PERSPECTIVE

Strategies to streamline the process of integration and implementation of problem-based learning in the medical curriculum

Saurabh R Shrivastava[1], Prateek S Bobhate[2], Harshal G Mendhe[3]

[1,3]Department of Community Medicine, Datta Meghe Medical College, Off-campus centre of Datta Meghe Institute of Higher Education and Research, Hingna Road, Wanadongri, Nagpur, Maharashtra, India

[2]All India Institute of Medical Sciences, Vijaypur, Jammu, India.

CORRESPONDING AUTHOR

Dr. Saurabh RamBihariLal Shrivastava, Professor, Department of Community Medicine, Datta Meghe Medical College, Off-campus centre of Datta Meghe Institute of Higher Education and Research, Hingna Road, Wanadongri, Nagpur, Maharashtra, India

Email: drshrishri2008@gmail.com

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ABSTRACT

Acknowledging the complexities and the vastness of the medical curriculum, time and again, the adoption of interactive and innovative teaching-learning methods has been advocated. Problem-based learning (PBL) method is expected to enhance student engagement, support adult learning principles, and assist students in their journey to attain different learning competencies. The PBL method advocates student-centered learning, wherein medical students take responsibility for their individual learning, which is not the case with conventional methods, where students are often passive recipients of the information provided by teachers. In conclusion, the approach of problem-based learning tends to overcome multiple deficiencies of the traditional curriculum and prepares students to effectively discharge their role as effective healthcare professionals. The need of the hour is to systematically plan and involve all the stakeholders in the planning and implementation process to derive the desired benefits.

KEYWORDS

Problem-based learning, Healthcare, Medical education

INTRODUCTION

Acknowledging the complexities and the vastness of the medical curriculum, time and again, the adoption of interactive and innovative teaching-learning methods has been advocated.(1) These teaching-learning methods are expected to enhance student engagement, support adult learning principles, and assist students in their journey to attain different learning competencies.(1,2) Along these lines, the employment of problem-based learning (PBL) across medical colleges has shown a steady rise, including restructuring the existing medical curriculum to integrate PBL for the benefit of medical students.(3) In-fact, different accreditation agencies, and technology-driven advancements have supported the decision of medical educators to introduce PBL across heterogeneous educational settings.(3-5)

Problem-based learning: Scope and Necessity

In contrast to the traditional curriculum that emphasizes factual recall, PBL exercises are designed in such a way as to promote active engagement of students with authentic clinical problems, which becomes crucial in facilitating the acquisition of critical thinking, clinical reasoning, problem-solving, and decision-making skills.(3,4) The PBL method advocates student-centered learning, wherein medical students take responsibility for their individual learning, which is not the case with conventional methods, where students are often passive recipients of the information provided by teachers.(4,5) As students actively engage with the given problem, they identify the existing gaps in knowledge, search for the solutions independently (self-directed learning), and then discuss with their team members to arrive at possible solutions (collaborative learning).(5,6) In other words, conventional methods promote individual learning, while PBL advocates learning in groups, which is often the case in clinical settings (as doctors are always a part of the healthcare team), and in the process acquire teamwork and leadership skills.(3,5)

In traditional curriculum, theoretical knowledge and its clinical application are often provided to students separately which makes it difficult for students to integrate, which is a must for successful clinical practice.(3,6) PBL problems (clinical scenarios) are designed to encourage students to combine both basic and clinical subjects-related knowledge and then apply it to the given problem to arrive at a possible

resolution.(4,5) This prepares students for their future clinical practice, including improving their ability to effectively respond to the complex and uncertain scenarios of real clinical practice.(4-6) All these activities help students to inculcate the habit of continuously seeking recent advancements and becoming lifelong learners.(3) Unlike traditional curriculum that is delivered subject-wise, PBL integrates various disciplines and gives a platform for students to combine knowledge from different specialties, and in the process understand the connection between various subjects.(3-5) Finally, as students arrive at a solution to the given problem by discussing it with their team members, this brings about an improvement in their communication skills as well, which carries massive significance in clinical practice.(7)

Identified challenges and Potential solutions

The process of planning and implementation of PBL in medical colleges has been linked with different challenges related to the curriculum, faculty, students, process, infrastructure, and administration (Table 1).(8,10,12-15) Curriculum concerns include an already packed teaching schedule with other curricular activities, and the problems in designing an effective case that happens to be complex, realistic, and educationally relevant.(8,9) Concerns have also been reported to assess critical thinking, problem-solving, and teamwork skills that cannot be assessed using conventional assessment strategies.(10,11) The success of planning and/or implementation of PBL essentially depends on the involvement of faculty members, and issues like workload, reluctance to be involved, and/or being not familiar with the intricacies of PBL can significantly hamper both the process as well as the attainment of learning outcomes.(12,13)

Along similar lines, resistance or lack of motivation from students to be a part of the PBL, often due to ignorance or lack of awareness can also interfere with the self-directed learning that is crucial to accomplish the learning objectives.(12,14) In continuation, poor group dynamics or no mechanism to assess group dynamics can also interfere with the implementation, and improvement of such sessions in the future.(15,16) Importantly, lack of support from the institutional administrators, including space constraints or limited allocation of financial support can significantly interfere with the implementation of PBL in any medical college.(3-5) The success of PBL in terms of benefiting students will depend on the adoption of a comprehensive package of solutions targeting involved stakeholders, including training of faculty members, sensitization of students, and microplanning of the curricular activities to avoid repetition, as detailed in Table 1. (9,11,12,16-19)

Table 1: Identified challenges and potential solutions

Identified challenges	Potential solutions
Curriculum overload	▪ Review the existing curriculum to reduce repetition and create space for PBL ▪ Integrate PBL into existing course without burdening students with extra time commitments ▪ Employ hybrid models where number of lectures are reduced and complemented by PBL ▪ Invest in user-friendly technology platforms that support virtual PBL sessions
Concerns in designing effective problems	▪ Train faculty members in how to design an effective problem ▪ Create a dedicated case-writing team that collaborates with clinicians and educators to formulate high-quality PBL cases ▪ Begin with pre-existing PBL cases and adapt them to the clinical context ▪ Adhere with the case templates that include clear learning objectives and structured guidelines for facilitators and students
Lack of cultural sensitivity	▪ Encourage open discussions about cultural barriers and adapt PBL facilitation methods to be more inclusive ▪ Modify PBL cases to be culturally relevant, making them more relatable to students
Untrained faculty members	▪ Organize PBL-specific workshops and periodic refresher sessions for faculty ▪ Link inexperienced facilitators with experienced PBL educators to mentor and support ▪ Offer online resources and simulation-based training for faculty to practice PBL facilitation ▪ Create an open platform for faculty to raise their doubts and get prompt resolution
Resistance to change	▪ Sensitize faculty members about the scope, the necessity, and the ways in which benefit students ▪ Engage faculty in the planning process ▪ Plan for phase-wise implementation of PBL, allowing gradual adaptation ▪ Invite faculty members to share their success stories showcasing the positive impact of PBL
Increased faculty workload	▪ Assign faculty members in rotation for the facilitator role to distribute the workload ▪ Provide some kind of recognition to faculty members involved in PBL ▪ Use pre-prepared PBL cases and resources to reduce the time spent on content creation
Student resistance	▪ Sensitize faculty members about the scope, the necessity, and the ways in which benefit students ▪ Gradually introduce PBL alongside traditional lectures to help students adjust ▪ Implement peer mentoring to help students deal with the potential challenges ▪ Provide feedback to students about areas for improvement
Variability in student motivation	▪ Set clear expectations and goals for each PBL session to ensure that all students are motivated and focused

	▪ Provide constructive feedback to help students stay engaged and realize the significance of their contributions ▪ Introduce peer evaluation as part of the assessment process to encourage accountability and participation
Assessment concerns	▪ Select appropriate assessment tools specifically designed for PBL (assessing the domains of problem-solving, teamwork, and critical thinking) ▪ Always use a combination of assessment methods to make the process comprehensive ▪ Frame rubrics and clear guidelines for students to understand how their PBL performance will be graded
Inconsistent group dynamics	▪ Train students in teamwork and communication skills before introducing PBL ▪ Assign different roles to students so that they are exposed to different working styles
Concerns with evaluation of group performance	▪ Use a combination of individual and group assessments ▪ Implement peer evaluation and self-assessment tools to gather multiple perspectives on group performance ▪ Set clear roles and tasks within groups to ensure accountability and facilitate accurate assessment
Limited financial resources	▪ Use cost-effective solutions, like virtual PBL simulations, to reduce the need for physical resources ▪ Implement PBL incrementally across the curriculum to manage costs over time
Insufficient administrative support	▪ Convince administrators by presenting evidence of improved student outcomes in PBL-based programs ▪ Use cost-effective solutions, like virtual PBL simulations, to reduce the need for physical resources ▪ Constitute a committee to oversee the planning, implementation, and resource allocation

Conclusion

In conclusion, the approach of problem-based learning tends to overcome multiple deficiencies of the traditional curriculum and prepares students to effectively discharge their role as effective healthcare professionals. The need of the hour is to systematically plan and involve all the stakeholders in the planning and implementation process to derive the desired benefits.

Authors Contribution

All authors have contributed equally.

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Conflict of Interest

There are no conflicts of interest.

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The authors haven't used any generative AI/AI assisted technologies in the writing process.

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