

## “Introduction of Case Based Learning for Teaching Common Gynecological Malignancies in Undergraduates”

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### Abstract

**Introduction:** Research and education are the two pillars of progress of medical science. While research helps in understanding diseases and treating them better, it is education of the younger minds of the fraternity which carries on the research and forms the bedrock of high quality of health care. Keeping this in mind we introduced the concept of case based learning in the final year MBBS students.

**Aim & Objective:** To introduce Case Based Learning method of teaching in final year students of M.B.B.S. Comparison of performance of students, taught by didactic method and CBL method of teaching. Students' perception and acceptance of CBL method of teaching.

**Methodology:** Students of final year MBBS of IGIMS, Patna were selected for this study. The topic of cervical cancer was divided into 4 classes and the teaching goal of each class was predetermined. The class of 86 students was divided into 4 groups for each class two groups were taught by traditional didactic lecture and the other two by CBL method. For the next class the groups were interchanged. Students were assessed through multiple choice questions and short answer type questions at the beginning and end of each class.

**Results:** There was statistically significant improvement in the knowledge of students about the topic in both the CBL and Lecture groups but the improvement was significantly better in the groups taught by CBL method. The feedback of students for this method was highly acceptable; it improved their understanding, knowledge and performance compared to traditional didactic lectures.

**Conclusions:** Statistical analysis of the pre and post class multiple choice questions and short answer type questions showed a statistically significant improvement in the knowledge of students taught by CBL method. In addition the response of students to the feedback questionnaire showed a high acceptability of CBL method.

**Keywords:** Case based learning (CBL), gynecological malignancy, high acceptability, teaching learning methods.

### Introduction

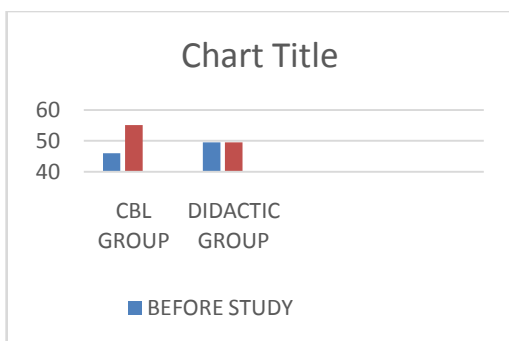
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Medical profession is one of the most novel and respected professions in the world but with increasing research and discoveries it is also one of the toughest professions to persist in. We are constantly exploring newer ways and means to teach the medical students in order to



**Fig. 1 Comparison of score between two groups before and after study**

make their learning process more interesting. The medical schools seek to train medical students who are able to apply their knowledge in novel situations [1, 2].

Gynecological malignancies are a subject less emphasized on, in the undergraduate teaching curriculum. It is considered a difficult topic and usually dealt with in details in the post graduate courses. Cervical cancer has a major impact on the lives of Indian women with an estimated 1,22,844 new cases diagnosed and out of them 67,477 die from disease every year. The fact that cancers affect a vast portion of the population in India and worldwide and the statistics predict a growing trend in its incidence, the basic knowledge of these conditions is essential for each and every doctor and health care professional. Learning scenarios that are used to simulate real situations are known as learning opportunities, which makes them a very attractive way for the education and training [3, 4].

Case based learning (CBL) is a teaching method which is a guided enquiry method and provides structured information to the participant. It involves active participation of the students as well as the teacher. In CBL, the group focuses on creative problem solving, with some advance preparation. In class – under the questioning and guidance of the professor – students probe underlying issues, compare different alternatives, and finally, suggest courses of action in light of the organization’s objectives [5].

Students are given a clinical problem and are given time to discuss, define, and resolve the problem. CBL uses a clinical situation that evokes interest in the students on the basis of knowledge that they already have and identifies knowledge gaps that are then addressed during the learning process. The benefits of CBL is that it

- Allows students to develop a collaborative, team based approach to their education.
- Hypothesis generation and the consolidation and integration of learning activities.
- Intrinsic and extrinsic motivation is developed, allowing individualized learning.
- Encourages self-evaluation and critical reflection.
- Allows scientific inquiry and the development of support provision for their conclusions.
- Integration of knowledge and practice.
- Development of learning skills.

Some authors sought feedback from faculty/teaching staff in addition to students. Educators were positive and enjoyed CBL while feeling that it achieved its objectives [6].

Thus with these advantages of CBL in mind we introduced this method of teaching to final year students of MBBS course and analyzed the improvement if any in their performance after this form of teaching.

**Aim**

To introduce case based learning (CBL) method of teaching in final year students for the topic of cervical cancer.

**Objectives**

1. Comparison of performance of students taught by didactic and CBL method of teaching.
2. Student’s perception and acceptance of CBL method of teaching.

**Table 1 Intra-group comparison of score between two groups before and after study**

Study score	Before Study	After Study	P value
CBL group(n=43)	46.5 ± 5.9	60.8 ± 2.9	< 0.0001
Didactic Group(n=43)	49.5 ± 5.8	55.1 ± 4.7	< 0.0001

**Table.2 Inter group comparison of score between CBL and Didactic Group before and after study**

	<b>CBL group(n=43)</b>	<b>Didactic Group(n=43)</b>	<b>P value</b>
<b>Before study</b>	<b>46.5 ± 5.9</b>	<b>49.5 ± 5.8</b>	<b>0.0197</b>
<b>After study</b>	<b>60.8 ± 2.9</b>	<b>55.1 ± 4.7</b>	<b>&lt;0.0001</b>

### Materials and Methods

The current study was carried out in Final year students of IGIMS Patna, Bihar after approval from the institutional ethical committee. All (86) students of final year MBBS were selected after written informed consent for this study. The topic of cancer cervix was divided into 4 classes and the learning objectives of each class were pre decided.

The class of 86 students was randomly divided into four groups. For the first class groups 1 and 2 was taught by traditional didactic lecture and groups 3 and 4 were given a case scenario. The case was discussed in details by the students with the help of the teacher when they deviated from the learning objectives of the class. The next class was taught by interchanging the groups in order to avoid ethical issues and bias. At the start and end of each class the students were given a questionnaire consisting of multiple choice questions and short answer questions based on the learning objectives of that class.

The results of the student's performance were compared to see any difference in scores in CBL and didactic teaching and the improvement in knowledge after the intervention. At the end of all four classes, the students were asked to fill out a feedback form to assess their experience and opinion about CBL. Their response was graded on 5 point Likert scale of – agree, strongly agree, no opinion, disagree and strongly disagree.

### Observation and Results

The statistical analysis was done by using Epi Info7. Evaluation of test score showed a statistically significant increase in performance of students taught by both CBL method and traditional lecture (Fig.1) but the improvement was noted to be much more in the CBL group (Table 1&2).

Student's perception about CBL was taken on a 5 point Likert Scale questionnaire with 11 questions. (Table 3) Students found the CBL an effective method of learning and felt this method would improve their ability to perform better in later days of clinical course. They found CBL more interesting and felt motivated to learn about Gynecological Malignancies.

### Discussion

Medical courses used to be taught in traditional education approaches by means of tutorials, didactic lectures and practical classes. They are teacher-centered, with minimal active participation from the students, leading to lack of critical thinking in students and insufficient training targeted at integrating skills [7].

World Health Organization (WHO) consultations on public health teaching and training recommend student- centered, inquiry-driven, problem-oriented and evidence-based innovative learning methods in public health courses. The teacher was expected to teach students by student-centric and problem-based approaches, playing a role as a facilitator to help students to acquire these competencies [8].

**Table 3 Feedback forms with responses**

QUESTIONS	Strongly agree (%)	Agree (%)	No opinion (%)	Disagree (%)	Strongly disagree (%)
<b>Q1) In understanding the topic of cancer cervix, CBL session was very useful.</b>	58.82	39.22	1.96	0	0
<b>Q2) CBL session was very important in terms of development of critical thinking.</b>	52.94	39.22	5.88	0	0
<b>Q3) CBL model was useful in future application of knowledge.</b>	49.09	47.06	7.84	0	0
<b>Q4) CBL session motivated you to learn gynecological cancer.</b>	39.22	50.99	7.84	1.96	0
<b>Q5) Role of teacher was very important in CBL session.</b>	70.59	25.49	1.96	0	1.96
<b>Q6) Group discussion during the CBL session was very useful</b>	43.14	43.14	11.76	0	0
<b>Q7) Brought in more interaction</b>	47.05	52.94	0	0	0
<b>Q8.) Improve problem solving ability</b>	45.09	45.09	9.80	0	0
<b>Q9). Teach other topics as well by this method</b>	43.14	47.06	7.84	0	1.96
<b>Q10). Can be continued for future batches</b>	39.22	52.94	5.88	1.96	0
<b>Q11). Will help to perform better in later days of clinical course</b>	50.25	45.75	4	0	0

The Vision 2015 document of Medical Council of India (MCI), emphasize on the introduction of case scenarios for classroom discussion and case-based learning [9]. No method of teaching and learning in medical science is ideal since each method has its own benefits and drawbacks. Didactic lecture format is used most commonly but, being a passive form of learning it fails to motivate the students to learn more with interest. CBL is an interactive student centered instructor led learning approach enabling students with a lifelong self-directed learning process. Several researchers compared

CBL with didactic form of teaching. Similar study conducted by Sandhya Pillai Nair *et al* in the department of biochemistry in Gujarat, India showed that CBL creates an effective learning environments [10]. Clinical case studies encourage active learning and the development of higher order thinking skills. Study conducted by Praveen R Singh and

Raksha Bhatt in the department of Anatomy also showed promising result of CBL and recommend its implementation in regular curriculum[11]. Other authors opined that CBL generated the medical students' learning enthusiasm, facilitated the health professionals' deeper conceptual understanding, improved nursing students' patient assessment skills and fostered more active and collaborative learners [12-13]. Studies have concluded that students preferred problem-based learning over lecture-based learning because of motivation boost, knowledge retention, class attractiveness and practical use [14]. In our study also we have found the benefits of CBL in improving the understanding and knowledge of the students compared to didactic lectures. The basic knowledge of the parent subjects is essential for all MBBS graduates and this method of teaching imparts lifelong learning and also promotes self-assessment and improvement. It also helps students be more interactive and ask

questions and learn. This is an essential part of learning and also research. Thus case based learning can be an effective adjunct to didactic lectures in various subjects of MBBS and also during post graduate studies.

### Conclusions

CBL is a student centered teaching method aimed at improving the analytical skills of students. Results from our study indicate statistically significant benefit of CBL over didactic lectures. This teaching method not only improved the student's performance in the exam but also created interest in the difficult topic being taught. The students have also felt the need for such classes in other difficult topics and disciplines as well. CBL can also be taught as complimentary to broad based didactic lectures. The limitation for this method was it was used for one subject in a batch. Similar studies in more topics and other subjects will further enhance the usefulness of this method of teaching.

### Authors' Contribution

None

### Conflict of Interests

None

### Ethical Considerations

None

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