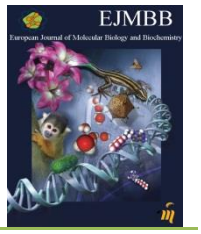
e - ISSN - 2348-2206
Print ISSN - 2348-2192

European Journal of Molecular Biology and Biochemistry

Journal homepage: www.mcmed.us/journal/ejmbb



CASE BASED LEARNING: A BETTER TEACHING LEARNING METHOD FOR UNDERSTANDING OF BIOCHEMISTRY IN MEDICAL STUDENTS

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Article Info

Received 23/05/2021
Revised 16/06/2021
Accepted 19/07/2021

Key words:- Case Based Learning (CBL),Teaching Learning Method (T/L Method), Didactic lectures.

ABSTRACT

Introduction: Case Based Learning (CBL) is a strategy that has been used in the medical curriculum to develop analytic and diagnostic thinking skills in health professionals and not just a mere accumulation of large amount of knowledge. The goal of CBL is to prepare students for clinical practice, through the use of authentic clini¬cal cases So study is taken up to assess if Case Based learning is a useful tool for teaching Biochemistry. **Materials and Method:** A Quasi experimental study was taken up involving 1stMBBS students of Malla Reddy Institute of Medical Sciences while attending regular Biochemistry tutorials during Jan-Feb 2017. Students were grouped into two batches based on their roll numbers and all of them were exposed to both CBL & didactic lectures alternatively in 2 weeks and pre test & post test evaluation was conducted for both the groups in the form of MCQ's and analysis of pre test & post test expressed as Mean and SD was done by paired 't'test and feedback questionnaire by evaluating the perception by five point likert scale rating. **Results:** In this Quasi experimental study taken up, pre test & post test evaluation as twenty MCQ's carrying one mark each were administered to all the batches A very significant post test performance was observed among the students after the CBL sessions in comparison to didactic lectures .**Conclusion:** Clinical case studies encourage active learning and the development of higher order thinking skills . Case Based Learning (CBL) can be used and it is effective in the medical curriculum for a better understanding of Biochemistry among the medical students.

INTRODUCTION

Health professionals need to develop analytic and diagnostic thinking skills and not just a mere accumulation of large amount of knowledge. Medical education is an active area of research and has undergone significant revolution in the past decade.

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Various teaching methodologies have been introduced in professional health education. Case Based Learning (CBL) is a strategy that has been used in the medical curriculum for this reason so that the students are exposed to the real medical problems and helps them to develop analyzing abilities1. The goal of CBL is to prepare students for clinical practice, through the use of authentic clini¬cal cases. It links theory to practice, through the application of knowledge to the cases, using inquiry-based learning

methods2. Using a case-based approach engages students in discussion of specific situations, typically real-world examples. This method is learner-centred and involves intense interaction between the participants. This also helps them in interpreting and solving the problems and in the course of doing this, they develop interest in correlating the clinical disorder with the biochemical abnormalities and make learning better. So study is taken up to assess if Case Based learning is a useful tool for teaching Biochemistry.

OBJECTIVES:

At the end of the present study taken up in the department of Biochemistry , we were able to

1. Assess the effectiveness of Case Based Learning (CBL) as a teaching learning technique among the student of 1st MBBS studying Biochemistry.
2. Assess the perception of students towards CBL tutorial as a teaching learning technique.

METHODOLOGY:

A Quasi experimental study was taken up involving 1stMBBS students of Malla Reddy Institute of Medical Sciences while attending regular Biochemistry tutorials during Jan-Feb 2017.Ethical clearance was obtainedInformed consent was obtained from the students.A group of 150 students were selected and they were divided into two groups A and B as the study group and the control group. Topics for CBL were informed priorly and were different on both occasions. Students with roll number between1-75 were introduced to case based learning, which formed the study group and 76-150 students who attended didactic lectures formed the control group. Pre test and post test evaluation was conducted for both the groups in the form of MCQ's.The subsequent week, both the batch were interchanged making all the students exposed to both T/L methods.A total of 135 students underwent CBL and 123 students underwent conventional lectures. Feedback in the form of a 8- point questionnaire was taken up from the students at the end of second session. Analysis of pretest and post test, expressed as Mean and SD was done by paired 't'test and feedback questionnaire by evaluating the perception by five point likert scale rating.

RESULTS:

The pre-test post test evaluation conducted after case based learning and didactic lectures depicted an extremely significant statistical difference with increase in post test performance **(Table 1).** A very significant post test performance was observed among the students after the CBL sessions in comparison to didactic lectures**(Table 2).** A 5 point Likert scale questionnaire which contained 8 questions which was administered to the students, to know their perception on the usefulness of the CBL revealed 91% of the students found the CBL sessions to be an interesting method of gaining knowledge. 84% of them felt CBL could be a good associated T/L method with didactic lectures. 97% of students opined that CBL enhanced the skill and confidence of themselves. 89% opined CBL increased development of critical thinking. 85% expressed that it helped in learning process. 88% of them felt that they exposed them to an experience of logical application of the knowledge which was gained in cracking cases and they were also motivated by these sessions which would be of great help in the future also. 89% of the students perceived that it will help in learning biochemistry easily and can be incorporated with didactic lectures in regular teaching **(Table 3)**.

Table 1 : Students Pre test and Post test pattern in CBL and Didactic lectures

T/L Technique	Pre-test score	Post-test score	p value
CBL	5.7±2.1	14.3±1.78	≤0.001 ES
Didactic lecture	6.2±1.7	10.2±1.86	≤0.001 ES

Table 2 : Students Post test score comparison between CBL and Didactic lectures

Didactic lectures	CBL	P value
10.2±1.86	14.3±1.78	≤0.01 S

Table 3 : Students feed back questionnaire analysis expressed in percentage

Sl No.	Question	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	In understanding today's topic, CBL session was very useful in gaining knowledge			9.1	34.8	56.1
2	Clinical case given in today's class was interesting.		1.5	9.2	41.6	47.7
3	Did this new method enhance the skill and confidence of the learner?			2.4	15.1	82.5
4	CBL session was very important in		4.3	7	62.2	26.5

	terms of development of critical thinking					
5	Did based CBL help to improve the scoring in tests?		5.4	6.8	46.9	40.9
6	CBL session motivated you to learn biochemistry in association with didactic lectures			1.5	18.2	80.3
7	Did it encourage in the studying process of learners?		11.3	1.2	31.8	53.7
8	Should CBL be incorporated along with regular teaching?		9.1	2.3	51.5	37.1

Discussion:

Learner centered approach is the need of the hour in medical education. The current method is teacher centered and passive. Biochemistry learning for medical undergraduates involve learning different biochemical changes occurring in the human body and their clinical applications. Many a times students go confused with multiple metabolic pathways and may end up losing interest in the subject. Hence the faculty of medical colleges have a greater responsibility in making the study methods of their subject innovative, interesting and participatory for the under graduate students. One such method is organizing case based learning sessions. CBL is a teaching learning method which can integrate basic science knowledge with clinical science. In our study, there was a significant gain in knowledge after CBL in comparison with didactic lectures. Our study is in accordance with Vijetha et al[3] and Hay et al[4]who contemplated that a higher scoring pattern in posttest after CBL. In our study, students perceived that CBL increased development of critical thinking and helped in learning process. This is similar to studies by Gade et al[5] and Susan[6] gade et al in their study mentioned that by discussing a clinical case related to the topic taught, students evaluated their own understanding of the concept using a high order of cognition which encouraged active learning and produced a more productive outcome. Our study revealed that CBL could be a good associated T/L method with didactic lectures, enhanced the skill and confidence of students, helped in learning process, exposed them to an experience of logical application of the knowledge which was gained in cracking cases and they were also motivated by these sessions and will help in learning biochemistry easily and can be incorporated with didactic lectures in regular teaching. These findings are similar to studies by Nair et al[7], Joshi et al[8], Adiga et al[9], Hudson et al[10] and McNaught et al[11].

CONCLUSION:

Clinical case studies encourage active learning and the development of higher order thinking skills. This puts forth a need to promote a student centered active learning with a focus on critical thinking and problem solving in clinical case studies.Case Based Learning (CBL) can be used and it is effective in the medical curriculum for a better understanding of Biochemistry among the medical students.

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