Section: Dermatology

Original Research Article

INTRODUCTION OF JIGSAW TEACHING IN DERMATOLOGY AMONG UNDERGRADUATE MEDICAL STUDENTS

Anuradha Bhatia[1], Rajsmita Bhattacharjee[2], Anuradha Nadda[3]

[1]Associate Professor Department of Dermatology, Dr BR Ambedkar State Insitute of Medical Sciences, India.
[2]Assistant Professor, Department of Dermatology, Dr BR Ambedkar State Insitute of Medical Sciences, India.
[3]Assistant Professor, Department of Community Medicine, Dr BR Ambedkar State Insitute of Medical sciences, India.

Received : 08/06/2025
Received in revised form : 25/07/2025
Accepted : 16/08/2025

Keywords:
Jigsaw, Dermatology, Undergraduate medical students.

Corresponding Author:
Dr. Anuradha Nadda,
Email: dranuradhapgims@gmail.com

DOI: 10.47009/jamp.2025.7.4.270

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2025; 7 (4); 1423-1427

ABSTRACT

Background: Medical education is shifting from passive, teacher-led methods to active, student-centered approaches to better equip future physicians with essential skills like communication, leadership, and teamwork. This study explores integration of Jigsaw method into dermatology teaching, aligning with CBME's emphasis on small group learning and interactive educational methods. **Materials and Methods*:*** The study after IEC approval was conducted in the Department of Dermatology, AIMS Mohali and included all 110 Phase III Part 2 MBBS students, excluding absentees. After sensitization, two Jigsaw-based Small Group Teaching sessions were conducted. Students in expert groups of seven prepared subtopics, then reassembled into jigsaw groups for peer teaching. Assessments comprised MCQs and validated online feedback questionnaires. Faculty facilitated sessions and provided feedback. Quantitative data were analyzed descriptively, and qualitative responses thematically, to assess perceptions, effectiveness, and challenges in implementing the Jigsaw method. **Result:** Of 110 eligible students, 91 attended Jigsaw Session 1 and 96 attended Session 2. Overall, 83.4% were satisfied, reporting improved communication (79.1%), understanding (85%), engagement (81.8%), and group work skills (75.4%); 79.1% wanted more dermatology topics taught this way. Faculty unanimously supported curriculum inclusion. Qualitative feedback highlighted interactivity, peer learning, and motivation, with suggestions for shorter topics and closer supervision. Challenges included uneven attentiveness and time constraints. MCQ results showed clear learning gains, with 82.4% and 93.7% scoring above 80% after Sessions 1 and 2, respectively. **Conclusion:** The study confirms the jigsaw technique as an effective, student-centered method that enhances learning, peer interaction, and teamwork skills and prepares students for collaborative clinical practice.

INTRODUCTION

Education in medical science is transitioning from passive, teacher-centered learning to active, team-based, student-centered learning approaches.[1] This transition is essential to cope with ever-changing and complex healthcare practices, as it not only meets the didactic goals but also promotes the development of critical skills required by modern-day physicians, such as communication, leadership, and collaboration.[2] There is a growing need for reviewing and enhancing educational approaches to achieve collective competence. Medical schools across the globe are advised to prioritize the development of interpersonal, communication, and teamwork skills among the students right from the outset of their educational programs.[3] Cooperative learning is a unique active-learning strategy involving a team of learners cooperating with each other in problem-solving and completing assignments and/or tasks to achieve the desired learning outcomes.[4] This approach allows students to be good listeners, show respect to team members, share knowledge, develop critical thinking.[4]

The Jigsaw teaching method ; a collaborative and student centered approach offers an innovative way to teach Dermatology effectively. “When you teach, you learn twice” – Jigsaw and other cooperative and active learning techniques are based on this fact. By fostering collaboration and critical thinking, this method not only enhances academic performance but also prepares students for teamwork in clinical

ISSN (O): 2687-5365; ISSN (P): 2753-6556

practice. In Jigsaw technique, participants are divided into groups. Each group is given a set of learning objectives to prepare and master together through active discussion. Afterward, participants are arranged into new groups, with each having one member from the original groups. Subsequently, members of new group teach each other the topics they prepared by actively participating and engaging with each other.[5]

There is notable evidence available in literature regarding effectiveness of Jigsaw method in medical education.[6-11]

Despite its multiple advantages, Jigsaw technique is not widely adopted by various medical schools. This can be attributed to limited awareness among educators regarding this technique and its potential as an effective learning strategy. This study was undertaken to provide a framework for integrating jigsaw teaching method into dermatology curricula. As far as we are aware, study on use of Jigsaw technique in teaching Dermatology has not been published in literature.

MATERIALS AND METHODS

Study Design and Setting:

This educational interventional study evaluated the jigsaw cooperative learning method in dermatology teaching. It was conducted in the Department of Dermatology, Dr. B. R. Ambedkar State Institute of Medical Sciences (AIMS), Mohali, from March to June 2025, after obtaining Institutional Ethical Committee approval (AIMS/IEC-HR/2025/28).

Participants:

All 110 Phase III Part 2 MBBS students were included; absentees on session days were excluded.

Study Tools:

Session content, prepared and reviewed by faculty, included structured handouts and image-based PowerPoint presentations. Feedback questionnaires, designed after literature review and validated by internal and external experts, were administered via Google Forms. Quantitative feedback used a 5-point Likert scale; qualitative feedback was collected through open-ended responses.

Implementation

Sensitization sessions on the jigsaw method were held for faculty and students. Two jigsaw-based Small Group Teaching sessions were conducted in two batches (n=55 each). Each batch was divided into seven expert groups (7–8 students) assigned distinct subtopics. Following a 20-minute preparation phase, students reassembled into mixed jigsaw groups with one member from each expert group for 40 minutes of peer teaching under faculty supervision. Sessions concluded with faculty clarification of key points.

Assessment and Evaluation

MCQs, validated by subject experts, assessed knowledge post-session. Student perceptions were collected immediately post-activity; faculty feedback addressed planning, implementation, and challenges.

Statistical Analysis

Likert-scale responses were analyzed descriptively; qualitative data underwent thematic analysis to identify benefits, challenges, and suggestion.

RESULTS

A total of 91 students attended the first session while the second session was attended by 96 students.

Student feedback

Student Feedback and Satisfaction Index for different statements regarding Jigsaw Teaching Method is depicted in Figure 2. As per the results, a significant majority of students responded positively to the jigsaw method**.** Specifically, 83.4% reported overall satisfaction with the technique. About 85% felt it enabled a deeper understanding of the topics covered, and 82.3% believed it helped to achieve their learning objectives. Furthermore, 79.14% noted improvement in their communication skills and 75.4% felt this facilitated their ability to work in a group. Many students found the method easy to adapt to, with 81.8% reporting it was more engaging than traditional teaching. Notably, 79.1% expressed interest in having more dermatology topics taught using this approach.

The satisfaction index indicates that students were generally satisfied with the Jigsaw technique, particularly in terms of feeling engaged, improving communication skills, improved understanding of the topic and successfully adapting to the method.

Faculty feedback

The faculty members provided highly positive feedback on the use of the Jigsaw technique for teaching Dermatology. All respondents expressed satisfaction with the method, and advocated inclusion of the Jigsaw technique in the MBBS Dermatology curriculum.

Qualitative feedback

Student Perceptions

Qualitative thematic analysis revealed five major strengths of the jigsaw method.

1. **Interactivity and Engagement** – Students valued its dynamic, enjoyable nature compared to traditional teaching: “Interactive session”, “Not monotonous”, “Good session interaction among peers”.
2. **Peer Learning and Group Work** – Collaborative learning was emphasized: “We teach each other”, “Learning from friends”, “Good group discussion is possible”
3. **Improved Understanding and Retention** – Breaking topics into smaller segments and teaching peers deepened comprehension: “Thorough understanding of topic”, “Teaching others helped me retain better”.
4. **Communication Skills and Self-Directed Learning** – The method encouraged active effort and skill-building: “Improved my communication skills”, “Self-learning”.

ISSN (O): 2687-5365; ISSN (P): 2753-6556

5. **Motivation and Learning Environment** – Students described the approach as "Amazing", "Interesting way of learning", fostering a positive atmosphere.

Suggestions for Improvement included adding short breaks, making topics more concise, and increasing faculty supervision to clarify unclear peer explanations.

Some feedback was neutral: "It was ok", "Neutral"

Faculty Perceptions

Faculty endorsed the method's ability to promote engagement and active learning but noted challenges: reduced attentiveness in some students focused on preparing their own content, and difficulties for slower learners. Implementation required considerable planning and logistical coordination. **Suggested improvements** included allowing more time for discussion, involving senior residents in preparing materials, and engaging them as facilitators to support group dynamics and ensure accurate content delivery.

Assessment scores in MCQs test

The assessment results demonstrated a high level of academic performance following the jigsaw sessions. After Session 1, 82.4% of students scored above 80% in the MCQ test. Remarkably, following Session 2, 93.7% of students scored above 80%, indicating improved comprehension and retention of the subject matter.

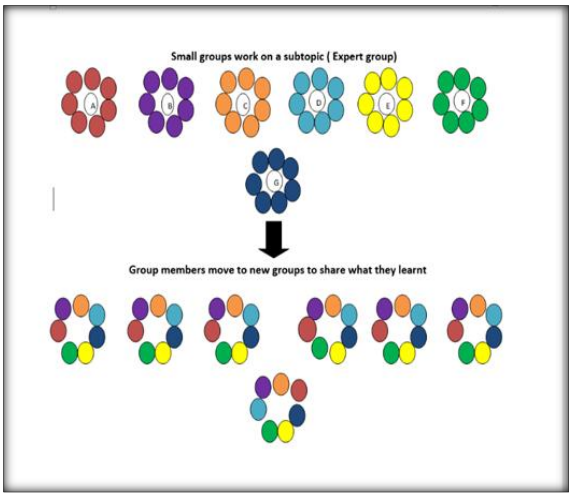

Figure 1

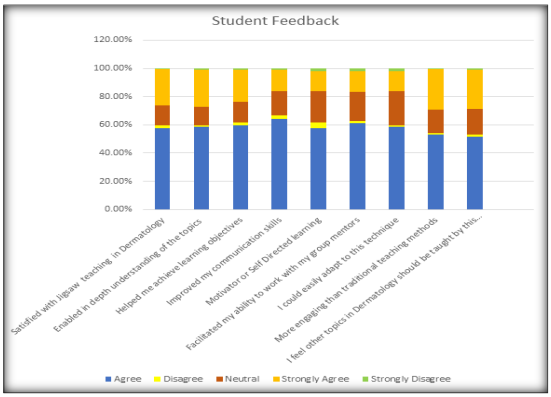

Figure 2: Student Feedback for different statements regarding Jigsaw Teaching

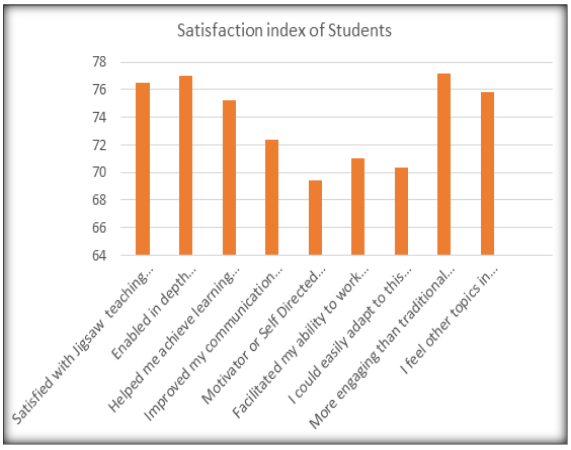

Figure 3

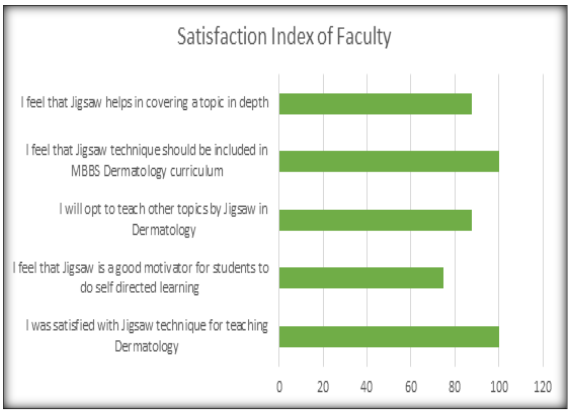

Figure 4

DISCUSSION

The findings of the present study suggest that students perceived the jigsaw technique positively, reporting that it not only enhanced their communication skills but also contributed to a more engaging and enjoyable learning experience. Kumar et al., Bhandari et al,[6,12] also reported that students found jigsaw-based learning to be more profound, effective, and enjoyable. Around 83.4% of students expressed overall satisfaction with the Jigsaw learning technique, and 82.3% felt it effectively helped them achieve their learning objectives. These findings align with earlier studies, which have reported significant improvements in students' understanding and knowledge retention after using the Jigsaw method.[8,10,13] The dual role of a participant—as a learner in expert groups and a teacher in discussion groups—holds the potential to foster the development of well-rounded medical professionals.[13]

In the present study, 79.14% noted enhanced communication skills, while 75.4% felt this facilitated their ability to work in a group, which contributed to both personal and interpersonal skill improvement. In a study conducted by Jeppu et al., students reported that jigsaw cooperative learning helped them stay committed, encouraged the exchange of ideas and knowledge, and led to the

ISSN (O): 2687-5365; ISSN (P): 2753-6556

development of mutual trust and interdependency.[2] Lalit et al. reported that students perceived the jigsaw technique as a refreshing active learning methodology that encouraged active student participation and discussions, thereby improving their problem-solving and communication skills.[11] A majority of students (81.8%) perceived the jigsaw technique to be more engaging compared to traditional teaching methods, similar to study done by Gogia et al,[10] 72.7% students reported that they could easily adapt to this technique. In contrast, only 13.3% of physiology students in the study by Soundariya et al. reported similar adaptability.[8] This disparity may be due to the fact that first-year students were still in the process of becoming comfortable with their batchmates, whereas students in final year in our study had already established peer relationships, making adaptation smoother. Majority of students in our study preferred other topics in Dermatology to be taught by this method. Similar sentiments were echoed in a study by Paliwal et al where most of the students were of the opinion that all the major topics should be taught by this method.[9]

In the present study, the implementation of the jigsaw cooperative learning strategy was associated with good academic performance, with more than 80% of students scoring above 80% in the post-session assessment. These findings align with those of Moin et al., who also reported enhanced academic outcomes with the use of the jigsaw method.[7] However, 3–5% of students in the current study did not view the technique favorably. This resistance may be attributed to their initial exposure to the method and the increased effort required in active learning environments. Strategies like the jigsaw demand greater student engagement and responsibility, which can be challenging when first encountered. Similarly, another study reported that 7–8% of students expressed negative perceptions of the method,[7] indicating that some level of initial resistance may be a common response to participatory learning approaches.

The common themes in the student's responses were Interactive, enjoyable, motivating, deeper understanding, better recall, peer learning and collaboration, improved communication skills. Similar findings are reflected in a study by Jeppu et al. [2] The qualitative findings of the present study highlighted the interactive nature of the Jigsaw method, making learning more enjoyable and effective. Several students emphasized the benefits of group discussions and learning from peers. Students found the method motivating, enjoyable, and conducive to a positive learning atmosphere. Some responses were neutral or noncommittal, and a few negative indicating that they were either indifferent or did not find the method beneficial. Some students perceived the activity to be time-intensive and exhausting—a perception echoed by Pahwa et al., who reported similar findings in their study.[14] The students suggested breaks in between and concise topics. Additionally, some students expressed dissatisfaction with the explanation of certain topics by their peers. Similar findings have been reported by Moin et al.[7] They suggest that the concerns regarding inadequate explanation of certain topics by peers could be addressed if teachers provide a comprehensive reference outlining the learning objectives. This would enable students to verify the accuracy and adequacy of the information shared during the jigsaw activity.

The satisfaction index revealed that students were largely satisfied with the jigsaw technique across several dimensions, including feeling engaged, improved understanding of the topic, enhanced communication skills, and ease of adaptation to the method. These findings are supported by a study conducted by Gogia, in which students reported that the jigsaw technique enhanced their understanding of subtopics, fostered engagement, and served as an effective teaching strategy. [10]

Faculty members viewed the jigsaw technique favorably, recognizing it as an effective strategy for promoting in-depth understanding of concepts in an engaging manner. Similar sentiments were reported by Lalit et al., who found that faculty perceived the jigsaw method as a valuable instructional approach that fosters effective learning and enhances student concentration.[11] However, faculty also identified certain challenges, including reduced attentiveness among some students, difficulties faced by slow-paced learners, and the substantial time and effort required for planning. These issues were identified by Moin et al also.[7] They suggested that these challenges can be mitigated by identifying and motivating passive students early, consistently involving them in collaborative activities, and encouraging them to take greater ownership of their learning. Such an approach can facilitate the transition of passive learners into active participants, while also enhancing the communication skills necessary for effectively teaching their peers. For optimal effectiveness, they also recommended introducing a time gap between expert group discussions and jigsaw group sessions. This interval would allow students to address disparities in understanding and strengthen their conceptual foundations before engaging in peer teaching.[7]

CONCLUSION

The present study demonstrates that the jigsaw technique is a feasible and effective instructional method that enhances knowledge acquisition while fostering an inclusive and engaging learning environment. Students perceived it as a valuable cooperative learning strategy that encourages active participation, peer interaction, and a strong sense of belonging within the classroom. Furthermore, by equipping students with essential collaborative skills, the jigsaw technique prepares them for real-world healthcare settings where interdisciplinary teamwork

ISSN (O): 2687-5365; ISSN (P): 2753-6556

is vital for delivering holistic and patient-centered care. Faculty members also acknowledged its value in promoting active learning and facilitating meaningful student involvement. However, the study did not evaluate long-term knowledge retention, a key factor in assessing the lasting impact of teaching methods.

REFERENCES

1. Kalra R, Modi JN, Vyas R. Involving postgraduate's students in undergraduate small group teaching promotes active learning in both. Int J Appl Basic Med Res. 2015;5(Suppl 1):S14–7.
2. Jeppu AK, Kumar KA, Sethi A. We work together as a group': implications of jigsaw cooperative learning. BMC Med Educ. 2023;23(1):734
3. Iqbal MP, Velan GM, O'Sullivan AJ, Balasooriya C. The collaborative learning development exercise (CLeD-EX): an educational instrument to promote key collaborative learning behaviours in medical students. BMC Med Educ. 2020;20:62.
4. Laal M, Laal M. Collaborative learning: what is it? Procedia-Social Behav Sci. 2012;31:491–5
5. Aronson E. The jigsaw classroom: building cooperation in the classroom. 2nd ed. Longman (NY); 1997. pp. 180–5.
6. Bhandari B, Mehta B, Maval M, SingH YR, Singhal A. Jigsaw method: an innovative way of Cooperative Learning in Physiology. India J Physiol. 2017;61(3):315–21.
7. Moin H, Majeed S, Zehra T, Zafar S, Nadeem A, Majeed S. Assessing the impact of jigsaw technique for cooperative learning in undergraduate medical education : merits, challenges and forward prospects. BMC Med Educ 2024; 853.
8. Soundariya K , Senthilvelou M , Shivayogappa ST, Deepika V , Selvi KS, Mangalavalli SM. Jigsaw technique as an active learning strategy in Physiology for I MBBS Students. Biomedicine- Vol. 41 No. 3: 2021.
9. Paliwal A, Jain S, Kashyap G, Shoaib M. Introduction And Evaluation Of Jigsaw Method Of Learning For Undergraduate Students. Journal of Population Therapeutics & Clinical Pharmacology: 31(3);2416-23.
10. Gogia T, Dutt S. A Study to Evaluate the Perception of Learning Outcomes Using Jigsaw Classroom Technique among medical undergraduates. Natl J Med Res 2025;15(01):70-74.
11. Lalit M, Piplani S. Active learning methodology–jigsaw technique: an innovative method in learning anatomy. J Anat Soc India. 2019;68(2):147–52.
12. Kumar VC, Kalasuramath S, Patil S, Kumar RK, Taj SK, Jayasimha VL et al. Effect of jigsaw co-operative learning method in improving cognitive skills among medical students. Int J Curr Microbio Appl Sci. 2017;6(3):164–73.
13. Archana S, Bahuleyan B, Shilpa AV, Sreeja CK, Babu R, Thomas NE, et al. Nurturing, learning and collaboration in medical education: An exploration of the Jigsaw teaching method. Natl J Physiol Pharm Pharmacol 2024;14(07):1414-1418.
14. 15.Pahwa AR, Dudani S, Gangadharan V, Gulati R. Introduction of the jigsaw technique of cooperative learning in teaching pathology to medical undergraduates. CHRISMED J Health Res. 2022;9(4):252–7.

ISSN (O): 2687-5365; ISSN (P): 2753-6556