



IMPACT OF CASE BASED LEARNING IN UNDERSTANDING PHYSIOLOGY

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ABSTRACT The knowledge of Physiology is extremely necessary for a new medical student to understand the basic functions of human body. Traditionally the entire syllabus of Physiology is completed through didactic lectures and practical sessions. In case of lecture the role of learners is passive and there is less or no interaction of the student with teacher. Case based learning is one of the innovative teaching-learning methodology which can make this subject interesting, clinically useful, and can enable the students to learn it by correlating with its clinical aspects. 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.

KEYWORDS : Case based learning, Physiology, pedagogical, team based approach

INTRODUCTION

Physiology is an important subject that is taught to 1st MBBS students. Sound knowledge of this subject with clear understanding of its clinical applications is necessary to form a strong base for sound clinical practice. The traditional method of teaching Physiology i.e. by conducting didactic lectures, practicals and tutorials which are mainly passive teaching-learning method does not help in the development of problem solving and clinical reasoning skills of the students. The students being not exposed to relation of Physiology to clinical practice, find this subject dry and unimportant and thereby do not develop interest in studying it in depth. It is well appreciated that Physiology should be taught with a dynamic approach as problem solving and application in clinical practice towards patient care. Although no single teaching method ensures a thorough understanding of a topic, various methods are being used in many institutes to reinforce lectures in teaching physiology, such as case-stimulated learning^[1] problem-based learning^[2] and patient-centred learning^[3].

Case based learning (CBL) is an established pedagogical method that uses case studies as active learning tools.^[4] It aims to develop reasoning skills based on clinical case scenarios which allows medical student to learn the basic medical science subjects in context of a medical problem. By discussing a clinical case related to the topic taught, students understand the concept at a high order of cognition. This process encourages active learning and may have a more productive outcome^{[5][6]}. With this method, both students and faculty members contribute to discussions on identified learning issues.^[7]

Despite numerous studies on case-based learning in various disciplines^{[8][9][10][11]} have been undertaken, there is still not enough evidence of the efficiency of this method for undergraduate students, as the results of the studies are diverse.^{[8][12][13][14][15]}

To ensure that students learn Physiology with interest and be able to apply the gained knowledge in clinical practice, Case based learning was introduced to a batch of 100 1st MBBS students by formulating a definite case base module. The module consisted of definite clinical based scenarios in relation to Renal physiology.

AIM & OBJECTIVES

AIM: To use case base learning as a tool to motivate and develop the interest of students to learn physiology in depth.

OBJECTIVES:

To assess the perception of students after introducing case base learning in Physiology.

To assess the interest of students to learn physiology after introduction of CBL.

METHODOLOGY

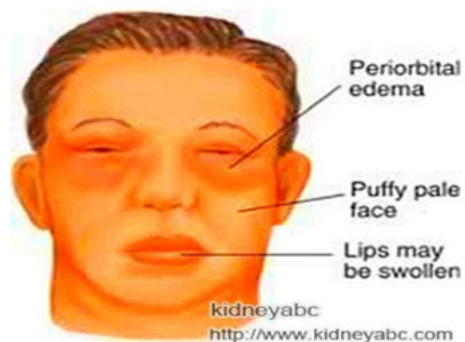
The project was carried out with the First MBBS Professional students in the Department of Physiology, Jorhat Medical College. The batch comprised of 100 students.

10 case base scenarios were prepared in consultation with the seniors of Physiology and Medicine department. Structured student feedback questionnaires were prepared and peer reviewed for validation. The questionnaire included 13 closed ended questions which were to be answered in terms of agree, neutral or disagree.

At first the topic of renal physiology was taken by traditional didactic lectures in 10 classes (1 class per week). After the completion of 10th class they were given 1 week time to read and study the topic on Renal physiology.

In the following weeks two classes were taken on the basis of case based learning. Prior to these classes the interested faculty and all the students were oriented and introduced to the concept of case base learning and group dynamics. All students willingly participated in the study and no control group was formed.

In the 1st class (duration-1 hr) the students were asked to form groups of 10 students each of their own choice. Now each group was asked to do group discussion on a particular given case base scenario by following the rule of group dynamics. After the group discussion was over the students were asked to leave the class and then come prepared with the answers of the given case base scenarios. The second class on CBL (duration-3hrs) was held in the following week. As per the rule of group dynamics, the speaker that each group has selected among themselves was asked to come on the dais and give their answers. After each group has given their answers, some sort of discussion was done between the teacher and students. Moreover the students of other groups were allowed to give some additional inputs or suggestions to each scenario. In this way 10 different case base scenarios were discussed by 10 groups in a period of 3hr class. At the end of discussions the perception of students regarding CBL as enhancing learning method was taken by using a close ended questionnaire. Prior to filling up the questionnaire the students were described about the meaning of each questions present in it. The response for each question regarding CBL was measured in terms of agree, neutral, disagree.



Identify the picture.

What is the probable diagnosis?

What are the causes of edema?

Explain the physiological basis of edema.

State the laboratory examinations to be done in such type of patients.

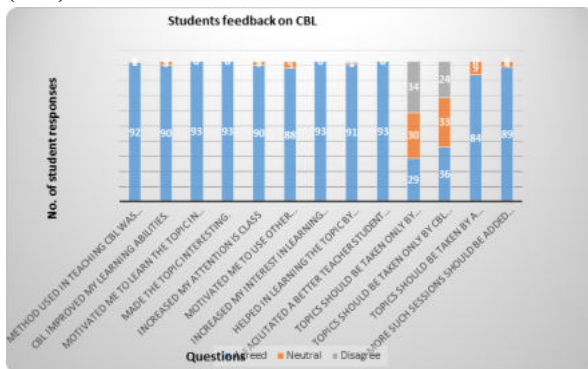
OBSERVATIONS AND RESULTS

Out of 100 students the responses were obtained from 93 students. 7 students were not present on the day when questionnaire was given due to illness or valid personal reason.

A total of 92 (98.9%) students agreed that the method used for conducting CBL sessions was very useful. Majority of them enjoyed CBL sessions as it made the topic interesting and increased their attention in class. 100% students agreed that this CBL session has increased their interest to learn renal physiology and motivated them to learn the topic in depth. Majority of the students 94.6% students felt that they were motivated to use other resources like library books, net and journals to have better concept of renal physiology. CBL sessions have guided them to learn the topic by correlating the basic mechanisms with its clinical aspects. This idea and concept have made them realize the importance of renal physiology in clinical practice. About 90% students opine that topics should be taken by a combination of didactic lectures and CBL sessions and more such sessions should be conducted for all the topics of Physiology in future. 100% students reported that CBL sessions facilitated a healthy teacher student relationship.

The data were analysed using SPSS software (version 18). The significance test was done for frequency of responses. Analysis revealed that p value for chi square two tailed test for 4 d.f is < 0.001 which is highly significant.

Bar Chart Showing Students Feedback on Case Based Learning (CBL)



FEEDBACK FROM FACULTY:

The feedback from faculty was taken verbally by asking three open ended questions.

- Do they feel the need of introducing CBL along with didactic lectures?
- Advantages of introducing CBL.
- Disadvantages of introducing CBL.

They were of the opinion that

- Topics should be taken in combination with didactic lecture and CBL.
- Students will be motivated, develop interest and will feel the importance of basic science subject to form the basis of medical understanding.
- Time consuming and more resources intern so faculty, good library and net connectivity are required.
- Introduction of CBL may hamper in completion of Physiology course in 1st MBBS.

CONCLUSIONS

From the present study it can be concluded that case based learning can be used as an innovative, motivational teaching tool for creating interest for Physiology among the students. Case-based teaching should be considered in medical curriculum along with traditional teaching strategies, in order to make the basic science courses and especially physiology more attractive and enjoyable.

We should implement any new method of teaching that can create interest among students about learning meaningfully and make them

better medical professionals. We also conclude that many reforms are needed in Indian medical education system for better healthcare.

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