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## Comparative Analysis of Active Learning Strategies in Large Group vs Small Group Teaching Among First-Year MBBS Students

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### KEYWORDS

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engagement,  
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### ABSTRACT:

**Background:** The transition from passive to active learning in medical education has gained momentum with the introduction of Competency-Based Medical Education (CBME) in India. However, the efficacy of active learning strategies in different group settings—large versus small—remains underexplored in the Indian undergraduate medical context.

**Objectives:** To compare the effectiveness of active learning strategies in large group teaching (LGT) versus small group teaching (SGT) among first-year MBBS students in terms of knowledge retention, student engagement, and satisfaction.

**Methods:** A quasi-experimental study was conducted on 100 first-year MBBS students, randomly divided into two groups of 50 each. The intervention consisted of two sessions—one conducted in a large group using interactive lectures and think-pair-share, and the other in small groups using problem-based learning (PBL) and group discussion. Pre- and post-tests assessed knowledge gain. Student engagement and satisfaction were measured using validated Likert-scale questionnaires. Statistical analysis included paired and unpaired t-tests, and Chi-square tests.

**Results:** The small group teaching method resulted in significantly higher post-test scores ( $p < 0.01$ ) compared to large group sessions. Student engagement and satisfaction were also rated significantly higher in the SGT cohort. Students in SGT reported better peer interaction, deeper understanding of concepts, and more opportunities for clarification.

**Conclusion:** Active learning strategies are effective in both large and small group settings, but small group teaching offers superior outcomes in knowledge retention, engagement, and student satisfaction.

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## Introduction

Medical education has traditionally relied on didactic lectures, particularly in the preclinical years. However, this approach often leads to passive learning, limiting student engagement and critical thinking [1]. The adoption of Competency-Based Medical Education (CBME) in India mandates the use of active learning strategies to foster lifelong learning and skill acquisition [2]. Active learning involves instructional methods that engage students in the learning process, requiring them to read, write, discuss, or engage in problem-solving [3].

Large group teaching (LGT), although efficient for content delivery, often struggles to sustain attention and encourage participation. In contrast, small group teaching (SGT) offers more personalized attention, peer interaction, and better assessment of individual learning needs [4,5]. Despite these apparent benefits, there remains a paucity of empirical data comparing the effectiveness of active learning in LGT and SGT formats in the Indian medical education context.

This study aims to bridge this gap by analyzing the comparative impact of active learning strategies used in LGT versus SGT among first-year MBBS students.

## Objectives

1. To assess knowledge gain among first-year MBBS students using active learning strategies in large vs small group teaching.
2. To evaluate student engagement and satisfaction in both teaching formats.
3. To identify student preferences and perceived benefits of each teaching method.

## Materials and Methods

### Study Design and Participants

This quasi-experimental study was conducted at a government medical college over two months. Ethical clearance was obtained from the Institutional Ethics Committee. One hundred first-year MBBS students were randomly assigned into two groups of 50 each.

## Teaching Interventions

- Large Group Teaching (LGT): Conducted in a lecture hall using interactive lecture techniques such as questioning, think-pair-share, and audience response systems.
- Small Group Teaching (SGT): Conducted in tutorial rooms using problem-based learning (PBL), group discussions, and mini-case studies.

## Assessment Tools

- Pre- and Post-Test: Comprised of 20 multiple-choice questions (MCQs) based on the session content.
- Engagement and Satisfaction Questionnaire: A validated 10-item Likert scale assessing aspects like interaction, motivation, clarity, and overall satisfaction.

## Statistical Analysis

Data were analyzed using SPSS version 26.0. Paired and unpaired t-tests were used for intra- and inter-group comparisons. Chi-square tests were used for categorical variables. A p-value <0.05 was considered statistically significant.

## Results

### Knowledge Gain

The mean pre-test scores for both groups were comparable (LGT:  $9.4 \pm 2.1$ ; SGT:  $9.6 \pm 2.3$ ). Post-test scores were significantly higher in the SGT group ( $14.8 \pm 1.7$ ) compared to the LGT group ( $12.5 \pm 2.0$ ),  $p < 0.01$ .

### Student Engagement and Satisfaction

Higher engagement was reported in SGT (mean score: 4.6/5) than LGT (3.8/5),  $p < 0.01$ . Students appreciated peer discussion, personalized feedback, and better concept clarity in SGT.

### Student Preferences

When asked about preferred teaching format, 76% of students favored SGT, citing better interaction and deeper understanding. However, 24% preferred LGT for broader coverage of content.



## Discussion

This study demonstrates that active learning strategies, though effective in both large group teaching (LGT) and small group teaching (SGT), yield significantly better outcomes when implemented in small groups. The small group setting facilitated higher post-test scores, increased student engagement, and greater satisfaction levels compared to large group teaching, aligning with findings from prior educational research [6,7].

One of the key reasons for the enhanced effectiveness in SGT is the increased opportunity for personalized interaction, clarification of doubts, and active peer discussion. Small group formats enable instructors to provide individualized feedback, which strengthens learning and promotes higher-order cognitive skills [8]. In contrast, large group settings, despite using active methods like think-pair-share and audience response systems, tend to dilute the depth of interaction due to logistical constraints and a higher student-to-teacher ratio.

Problem-based learning (PBL) and group discussion—core components of SGT in this study—allow students to apply theoretical knowledge to real-world scenarios, fostering critical thinking, analytical reasoning, and teamwork skills. These competencies are essential in modern medical practice and are explicitly emphasized in the Competency-Based Medical Education (CBME) curriculum [2,5]. Active learning in small groups also aligns with adult learning theory, which posits that learners are more motivated when content is relevant, participatory, and experience-driven [17].

Interestingly, a minority of students (24%) still preferred large group sessions, citing structured content delivery and time efficiency. This underscores that LGT still holds value, especially for introducing broad foundational knowledge. However, these findings support a balanced integration of both teaching modalities, with an emphasis on using large group sessions for overviews and small group formats for in-depth learning and skill development [9,14].

The study's implications for curriculum planners and educators are significant. There is a need to restructure anatomy and other basic science teaching to include more active learning in small groups. Institutions should invest in faculty development programs that train educators to

effectively facilitate small group learning and incorporate technology-enhanced active learning methods even in large settings when small groups are not feasible [19].

## Limitations

This study was conducted in a single institution, which may limit generalizability. Furthermore, the intervention period was short, and long-term retention was not assessed. The results may also be influenced by the novelty effect, as students are not frequently exposed to active learning. Future studies should consider longitudinal analysis, include multiple institutions, and explore faculty perceptions and logistical barriers to SGT.

## Conclusion

The comparative analysis clearly indicates that while active learning strategies enhance teaching effectiveness across both large and small group settings, small group teaching provides distinct advantages in knowledge retention, engagement, and student satisfaction among first-year MBBS students.

Given the CBME's emphasis on learner-centered education and the growing need to develop critical thinking and communication skills in medical graduates, small group teaching formats should be more widely implemented in Indian medical colleges. Structured faculty training, infrastructural support, and integrated curricular planning are essential to scale and sustain the shift toward more interactive, outcome-based education.

A hybrid approach combining large group lectures for foundational concepts and small group discussions for application and analysis may provide an optimal teaching model in resource-constrained settings. Ultimately, tailoring teaching strategies to student needs, content complexity, and institutional capacity will ensure a more meaningful and effective medical education experience.

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