture-style approaches, indicating that the effectiveness of SGDs depends substantially on facilitation quality [9].

Studies examining student perceptions further reinforce the educational value of small group teaching. Tadesse et al. observed that learners participating in SGDs reported improved conceptual clarity, enhanced motivation, and better retention of subject matter compared to passive formats [10]. AlQarni et al. found that undergraduate medical students preferred small group teaching particularly for complex topics, citing improved interaction, opportunity for clarification, and enhanced confidence in expressing doubts [11]. These findings align with the philosophical underpinnings of CBME, which require integration of knowledge with application and communication skills rather than isolated factual recall.

Competency-based education mandates alignment between defined outcomes and instructional strategies. Gruppen et al. emphasized that CBME is not merely a curricular restructuring but a fundamental shift in educational philosophy that demands interactive, feedback-rich learning environments [12]. Dolmans et al. described how problem-based and small group learning approaches encourage deep learning strategies by fostering reflection, peer dialogue, and contextual understanding rather than superficial memorization [13]. Furthermore, Van Diggele et al. demonstrated that small group learning formats enhance collaborative competencies and interprofessional communication, both of which are explicitly embedded within modern competency frameworks [14]. These insights suggest that SGDs may play a pivotal role in operationalizing CBME objectives.

Despite the documented benefits of interactive learning, lectures remain widely utilized in medical education due to their efficiency in delivering large volumes of information within limited time. Ali et al. compared undergraduate students' perceptions of lectures and small group discussions and reported that while lectures were valued for structured content delivery and broad syllabus coverage, small group discussions were preferred for engagement, critical thinking, and participatory learning [15]. This comparative perception reflects a pedagogical balance rather than a dichotomy; lectures may remain appropriate for introductory or foundational topics, whereas SGDs may better support higher-order learning outcomes.

The transition toward CBME in India necessitates careful evaluation of how students perceive these differing instructional modalities. While regulatory documents strongly advocate small group learning, the success of such strategies depends on contextual factors including facilitator competence, infrastructure, scheduling, and student preparedness. If learners perceive SGDs as unstructured, inadequately facilitated, or stressful, the intended competency gains may not be realized. Conversely, if lectures are perceived as overly passive and disengaging, they may fail to achieve meaningful learning outcomes despite content coverage.

Perception studies therefore serve as important quality indicators in educational reform. Understanding student perspectives provides insight into engagement levels, perceived knowledge retention, comfort in participation, and overall satisfaction with teaching modalities. Within the CBME framework, where active participation and self-directed learning are emphasized, evaluating how MBBS students perceive small group discussions versus lectures becomes particularly relevant. Such evidence can guide institutional refinements in teaching strategies, inform faculty development programs, and contribute to strengthening curriculum implementation.

In this context, assessing the perception of MBBS students regarding Small Group Discussions compared to traditional lectures is both timely and necessary. While global and national policies endorse interactive methods, empirical evidence underscores the academic advantages of active learning, theoretical models support alignment of interactive teaching with competency outcomes, and comparative studies reveal nuanced student preferences. However, contextual data within specific institutional settings remain essential for informed decision-making. Evaluating student perceptions in a CBME environment can help determine whether small group discussions are effectively fulfilling their intended role or whether strategic modifications are required to optimize both lectures and SGDs within undergraduate medical education.

METHODOLOGY

The present study was conducted as a cross-sectional, questionnaire-based analytical study to assess the perception of MBBS students regarding Small Group Discussions (SGDs) versus traditional lectures as learning methods within the Competency-Based Medical Education (CBME) framework. The study was carried out over a period of three months from December 2025 to February 2026 among undergraduate medical students who had been exposed to both didactic lectures and structured small group discussions as part of their regular academic curriculum.

The study population consisted of MBBS students in Phase III (Part I), as they had adequate exposure to both instructional modalities under the CBME curriculum. Students were included if they had attended at least five structured SGD sessions and provided written informed consent to participate in the study. Students with attendance below 75% in mandatory SGD sessions and those who submitted incomplete questionnaires were excluded to ensure validity and reliability of responses.

The sample size was calculated using the formula for estimation of a single proportion in cross-sectional studies:

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

Where $Z = 1.96$ corresponding to a 95% confidence interval,

p = expected proportion of positive perception (0.81),

d = allowable margin of error (0.05).

Substituting the values:

$$n = (1.96)^2 \times 0.81 \times (1 - 0.81) / (0.05)^2$$

The minimum calculated sample size was approximately 237 participants. To account for potential non-response and incomplete data, the final sample size was rounded to 250 participants. A complete enumeration approach was adopted, and all eligible Phase III (Part I) students present during the data collection period were invited to participate.

Data were collected using a validated, semi-structured, self-administered questionnaire developed after reviewing relevant literature and CBME guidelines. The questionnaire comprised multiple sections covering demographic variables, perception of lectures, perception of SGDs, comparative evaluation of both methods, facilitator role, learning environment, and overall satisfaction. Perception-based items were measured using a five-point Likert scale ranging from “strongly disagree” to “strongly agree.”

The questionnaire underwent content validation by subject experts in medical education prior to final administration. A pilot study was conducted among approximately 10% of the calculated sample size who met the inclusion criteria but were not included in the final analysis. Necessary modifications were made based on feedback regarding clarity and comprehensibility. Internal consistency of the tool was assessed using Cronbach’s alpha, and a value of ≥ 0.7 was considered acceptable for reliability.

Data collection was carried out in a supervised academic setting to minimize discussion among participants while completing the questionnaire. Participants were briefed regarding the purpose of the study and were assured that participation was voluntary. Written informed consent was obtained prior to distribution of the questionnaire. The average time taken to complete the questionnaire was approximately 15–20 minutes.

Completed questionnaires were coded and entered into Microsoft Excel and subsequently analyzed using IBM SPSS version 27. Descriptive statistics were used to summarize demographic variables and perception responses. Categorical variables were expressed as frequencies and percentages, while continuous variables were presented as mean $\pm$ standard deviation. Composite perception scores for lectures and SGDs were calculated by summing the Likert-scale responses for respective sections.

Inferential statistical analysis was performed to compare perception scores between lectures and SGDs. The Chi-square test was used to determine associations between categorical variables such as gender and preferred teaching modality. Independent t-test or Mann–Whitney U test was applied, where appropriate, to compare mean perception scores between subgroups. A p-value of less than 0.05 was considered statistically significant.

Ethical approval was obtained from the Institutional Human Ethics Committee prior to commencement of the study. Participation was entirely voluntary, and students were informed of their right to withdraw at any stage without academic consequences. No personal identifiers were recorded, and confidentiality of responses was strictly maintained. The study involved no invasive procedures, interventions, or experimental components, and the risk to participants was minimal.

RESULTS

The results of the present study describe the demographic profile of participants, comparative perception scores of lectures and small group discussions (SGDs), perceived facilitators and barriers to SGD participation, and factors associated with high SGD satisfaction. A total of 250 MBBS students were included in the analysis. Descriptive statistics were used to summarize perception patterns, followed by inferential analysis to compare learning modalities and identify predictors of satisfaction. The findings provide quantitative evidence regarding student preference, engagement levels, and determinants of effective SGD implementation within the CBME framework.

Table 1: demographic characteristics and SGD attendance pattern of study participants (n = 250)

Category	Frequency (n)	Percentage (%)
Age (Years)		
20–21	98	39.2
22–23	127	50.8
24–25	25	10
Mean $\pm$ SD	22.1 $\pm$ 1.2 years	
Gender		
Male	118	47.2
Female	132	52.8

Average SGD's attended per month		
<2 sessions	45	18
2–4 sessions	142	56.8
>4 sessions	63	25.2

Among the 250 study participants, the majority were aged 22–23 years (50.8%), followed by those aged 20–21 years (39.2%), with a smaller proportion in the 24–25 years age group (10.0%). The mean age was 22.1 ± 1.2 years, indicating a relatively homogeneous age distribution typical of MBBS students in the same academic phase.

Females constituted a slightly higher proportion of the study population (52.8%) compared to males (47.2%), showing a near-equal gender distribution.

With respect to participation in small group discussions, more than half of the students (56.8%) attended 2–4 SGD's per month, while 25.2% attended more than four sessions per month. Only 18.0% of participants attended fewer than two SGD's monthly, suggesting generally good exposure to SGD-based learning among the study population.

Table 2: comparative perception scores of lectures vs SGD among MBBS students (n = 250)

Learning Method	Mean Score $\pm$ SD (out of 5)	Median (IQR)	p-value
Effectiveness in content coverage			
Lecture	4.12 ± 0.78	4 (4–5)	<0.001
SGD	3.68 ± 0.82	4 (3–4)	
Knowledge Retention			
Lecture	3.24 ± 0.91	3 (3–4)	<0.001
SGD	4.23 ± 0.71	4 (4–5)	
Engagement & Interest			
Lecture	2.87 ± 0.96	3 (2–3)	<0.001
SGD	4.31 ± 0.68	4 (4–5)	
Understanding of Clinical Cases			
Lecture	3.15 ± 0.88	3 (3–4)	<0.001
SGD	4.42 ± 0.64	5 (4–5)	
Communication Skills Development			
Lecture	2.56 ± 0.94	3 (2–3)	<0.001
SGD	4.18 ± 0.73	4 (4–5)	
Opportunity to clarify doubts			
Lecture	2.68 ± 1.02	3 (2–3)	<0.001
SGD	4.36 ± 0.69	4 (4–5)	
Overall Satisfaction			
Lecture	3.34 ± 0.87	3 (3–4)	<0.001
SGD	4.28 ± 0.72	4 (4–5)	

The comparative analysis of perception scores revealed significant differences between lectures and small group discussions (SGDs) across multiple learning domains among MBBS students. Lectures were perceived as more effective for content coverage, with a significantly higher mean score compared to SGD's (4.12 ± 0.78 vs. 3.68 ± 0.82 ; $p < 0.001$). In contrast, SGD's demonstrated significantly higher perception scores in all higher-order learning domains. Students rated SGD's superior for knowledge retention (4.23 ± 0.71 vs. 3.24 ± 0.91), engagement and interest (4.31 ± 0.68 vs. 2.87 ± 0.96), and understanding of clinical cases (4.42 ± 0.64 vs. 3.15 ± 0.88), with all differences being statistically significant ($p < 0.001$).

Similarly, SGDs were perceived to be more effective in communication skills development (4.18 ± 0.73 vs. 2.56 ± 0.94) and in providing greater opportunity to clarify doubts (4.36 ± 0.69 vs. 2.68 ± 1.02), compared to lectures ($p < 0.001$ for both). Overall satisfaction scores were also significantly higher for SGDs than for lectures (4.28 ± 0.72 vs. 3.34 ± 0.87 ; $p < 0.001$), indicating a stronger overall preference for SGD-based learning. These findings suggest that while lectures remain effective for structured content delivery, SGDs are perceived as superior for active learning, engagement, and competency-based outcomes.

Table 3: student perception regarding barriers and facilitators in SGD participation (n = 250)

Statement	Strongly Disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly Agree n (%)	Mean $\pm$ SD
Process & Preparedness						
Topics announced well in advance	8 (3.2)	12 (4.8)	23 (9.2)	127 (50.8)	80 (32.0)	4.04 ± 0.93
I regularly read materials before SGD	18 (7.2)	52 (20.8)	48 (19.2)	98 (39.2)	34 (13.6)	3.31 ± 1.16
Equal opportunity to speak	5 (2.0)	15 (6.0)	32 (12.8)	135 (54.0)	63 (25.2)	3.94 ± 0.89
Comfortable expressing doubts	4 (1.6)	11 (4.4)	28 (11.2)	128 (51.2)	79 (31.6)	4.07 ± 0.87
Peer inputs helpful	3 (1.2)	7 (2.8)	19 (7.6)	142 (56.8)	79 (31.6)	4.15 ± 0.78
Stress & Motivation						
SGD more stressful than lectures	42 (16.8)	89 (35.6)	56 (22.4)	48 (19.2)	15 (6.0)	2.62 ± 1.15
More motivated to study SGD topics	6 (2.4)	18 (7.2)	37 (14.8)	121 (48.4)	68 (27.2)	3.91 ± 0.97
Facilitator Role						
Encourages quiet students	7 (2.8)	19 (7.6)	35 (14.0)	132 (52.8)	57 (22.8)	3.85 ± 0.95
Acts as guide not lecturer	5 (2.0)	12 (4.8)	28 (11.2)	138 (55.2)	67 (26.8)	4.00 ± 0.88
Keeps discussion focused	4 (1.6)	9 (3.6)	26 (10.4)	141 (56.4)	70 (28.0)	4.06 ± 0.83
Provides constructive feedback	6 (2.4)	14 (5.6)	31 (12.4)	129 (51.6)	70 (28.0)	3.97 ± 0.92
Bridges theory and practice	3 (1.2)	8 (3.2)	24 (9.6)	136 (54.4)	79 (31.6)	4.12 ± 0.82
Infrastructure						
Seating allows interaction	9 (3.6)	23 (9.2)	41 (16.4)	121 (48.4)	56 (22.4)	3.77 ± 1.02
AV aids adequate	12 (4.8)	28 (11.2)	52 (20.8)	118 (47.2)	40 (16.0)	3.58 ± 1.05
Duration sufficient	8 (3.2)	19 (7.6)	38 (15.2)	128 (51.2)	57 (22.8)	3.83 ± 0.98

Student perceptions regarding barriers and facilitators of small group discussion (SGD) participation revealed several important insights across domains of preparedness, stress, facilitator role, and infrastructure.

Under process and preparedness, a majority of students expressed positive perceptions. Most participants agreed or strongly agreed that topics were announced well in advance (82.8%), reflected by a high mean score (4.04 ± 0.93). Students

also reported feeling comfortable expressing doubts (82.8%; mean 4.07 ± 0.87) and perceived that there was equal opportunity to speak during discussions (79.2%; mean 3.94 ± 0.89). However, regular pre-reading before SGDs was suboptimal, with only about half of the students agreeing or strongly agreeing (52.8%), and this item showed a comparatively lower mean score (3.31 ± 1.16), indicating a potential barrier to effective participation. Peer interaction was viewed very positively, with a large proportion of students agreeing that peer inputs were helpful (88.4%), yielding one of the highest mean scores in the table (4.15 ± 0.78), highlighting the collaborative advantage of SGDs.

In the stress and motivation domain, perceptions were mixed. While a substantial proportion of students disagreed that SGDs were more stressful than lectures (52.4%), nearly one-quarter reported some level of stress, resulting in a lower mean score (2.62 ± 1.15). Conversely, SGDs were perceived as motivating, with 75.6% of students reporting increased motivation to study SGD topics (mean 3.91 ± 0.97). Regarding the facilitator role, responses were largely favorable. Most students agreed that facilitators encouraged quiet students, acted as guides rather than lecturers, and kept discussions focused, with mean scores ranging from 3.85 to 4.06. The ability of facilitators to bridge theory and practice was particularly well appreciated (mean 4.12 ± 0.82), reinforcing the role of facilitators in effective SGD implementation.

In terms of infrastructure, perceptions were comparatively less favorable. Although a majority agreed that seating allowed interaction and session duration was sufficient, these items had lower mean scores (3.77 ± 1.02 and 3.83 ± 0.98 , respectively). Adequacy of audiovisual aids received the lowest mean score (3.58 ± 1.05), suggesting infrastructure as a notable area for improvement. Overall, the findings indicate that while SGDs are well supported by effective facilitation, peer interaction, and student engagement, inadequate pre-session preparation, perceived stress among a subset of students, and infrastructural limitations represent key barriers to optimal SGD participation.

Table 4: univariate analysis of factors associated with high SGD satisfaction (score ≥ 4) among MBBS students (n = 250)

Category	High SGD Satisfaction n (%)	Low SGD Satisfaction n (%)	Odds Ratio (95% CI)	p-value
Age				
20–21 years	62 (63.3)	36 (36.7)	Ref	0.284
22–23 years	88 (69.3)	39 (30.7)	1.31 (0.76–2.25)	
24–25 years	19 (76.0)	6 (24.0)	1.84 (0.68–4.98)	
Gender				
Male	75 (63.6)	43 (36.4)	Ref	0.042
Female	94 (71.2)	38 (28.8)	1.42 (1.01–2.28)	
SGD attendance/month				
<2 sessions	18 (40.0)	27 (60.0)	Ref	<0.001
2–4 sessions	98 (69.0)	44 (31.0)	3.34 (1.68–6.65)	
>4 sessions	53 (84.1)	10 (15.9)	7.95 (3.42–18.48)	
Regular pre-reading				
No (SD/D/N)	58 (49.2)	60 (50.8)	Ref	<0.001
Yes (A/SA)	111 (84.1)	21 (15.9)	5.47 (3.10–9.65)	
Comfort expressing doubts				
No (SD/D/N)	18 (41.9)	25 (58.1)	Ref	<0.001
Yes (A/SA)	151 (72.9)	56 (27.1)	3.75 (1.92–7.32)	
Peer inputs helpful				
No (SD/D/N)	11 (37.9)	18 (62.1)	Ref	<0.001
Yes (A/SA)	158 (71.5)	63 (28.5)	4.10 (1.84–9.15)	
Facilitator encouragement				
No (SD/D/N)	28 (45.9)	33 (54.1)	Ref	<0.001
Yes (A/SA)	141 (74.6)	48 (25.4)	3.46 (1.94–6.18)	
Facilitator acts as guide				
No (SD/D/N)	20 (44.4)	25 (55.6)	Ref	<0.001
Yes (A/SA)	149 (72.7)	56 (27.3)	3.32 (1.75–6.31)	

(*SD – Strongly Disagree, D-Disagree, N-Neutral, A-Agree, SA-Strongly Agree)

Univariate analysis identified several factors significantly associated with high SGD satisfaction (score ≥ 4) among MBBS students. Age was not significantly associated with SGD satisfaction, although a gradual increase in the proportion of

students with high satisfaction was observed with increasing age; however, this trend did not reach statistical significance ($p = 0.284$). Gender showed a significant association with SGD satisfaction, with female students demonstrating higher odds of high satisfaction compared to males ($OR = 1.42$, 95% CI: 1.01–2.28; $p = 0.042$).

A strong and statistically significant association was observed between frequency of SGD attendance and satisfaction. Students attending 2–4 sessions per month had over three times higher odds of high satisfaction ($OR = 3.34$, 95% CI: 1.68–6.65), while those attending more than four sessions per month had nearly eight times higher odds ($OR = 7.95$, 95% CI: 3.42–18.48), compared to those attending fewer than two sessions ($p < 0.001$). Regular pre-reading before SGDs emerged as a significant predictor, with students who reported regular preparation showing substantially higher odds of satisfaction ($OR = 5.47$, 95% CI: 3.10–9.65; $p < 0.001$). Similarly, students who felt comfortable expressing doubts during SGDs were more likely to report high satisfaction ($OR = 3.75$, 95% CI: 1.92–7.32; $p < 0.001$).

Positive perceptions of the learning environment and facilitation were also strongly associated with higher satisfaction. Students who perceived peer inputs as helpful had significantly greater odds of high satisfaction ($OR = 4.10$, 95% CI: 1.84–9.15), while those who felt encouraged by facilitators ($OR = 3.46$, 95% CI: 1.94–6.18) and perceived facilitators as acting as guides rather than lecturers ($OR = 3.32$, 95% CI: 1.75–6.31) were also significantly more satisfied ($p < 0.001$ for all). Overall, the univariate analysis indicates that SGD attendance frequency, student preparedness, comfort in participation, peer interaction, and facilitator-related factors are key determinants of high SGD satisfaction among MBBS students.

Table 5: multivariate logistic regression analysis of predictors for high SGD satisfaction (n = 250)

Category	aOR (95% CI)	p-value
Gender		
Male	Ref	0.412
Female	1.28 (0.71-2.31)	
SGD attendance per month		
<2 sessions	Ref	–
2–4 sessions	2.84 (1.32-6.12)	0.008
>4 sessions	5.92 (2.18-16.08)	<0.001
Regular pre-reading before SGD		
No (SD/D/N)	Ref	<0.001
Yes (A/SA)	3.68 (1.89-7.16)	
Comfort expressing doubts in SGD		
No (SD/D/N)	Ref	0.063
Yes (A/SA)	2.12 (0.96-4.68)	
Peer inputs helpful		
No (SD/D/N)	Ref	0.161
Yes (A/SA)	1.98 (0.76-5.16)	
Facilitator acts as guide		
No (SD/D/N)	Ref	0.114
Yes (A/SA)	1.87 (0.86-4.06)	
Infrastructure adequate		
No (SD/D/N)	Ref	0.082
Yes (A/SA)	1.76 (0.93-3.33)	

(*SD – Strongly Disagree, D-Disagree, N-Neutral, A-Agree, SA-Strongly Agree)

Multivariate logistic regression analysis was performed to identify independent predictors of high SGD satisfaction after adjusting for potential confounders. Frequency of SGD attendance emerged as the strongest independent predictor. Students attending 2–4 SGDs per month had nearly three times higher odds of high satisfaction ($aOR = 2.84$, 95% CI: 1.32–6.12; $p = 0.008$), while those attending more than four sessions per month had almost six times higher odds ($aOR = 5.92$, 95% CI: 2.18–16.08; $p < 0.001$), compared to students attending fewer than two sessions per month.

Regular pre-reading before SGD also remained a significant independent predictor of high satisfaction. Students who prepared in advance were more than three times as likely to report high satisfaction ($aOR = 3.68$, 95% CI: 1.89–7.16; $p < 0.001$).

In contrast, variables that were significant in the univariate analysis such as gender, comfort in expressing doubts, perceived usefulness of peer inputs, facilitator acting as a guide, and adequacy of infrastructure did not retain statistical significance in the multivariate model. Although these factors showed positive associations with SGD satisfaction, their effects were attenuated after adjustment, suggesting potential confounding or interrelationships among predictors. Overall, the multivariate analysis indicates that regular exposure to SGDs and student preparedness are the key independent determinants of high SGD satisfaction among MBBS students, underscoring the importance of both adequate session frequency and active learner engagement for effective SGD implementation.

DISCUSSION

The present study evaluated MBBS students' perceptions of Small Group Discussions (SGDs) in comparison with traditional lectures within the Competency-Based Medical Education (CBME) framework. The findings revealed a clear pattern: lectures were perceived as superior for structured content coverage (mean 4.12 ± 0.78 vs. 3.68 ± 0.82 ; $p < 0.001$), whereas SGDs consistently outperformed lectures across higher-order learning domains. Knowledge retention was rated higher in SGDs (4.23 ± 0.71 vs. 3.24 ± 0.91), as was engagement and interest (4.31 ± 0.68 vs. 2.87 ± 0.96). Students also perceived SGDs to be more effective in enhancing understanding of clinical cases (4.42 ± 0.64 vs. 3.15 ± 0.88), communication skills (4.18 ± 0.73 vs. 2.56 ± 0.94), and opportunity to clarify doubts (4.36 ± 0.69 vs. 2.68 ± 1.02), with all differences statistically significant ($p < 0.001$). Overall satisfaction similarly favored SGDs (4.28 ± 0.72 vs. 3.34 ± 0.87).

Duganavar et al. [16], in a quasi-experimental comparison of lectures, SGDs, and self-directed learning, demonstrated that students exposed to small group formats achieved significantly higher post-test scores than those receiving lectures alone. Although their work focused on objective performance outcomes rather than perception scales, the direction of findings closely parallels the present study, where students rated SGDs as superior for retention and applied understanding. This convergence between subjective perception and objective academic outcomes reinforces the pedagogical strength of interactive formats.

The broader educational shift during the COVID-19 pandemic, as described by Rose [17], emphasized adaptability and learner engagement in maintaining educational continuity. Interactive methods were highlighted as essential for preserving academic rigor in uncertain contexts. In the present study, 75.6% of participants reported that SGDs motivated them to study more effectively, suggesting that interactive modalities continue to foster engagement even beyond pandemic-related disruptions. This observation aligns with contemporary discourse on resilient and learner-centered educational systems.

Eva and Regehr [18] discussed the theoretical foundations of learner-centered education, emphasizing that effective implementation requires integration of facilitation, structure, and student accountability. In the current analysis, facilitator-related variables—such as acting as a guide (mean 4.00 ± 0.88) and bridging theory with practice (mean 4.12 ± 0.82)—were positively rated and significantly associated with satisfaction in univariate analysis. However, after adjustment in multivariate regression, these factors did not remain independent predictors. This suggests that while facilitation quality enhances the learning environment, its impact may be mediated by more fundamental elements such as exposure frequency and student preparedness.

Indian literature provides additional contextual insight. Sharma and Chhatwal [19] observed that students valued CBME's emphasis on participation and applied learning but noted inconsistencies in delivery across institutions. Ramanathan et al. [20] similarly identified infrastructural constraints and faculty adaptation challenges during CBME implementation. In the present study, infrastructure-related variables, particularly adequacy of audiovisual aids (mean 3.58 ± 1.05), received comparatively lower ratings, indicating room for improvement. The similarity between these findings and national reports suggests that logistical and structural factors continue to influence the effectiveness of interactive teaching modalities.

Bhagat [21] further highlighted that CBME implementation during the pandemic was complicated by reduced clinical exposure and limited interactive sessions. Despite these challenges, the present study demonstrated that students who attended more than four SGDs per month had nearly six times higher adjusted odds of high satisfaction (aOR 5.92; 95% CI: 2.18–16.08; $p < 0.001$). This indicates that consistent exposure plays a pivotal role in shaping positive perception, potentially offsetting structural disruptions.

Engagement remains a central determinant of learning effectiveness. Nayak et al. [22] reported that approximately two-thirds of undergraduate medical students felt more actively involved during small group tutorials compared to lectures. The present findings reflect an even stronger trend, with engagement scores for SGDs (4.31 ± 0.68) substantially exceeding those for lectures (2.87 ± 0.96). Such differences underscore the participatory advantage inherent to smaller group formats, particularly within competency-driven curricula.

Vasudevan et al. [23] demonstrated improved conceptual clarity and application of epidemiology principles following structured small group teaching. Similarly, Roshni and Rahim [24] reported enhanced comprehension and interaction in family medicine sessions conducted through SGDs. These observations are congruent with the present study, where understanding of clinical cases was rated highest among SGD domains (mean 4.42 ± 0.64). The alignment across diverse subjects suggests that the benefits of small group pedagogy extend beyond discipline-specific contexts.

Dayananda et al. [25] found that students perceived small group teaching as more interactive and confidence-building than lectures, particularly in second-year cohorts. Shinde et al. [26] also documented higher satisfaction with SGDs in terms of participation and conceptual clarity. The present study extends these findings by quantitatively demonstrating that 84.1% of students who engaged in regular pre-reading reported high SGD satisfaction, with preparation emerging as a strong independent predictor (aOR 3.68; 95% CI: 1.89–7.16; $p < 0.001$). This emphasizes that learner accountability enhances the perceived effectiveness of interactive teaching.

Earlier critiques of CBME by Sharma et al. [27] and faculty perceptions documented by Rustagi et al. [28] highlighted concerns regarding readiness and adaptation challenges during curricular transition. While those studies predated widespread CBME consolidation, the present findings suggest gradual normalization of interactive pedagogy, evidenced by high mean scores across most SGD domains. However, the absence of independent significance for some facilitator and infrastructure variables in multivariate analysis indicates that implementation remains multifactorial and context-sensitive.

Older hybrid curriculum studies by Sahu et al. [29] and perception analyses by Annamalai et al. [30] similarly reported positive student attitudes toward SGDs, particularly for interactive and application-oriented learning. The present study corroborates these earlier trends within a fully implemented CBME framework, demonstrating sustained student preference for small group modalities over lectures in higher-order competencies.

A notable discrepancy across studies lies in the domain of content coverage. While Duganavar et al. [16] reported no significant disadvantage of SGDs in syllabus completion, students in the present study perceived lectures as more effective for content delivery (mean 4.12 ± 0.78). This difference may reflect time constraints within small group formats or student expectations of structured information delivery through lectures. It suggests that a blended approach may optimize both breadth and depth of learning.

CONCLUSION

The present study has certain methodological and contextual limitations that should be considered while interpreting the findings. Being cross-sectional in design, it assessed student perceptions at a single point in time and therefore could not establish causality between teaching modality and learning outcomes. The study relied on self-reported perception scores rather than objective academic performance indicators; although perception is an important educational quality marker within CBME, it may not always directly correspond to measurable competence. The analysis was confined to a single academic setting and a specific phase of MBBS training, which may limit generalizability to other institutions with different infrastructure, faculty training levels, and implementation strategies. Potential response bias cannot be entirely excluded, as students might have provided socially desirable answers favoring interactive methods aligned with current curricular reforms. Additionally, certain factors such as individual learning styles, prior academic performance, and personality traits were not evaluated and may have influenced satisfaction levels. Despite multivariate adjustment, unmeasured confounding may still exist.

Notwithstanding these limitations, the findings provide important insights into teaching-learning preferences within a CBME framework. Lectures were perceived as effective for structured content coverage, whereas Small Group Discussions (SGDs) were consistently rated superior across domains reflecting higher-order competencies, including knowledge retention, engagement, clinical reasoning, communication skills, and overall satisfaction. Regular attendance and prior preparation emerged as strong independent predictors of high satisfaction, underscoring the importance of student accountability and consistent exposure. The results support the integration of structured lectures for foundational knowledge with well-facilitated SGDs for application, interaction, and competency development. A balanced, blended approach may therefore optimize educational outcomes in undergraduate medical training.

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