A Comparative Study on Traditional and Case Based Teaching Learning Methods and its Impact on Academic Performance Among First Year Medical Students

[1] Shivaleela C, [2] Anjali Borle , [3] Vaibhav Anjankar , [4] Kumar G V
[1]Professor of Anatomy, Sri Siddhartha Medical College, Tumkur, Karnataka
[2]Professor of Prosthodontics, Sharad Pawar Dental College, Sawangi (Meghe) Wardha, Maharashtra.
[3]Professor of Anatomy, Jawaharlal Nehru Medical College, DMIHER, Wardha, Maharashtra.
[4]Professor & HOD of Paediatrics, Sri Siddhartha Medical College, Tumkur, Karnataka

Abstract: Case-based learning (CBL), also referred to as case study teaching and case method learning, is a long established pedagogical method, which is defined in a number of ways depending on the discipline and type of 'case' employed. Current drift in medical education is a shift from teacher centered submissive learning environment to student centered energetic, positive learning. 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. Aim: To compare traditional teaching learning methods and case based teaching learning methods and its impact on academic performance among first year medical students

Materials and methods: The students who will participate in the study will be divided into two equal groups by random allocation. Pre-test MCQs will be given to both the groups. The first group will be taught with traditional lecture. The second group will be divided again in to smaller groups and each group will be given a case scenario of the topic, followed by group discussion which will be moderated by a facultyThe students of the both the groups will be given post-test MCQS on the topic. The scores of pre-test and post-test obtained will be compared with both the groups and statistically analyzed. The above groups will be flipped and the second topic will be given and the same procedure will be followed as done for the first topic. Finally, feedback will be taken from the students and faculty, which will be analyzed and expressed in percentages.

Observation and Results:

1. **Assessment of academic performance of both the groups will be done by statistical evaluation of MCQ pre-test and post-test scores by using SPSS Version 20**
2. **Feedback survey based on questionnaire will be analyzed and expressed in percentages to assess the perceptions of students and barriers by faculty in implementing the CBL.**

Discussion: will be on the basis of observation and analysis of data.
Conclusion: will be drawn on the basis of observation and results.
Keywords: Case based learning, Traditional teaching, CBME.

Introduction

Case-based learning (CBL), also referred to as case study teaching and case method learning, is a long established pedagogical method, which is defined in a number of ways depending on the discipline and type of 'case' employed. The first full-time pathology professor at the University of Edinburgh, James Lorrain Smith, introduced what he called the 'case method of teaching pathology' in 1912. [1] The student's attitude towards their learning plays an important role in determining the outcome of any educational new effort. It determines the degree of excellence, expanse of education and the learning point of view of the students. [2] Current drift in medical education is a shift from teacher centered submissive learning environment to student centered energetic, positive learning. [3] 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 [4] 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 [4]

Need of the study:

The National Medical Commission has framed the learning process for graduate medical education which incorporates case studies and problem-oriented approach as well as introduction of horizontal and vertical integration throughout the UG curriculum. 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 in this context is an art that transfers knowledge from instructor to student using a competent teaching/learning exchange process.

The subject needs to be taught with comprehension of concepts and mechanisms together with the orientation of clinical aspects of disease. 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. This has necessitated more training of teachers in innovative teaching-learning methods in medical education. Hence medical students who are the future teachers should acquire the effective teaching skills to teach their students effectively. Training the medical students in case based learning method of teaching helps in inculcating better teaching skills in them.

Review of literature:

In a study conducted by Muralidhar Reddy Sangam et al, [5] the average difference of the scores between pre-session and post-session tests in the CBL group for Topics I and II (4.01±1.17 and 3.8±1.6) are significantly more compared to the didactic lecture method (3.3±1.3 and 1.9±1.2). The average difference of the scores between the post-session tests and retention-tests in the CBL group (0.122±1.05 and 0.18±1.04) were further compared to the lecture method (0.016±0.95 and 0.09±0.8) for Topics I and II, respectively. There was a significant increase in the proportion of students with scores above 50% in the post-session test and retention test in the CBL group compared to the didactic lecture group.

In a study conducted by Praveen R Singh, Raksha Bhatt [6], a total 83 students responded to the feedback. The percentage of students agreeing to various questions was in the range of 51 to 87%. Group discussions during CBL were able to improve the understanding of theory taught along with better problem solving and increased interaction, as agreed upon by 62, 69 and 74% of students respectively. Facilitators were found helpful by 73%; and 71% felt it was feasible to have CBL along with lectures. From our experience and students perceptions it can be concluded that CBL is a very good approach to initiate student centred learning. This also helps students to understand practical application of the theory taught to them.

In a study conducted by Nair SK, Rai N [7], out of the total 150 students of MBBS 1st year only 140 submitted the feedback form as the remaining 10 students were absent. Out of 140 students 139 students agreed for CBL (score>30), and one student was in a confused state not really able to agree/disagree and none of the students were against CBL (score <20). On comparing the results of the topic taught by CBL and non CBL it was found that students taught by CBL performed better in their assessment. In the first session out of 10 marks students taught by CBL scored a mean of 6.46 while those taught by non CBL scored mean marks of 4.3. In the second session also students taught by CBL performed better than those taught by conventional method the score of mean marks out of 10 being 9.41 and 8.15 respectively. The p value was found to be highly significant in both the sessions (0.0001)

In a study conducted by Rameswarapu Suman Babu, Mergu Prasad [8], a total of 150 students participated in this study. The results of the survey are based on student's opinion of the effectiveness of CBD suggested modifications. 28% accepted that they never formulate the learning objectives before the case discussions. 68.7% agreed that the teaching materials/references or/resources were never shared among the students before the case discussion. Communication on the content and direction of PBL is an important aspect as it helps in the structuring of knowledge and facilitating extraction and understanding of information from various resources. This enhances the learning process as well as clinical performance. 87.5% participants accepted the fact that in their CBD only real patients were incorporated.72% of the students agreed that content of the cased based discussion was distributed, but it never contained the direction of Problem Based Learning (PBL).

Aims and objectives:

Aim: To compare traditional teaching learning methods and case based teaching learning methods and its impact on academic performance among first year medical students

Objectives:

1. To compare student performance in traditional teaching learning methods versus case based teaching learning methods using MCQs as the assessment method.

2. To assess the effectiveness of CBL on academic performance of first year medical students using their scores in the 1st internal assessment.

3. To analyze the perceptions of CBL teaching learning methods among first year medical students

4. To analyze the barriers in implementing the CBL teaching learning methods in CBME curriculum from the perceptions of the faculty of 1st year MBBS.

Materials and Methods:

Methodology -

Two topics will be selected, case scenarios will be constructed, and the faculty of Anatomy will be trained. Pre-test and post-test MCQs for the selected topics and feedback questionnaires for students and questionnaires for the faculty regarding barriers in implementing CBL method will be designed, and they will be validated. Before the study, counselling of the students will be done. Informed written consent will be obtained from the first MBBS students who will be willing to participate in the study.

The students who will participate in the study will be divided into two equal groups by random allocation. Pre-test MCQs will be given to both the groups. The first group will be taught with traditional lecture. The second group will be divided again in to smaller groups and each group will be given a case scenario of the topic, followed by group discussion which will be moderated by a faculty. Adequate time will be given for case discussion and solving the Specific Learning Objectives by the students. The students of the both the groups will be given post-test MCQS on the topic. The scores of pre-test and post-test obtained will be compared with both the groups and statistically analyzed. The above groups will be flipped and the second topic will be given and the same procedure will be followed as done for the first topic.

Finally, feedback will be taken from the students and faculty, which will be analyzed and expressed in percentages.

a) Methods of collection of data:

The following research techniques will be used to collect the data:

1. Pre-test and post-test MCQ scores will be taken to compare the knowledge about the topic in both the groups
2. The feedback survey will be based on questionnaire which will be analyzed and expressed in percentages to assess the perceptions of students and barriers in implementing the CBL by the faculty.

b) Venue of research: Department of Anatomy, Sri Siddhartha Medical College, Tumkur, Karnataka.

c) Sample size – All the first year medical students

d) Inclusive criteria: All the first year medical students who will volunteer to participate in the study will be included in our study.

e) Exclusive criteria: All the first year medical students who are not willing to participate in the study will be excluded.

f) Study duration: 06 months.

Statement of Problem

The purpose of this study is to compare traditional teaching learning method and case based teaching learning method and to find out which is more effective for the good academic outcome of first year medical students of Sri Siddhartha Medical College, Tumkur, Karnataka.

Research Hypothesis

The CBL teaching method will not enhance the academic performance and improve the interest and motivation in first year medical students as compared to traditional teaching methods

Parameters for evaluation:

- MCQ pre-test and post-test scores
- The feedback survey based on structured questionnaire for the students on CBL
- The feedback survey for the faculty to know the barriers in implementing CBL

Observation and Results:

3. Assessment of academic performance of both the groups will be done by statistical evaluation of MCQ pre-test and post-test scores by using SPSS Version 20
4. Feedback survey based on questionnaire will be analyzed and expressed in percentages to assess the perceptions of students and barriers by faculty in implementing the CBL.

Discussion: will be on the basis of observation and analysis of data.

Conclusion: will be drawn on the basis of observation and results.

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Annexure 1

Consent Form

For

A comparative study on traditional and case based teaching learning methods and its impact on academic performance among first year medical students

Consent by the Participant

I hereby declare that I am solemnly willing to participate in the Research project entitled **"A comparative study on traditional and case based teaching learning methods and its impact on academic performance among first year medical students"** Undertaken by **Dr. Shivaleela C,** Professor, Department of Anatomy, Sri Siddhartha Medical College, Agalakote, Tumkur, Karnataka-572107 under the guidance of **Dr. Anjali Borle,** Professor of Prosthodontics, Sharad Pawar Dental College, Sawangi ,Wardha Head of Dental Education and Head of Capacity Building, SHPER.

Name & Signature