

THE EFFECTIVENESS OF CASE BASED DISCUSSION AS A VALID PROBLEM BASED LEARNING METHOD IN ANAESTHESIA POSTGRADUATE TEACHING

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ABSTRACT: CONTEXT: Anaesthesia is a branch of medicine which allows only a very narrow margin of error. Anaesthesia post-graduate (PG) teaching with problem-based learning (PBL) enhances the critical thinking and problem-solving skills among the students. Among the different problem based learning methods case based discussions (CBD) are most widely practiced out of all in anaesthesia PG teaching.

METHODS AND MATERIAL: An anonymous questionnaire based, cross-sectional survey among 37 anaesthesia residents from two medical institutions in North Kerala, India was conducted. The present survey was designed to assess the effectiveness of case based discussions in anaesthesia PG teaching by assessing the student's satisfaction with CBD and the suggested modifications if any to improve the current status of teaching.

RESULTS AND CONCLUSIONS: The CBD as a part of PBL in anaesthesia PG teaching in our set up lacks many important aspects of PBL such as formulation of objectives, facilitation skills, communication on direction of PBL and supplementation of inadequacies. A broader, strict and organized implementation of PBL incorporating the key elements of PBL needs emphasis in PG teaching curriculum. Facilitation skill development programs needs motivation and encouragement from the perspective of the academic administrators.

KEYWORDS: Anaesthesia, Problem based learning, Case based discussions.

KEYMESSAGE: In terms of adherence to the key aspects of PBL, there are variations in case-based discussion setups of various institutions. A broader and organized implementation of case-based discussion incorporating the key elements of PBL needs emphasis in anaesthesia PG teaching curriculum.

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INTRODUCTION: The growing interest in anaesthesia and pain management specialty, easily accessible internet services and availability of various learning and skill acquisition courses has led to an advanced transformation in the postgraduate medical education and training in anaesthesia in recent years. The methods involved in the teaching curriculum in anaesthesia include intraoperative apprenticeship, topic-based didactic lectures, seminars and journal clubs, problem-based learning and simulation. The simulations are considered as the gold standard method of teaching.

Problem-based learning (PBL) is complex and heterogeneous. A wide variety of educational methods¹ are referred as PBL. These include Lecture-based case, Case-based lecture, Case based discussions, Problem or inquiry based and Closed loop or reiterative. Anaesthesia is a specialized branch of medicine with a very narrow margin of error.

Incorporation of PBL in anaesthesia postgraduate (PG) teaching enhances the critical thinking and problem-solving skills. It also helps in developing a broader prospective of clinical case scenarios. Case based discussions (CBD) are most widely practiced² out of all PBL methods in anaesthesia PG teaching.

The present survey was designed to assess the effectiveness of CBD in anaesthesia postgraduate teaching by assessing the student's satisfaction with CBD and the suggested modifications if any to improve the current status of teaching.

SUBJECTS AND METHODS: The second and final year postgraduate students and senior residents of the Department of Anesthesiology in two tertiary referral hospital in central Kerala during the period from May 2015 to August 2015 were included in the study. The study design was an anonymous, questionnaire based cross sectional survey.

The questionnaire consisted of 8 questions which were specifically designed to obtain the student's opinion on effectiveness of CBD and the suggested modifications. After briefing, the students were distributed the questionnaire and it was completed unaided in the form of YES/NO. The students were asked to give only single response to each of the question. The questionnaire was collected anonymously and the data entered in Microsoft (MS) Excel software and analysed.

QUESTIONNAIRE:

1. Whether the students formulate learning objectives before the CBD.
2. Whether the teaching materials/ references/ resources is shared amongst the students before the case discussion.
3. Is the content of CBD distributed to all students and facilitators prior.
4. Is there prior communication on to the "Direction of CBD" to all students and facilitators.

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5. Characteristics of facilitator.
 - a. Is the facilitator a content area expert, who is fully familiar with the topic being taught?
 - b. Does the facilitator limit the extent to which they provide solution for trainees.
 - c. Does the teacher follows the group dynamics e.g., Does he gives adequate time for answering the question or equalizes the participation, use paraphrasing, call for consensus or summarizes at the end?
6. Are real patients presented at the time of case presentation.
7. Does the questions and issues that are not answered within the small group forms the basis for further learning and discussion outside the group.
8. Department teaching program can be improved if there is/are (tick any options)
 - a. Enhanced departmental funding.
 - b. Enhanced academic activity time.
 - c. More experienced faculty members.
 - d. More advanced equipment.
 - e. Enhanced determination/willingness/bent of mind.

RESULTS: A total of 37 anaesthesia residents ie. 31 junior and 6 senior residents participated in the study. Two persons did not complete the questionnaire and finally 35 anaesthesia residents were included in the survey. The response rate was therefore 95% (35/37).

The results of the survey are based on student's opinion of effectiveness of CBD with suggested modifications. Formulation of learning objectives is an important aspect of any PBL session. In our survey, only 40% of students agreed that they practice this as routine whereas 60% accepted that they never formulate the learning objectives before the case discussions (Figure 1).

Majority of the students (63%) agreed that the teaching materials/references or/resources were never shared among the students before the case discussion. Communication on the content and direction of PBL is an important aspect as it helps in the structuring of knowledge and facilitating extraction and understanding of information from various resources. This enhances the learning process as well as clinical performance. 70% of the students agreed that content of the CBD were distributed but it never contained the direction of PBL (Figure 2). All participants accepted the fact that in their CBD only real patients were incorporated (Figure 1).

About facilitation skills majority (75%) of the students thought that their teacher is more of a knowledge imparter than the moderator or facilitator but 80% agreed that their teacher is a content area expert. 57% of the students agreed that their facilitators can effectively manage "Group dynamics" (Figure 3). In our survey, majority (75%) of the students admitted the fact that there is no provision of supplementation of deficiencies or queries of a CBD.

All students were in favor of increased academic activity time.

DISCUSSION: In postgraduate anaesthesia teaching, only few studies have compared lecture based approach and PBL discussions for particular topics like preanesthetic checkup,³ ethical reasoning skills⁴, and intensive care.⁵ Carrero³ et al. used PBL for teaching the topic "preanesthetic assessment" and compared its effectiveness with the traditional lecture-based method by using an objective knowledge assessment tool before and after teaching. They concluded that implementation of PBL is a suitable teaching method for teaching preanaesthetic assessment.

Sakai⁶ and colleagues, in a retrospective observational study, compared the education outcome amongst anaesthesia PG students, before and after the implementation of PBL discussion format, and found PBL to be effective. In anaesthesia postgraduate teaching case-based discussion² is the most commonly practiced but the most understudied PBL method. Case studies or CBDs are easy to implement and readily accepted by the students. As the case material is already organized, the clinical reasoning skill achieved is ought to be limited.

The ASA recommended key elements of PBL⁷ include small group, learner centered, active learning and case based/problem oriented. There may be a variation in case-based discussion setups of various institutions in terms of their adherence to the aforementioned key aspects of PBL. The common elements of PBL⁸ are learning objectives formulation, communication on the direction and content of PBL, supplementation of inadequacies of small group discussions and facilitation skills. In the present survey, we observed a significant lack of all these elements.

The success of PBL is mainly determined by the facilitation skill^{9,10} of the tutor. The facilitator plays a key role as he not only monitors but also stimulates and directs the PBL process. A facilitator must be an expert in utilizing various techniques to manage the group dynamics. In our survey, majority of the students considered their teacher to be more of a knowledge imparter than a facilitator. Approximately half the students agreed that their facilitators are content area expert and also efficient in managing group dynamics. In the current set-up very few faculty members are trained in PBL facilitation. Hence, emphasis must be laid upon implementation of various faculty development programs in the medical institutions.

CONCLUSIONS: The case based discussion as a part of problem based learning in anesthesia postgraduate teaching in our set up lacks many important aspects of PBL such as formulation of objectives, facilitation skills, communication on direction of PBL and supplementation of inadequacies.

A broader, strict and organized implementation of PBL incorporating the key elements of PBL needs emphasis in PG teaching curriculum. Facilitation skill development programs needs motivation and encouragement from the perspective of the academic administrators.

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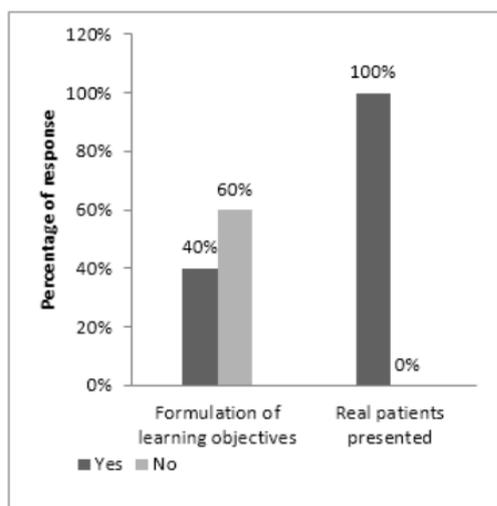


Figure 1: Student's opinion on formulation of objectives and presence of real patients in case based discussions

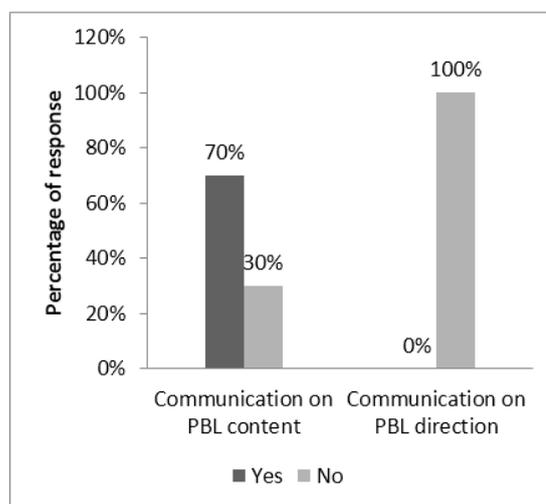


Figure 2: Student's opinion regarding the communication on problem based learning content and direction.

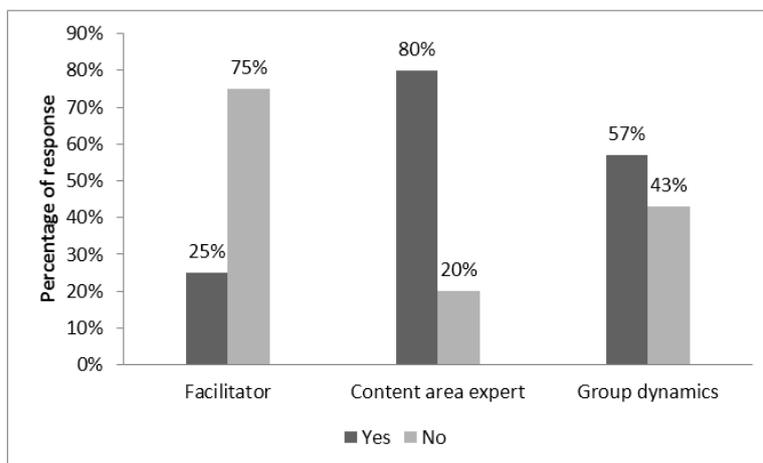


Figure 3: Student's opinion on facilitation skills: Whether the tutor is facilitator/ knowledge imparter, expertise in content area, group dynamics skills