



COMPARATIVE STUDY OF JIGSAW AND PROBLEM BASED LEARNING METHODS AMONG FINAL MBBS PART 1 STUDENTS IN COMMUNITY MEDICINE

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ABSTRACT

Background: In CBME curriculum, more emphasis is done on small group teaching. The self-directed teaching learning methods like jigsaw and problem-based learning methods aid in critical thinking, developing communication and interpersonal skills. However, there is less knowledge about the effectiveness of these methods.

Methods: A quasi- experimental study was conducted among the final MBBS part 1 students in Community Medicine. During the small group teaching sessions, Students were randomly divided into Jigsaw and Problem based groups for learning hypertension. A pre and post-test questionnaire was administered. On Day 2 cross over was done with diabetes topic and perception of students about the methods was obtained. Data was analysed using SPSS software.

Results: Jig saw method helped more in enhancing knowledge of participants and this difference was found be statistically highly significant on independent t test (Topic hypertension - $t=3.96$, $p=0.0001$ and topic diabetes - $T=2.06$, $p=0.04$). On assessing the perception regarding both the methods, students felt jig saw method helps in enhancing communication skills, better retention of the topic and comprehending the topic while Problem based learning helped more in logical thinking, creating intellectual curiosity and in-depth coverage of topic.

Conclusions: In our study, Jig saw technique resulted in better academic performance compared to Problem Based learning group. This could be true especially for subjects with well-defined content due to its structured participation.

Keywords: CBME, Jigsaw, Problem-Based Learning.

INTRODUCTION

National medical commission of India started implementing Competency based medical education (CBME) curriculum from August 2019 aiming to address the gaps and thereby to produce competent medical graduates. The CBME curriculum has incorporated the student oriented small group teaching and self-directed learning sessions to enhance learning, communication skills, team work and confidence.^[1,2]

Teaching learning methods like jig saw and problem-based learning are better for the small group settings. Jigsaw is a cooperative learning method where students teach and learn at the same time helping to gain knowledge.

In this method, students are divided into “home groups” where each individual is assigned a subtopic of the competency or learning objective. Thereafter, students assigned the same subtopic from different home groups assemble to form “expert groups.” Expert groups focus on mastering specific subtopics through discussion. Students then rejoin their home groups as experts and teach their peers, ensuring comprehensive learning. It encourages critical thinking, active participation, peer learning and communication skills.^[3,4,5]

Problem based learning is a self-directed teaching learning method which arouses interest on the topic and improves analytical and critical thinking skills. It also enhances team cooperative learning when done in groups.^[6] Problem-solving skills facilitate the application of basic concepts to clinical scenarios, promoting higher-order thinking. It also encourages active participation in the group improving peer learning and communication skills.^[7]



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Most of the studies compare jigsaw and problem-based learning methods to traditional teaching or lecture. There are a meagre of studies comparing these methods of cooperative learning. Hence this study was conducted to compare jig saw and problem-based learning methods in enhancing learning.

Objectives

1. To compare the effectiveness of jig saw and problem-based learning (PBL) methods among the final MBBS part 1 medical students.
2. To assess student perception with jig saw and problem-based learning methods in enhancing self-directed learning.

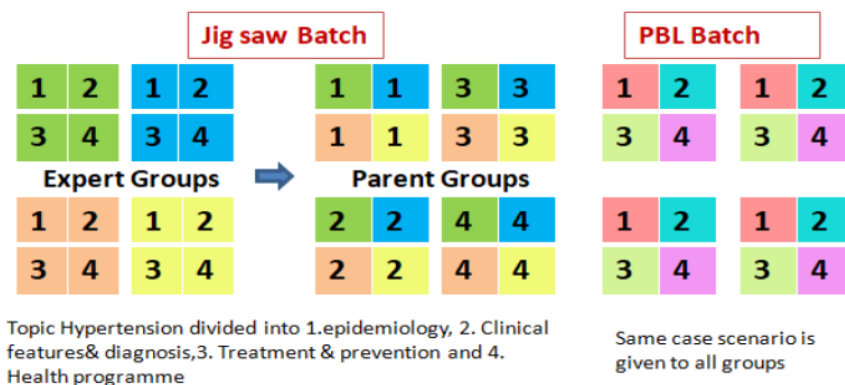
MATERIAL & METHODS

A quasi- experimental study was conducted among the final MBBS part 1 students at Bhaskar medical college, Ranga Reddy district, Telangana for a period of 6 months from August 2024 to January 2025 after obtaining institutional ethical committee approval. Four batches of students are posted in community Medicine department each month. For each batch, students are selected into Jigsaw (J) and

problem-based learning (P) groups based on their roll numbers into groups A, B, C, D Eg: AJ, AP, BJ, BP, CJ, CP, DJ, DP. Two topics Diabetes and Hypertension were taken for comparison between these methods for 2 days for each batch with each session lasting about 150 minutes. On day 2, cross over was done so that all the students experience both the methods. The pre-test and post-test MCQ questions and case scenario were validated by the subject experts.

In Jig saw method, after pretest, first the student prepares the topic and later those who received the same topic forms Expert group. After discussion in expert group, they go to respective parent groups and discuss the complete topic among themselves. After discussion is completed, each group summarizes before facilitator and discuss followed by post-test.

In Problem Based learning (PBL), after pretest, students were divided into groups of 4 and given a case scenario for each group. The relevant reference material was provided to the groups. After discussion, each group summarizes before facilitator and discuss followed by post-test.



After the student experienced both the methods, Perception of the students was obtained. The data collected was analysed using SPSS software. The results were calculated as means, standard deviations, graph, independent T test and p values

A total of 121 STUDENTS participated (Jigsaw-60, PBL- 61) for the topic hypertension and 124 students (Jigsaw-62, PBL- 62) for the topic diabetes. On analysing the pre and post test scores of both the methods, there was significant improvement in the post test scores for both the topics. (table.1)

RESULTS

Table.1: Comparison of Pre and Post Test Scores Using Jigsaw and Problem Based Learning Methods

| Topic- Hypertension | Jigsaw Pre test | Jigsaw Post test | T test & p value | PBL Pre test | PBL Post test | T test & p value |
|---------------------|-----------------|------------------|-------------------|--------------|---------------|--------------------|
| Mean | 5.35 | 8.15 | 10.76 p<0.0001 | 5.46 | 7.05 | 6.445 p< 0.0001 |
| Std.Dev | 1.48 | 1.57 | | 1.56 | 1.48 | |
| Topic- Diabetes | | | | | | |
| Mean | 5.05 | 7.77 | 9.69 p<0.0001 | 5.82 | 7.27 | 6.11 p< 0.0001 |
| Std.Dev | 1.71 | 1.23 | | 1.48 | 1.57 | |

*p<0.05 – statistically significant

On assessing the post test scores for both hypertension and diabetes topics, the Jig saw method of learning helped more in enhancing knowledge of

participants and the difference was found be statistically significant. (table.2)

Table 2. Comparison of Jigsaw and PBL Methods

| Method | N | Mean | Std. Dev | t-test & p value |
|----------------------------|----|------|----------|-------------------|
| Topic: Hypertension | | | | |
| Jig Saw | 60 | 8.15 | 1.57 | t=3.96 (p=0.0001) |
| PBL | 61 | 7.05 | 1.48 | |
| Topic Diabetes | | | | |
| Jig Saw | 64 | 7.79 | 1.22 | t=2.06 (p=0.04) |
| PBL | 62 | 7.27 | 1.56 | |

*p<0.05 – statistically significant

Regarding perception of both the methods, students felt jig saw method helped in enhancing communication skills, better retention of the topic and comprehending the topic while Problem based

learning helped more in logical thinking, creating intellectual curiosity and in-depth coverage of topic (Fig.1).

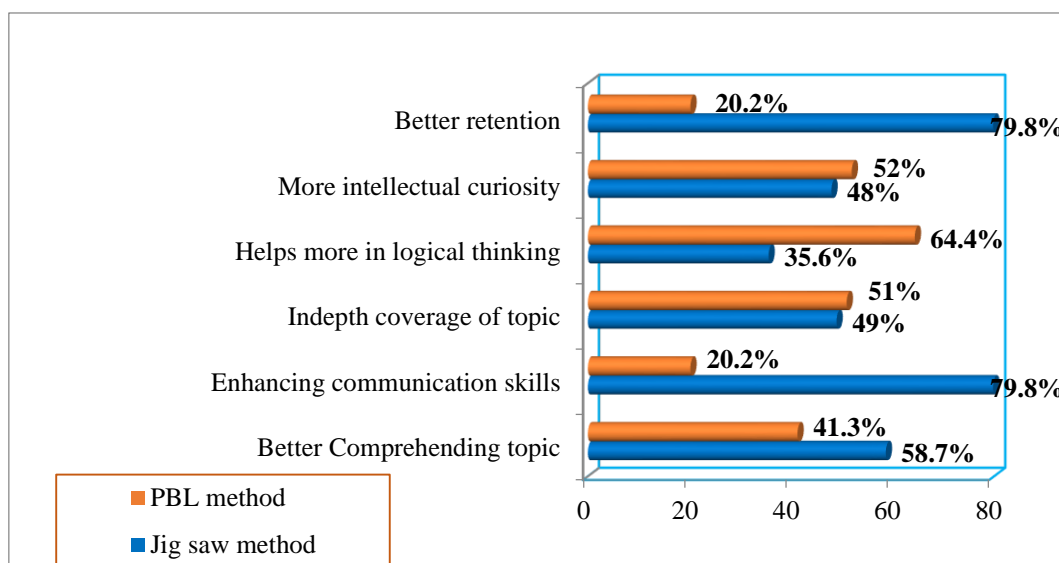


Figure .1: Perception of the Students on Jig Saw and Problem-Based Learning Methods

DISCUSSION

The present study compared the two active teaching learning methods jig-saw and problem-based learning among final MBBS part 1 students in Community Medicine. On comparing the pretest and post test scores, both the jigsaw and problem-based learning methods showed a significant improvement in student’s performance. In the similar studies conducted by Rajesh Paluru et al and Hira Moin et al, jigsaw method being a cooperative learning method has shown higher level of academic performance among students. [8,9] Also the Problem based learning showed significant results according to the studies done by Nithin Kumar et al. [10] On comparing both the Jigsaw and PBL methods, the Jig saw method of learning helped more in enhancing knowledge of participants in our study. This could be true especially for subjects with well-defined content due to its structured participation. In our study, students perceived Jig saw method helped in enhanced retention and communication skills. These findings are similar to a study conducted by Nimesh A et al where students gave feedback on jigsaw method helping them to understand the topic better, increasing the retention

potential and peer communication. [11] Also, in another study by Chopra et al, it was found to have enhanced communication skills by overcoming the shyness and hesitation in the class. [12] Compared to Jigsaw, Problem based learning perceived by students to improve logical thinking, creating intellectual curiosity and in-depth coverage of topic in our study. Similar findings were found in the studies where students reported problem solving skills, critical thinking, effective interpersonal skills. [13,14]

CONCLUSION

The jigsaw method was more effective than PBL for selected topics in community medicine. Jigsaw method of cooperative learning enhanced engagement of the students and academic improvement. Peer and facilitator interaction foster the collaborative learning and increased communication skills among the students. For early sensitization of topics, jig saw method can be preferred as every student is actively involved thereby reducing the passivity of participation of some students found in PBL method and Jigsaw also helps to focus on achieving all Specific learning

objectives compared to PBL where in certain contexts it is found difficult.

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Conflict of Interest: None

Ethical Approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. National Medical Commission. Competency-Based Undergraduate Curriculum for the Indian Medical Graduate [Internet]. New Delhi: National Medical Commission; 2019. Available from: <https://www.nmc.org.in/information desk/for-colleges/ug-curriculum/>
2. Supriya Shinde, Varsha Vaidya, Saibal Adhya, Asmita Phadke. Undergraduate students' perception of small group teaching in a medical college. *Int J Acad Med Pharm* 2024; 6 (5); 641-645.
3. Archana Chauhan, Arun Chauhan, Randeep Mann, Tulika Shrivastava Madaik. Doctor-patient relationship: Effectiveness of the "Jigsaw" method of teaching among Phase I MBBS students in a tertiary care teaching hospital. *National Journal of Physiology, Pharmacy and Pharmacology* 2022;12(11):1785-91.
4. Panchami Suvarna, Jnaneshwara P Shenoy, Aravind Pallipady. Effectiveness of jigsaw teaching method on developing core competency of shock among first year medical students. *Int J Acad Med Pharm* 2023; 5(5); 127-131.
5. Vidyasingaravelu, Madhusudhan. Jigsaw vs small group teaching: A comparative study among Phase 3 MBBS students in the department of Paediatrics. *Pediatr.* 2021,9(4):347-354.
6. Qi-Ming Zheng, Yuan-Yuan Li, Qing Yin, Na Zhang, Ye-Peng Wang, Guo-Xiang Li and Zhi-Gang Sun. The effectiveness of problem-based learning compared with lecture-based learning in surgical education: a systematic review and meta-analysis. *BMC Medical Education* 2023; 23: (article no.546):1-11. Available at: <https://doi.org/10.1186/s12909-023-04531-7>.
7. Asad M, Iqbal K, Sabir M. Effectiveness of problem-based learning as a strategy to foster problem solving and critical reasoning skills among medical students. *Journal of Ayub Med Col.* Jul 2015, 27(3):604-607.
8. Dr. Rajesh Paluru, Thyelnai Dawn Khaling , B. V. Surendra, Pramila. T. Effectiveness of Jigsaw Technique of Interactive Learning in Physiology Among I MBBS Students. *Int. J Med. Pharm. Res.*, 6(3): 231-235, 2025.
9. Moin, H., Majeed, S., Zahra, T. *et al.* Assessing the impact of jigsaw technique for cooperative learning in undergraduate medical education: merits, challenges, and forward prospects. *BMC Med Educ* 24, 853 (2024). <https://doi.org/10.1186/s12909-024-05831-2>
10. Nithin Kumar, Tanuj Kanchan, Bhaskaran Unnikrishnan, Rekha Thapar, Prasanna Mithra et al. Incorporating problem based learning into medical curriculum: An experience from a medical college in Mangalore. *Indian Journal of Pharmacology.* 2017, 49(5): 344-347.
11. Nimesh A, Goyal G, Aggarwal R. Evaluating the Effectiveness of Jigsaw-Based Learning in Medical Education: Students' Perceptions and Feedback. *Cureus.* 2025 Jan 9;17(1): e77203. Doi: 10.7759/cureus.77203.
12. Chopra, D., Kwatra, G., Bhandari, B. *et al.* Jigsaw Classroom: Perceptions of Students and Teachers. *Med.Sci.Educ.* 33, 853-859 (2023). <https://doi.org/10.1007/s40670-023-01805-z>
13. Manisha Jindal, Shalini Srivastav, Harsh Mahajan, Geeta Baro. Perceptions regarding Problem-Based Learning as a Teaching Learning Strategy among medical students. *NJIRM* 2016; Vol. 7(4): 87-91. eISSN: 0975-9840
14. Dwidmuthe, Samir; Dubhashi, Siddarth; Pusdekar, Vinod; Tiwari, Vivek Sahoo, Samrat. Insight into "Problem-based Learning" in Medical Education – Students' Perceptions about its Facilitators and Barriers: A Cross-sectional Study. *Annals of African Medicine* 24(2): p 350-355, Apr–Jun 2025.

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