



A Comparative Study of Small Group Teaching Versus Traditional Lectures in Undergraduate Pediatric Education

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ABSTRACT

Background: The transition from traditional didactic lectures to interactive teaching methods is a major focus in medical education. While lectures allow for standardized delivery using visual aids, small group teaching (SGT) facilitates one-on-one interaction.

Objective: To compare the effectiveness of small group teaching versus traditional didactic lectures on the knowledge acquisition of undergraduate medical students.

Methods: A prospective comparative study was conducted among the 2021 batch of undergraduate medical students at Travancore Medical College, Kollam. Out of 150 students, 120 participated and were randomly divided into two equal cohorts (n=60). Group A received Small Group Teaching (three sessions of 20 students each), while Group B attended a traditional Lecture (one session of 60 students utilizing PowerPoint and visual aids). Effectiveness was assessed using a standardized 50-mark post-test containing multiple-choice and short-answer questions.

Results: Group A (SGT) achieved a higher mean post-test score of 39.2 ± 5.1 , compared to Group B (Lecture), which scored 37.1 ± 5.8 . The difference in total scores was statistically significant ($p = 0.037$). Sub-analysis revealed that Group B performed slightly better on factual recall questions, whereas Group A demonstrated significantly higher scores in clinical application and problem-solving ($p = 0.012$).

Conclusion: Small group teaching is highly effective for fostering clinical reasoning and application skills among undergraduate medical students, though traditional lectures with strong visual aids remain efficient for factual knowledge dissemination. A blended approach may yield the best educational outcomes.

I. INTRODUCTION

Undergraduate medical education is undergoing a paradigm shift from passive information transfer to active, student-centered learning. The Department of Paediatrics requires students to not only memorize complex

developmental and pathological facts but also to apply this knowledge in clinical scenarios.

Traditionally, the didactic lecture has been the cornerstone of medical education. Lectures are highly efficient for delivering a large volume of standardized information to a broad audience and allow the educator to utilize comprehensive visual aids, such as clinical photographs and flowcharts, via PowerPoint presentations [1, 2]. However, lectures often suffer from reduced student engagement and limited opportunities for interactive feedback [3].

Conversely, Small Group Teaching (SGT) promotes an active learning environment. By restricting the student-to-teacher ratio, SGT encourages one-on-one interaction, peer collaboration, and immediate clarification of doubts [4, 5]. Despite these benefits, SGT is resource-intensive and relies heavily on the facilitation skills of the tutor [6].

This study aims to evaluate and compare the immediate educational impact of SGT versus traditional didactic lectures among undergraduate medical students at Travancore Medical College, Kerala, to determine which modality better serves the learning objectives in pediatrics.

II. MATERIAL AND METHODS

- **Study Design:** A prospective, randomized comparative study.
- **Study Setting:** Department of Paediatrics, Travancore Medical College, Kollam, Kerala.
- **Study Period:** January to December 2025
- **Study Population:** Undergraduate medical students of the 2021 admission batch.
- **Sample Size:** Out of a total batch of 150 students, 30 students were unavailable or dropped out, yielding a final sample size of 120 participants.
- **Randomization & Intervention:** The 120 students were randomly allocated into two groups of 60, after obtaining informed consent for the same:
 - **Group A (Small Group Teaching):** Subdivided into three smaller cohorts of 20 students each. They received interactive,



- discussion-based teaching on a specific pediatric topic.
- **Group B (Traditional Lecture):** Taught as a single cohort of 60 students using a standard didactic lecture format enriched with PowerPoint slides and visual aids covering the exact same topic.
- **Assessment:** Knowledge acquisition was evaluated immediately following the sessions using a validated 50-mark post-test. The test comprised two domains: Factual Recall (20 marks) and Clinical Application/Problem Solving (30 marks).
- **Statistical Analysis:** Data were tabulated in Microsoft Excel and analyzed using SPSS. Continuous variables were expressed as Mean

± Standard Deviation (SD). An independent samples t-test was used to compare the means between the two groups. A p-value of < 0.05 was considered statistically significant.

III. RESULTS

All 120 enrolled students completed their respective teaching modules and the subsequent post-test assessment.

1. Overall Performance

Students in the Small Group Teaching cohort demonstrated a statistically significant improvement in overall post-test scores compared to the lecture cohort.

Table 1: Comparison of Total Post-Test Scores (Out of 50)

Group	N	Mean Score	Standard Deviation (SD)	p-value
Group A (SGT)	60	39.2	5.1	0.037*
Group B (Lecture)	60	37.1	5.8	

2. Domain-Specific Performance

A sub-analysis of the post-test domains revealed varying strengths associated with each teaching method. Group B (Lecture) showed a

marginal, though not statistically significant, advantage in factual recall. However, Group A (SGT) significantly outperformed Group B in clinical application questions.

Table 2: Domain-Specific Score Comparison

Assessment Domain	Group A (SGT) Mean ± SD	Group B (Lecture) Mean ± SD	p-value
Factual Recall (Max 20)	14.8 ± 2.2	15.6 ± 1.9	0.068
Clinical Application (Max 30)	24.4 ± 2.9	21.5 ± 3.9	0.012*

Interpretation: The one-on-one interaction in small groups significantly enhanced the students' ability to apply concepts to clinical scenarios, whereas the visual aids in the lecture format adequately supported the retention of factual data.

IV. DISCUSSION

The current study evaluated the efficacy of two distinct pedagogical approaches—Small Group Teaching and didactic lectures—among 120 undergraduate students. Our findings suggest that while both methods are effective, they serve slightly different educational purposes.



The overall mean score was significantly higher in the SGT group (39.2 vs. 37.1, $p = 0.037$). This aligns with the findings of Steinert (2004), who reported that small group environments foster deeper cognitive processing through active dialogue and peer-to-peer explanation [4]. The intimate setting of 20 students per group allowed for immediate error correction and personalized interaction, which is often lost in a larger lecture hall setting.

Interestingly, our domain-specific analysis showed that traditional lectures remain highly competitive for delivering factual knowledge. Group B scored an average of 15.6 out of 20 in factual recall, edging out Group A. As Brown and Manogue (2001) highlighted, well-structured lectures utilizing rich visual aids—such as the PowerPoint presentations used in our study—are highly effective for transmitting structured data and establishing a foundational framework of knowledge [2].

However, the true advantage of SGT emerged in the clinical application domain ($p = 0.012$). The ability to discuss cases, ask questions in real-time, and engage in collaborative problem-solving translates directly to better clinical reasoning skills, a conclusion heavily supported by Jacques (2003) in his extensive review of small group dynamics [6].

Limitations: The primary limitation of this study is the evaluation of only immediate knowledge retention via a single post-test. Longitudinal follow-up is required to assess long-term retention and actual clinical competency.

V. CONCLUSION

Small group teaching, characterized by enhanced student-teacher interaction, is significantly more effective than traditional lectures for developing clinical reasoning and application skills in undergraduate pediatric education. However, traditional lectures utilizing robust visual aids remain a highly efficient modality for factual knowledge transfer. Medical curricula should optimally integrate both methods, utilizing lectures for foundational frameworks and small groups for clinical problem-solving.

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