ORIGINAL RESEARCH PAPER

Medical Science

INTRODUCTION OF CASE BASED LEARNING IN UNDERGRADUATE PATHOLOGY TEACHING.

KEY WORDS: Medical education, Case based learning, Feedback

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ABSTRACT

Pathology is a subject which bridges the basic medical sciences with clinical sciences in medical education. The undergraduate pathology classes in our Medical Colleges usually include didactic lectures, conventional practical and tutorial classes. The subject of Pathology can be made more interesting for the students by developing in them a proper understanding of the pathologic basis of disease at the 2nd MBBS level with clinical co-relation. One of the innovative method which can be used in this regard is case-based learning. I undertook this project to introduce case-based learning in undergraduate pathology teaching at Jorhat Medical College and Hospital, Jorhat for the second MBBS students. Both student's and teacher's feedback were evaluated concerning their perceptions towards the method, its conduct and the various aspects of CBL.

INTRODUCTION:

Case-based learning (CBL) promotes integration of knowledge and practice. Medical and health care related education is constantly changing with time. CBL has been used in medical fields since 1912, when it was used by Dr. James Lorrain Smith while teaching pathology in 1912 at the University of Edinburgh [1].

The undergraduate pathology classes in all the Medical Colleges across India usually include didactic lectures, conventional practical and tutorial classes. In this module the undergraduate students cannot properly correlate the usefulness of the knowledge of pathology in the clinical scenario at the 2nd MBBS level. During CBL, students are exposed to the real medical problems. By introduction of CBL, it is supposed to enhance students' knowledge and make them aware of the relevance of pathology in clinical settings. Proper understanding of the application of pathology in the clinical setting will definitely create interest of the students in learning the subject.

In a review of the literature, Williams (2005) describes how CBL utilizes collaborative learning, facilitates the integration of learning, develops students' intrinsic and extrinsic motivation to learn, encourages learner self-reflection and critical reflection, allows for scientific inquiry, integrates knowledge and practice, and supports the development of a variety of learning skills.[2]

In a systematic analysis of 104 articles in health professions education, CBL was found to be utilized in courses with less than 50 to over 1000 students (Thistlethwaite et al., 2012).[3]

Other studies have also reported on the effectiveness of CBL in achieving learning outcomes (Bonney, 2015[4]; Breslin, 2008[5]; Herreid, 2013[6]; Krain, 2016).[7]

'The goal of CBL is to prepare students for clinical practice, through the use of authentic clinical cases. It links theory to practice, through the application of knowledge to the cases, using inquiry-based learning methods'[3]

MATERIALS AND METHOD:

The present study was conducted in a batch of 100(hundred) students of second MBBS class of 2018-19 session. An informed consent was taken from the participating students and ethical clearance for the project was obtained from Institutional Ethics Committee. Discussions regarding the project were carried out with the Head of the Department and valuable inputs were taken into consideration. Both faculty and students were sensitized, oriented and introduced to the concept of CBL and group discussion. CBL sessions were then planned for the topic of jaundice with the help of the faculties. The students were well informed of the academic purpose of the study and they willingly participated in the sessions. Feedback in the form of validated questionnaires for students was prepared with the help of faculties of the department of Pathology, Jorhat Medical College . A thorough review of literature was done and questionnaires were prepared as per similar study conducted by Dutta A et al ([11]) with slight modifications. A set of Multiple choice questions were prepared with the help of faculties covering the topic to be discussed. A total of 100 (hundred) 2nd MBBS students were included in the study. The topics were covered in didactic lectures of one hour duration before introducing CBL method. The students were divided into groups comprising of 25 students each guided by one faculty. The students were given four common written clinical cases on jaundice and asked to apply the knowledge of pathology to investigate and diagnose the cases. They were given one hour duration to discuss amongst themselves and another hour to share their views with the faculty concerned. Structured feedback questionnaire on acceptability and usefulness of this method were taken from both the students and the faculty to review their learning experience over conventional teaching. Feedback forms were based on two sets of close-ended questions to know the level of satisfaction of both the students and faculties. A Multiple choice question based test was given to the students on the topic of jaundice to assess the students' reasoning power and understanding capabilities.

OBSERVATIONS:

Out of a batch comprising of a total of 100 students, percentage of participants were 80%. More than 67% of the students strongly agreed and more than 27% agreed that CBL stimulated their desire to learn. 90% felt confident to apply the knowledge of basic sciences and pathology to solve clinical cases. 98% agreed that it is a good method and 86% felt that it is a better method than traditional teaching method. However, more than 20% agreed that it is a time consuming method and hinders the normal pace of the class. 95% were satisfied with the CBL approach and 87% recommended its introduction in other subjects too.

Students Feedback Questionnaire

		Strongly agree	Agree	Not sure	Disagree	Strongly disagree
1.	CBL stimulated my desire to learn	54	23	02	0	01
2.	I feel confident to apply basic science and pathology concepts to solve clinical cases	46	31	02	0	01

3.	CBL is a good method to practice integration of knowledge and skills	57	22	0	0	01
4.	CBL improved my clinical reasoning ability	50	22	06	01	01
5.	CBL is better than traditional teaching	44	25	09	0	02
6.	CBL is time consuming and hinders the normal speed of the class	05	13	25	22	15
7.	I was not comfortable during the CBL discussion sessions	02	02	06	43	27
8.	CBL increased my self confidence and attitude towards learning	30	41	07	01	01
9.	I am satisfied with the CBL approach of learning	39	37	03	0	01
10.	I would recommend CBL to other departments of our institution	44	26	07	01	02

The teachers feedback questionnaires also showed a similar positive response regarding introduction of CBL in our institute. Five of our faculties participated in the CBL sessions and felt that it was a good method which stimulated the student's desire to learn and brought confidence in them for application of basic concepts of pathology in solving clinical cases. However all the faculties are still not sure whether it is better than conventional teaching method.

Teacher's Feedback Questionnaire

		Strongly agree	**Agree**	**Not sure**	**Disagree**	**Strongly disagree**
1.	CBL stimulated student's desire to learn	04	01	-	-	-
2.	Students felt confident to apply basic science and pathology concepts to solve clinical cases	03	02	-	-	-
3.	CBL is a good method to practice integration of knowledge and skills	04	01	-	-	-
4.	CBL increased student's reasoning ability	03	02	-	-	-
5.	I think CBL is better than traditional teaching	03	01	-	01	-
6.	CBL is time consuming and hinders the normal speed of the class	-	-	01	03	01
7.	Students were not comfortable during the CBL discussion sessions	-	-	01	02	03
8.	I was not comfortable with the CBL system of teaching	-	-	-	02	03
9.	I am satisfied with the CBL approach of teaching	02	02	-	01	-
10.	I would recommend CBL to other departments at our institution	03	01	-	01	-

In the multiple choice based questionnaire, which followed the CBL session, the students showed satisfactory response. 80% of the students could answer all the questions correctly.

DISCUSSION:

Analysis of the feedback questionnaires of the students and teachers in our study clearly indicates that CBL is a better method than conventional teaching that helps in integration of knowledge and skills.

Vora and Shah; Tathe and Sing; Joshi, Nilawar and Thorat have suggested that CBL was an effective teaching method in different pre and para-clinical subjects like Pharmacology, Microbiology, Biochemistry etc. They also opined that perceptions of students and teachers to CBL were very positive and highly satisfactory [8,9,10]. The study by Abhijit et al also found that the perceptions of students and teachers to CBL were very positive and no significant lacunae or drawbacks were revealed from their feedback responses [11].

Pearson *et al*, Kassebaum *et al*, and Hansen *et al* discussed the comparison of CBL with traditional lecture/didactic formats. Pearson *et al* were able to conclude that the innovative CBL paradigm appeared to be an effective adjunct to the traditional lecture format. The study by Kassebaum *et al* was able to show that students undertaking the CBL format were better able to ask questions and make comments during class and CBL made the learning more enjoyable. Student perception indicated that clinical reasoning, diagnostic interpretations, and the ability to think logically was also improved with CBL[12].

In our study too, from the feedback quessionnaires, it is evident that both the teachers and students agreed that CBL is a good method and it stimulated their desire to learn. They also felt confident to apply the knowledge of basic sciences and pathology to solve clinical cases. However they felt that it was more time consuming than traditional lectures. Overall both the teachers and students were satisfied with CBL and would like to recommend their introduction in the other subjects too.

CONCLUSION:

Didactic lectures are good for giving information to the students but it lacks student's participation. Active learning happens when students are given an opportunity to think and interact which can be made possible with CBL method.

CBL will definitely impart relevance to medical education by blending theory with practice and induce deeper learning to create a competent Indian Medical Graduate.

From our experience and students and teachers perceptions, it can be concluded that CBL is a very good approach to initiate student centered learning and help students to understand the practical application of the theory taught to them.

Introduction of CBL will encourage an enquiry and problem solving approach in students. It will motivate the students to become self-directed learners and develop their clinical reasoning and decision making easy while treating patients later on. Similar repeated experience in class will enable them to focus on the complexity of clinical care. Thus introduction of CBL in medical education will lead to a more productive outcome in the process of creation of a competent Indian Medical Graduate.

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