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Problem based learning for preclinical undergraduate medical studies at Chitwan Medical College

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Abstract

The introduction of problem based learning (PBL) in contemporary medical education has enabled learners to emphasize their learning behaviour fostering self-directed learning, critical thinking, communication skills, and application of knowledge in real life scenarios. Abiding by the parent curriculum, some parts of teaching-learning activity at Chitwan Medical College are conducted using PBL. It is conducted at the start of human body systems and concludes with a seminar. The objectives to be covered during PBL sessions are collected from each department and pertinent clinical conditions are decided by all faculties from basic science subjects including community medicine department whenever relevant.

Keywords: Medical Students, Preclinical, Problem Based Learning, Undergraduate

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Introduction

Medical education is undergoing a paradigm shift from traditional didactic teaching to more interactive and student-centered approaches. Problem-Based Learning (PBL) is at the forefront of this transition which essentially aspires students to investigate and resolve real-world medical issues in a group setting while highlighting critical thinking, independent learning and multidisciplinary integration.¹ This viewpoint examines the implementation and impact of PBL during preclinical undergraduate medical studies at CMC, Nepal and provide recommendations for improvement of the same. Through means of PBL, CMC aims to produce competent medical professionals equipped with knowledge and problem-solving abilities essential for their future careers.

The PBL

The PBL is an active learning approach in which a tutor leads a small, self-directed group through a brainstorming session to begin solving an issue. The problem usually a clinical case tests their knowledge and problem solving abilities.² The main principle behind this teaching-learning activity is that learning should begin with a real or a realistic problem that the student will face as a future physician.¹ The learning objectives primarily are set by consensus among subject experts, and the students are encouraged to derive the same objectives through group discussion with the help of triggers provided based on previous knowledge.³ Here, it requires a shift to a learner-centered inquiry based environment for the students where knowledge is acquired through independent study. Educational goal of PBL is to assist students in honing their problem-solving or reasoning skills by analysing and solving issues.⁴

Conducting PBL at CMC

The curriculum of Tribhuvan University divides undergraduate medical studies into three phases where basic science subjects including community medicine and communication skills are taught in first phase.⁵ PBL has been included as a teaching learning method. PBL started in CMC with its inception in 2006 and has been

conducted ever since. A PBL coordinator is assigned whose primary duty is to observe the thorough execution of PBL process. Before starting PBL, the coordinator is responsible for organizing a meeting with the heads of department, who together with other faculty members in the department formulate specific learning objectives. Once the consensus for learning objectives is established by all the departments, the coordinator prepares the triggers/scenarios dividing, subdividing, and correlating the objectives. Triggers are crafted carefully to reflect common cases that the students are likely to encounter in their careers. Clinical case scenario is included in the trigger which acts as a stimulus for the students to appreciate the relevance of understanding basic science knowledge and putting it into clinical practice. The tutor guide is formed by individual departments which is later compiled by the coordinator.

It is conducted at the start of the human body systems usually on Sundays. One PBL includes 3 sessions on alternate days and is conducted with self-study in between. During the first PBL session, students are introduced and oriented with the overall PBL process. Typically, a group of 10 students together with one or more facilitators, usually a faculty, work collaboratively in a group to identify and explore the problem. They then derive the learning needs to advance their understanding of the problem based on their pre-existing knowledge. The learning needs are derived in the form of questions that need to be explored through self-directed learning. Subsequent PBL sessions involve sharing findings, discussing new information, and creating conceptual understanding. Students are encouraged to actively discuss and analyse the problem fostering individual and group communication skills.

Characteristics of PBL

Student-centered self-directed learning: Rather than the “sage on the stage” bucket analogy³, in PBL students are active participants who dictate their learning process and acquire information independently by identifying knowledge gaps

and seeking information independently thus helping them become lifelong learners.^{2,6}

Role of facilitator: In PBL, facilitators need not be the content experts rather, they are usually the process experts where they guide students through the learning process ensuring that the learning objectives are met rather than providing direct instruction.^{7,8}

Interdisciplinary integration: In PBL, integration of various basic science subjects correlating them with real-life scenarios is promoted. This not only helps bridge the gap between basic and clinical science but also helps students understand the interconnectedness of medical knowledge by applying theoretical knowledge into clinical practice providing a holistic learning experience.

Real or realistic clinical scenarios: Problems in PBL cases are prepared and presented in such a way that they reciprocate real or realistic clinical scenarios, making learning relevant and practical. This encourages students to think critically to assess, diagnose, and create treatment plans early on in their careers. This sense of solving real-world problems can make learning experience more stimulating and rewarding with deep learning skills.

Collaborative learning: Students work in small groups, fostering teamwork and communication skills. These skills are crucial for effective patient care and interdisciplinary collaboration in future career and medical practice.⁹

Challenge and recommendation

Human resource management: Implementing PBL requires significant resources apart from infrastructure. Effective PBL relies on trained facilitators who can guide case discussions without dominating student participation. The case materials designed if appropriate could benefit the learners.

The disparity between facilitator and student engagement timing, facilitation skills, and encouragement has been observed throughout PBL sessions.¹⁰ Continuous facilitator training and development programs for faculties are

essential to maintain uniform quality of PBL sessions. Also, a dedicated PBL coordinator with expertise in the field would help design an appropriate tutor guide.

Assessment: Traditional assessment methods may not adequately measure competencies gained through PBL.¹¹ A different assessment tool that evaluates critical thinking, problem solving, and communication skills needs to be developed not deterring from the norms of the curriculum.

The PBL is mostly conducted as a single case for any body system that may not cover the objectives defined in the curriculum.^{2,5} The current practice of merging the PBL assessment with overall assessment requires revision.

Also, the assessment of PBL process is required to ensure it meets educational goals effectively. Regular feedback from both students and facilitators can help refine the PBL process.

Inclusion of clinical faculties: The PBL case ensures integration of all basic science subjects with clinical subjects. With this in consideration, practicing physicians or clinical faculties if involved in selection of clinical cases and construction of PBL triggers would ensure realistic case scenarios.

Also, the practice of using real names of the attending doctors or their departments working within the same institution can make the clinical case more realistic and introduce their mentors early on.¹²

Involvement of the medical education unit: The medical education unit should be involved in overall teaching-learning activities within the institution and take an active role in processes for PBL at the institute, and integration with other teaching learning activities. Also, it could play a role in student adaptation in transition from traditional learning methods to PBL by providing orientation and support.

Conclusion

The implementation of PBL is a significant change in medical education in Nepal.

Implementing it in preclinical undergraduate medical studies holds the promise of producing competent, motivated, and self-directed medical professionals. While challenges exist, with careful planning and commitment, PBL can significantly enhance the quality of medical education and better prepare students for the complexities of clinical practice. As medical education continues to evolve, the experiences and insights gained from conducting PBL could help enhance the curriculum and produce competent, reflective, and skilled medical professionals.

Author contribution

Concept, design, data, draft, final manuscript and accountability- All.

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Conflict of interest

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