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EFFECT OF PROBLEM BASED LEARNING IN COMPARISON WITH LECTURE BASED LEARNING IN FORENSIC MEDICINE

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ABSTRACT: BACKGROUND: Problem based learning (PBL) is an approach to learning and instruction in which students tackle problems in small groups under the supervision of a teacher. This style of learning assumed to foster increased retention of knowledge, improve student's general problem solving skills, enhance integration of basic science concepts in to clinical problems, foster the development of self-directed learning skills and strengthen student's intrinsic motivation. **AIM:** The study was conducted to compare the effect of Problem based learning in comparison with lecture based learning. **SETTING:** A cross-sectional study was conducted among 2nd year MBBS students of Jubilee Mission Medical College and Research Institute, Thrissur during the period of December 2014 to March 2015. **METHODOLOGY:** The batch is divided into two groups (A & B), 45 in each group. By using PBL method, blunt force injuries were taught to Group-A and sharp weapon injuries to group-B. By using lecture based learning (LBL) method blunt force injuries were taught to Group-B and sharp weapon injuries to group-A. At the end of the session a test in the form of MCQ was conducted on the students to evaluate their learning outcome. **OBSERVATION AND RESULTS:** In session I, the average test score of LBL group was 8.16 and PBL group was 12. The difference was statistically significant. In session -II also 45 students has participated each in LBL and PBL classes. The average of test score of LBL group was 7.267 and PBL was 11.289, which was highly significant statistically. **CONCLUSION:** Study has proven that problem based learning is an effective teaching learning method when compared to conventional lecture based learning.

KEYWORDS: Problem based learning, Lecture Based Learning, Medical Education.

INTRODUCTION: At present most medical colleges in our country still use the traditional didactic teaching method. This is in spite of the warning about the pedagogical errors and information overload that get in the way of learning and dissatisfy students.⁽¹⁾ As quoted by Kassebaum,⁽¹⁾ William Osler had reminded medical educators that education is a lifelong process, and that we can only instill principles, put the student in right path, give him methods, teach him how to study, and early to discern between essentials and non-essentials. It was the innovation of problem based approach at Mc Master University in the late 1960s that blazed the trial of student centered, interdisciplinary teaching and learning permeating the entire medical school curriculum.^(1,2) This type of teaching learning method has become an integral part of medical curriculum around the world and only partially experienced in our country.

Problem Based Learning is an approach to learning and instruction in which students tackle problems in small groups under the supervision of a teacher⁽³⁾ Problem based learning enables the students to build their attitude towards self-criticism and group evaluation and that

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ultimately stay helpful for such self-directed lifelong learners in professional life⁽³⁾ It has been reported that instead of didactic communication in lecture hall, active participation of students in problem based learning helps to prepare them to become active, independent learners and problem solvers, rather than more or less passive recipients of information.

The first session of problem based learning begins with a case presentation followed by clarification of concepts and facts that are new to the students. Students are then asked to identify and analyze the problem, and attempt to formulate hypothesis based on their previous knowledge. After this, students determine learning objectives and resources required to obtain the necessary information. After a period of 2 or 3 days during which they locate and collect information, students meet with their instructor for a second session to present their findings, analyze the information they have gathered and discuss the case.⁽⁴⁾

This method is based on problem based learning strategies as proposed by Schmidt involving the following seven steps.⁽⁵⁾ a) Clarifying terms and concepts not readily comprehensible. b) Defining the problem. c) Analyzing the problem. d) Drawing up a systematic inventory of explanations deduced from step three. e) Formulating learning objectives. f) Collecting additional information outside the group. g) Synthesizing and testing the newly acquired information.

Problem based learning in India especially with respect to medical education is still in its early days.⁽⁶⁾ A study carried out among the first year students at Nelson Mandela School of Medicine showed that majority of the students benefited from input of other students in problem based Learning tutorials as they were conducted in small groups.⁽⁷⁾ It has been reported that instead of didactic communication in lecture hall, active participation of students in problem based learning had a bigger role to play in continuing medical education.⁽⁸⁾

The current study is aimed to compare perception of MBBS students and the effect of the two teaching methodologies - conventional mode of teaching by lecture and problem based learning.

OBJECTIVE OF THE STUDY:

1. To compare Problem Based Learning and conventional mode of teaching by lecture in Medical Education.
2. To prove problem based learning as an effective tool when compared to conventional lecture based learning.

MATERIALS AND METHODS:

Type of Study: Cross sectional study.

The study was conducted among the second year MBBS students of Jubilee Mission Medical College & Research Institute, Thrissur. The batch selected was 2010 regular batch with a total strength of ninety students. The whole batch was divided into two groups (A & B). The topic selected was blunt weapon injuries and sharp weapon injuries from the subject of Forensic Medicine and Toxicology. Classes were conducted in two sessions.

In the first session, blunt force injuries were taught to group-A using Problem Based Learning method after subdividing in to three subgroups. The same topic was taught to group-B

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using Lecture based learning. In the second session Sharp weapon injuries were taught to group-B using PBL method after dividing in to three subgroups and group-A using the Lecture based learning so that all the students were exposed to both types of teaching.

In Problem Based Learning the students were given four modified problem type questions-two from blunt force injuries and two from sharp weapon injuries- which they discussed among themselves and at the end of the session the concerned topics were discussed under guidance. On the next day the students were asked to meet again to present their findings, analyze the information they have gathered and discuss the case. At the end of the each session on third day, a test in the form of multiple choice questions (fifteen questions each carrying one mark) was conducted among the students who were exposed to both types of teaching to evaluate their learning outcome.

SPSS was used for data entry and analysis.

RESULTS: The study was conducted among the second professional MBBS students of Jubilee Mission Medical College & Research Institute, Thrissur. In first session 45 students (Group-B) attended the lecture based class and 45 students (Group-A) in three batches attended the problem based learning. On Third day a test was conducted for both batches. The average test score for Problem Based Learning was 12.00 and the average score for Lecture based learning batch was 8.16. The difference was highly significant statistically as shown in table-1.

In the second session 45 students (Group-B) in three batches attended the problem based learning with another topic. Group-A with 45 students attended lecture based learning. On fourth day a test was conducted for both batches. The average test score for Problem Based Learning was 11.29 and the average score for Lecture based learning batch was 7.27. The difference was highly significant statistically as shown in table-2.

	Number of Students	Mean Score	Std. Deviation	Std. Error Mean	t value	p value
Group-B	45	8.1556	1.46094	.21778	-14.62	.000
Group-A	45	12.0000	1.02247	.15242		

Table 1: Comparison of test score in session-1

	Number of Students	Mean Score	Std. Deviation	Std. Error Mean	t value	p value
Group-A	45	7.2667	1.21356	.18091	-15.345	.000
Group-B	45	11.2889	1.27247	.18969		

Table 2: Comparison of test score in Session-2

DISCUSSION: The traditional medical education is fragmentary and unintegrated training given by different departments with an emphasis on teaching theoretical aspects.⁽⁹⁾ In this context introduction of Problem Based Learning is relevant, which involves a problem which acts as a

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trigger for the session. Small group discussion and self-directed learning can be used to introduce Problem Based Learning among students.

In this study 90 second professional MBBS students were exposed to both Problem Based Learning and Lecture Based Learning after dividing in to two groups. This was done to compare the learning outcome among the students exposed to both methods of teaching methods by way of conducting a post session test. A highly significant post session test score was obtained by the students who were exposed to Problem Based Learning approach when compared to students who were exposed to traditional Lecture Based Learning.

A study conducted in India showed Problem Based Learning was better than traditional teaching based on student's perception of acquiring knowledge.⁽¹⁰⁾ In this study Problem Based Learning students consistently find their course more enjoyable and demonstrate better interpersonal skills compared with traditionally trained students. In another study,⁽¹¹⁾ substantial improvement in post test scores by the students expose to Problem Based Learning clearly revealed acceptance of Problem Based Learning over conventional method of teaching. Feedback from those students revealed majority agreement that Problem Based Learning helped them creates interest, better understanding and promotes self-directed learning.

Thus problem based learning is an innovative and challenging approach to medical education- innovative because it is a new way of using clinical material to help students learn and challenging because it requires the medical teacher to use facilitating the supporting skills rather than didactic direct ones.

CONCLUSION: Study has proven that Problem Based learning is an effective learning method when compared to conventional Lecture based learning.

LIMITATION OF THE STUDY: Study was conducted only for a batch containing ninety students and only two topics were covered. Moreover Problem Based learning is a time consuming method.

FUTURE RECOMMENDATION: Study may be conducted in different batches which includes more number of topics. Problem Based learning can be used as a teaching learning method for selected topics in Forensic Medicine.

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