

STUDENTS' OPINION ON EFFECTIVENESS OF CBL IN ARMY MEDICAL COLLEGE, RAWALPINDI, PAKISTAN

Shoaib Bin Aleem, Kamil Asghar Imam, Muhammad Hammad

Army Medical College, National University of Sciences and Technology (NUST), Islamabad

ABSTRACT

Objectives: To assess students' opinion regarding group working, quality of learning and assessment in newly introduced case based learning at Army Medical College, Pakistan.

Study Design: Descriptive study

Place and Duration of Study: Army Medical College, 03 months.

Subjects and Methods: In this study, students from the second year MBBS class at Army Medical College were given a questionnaire on completion of their second year of medical school (2012) regarding their opinion about CBL. The questionnaire used in this study consisted of 18 statements with Likert-type responses ranging from Strongly Agree (1) to Strongly Disagree (5). Statements were grouped using 3 categories: Group working, Quality of Learning and Assessment.

Results: Process of learning through group work and problem solving as a learning tool was appreciated by >80% of students. Also, >84% acknowledged that CBL has prompted them to come well prepared in the session and has helped them in improving their understanding of key concepts. >83% students opine that their efforts in CBL discussions are being evaluated fairly.

Conclusion: Feedback from the students clearly asserts superiority of CBL in imparting knowledge, cultivating the habit of self-learning and inculcating skills of group discussions which is in consistence with the published literature. At the same time, weak points highlighted by the students need rectification.

Keywords: Assessment, CBL, Group working, Quality of learning, Students' opinion.

INTRODUCTION

Undergraduate teaching in medical colleges Lecture-based, Case/Problem-based or a combination of Lecture and Case/Problem-based learning. Lecture-based learning (LBL) has been at the core of medical education in most of the medical colleges. However, as medical educators recognized the importance of active learning strategies, the effectiveness of LBL was questioned as it is a passive form of learning^{1,2}. Seeing that, various methods of active learning were evolved and introduced in various medical schools around the world. One of these methods is case based learning (CBL) in which written case histories are provided to the students who study and then discuss these cases as small groups^{3,4}.

CBL is based on the principle of using

clinical cases to generate discussion among the students for active acquisition and integration of new knowledge⁵. CBL promotes optimal learning in three ways. First, it provides an opportunity where the student actively participates and contributes in group discussion while receiving feedback from other students and the instructor⁶. Second, the student receives knowledge, guidance and support from other members of the group. Students consult library and search internet to acquire relevant knowledge. Thus, learning becomes multidirectional instead of being uni-directional i.e. teacher to student⁷. Third, the learning is based on solving a clinical problem which leads to acquisition of applied aspects in addition to basic mechanisms and the process of learning occurs through the multiple interactions within the learning environment⁸.

CBL increases the ability of students to work together to identify and analyze case histories, and/or generate solutions which promotes physician competencies, especially in the social

Correspondence: Dr Shoaib Bin Aleem, Army Medical College, Rawalpindi

Email: shoaib.phy@gmail.com

Received: 19 Jun 2013; Accepted: 22 Nov 2013

and cognitive dimensions⁹. Acquisition of retrievable knowledge, integration of basic and clinical sciences, self-directed learning skills, clinical reasoning skills, awareness of the limitations of one's knowledge, communication skills and motivation are among the advantages associated with the CBL¹⁰⁻¹².

Keeping in view the benefits of CBL, it had been implemented at Army Medical College, Pakistan since 2008. It is vital for the success and continuity of this recently introduced approach that students view it positively. The purpose of this study was to determine how medical students of 2nd year MBBS view the effectiveness of CBL as a tool of acquiring knowledge while working as a group.

SUBJECTS AND METHODS

This descriptive study was carried out using non-probability, purposive sampling technique. Two hundred students from the 2nd year MBBS class at Army Medical College, Pakistan were given a questionnaire on completion of their second year of medical school (2012) regarding their opinion about CBL in a classroom setting and during class time. During the two years of their academic training, the traditional curriculum was horizontally integrated for teaching these students. CBL sessions were of two hours each and carried out twice a week. Each group was facilitated by randomly assigned faculty members who were trained through workshops.

The questionnaire used in this study consisted of 18 statements with Likert-type responses ranging from Strongly Agree (1) to Strongly Disagree (5). Statements were grouped using 3 categories: Group working, Quality of Learning and Assessment (Table-1). The questionnaire was used to conduct a pilot test with 15 male and 15 female second year students. Cronbach alpha coefficient was used to test the reliability of the questionnaire which was found to be 0.87. The work was carried out in accordance with the Declaration of Helsinki, including, but not limited to there being no

potential harm to participants, the anonymity of participants is guaranteed and the informed consent of participants was obtained. Data was compiled using Microsoft Excel 2007 and results presented as percentages.

RESULTS

Questionnaire proforma was distributed among 200 students out of which 172 (86%) returned it. Of the 172 participants, 81 (47%) were male and 91 (53%) were female. >80% students expressed an overall satisfaction with the CBL (Table-2). Process of learning through group work and problem as a learning tool was appreciated by majority of students as expressed. >84% acknowledged that CBL has prompted them to come well prepared in the session and has helped them in improving their understanding of key concepts. >83% mentioned that their efforts in CBL discussion are fairly evaluated.

DISCUSSION

CBL is based on adult learning principles and since learning is contextual, closer the resemblance between problem and real life situation, better would be the performance of the students¹³. Various studies conducted previously have shown results which support superiority of CBL over traditional learning strategies. Students acknowledged that CBL is a better way of learning and are mostly satisfied with the way it is being conducted⁸⁻¹¹.

An effective CBL group should be organized, motivated, mutually encouraging, clearly understand and energetically pursue the tasks outlined in the given problem¹⁴. Most of the students in present study agreed that they have a meaningful interaction in an environment where students discuss the problem in respectable manner and the instructor does not overshadow problem solving (70-80% either agree or strongly agree). This promotes student's interpersonal skills and ability to work as team members¹⁰. In study carried out at Rawalpindi Medical College (RMC), 80-89% students endorsed that CBL was

productive and the facilitator created a supportive discussion while 44.4% disagreed and 5.6%

Table-1: Questionnaire used to assess student satisfaction with the process of CBL.

Group working
I usually have a meaningful interaction with the group.
There are students in my group who hesitate to participate but their percentage is low.
Most of the time, some students dominate the discussion preventing others from participating.
CBL session mostly becomes a tutorial in which teacher keeps asking questions which students have to answer.
Most of the time students only repeat bookish knowledge.
Most of the time students over-rely on teachers for generating discussion and solving problems.
All students in my group respect each other and do not ridicule any one during discussion.
Quality of learning
CBL is a better way to learn course contents than lectures.
Group discussions help me improve my concepts of various medical concepts better than lectures.
Group discussions help me in retention of key facts about the topic under discussion.
Most of the time, I prepare the topic to be discussed before the session which has improved my understanding of the subject.
Most of the time, I take help of various books present in college library to prepare the topic.
Most of the time, I take help of material available on internet to prepare the topic.
Most of the students come well prepared and generate a discussion which elaborates various aspects of the problem under discussion.
Assessment
Assessment of my contribution in the discussion is done fairly.
Quiz tests are relevant to the problem and marked fairly.
As the CBL session is assessed, it motivates me to prepare well and participate enthusiastically.
All teachers assess according to the same criteria so it does not matter which teacher is supervising the session.

environment without dominating the discussion and kept them focused on the task¹⁵. In Dow Medical College, students evaluated PBL was significantly higher than LBL ($p < 0.05$) in terms of interest in method of learning and stimulation for further study as a result of productive group discussions. However, there was no significant difference ($p > 0.05$) in perception of the instructor's role in either PBL or LBL¹⁶.

The weak points identified by our students include domination of the discussion by some students (72.67% either agree or strongly agree) while a few others are hesitant to participate (76.74% either agree or strongly agree). In the study done in RMC, 50% of the students reported equal participation of all students in group

remained neutral¹⁵. To avoid this predicament, it is suggested that instructors should intervene in a positive manner to ensure maximum active participation of all the students. Second, a few students tend to memorize the bookish knowledge and just repeat the same (72.08% either agree or strongly agree). If quality of problem given to the students is improved further, it will stimulate the students to discover basic scientific and clinical mechanisms, think critically, evaluate ideas and share pertinent information. This will enhance the problem solving skills of the students and drift them away from traditional approach of memorizing things.**

Majority of our students (66.27% either agree or strongly agree) think that CBL is a better way of learning as compared to the lectures. It helps

Students at RMC highly appreciated PBL as a learning tool which facilitated their understanding of the subject (78% either agree or

Table-2: Students' response to the questionnaire.

A. Group working					
Question no.	Strongly agree	Agree	Confused	Disagree	Strongly disagree
1	39 (22.67%)	98 (56.97%)	10 (5.81%)	11 (6.39%)	14 (8.13%)
2	52 (30.23%)	80 (46.51%)	11 (6.39%)	23 (13.37%)	6 (3.48%)
3	3(1.74%)	27 (15.69%)	17 (9.88%)	79 (45.93%)	46 (26.74%)
4	5 (2.90%)	39 (22.67%)	12 (6.97%)	53 (30.81%)	63 (36.62%)
5	1 (0.58%)	39 (22.67%)	8 (4.6%)	75 (43.60%)	49 (28.48%)
6	9 (5.23%)	33 (19.18%)	11 (6.39%)	81 (47.09%)	38 (22.09%)
7	41 (23.83%)	94 (54.65%)	10 (5.81%)	8 (4.6%)	19 (11.04%)
B. Quality of learning					
Question no.	Strongly agree	Agree	Confused	Disagree	Strongly disagree
1	62 (36.04%)	52 (30.23%)	28 (16.27%)	17 (9.88%)	13 (7.55%)
2	78 (45.34%)	25 (14.53%)	27 (15.69%)	30 (17.44%)	6 (3.48%)
3	40 (23.25%)	91 (52.90%)	6 (3.48%)	23 (13.37%)	12 (6.97%)
4	46 (26.74%)	87 (50.58%)	1 (0.58%)	28 (16.27%)	10 (5.81%)
5	22 (12.79%)	34 (19.76%)	17 (9.88%)	69 (40.11%)	30 (17.44%)
6	45 (26.16%)	74 (43.02%)	5 (2.90%)	24 (13.95%)	24 (13.95%)
7	23 (13.37%)	98 (56.97%)	12 (6.97%)	29 (16.86%)	10 (5.81%)
C. Assessment					
Question no.	Strongly agree	Agree	Confused	Disagree	Strongly disagree
1	18 (10.46%)	114 (66.27%)	2 (1.16%)	31 (18.02%)	7 (4.06%)
2	31 (18.02%)	120 (69.76%)	11 (6.39%)	10 (5.81%)	Nil
3	46 (26.74%)	78 (45.34%)	20 (11.62%)	16 (9.30%)	12 (6.97%)
4	40 (23.25%)	100 (58.13%)	15 (8.72%)	12 (6.97%)	5 (2.90%)

them to understand the topic in better way and retain the key facts. Most of our students (77.32% either agree or strongly agree) come prepared in the CBL session which shows their interest to actively participate in the discussion and contribute positively to the process of learning. This aspect is mostly missing in the lecture based teaching and is therefore one of the biggest advantages of CBL. Students rely more on the internet (69.18% either agree or strongly agree) as compared to the books (32.55% either agree or strongly agree) which underlines the need for ready access to library and computer facility for effective CBL as stressed by Pelzer and co-workers¹⁷. Also, the students must be guided beforehand about the internet sites with reliable scientific medical information.

strongly agree). However, in contrast to our study, students relying on non-electronic library sources slightly dominated the internet users (52.3% and 49.9% respectively)¹⁵. Students of Dow Medical College also favoured PBL against LBL ($p < 0.05$) regarding time spent in self-study, number of books consulted, time spent on internet search, time spent in library, amount of group discussion and depth of knowledge gained¹⁶. Similar comparison made in Isra University depicted greater autonomy and in-depth approach of learning as compared to traditional curriculum ($p < 0.001$). Majority of students ($p < 0.001$) rated the experience of CBL as excellent due to democratic learning environment while traditional learning was dubbed as boring¹⁸. While evaluating CBL, students at

Carver College of Medicine, USA rated the areas of understanding the relationship between knowledge and clinical practice (4.34/5 points) and learning experience (4.34/5 points)¹¹.

An efficient assessment and evaluation technique can indemnify that the CBL is being conducted effectively for the given environment and students are extracting the maximum benefits from it¹⁹. Students at our institution believe that quiz tests were relevant to the problem (87.78% either agree or strongly agree) and their performance in the CBL was marked judiciously (76.91% either agree or strongly agree) which motivated them to study and discuss the problem actively (81.38% either agree or strongly agree). Especially important was the perception of the students that there is minimal instructor to instructor variation in the assessment process (59.87%). These outcomes are in line with the guiding principles of assessment in CBL as mentioned by Waters and McCracken which emphasize that assessment must be relevant to the problem posed, foster the learning among the students and judge them fairly²⁰.

CONCLUSION

Currently, the most realistic indicator of a program's success is the students' own perception of their learning. Students have expressed their satisfaction over the way CBL is being conducted at Army Medical College. Their feedback clearly asserts superiority of CBL in imparting knowledge, cultivating the habit of self-learning and inculcating skills of group discussions. Some of the weak points highlighted by the students need to be considered at appropriate levels and prompt measures to rectify them should be taken.

REFERENCES

1. Jacques D. Myths that must go. *The Australian Higher Educ* 1997; 22: 41-2.
2. Nandi PL, Chan JNF, Chan CPK, Chan P, Chan LPK. Undergraduate medical education: comparison of problem-based learning and conventional teaching. *HKMJ* 2000; 6: 301-6.
3. Graffam B. Active learning in medical education: strategies for beginning implementation. *Med Teach* 2007; 29: 38-42.
4. Parmelee DX, DeStephen D, Borges NJ. Medical students' attitudes about team-based learning in a pre-clinical curriculum. *Med Educ Online* [serial online] 2009; 14:1.
5. Thomas MD, O'Conner FW, Albert ML, Boutain D, Brandt PA. Case-based teaching and learning experiences. *Issues Mental Health Nurs* 2001; 22(5): 517-31.
6. Garvey MT, O'Sullivan M, Blake M. Multidisciplinary case-based learning for undergraduate students. *Eur J Dent Educ* 2000;4: 165-8.
7. Merild MD. First principles of instruction. *ETR&D* 2002; 50(3): 43-59.
8. Richards PS, Inglehart PR. An interdisciplinary approach to case-based teaching: does it create patient-centered and culturally sensitive providers? 2006; 70(3): 284-91.
9. Bowe CM. Case method teaching: An effective approach to integrate the basic and clinical sciences in the preclinical medical curriculum. *Med Teach* 2009; 31(9): 864-41.
10. Thistlewaite JE, Davies D, Ekeocha S, Kidd JM, MacDougall C, Mathews P, et al. The effectiveness of case-based learning in health professional education. A BEME systematic review: BEME Guide No. 23. *Med Teach* 2012; 34(6): 421-44.
11. Hansen WF, Ferguson KJ, Sipe CS, Sorosky J. Attitudes of faculty and students toward case-based learning in the third-year obstetrics and gynecology clerkship. *Am J ObstetGynecol* 2005; 192(2): 644-7.
12. Thomas RE. Problem-based Learning; measurable outcomes. *Med Educ* 1997; 31: 320-9.
13. Kwa S. How do adults learn? *Malay Family Phys* 2007; 2(1): 25-6.
14. Sockalingam N, Schmidt HG. Characteristics of problems for problem based learning: the students' perspective. *IJPBL* 2011; 5(1) :6-33.
15. Khan MM, Saga Z, Minhas F, Anwar I, Kulsoom A, Hassan F. Innovation in medical education: implementation of problem based learning under the umbrella of a traditional curriculum – perceptions of students and faculty. *Pak Armed Forces Med J* 2012;1.
16. Khan I, Fareed A. Problem-based learning variant: transition phase for a large institution. *J Pak Med Assoc.* 2001; 51(8): 271-4.
17. Pelzer NL, Wiese WH, Leysen JM. Library use and information-seeking behavior of veterinary medical students revisited in the electronic environment. *Bull Med LibrAssoc* 1998; 86(3): 346-55.
18. Zehra N, Nisar N, Haider G, Munir AA. Innovation in teaching strategies for undergraduate medical students at Isra University Hyderabad, Sindh-Pakistan. *JLUMHS* 2009; 8(2):169-72.
19. Urooj S, Ahmed A. Restructuring the examination system at the higher secondary education in Pakistan: in teachers' perception. *IJCRB* 2012; 4(6): 827-34.
20. Waters R, McCracken M. Assessment and evaluation in problem-based learning. In: *Proceedings of Frontiers in Education Conference 27th Annual Conference: 1997 Nov 5-8; Pittsburgh, USA.* New York: IEEE; 1997 p. 689-93. Available from:IEEE Xplore.