Evaluation Of Case based learning to improve student participation and better understanding of subject Among Medical Students

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Abstract :

Background: The Case Based Learning(CBL) is an andragogic method of learning[1]. In CBL, a problem or inquiry is used to stimulate the acquisition of knowledge, skills, and attitudes. 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[2]. CBL also encourages self evaluation and allows scientific inquiry and the development of support provision for the Conclusion.

Objective: To Asses the impact of Case Based tutorials in Improving Student Participation.

Methods: An interventional Study was carried out in the Department of Paediatrics at J N Medical College, Belgaum . A total of 80 Final Year MBBS Were included in the study and the study was conducted between April 2015 to September 2015.

Results: The Students were divided into two groups of 40 Students each. In the Intervention group the paired 't' test value was 11.493 and the confidence interval was 2.162 to 2.09 at 95 % confidence interval.

Conclusion: The Present Study concludes that CBL can be used as innovative teaching Method for increased retention of Knowledge and Better understanding of the subject.

Key Words: Problem Based Learning, Medical Students, Self Directed Learning, Andragogy, Attitude.

Introduction:

The Case Based Learning (CBL) is an andragogic method of learning[1]. In CBL, a problem or inquiry is used to stimulate the acquisition of knowledge, skills, and attitudes. Cases place events in a context or situation that promote authentic learning. 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[2]. CBL also encourages self-evaluation and allows scientific inquiry and the development of support provision for the conclusions[3,4]. Another andragogic method of learning which has common goals as CBL is Problem Based Learning (PBL). In PBL the problem drives the learning whereas in CBL, the case-based format requires students to recall previously covered material to

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solve clinical cases, which are based on clinical practice[5,6].

There is lot of literature on PBL within many different disciplines; however, there is a paucity of literature on CBL within the contexts of medical education as CBL has not been utilised in medical education to a significant extent. This research work on CBL is an attempt to analyse the effectiveness of CBL in medical education

OBJECTIVE OF THE STUDY:

1) To assess the impact of case based learning in improving student participation
2) To assess the effectiveness of case based learning in improving the understanding of the subject

METHODOLOGY:

An Interventional study was conducted in the department of paediatrics in J N Medical college between April 2015 to September 2015. A total of 80 Students who were in Final year MBBS were included in the study. The students were further divided into two groups as A and B with 40 Students in each group. Group A was subjected to case based teaching in tutorials whereas group B was subjected to conventional method of teaching in tutorials.

Group A and group B were further split into two subgroups consisting of 20 students in each group as group A1, A2 and B1, B2 respectively to make it as small group teaching in tutorials.

Students of both groups A and B were subjected to pre test and post-test through a questionnaire which consisted of multiple choice questions.

The scores of pretest and post-test was compared for each student using a paired T- test and then the scores of pre-test and post-test was compared between group A and group B by using unpaired T-Test.

At the end of tutorials , student's overall perception regarding case based teaching in tutorials was assessed by using a questionnaire which was based on **Likert scale.**

Details of intervention in methodology

The teacher would present a short written account of the case with some important symptoms ,signs and relevant investigations.The students together try to identify the points they think they understand and determine those terms, tests, procedures, symptoms, etc., for which they need more information. Subsequently, students discuss their findings and share opinions and understandings . Thus their search for the correct diagnosis narrows down.The teacher would intervene regarding how to approach such a case if students have difficulties in reaching to a close diagnosis.Thus their search for the correct diagnosis narrows down. Finally they would come up with the differential diagnosis and the treatment approach for the given case. The knowledge and understanding of the case comes from the search for answers, not from "the answer" to a particular case. The power of this method is its interactive approach between thinking, discussion, and searching for more information

Results:

Out of the 80 students in our study, they were divided into 40 students into Group A and Group B.

The group A was classified as interventional group which had received Case Based Learning and Group B received the Conventional Way of teaching. Both the groups were analysed with mean score at the beginning of the posting as pre test and at the end of posting as post test

In the intervention group the mean score of students in the pre test was 5.7 and the mean score of the post test in the same group was 8.3 . The mean Difference between the scores of pre and post test was 2.6. On applying the paired t test in the intervention group the case based learning was found to be statistically significant with t value of

11.493 and the p value was less than 0.001 at 95% and confidence interval was 2.0162 to 2.09.

In the Conventional teaching group the mean score of students in the pre test was 5.4 and the mean score of the post test in the same group was 6.7 . The mean Difference between the scores of pre and post test was 1.4 . On applying the paired t test in the Conventional teaching was also found to be statistically significant with t value of 8.143 and the p value was less than 0.001 at 95% and confidence interval was 1.072 to 1.77.

The mean score of interventional group was 5.7 at pre test level and after intervention , it was 8.3. Thus there was increased knowledge score of 2.6.The mean score of conventional group was 5.4 at pretest level and after intervention ,it was6.8.Thus there was increased knowledge score of 1.4 only showing more increased mean score in Intervention group. [Graph 1]

The difference between the interventional and conventional group at pretest level was statistically not significant (p=0.378) but at Post test level, the difference was statistically significant (p<0.001)

The Student Perception was assessed using the Likert Scale regarding the case based Tutorials.[Table 1]. Majority of the students did strongly agree the advantages of Case Based Learning over the Conventional Way of learning in our study.

Discussion:

CBL seems to be a good method of teaching, on the basis of results of the evaluation test and the questionnaire results, wherein the whole process can be made students–cantered.

In our study the MBBS students were the target group. Similarly, different students from different Profession were tested for the effectiveness of the Case Based Learning by various authors. The Literature available regarding the effectiveness of Case Based Learning was very minimal. The below tables gives the comparison of our study results with the results of different Authors.[7,8]

Case Based learning was proved to be very interesting and generating curiosity among the students. It made the students to retain the knowledge for longer duration and involve in group discussion with logical thinking. The cased based way of learning directed students towards the concept of Self Directed Learning. It can help among the students to develop the habits of Self Directed Learning.

The use of case based Studies have shown a positive intent in the learning behaviour of students in our study which was also similarly seen in the studies done by Sandhya Pillai Nair et al [9], Kevin M Bonney[10] , Surapaneni K M[11] and Cliff W H.[12]

In the study done by Sandhya Pillai Nair among the Medical Students the mean in the test group before intervention was 20.42 ± 11.6 and 36.5 ± 11 after intervention. The mean score in the after intervention group was higher than before intervention group among both the test and control group.

It was observed that that during the study students enjoyed and were interested in this new method of teaching. This method of teaching had created curiosity and excitement among the students. Generating and creating interest among students should be major motivating factor to increase the efficiency and to motivate the students towards self-directing learning.

Conclusion:

The present study concludes that CBL can be used as innovative teaching method for increased retention of knowledge and better understanding of subject. This innovative teaching-learning methodology is student centered and achieves greater learner satisfaction. CBL prepares the students for clinical practice, through the use of authentic clinical cases. It links theory to practice, through the application of knowledge to the

cases.CBL should be incorporated into the curriculum as students develop better problem solving skills under a CBL model compared with conventional model.

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Graph 1: Bar Diagram showing mean score level Differences in Intervention and Conventional Group.
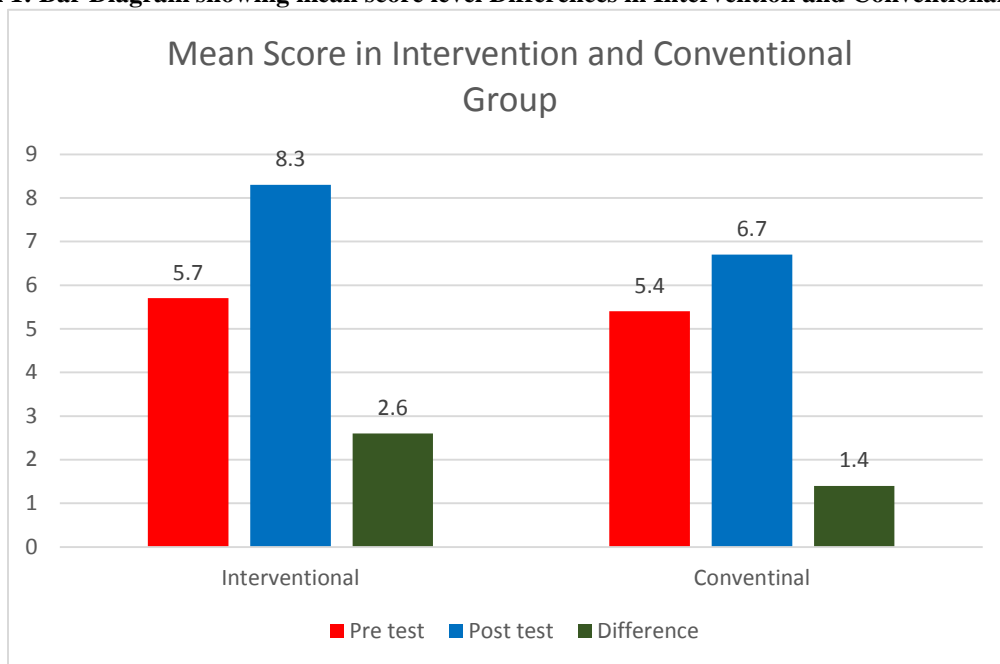
Table 1 : Likert Scale of Student Perception on Cased Based Tutorials (in Percentages)

Likert Scale Perception	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
Search Learning Resources	52.5	35	10	2.5	0
Helps to work in Team	25	60	15	0	0
Think Critically	70	30	0	0	0
Spending More time	15	65	20	0	0
Active Learning	57.5	42.5	0	0	0
Learning Newer Aspects	80	17.5	2.5	0	0
Intrest for learning	80	20	0	0	0
Concepts made clear	80	15	5	0	0
Active Participation	87.5	12.5	0	0	0
Part of Curriculum	62.5	37.5	0	0	0