

Case Based Learning-An Innovative Method of Teaching Pharmacology In A Government Medical College.

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ABSTRACT: Back ground: Case-based learning (CBL) is a long established pedagogical method, which is defined in a number of ways depending on the discipline and type of 'case' employed. In health professional education, learning activities are commonly based on patient cases. Basic, social and clinical sciences are studied in relation to the case, are integrated with clinical presentations and conditions (including health and ill-health) and student learning is, therefore, associated with real-life situations.

Aim: To explore, analyze and synthesize the evidence relating to the effectiveness of CBL as a means of achieving defined learning outcomes in health professional prequalification training programmes.

Materials and Methods: The study was conducted in Fifth (V) Semester medical students in a Government College. The total number of students were 140 (n=140). A common questionnaire consisting of 19 questions were given and they were instructed to answer according to Likerts Scale.

Results: The results were analyzed using descriptive statistics. The percentage was calculated.

Conclusion: From the study it can be concluded that 65% of students strongly agreed that CBL was a very useful method of teaching. So CBL method of teaching has to be implemented in all medical colleges. There was no gender difference in their views on case based learning.

Keywords: Case based learning, Fifth Semester, Likerts Scale, Medical students.

I. Introduction

Case based learning (CBL) is an educational paradigm closely related to the more common Problem based learning (PBL). This PBL approach is andragogical (adult teaching/learning), posing contextualized questions that are based upon "real life" problems that may be clinical or non-clinical⁽¹⁾. CBL's main traits derived from PBL are that a case, problem, or inquiry is used to stimulate and underpin the acquisition of knowledge, skills, and attitudes. Cases place events in a context or situation that promote authentic learning⁽²⁾. Cases are generally written as problems that provide the student with a background of a patient or other clinical situation. Supporting information is provided, such as latest research articles, vital signs, clinical signs and symptoms, and laboratory results. CBL allows students to develop a collaborative, team based approach to their education. Other characteristics include hypothesis generation and the consolidation and integration of learning activities. Other benefits:

1. intrinsic and extrinsic motivation is developed, allowing individualized learning;
 2. encourages self-evaluation and critical reflection;
 3. allows scientific inquiry and the development of support provision for their conclusions;
 4. integration of knowledge and practice, and development of learning skills⁽³⁾.
- Some regard the term PBL as negative and misleading, and highlight that there is no definitive description of PBL. The growing numbers of synonyms include integrated learning, patient centered learning, pathway models, project based learning, and CBL. Case-based learning and Problem based learning share common goals, but each instructional design possesses unique characteristics. In problem-based learning, the problem drives the learning. The case-based format requires students to recall previously covered material to solve clinical cases, which are based on clinical practice⁽⁴⁾. Learning and remembering science is much easier when you can link it to real life patient cases and get a genuine feel for how essential it is to clinical practice. And, as far as patient safety is concerned, the sooner students start meeting patients and relating scientific knowledge to clinical practice, the better. CBL allows students to develop a collaborative, team based approach to their education and their profession. It is intended to foster learning for competence, deep level understanding⁽⁵⁾ and provide opportunities for vertical and horizontal integration of the syllabus. CBL is needed as information tends to be forgotten quickly when students are passive. CBL is suited for teaching higher order of thinking such as application, analysis, synthesis or

evaluation. Problem-based learning (PBL) is a student-centered pedagogy in which students learn about a subject through the experience of solving an open-ended problem. Students learn both thinking strategies and domain knowledge. Likert scale (/la'ke:tskeɪ/, commonly pronounced "like-ert" but some pronounce it as "lick-ert"⁽⁶⁾) is a psychometric scale commonly involved in research employing questionnaires. Self-reporting is the most widely used approach to scaling responses in survey research. The term is often used interchangeably with rating scale, or more accurately the Likert-type scale, even. This study on case based learning (CBL) was done in department of Pharmacology, Sri Venkateswara Medical though the two are not synonymous. The scale is named after its inventor, psychologist Rensis Likert⁽⁷⁾. When responding to a Likert questionnaire item, respondents specify their level of agreement or disagreement on a symmetric agree-disagree scale for a series of statements. Thus, the range captures the intensity of their feelings for a given item^{(8),(9)}.

II. Materials and Methods

This study on case based learning (CBL) was done in department of Pharmacology, Sri Venkateswara Medical College, Tirupati, Andhra Pradesh. CBL was initiated for entire batch of V Semester students (n=140). Female students were 90 in number and male students were 50 in number. The topic for CBL session was announced in previous class and the topic was selected which was already covered in their regular lectures and which the faculty thought would be useful to the students. The students were divided into A, B, C batches according to their roll numbers. Three practical classes of 2 hours each were taken for the study. In one practical class A batch i.e 50 students were subdivided into 5 groups of 10 each and 5 problems were displayed during the session using powerpoint presentation related to malaria. Students were given 8 minutes time for acquaintance of the case. They work out a solution. Later questions related to the case were projected and students were given an opportunity to respond. Faculty only facilitated the learning process and discussed the relevant points. The procedure was continued with remaining batches in subsequent classes with 50 students in B batch, subdivided into 5 groups of 10 each and 40 students in C batch who were subdivided into 4 groups respectively. Later opinion on this method of teaching was taken from the students and they were instructed to answer the questions given on CBL using the Likerts scale. The identity of the student was not revealed.

Questionnaire on Case Based Learning

Likert scale

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
(1)	(2)	(3)	(4)	(5)

A. General perception of students about Case based learning .

1. This method is good and good understanding is achieved by this method
2. As a student I am comfortable and satisfied by this teaching method
3. There was repetition of some points during the session

B. Student-student and student-teacher interaction

4. Discussions were held during / and after the session
5. Time allotted for discussion was adequate
6. Discussion held in class helped in understanding the subject better
7. The sessions were interactive
8. Students were given an opportunity to clear their doubts

C. Benefits perceived by the students from the teaching method

9. I expect to score better in this topic as a result of this method of teaching
10. I feel confident in applying basic sciences knowledge to solve the clinical problems.
11. This teaching method encouraged my intellectual curiosity.
12. This method reinforced information taught in other classes.
13. CBL sessions will be helpful for final university examination preparation.
14. CBL sessions enhanced clinical reasoning abilities.
15. CBL sessions helps in memorizing drug names and classification.
16. CBL sessions improved my skills in teaching myself new materials.

D. Role of teachers as facilitators

17. For this teaching technique the teacher / teachers had taken collaborative effort.

- 18. The teacher / teachers provided guidance for self-learning.
- 19. Teacher / teachers paid enough personal attention to the students.

III.Results

Table 1- General Perception Of Students On Cbl

1.CBL provides Good understanding of the subject	63%
2.CBL method is comfortable and satisfactory	67%
3.It has repetition of points	70%

GRAPH 1

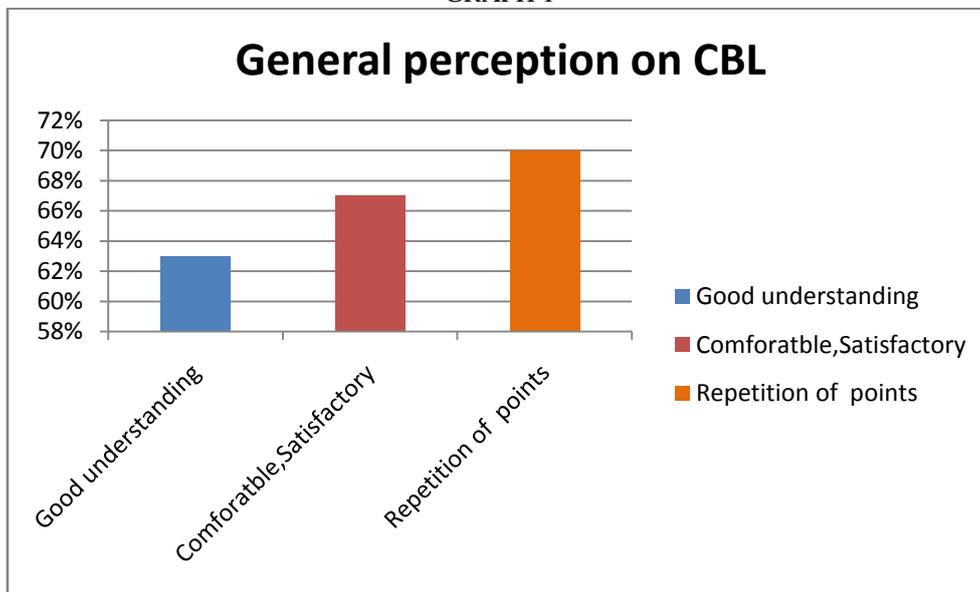


Table2-Student-Teacher Interaction

4.Discussions during/after the sessions	68%
5.Time was adequate	68%
6.Understand subject better	64%
7.Sessions were interactive	68%
8.Opportunity to clear the doubts	61%

GRAPH 2

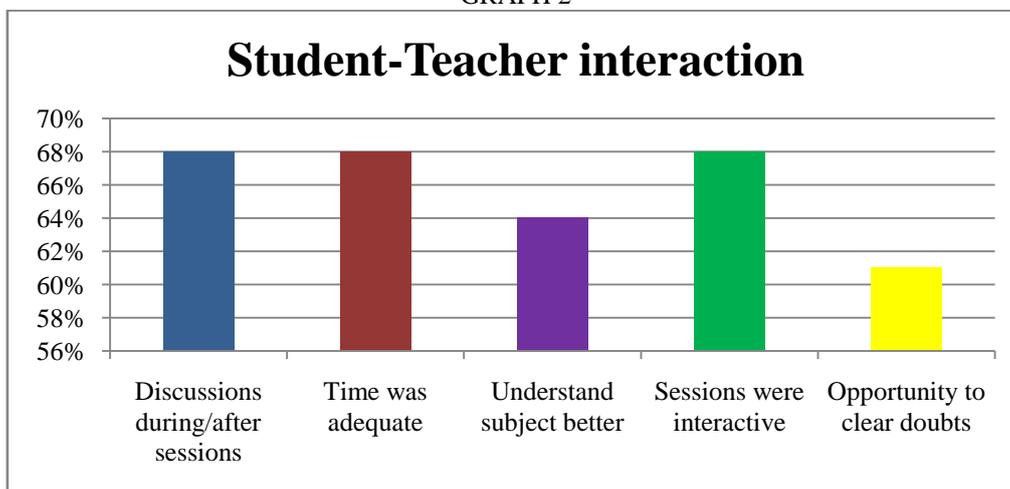


Table3 –Benefits OfCbl

9.Score better in this topic	71%
10.Confident to apply basic sciences knowledge to solve clinical problems	66%
11.Encouraged intellectual curiosity	63%
12.Reinforced information taught in other classes	66%
13.Helpful in final university examinations	64%
14.Enhanced clinical reasoning ability	71%
15.Helps in memorizing drug names and classification	61%
16.Improved skills in teaching themselves	52%

GRAPH3

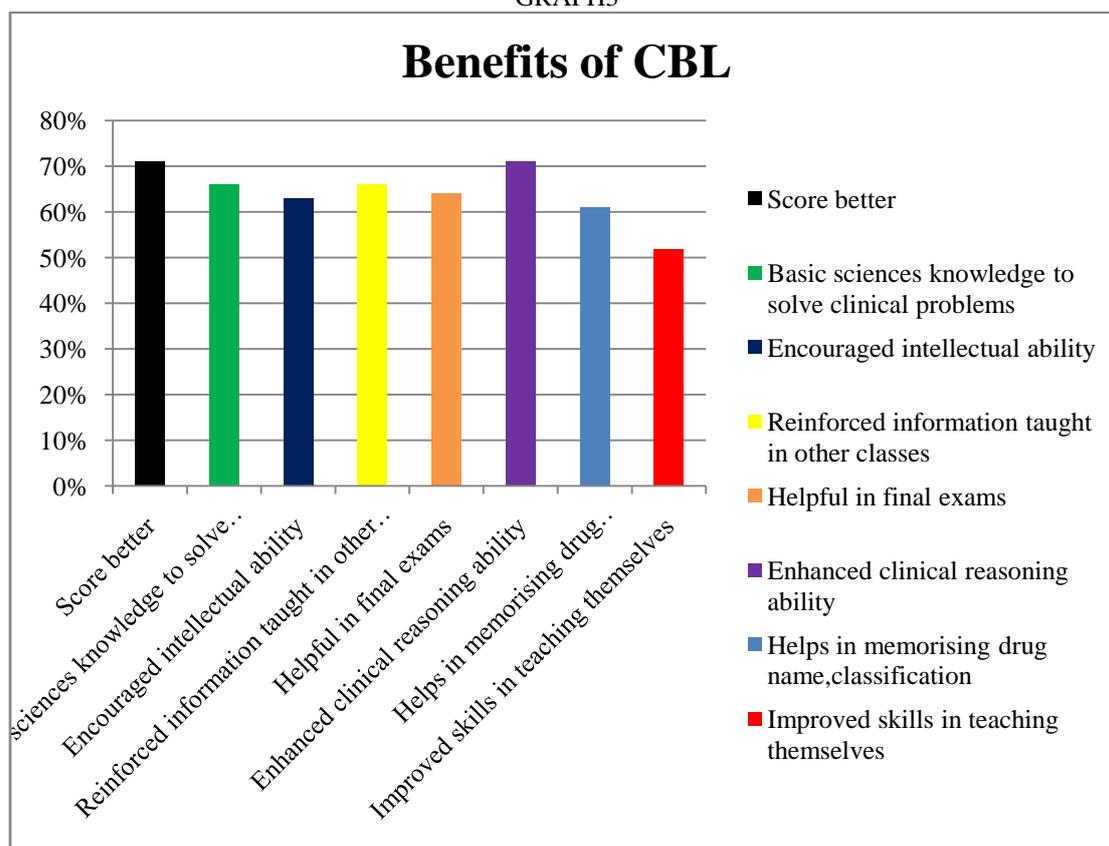
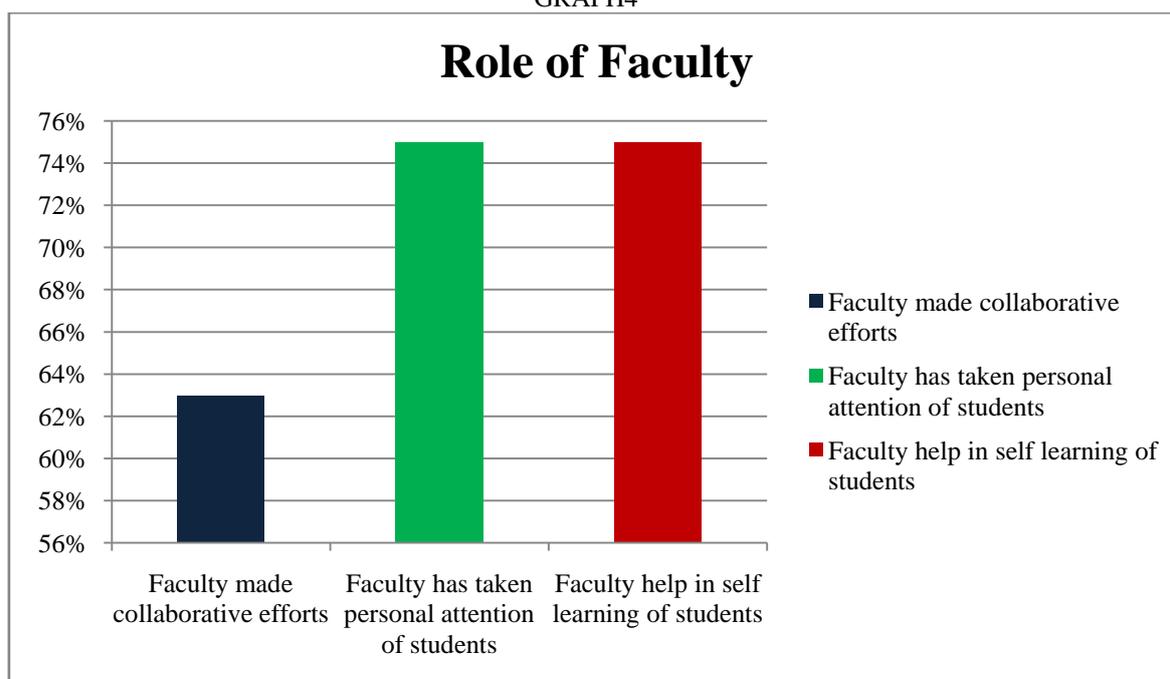


Table 4 - Role Of Faculty As Facilitator

17.Faculty made collaborative efforts	63%
18.Faculty provide personal attention to students	75%
19.Faculty help in self-learning of students	75%

GRAPH4



IV. Discussion

Pearson et al⁽¹⁰⁾, Kassebaumet al⁽¹¹⁾, and Hansen et al⁽¹²⁾ discussed the comparison of CBL with traditional lecture/didactic formats. Pearson et al were able to conclude that the innovative CBL paradigm appeared to be an effective adjunct to the traditional lecture format.

TABLE 1 and GRAPH 1 -It was noticed from the study conducted on CBL that 63% of students strongly agreed that there was good understanding about subject by this method and 67% opined that this method of teaching was comfortable and satisfactory and 70% strongly agreed that there was repetition of points by this method.

TABLE 2 and GRAPH 2-It was shown that 68% of students opined that there was a scope for discussion during/after the sessions and 68% opined that the time was sufficient, 64% of students understood the subject better by this method,68% of students strongly agreed that the sessions were interactive and 61% opined that there was an opportunity to clear the doubts.

TABLE 3 and GRAPH3- It was evident that 71% of students opined that they could score better by this method and 66% strongly agreed that they developed confidence to apply basic sciences knowledge in solving clinical problems.63% of students opined that this method had encouraged intellectual curiosity,66% of students opined that the information taught in earlier classes was reinforced. 64% of students strongly agreed that the method was helpful in final university examination ,71% of students opined that CBL has enhanced clinical reasoning ability, 61% of students opined that the method helped in memorizing drugs and its classification and 52% of students felt that the method had improved skills in teaching themselves.

TABLE 4and GRAPH 4- It was clearly shown that 63% of students opined that the faculty had taken collaborative efforts to teach by this method and 75% of students opined that the faculty has taken personal interest in each and every students performance and aided in their self-learning.

V. Conclusion

CBL is an effective method for improving student's case solving skills. Students will make strong connections between concepts when they learn facts and skills by actively working with information rather than passively receiving information. Finally it can be concluded that CBL not only developed confidence and encouraged intellectual curiosity but also strives to make them self-directed learners. It was also noticed that there was no gender difference in views regarding CBL method of teaching.

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