COMPARISON OF TRADITIONAL- AND CASE-BASED METHOD FOR LEARNING PHYSIOLOGY AMONG 1ST YEAR MBBS STUDENTS

PRAMILA T1, RAMAKRISHNA BANDARU2, PRATHIBHA T3, SURENDRA BV4*

1Department of Physiology, Viswabharathi Medical College and Hospital, Kurnool, Andhra Pradesh, India. 2Department of Anaesthesia, Mallareddy Institute of Medical Sciences, Hyderabad, Telangana, India. 3Department of Computer Science and Engineering, Government Engineering College, Ramanagara, Karnataka, India. 4Department of Physiology, Viswabharathi Medical College and Hospital, Kurnool, Andhra Pradesh, India
*Corresponding author: Surenendra BV; Email: drsurendraphysiology@gmail.com

ABSTRACT

Objective: The medical science of physiology is both basic and applied. Traditional physiology instruction is teacher-centered, with little involvement from the students. A self-directed learning strategy focused on training through the use of personal narratives is known as case-based learning (CBL). The present study was conducted to assess the effectiveness of CBL method in teaching physiology among 1st year MBBS students.

Methods: This study was conducted among 1st year MBBS students of 2022–2023 batch. The study design included a pre-test, a CBL discussion on a specific topic, and a post-test following the CBL session. MS Excel and SPSS version 23 were used to gather, tabulate, and statistically analyze the data. Results from the pre- and post-tests were compared using the student’s “t” test, and p < 0.05 was regarded as statistically significant. The 12 questions that made up the feedback survey were all expressed as percentages.

Results: When pre- and post-test results were compared, the post-test score after the CBL session was significantly better than the pre-test score of the session. The majority of students supported CBL activities. In student feedback, more than 95% of the students thought CBL classes helped in clearing doubts, helped in increasing interest. More than 91% of the students thought CBL classes improved conceptual thinking.

Conclusion: Through active learning, CBL can be utilized as an addition to lectures to augment standard teaching/learning approaches. It encourages the drive to learn and the development of critical reasoning.

Keywords: Case-based learning, Active learning, Physiology.

INTRODUCTION

In this era of medical education, a combination of teaching methodologies can be acquired to facilitate learning among students who have different learning approaches [1]. Physiology is both basic and applied medical science. It has to be taught and learned effectively so as students graduate and practice in the community [2]. The traditional conventional system (didactic lecture) of teaching is teacher centered with minimal or no active participation from the students, it has minimal or no integration of the subject both horizontal and vertical. Teaching of physiology in this context is an art that transfers knowledge from instructor to student using a competent teaching/learning exchange process [3]. The subject needs to be taught with comprehension of concepts and mechanisms together with the orientation of clinical aspects of disease [4]. One such approach is case-based learning (CBL) where the students learn with the help of case scenarios and are actively engaged to solve a problem to attain the learning objectives. CBL is known to transmit analytical skills and ability to solve real medical problems in the students [5,6].

CBL is defined as learning that is based on the description of a health problem faced by the patient, scrutiny, and understanding of all the related facts obtained from past events, exploration, systematic examination, and organizing the further management of the patient [7]. In CBL, the faculty formulates the case scenarios and students discuss the case in small groups and attempts to arrive at a solution using the knowledge gained from previously taught curricular content. CBL has been shown to impart early clinical exposure, assist students to link clinical conditions to basic sciences, develop clinical reasoning, improve students score, enhance communication skills, and galvanize students toward self-directed learning [8].

In CBL, the faculty expresses the case scenarios in a concise way and students discuss the case in small groups, explore, and analyze it, and makes an effort to reach to solve the problem using the facts, information, and skills acquired through experience gained from previously taught subject content. CBL has been shown to foster exposure of medical students to patients as early as the 1st year of medical college. It aids students to connect observable conditions of a disease to fundamental sciences and develop strategies to gather and analyze patient information. It also enhances students score; strengthen the process of exchanging, creating, and sharing information skills. It motivates the students toward making their own decisions and organizing their own work rather than being told what to do by teachers [8].

The objectives of the present study were to assess the effectiveness of CBL in teaching by comparing pre-test and post-test scores of multiple choice questions (MCQs) and to analyze the feedback from students about the perception and effectiveness of the CBL method.

METHODS

The present prospective and interventional study was conducted in the Department of Physiology, at Viswabharathi Medical College and General Hospital, Kurnool. Approval from the Institutional Ethics Committee and informed consent of the subjects was taken before the conduction of this study.
Medical students in the age group of 17–21 years of the first MBBS students of 2022–2023 batch were selected. Eighty students out of the 150 students of the first MBBS participated in the study. Two topics (Hyperthyroidism and Hypothyroidism) were selected, cases were constructed, and the faculty of physiology was trained. MCQs and feedback questionnaires for students were designed, and they were prevalidated and validated. Before the intervention, counseling of the students was done. Informed written consent was obtained from the first MBBS students who were willing to participate in the study. All 80 students were taught by the traditional method on the two topics (Hyperthyroidism and Hypothyroidism) which were followed by MCQ pre-test to elicit their baseline knowledge about the given topic. The next day, the students were divided into small groups. CBL session was conducted wherein they were presented with a case scenario. The case scenario included clearly written symptoms and signs related to the topic. Adequate time was given for case discussion and solving the specific learning objectives by the students. This was followed by MCQ post-test. Finally, feedback was taken from the students. The feedback survey was based on 12 questions which were expressed in percentages.

**RESULTS**

A total of 80 1st-year MBBS students participated in the study. Student’s examination performance such as MCQs pre- and post-test were analyzed by paired sample t-test. p<0.05 was considered as significant. For qualitative data, that is, the perception of the students about CBL method was obtained through the questionnaire. Students feedback was expressed in percentages.

**DISCUSSION**

To boost student enthusiasm and active learning, different teaching strategies are used in medical education. The adoption of an engaging, student-centered methodology has fundamentally altered how pupils learn. With repeated experiences in a supportive environment and a focus on the complexity of clinical care, the case-based method has the advantages of encouraging self-directed learning, clinical reasoning, clinical problem-solving and decision-making [9]. The purpose of the present study was to assess medical students’ perceptions of this novel teaching approach and to ascertain if interactive, case-based lectures are an effective teaching tool for medical physiology.

Studies conducted in India and across the globe have certainly authenticated the benefits of CBL in medical education [11,12,18]. Medical students in the age group of 17–21 years of the first MBBS participated in the study. Two topics (Hyperthyroidism and Hypothyroidism) were selected, cases were constructed, and the faculty of physiology was trained. MCQs and feedback questionnaires for students were designed, and they were prevalidated and validated. Before the intervention, counseling of the students was done. Informed written consent was obtained from the first MBBS students who were willing to participate in the study. All 80 students were taught by the traditional method on the two topics (Hyperthyroidism and Hypothyroidism) which were followed by MCQ pre-test to elicit their baseline knowledge about the given topic. The next day, the students were divided into small groups. CBL session was conducted wherein they were presented with a case scenario. The case scenario included clearly written symptoms and signs related to the topic. Adequate time was given for case discussion and solving the specific learning objectives by the students. This was followed by MCQ post-test. Finally, feedback was taken from the students. The feedback survey was based on 12 questions which were expressed in percentages.

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CONCLUSION

The CBL teaching method is a learner-centered teaching methodology. It is an interesting and effective active learning strategy. Overall, results indicate that students expressed a strong preference for CBL compared to traditional methods.

REFERENCES