CASE BASED LEARNING AND TRADITIONAL TEACHING STRATEGIES: WHERE LIES THE FUTURE?

Naheed Bano, Farhat Arshad, Sadia Khan, C.Aqeel Safdar*

Holy Family Hospital Rawalpindi, *Military Hospital Rawalpindi

ABSTRACT

Objective: To explore the perceptions of final year medical students about efficacy of traditional teaching methods and Case based learning (CBL) and to evaluate the effect of CBL on students' performance and satisfaction level during their clinical rotation in Obstetrics and Gynaecology Department.

Study Design: Sequential mixed method study.

Place and Duration of Study: Department of Obstetrics and Gynaecology, Holy Family Hospital, Rawalpindi from January 2013 to June 2013.

Participants and Methods: Students expressed their perceptions on a Likert scale in a questionnaire. It was triangulated with data collected from 4 focus group discussions (FGD). Students for FGD were selected using purposive sampling. Students' performance in OSPE and long case was compared with another group who was taught with traditional methods. Quantitative data was analyzed by SPSS version 17. For qualitative data, themes and patterns were identified using content analysis technique.

Results: Of 141 students, 134 returned completed forms giving a response rate of 95%.Gender distribution was similar in both the groups. There was no statistically significant difference in performance assessment. Strong preference for CBL was expressed by 97% as it improved their confidence (83%), clinical and presentation skills (91& 80%), attitude and student teacher relationship (68 & 77%), strengthened link between theory and practice (90%), and integrated basic and clinical knowledge (92%). Seventy six percent stated that all teaching should be CBL. Qualitative data from SGD strongly supported these views.

Conclusion: Although test performance was similar in both the groups, students expressed strong preference for CBL as compared to traditional methods

Keywords: Case based learning, traditional methods, small group discussion

INTRODUCTION

Current trends in medical education are a move away from teacher-centred passive learning environment to student-centred active learning[1]. Though traditional learning strategies involving lectures and bedside teaching are still being used predominantly in many medical colleges, case-based learning (CBL) is being promoted as a better and effective strategy[2,3]. It has been used in law schools from as early as the late 1800's and in business schools since the early 1900's[4].

Case-based learning is defined as learning that is based upon description of a patient's problem(s), analysis and interpretation of all the relevant data obtained from history, examination and investigations and planning further management of the patient[5]. It incorporates many principles of adult learning e.g. active involvement of learners, social interaction, tutor and peer input, communication, modelling professional thinking and action, providing direction and feedback, and creating a collaborative learning environment leading to active construction of knowledge[6]. All this promotes insight, critical thinking, reflection and concept making. Relevant basic science concepts are integrated in the case based scenarios[7]. This approach helps in problem solving and is the basis of problem-based learning[8]. The major difference between CBL and PBL (Problem based learning) is that in the former learning outcomes are known to the students whereas in the latter, students themselves specify the learning outcomes. Moreover, PBL has a very specific format with seven jumps whereas in CBL

Correspondence: Dr Naheed Bano, Obs/Gynae Dept. Unit-1, Holy Family Hospital, Rawalpindi.
Email: naheedlari@hotmail.com
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students come prepared and it is usually completed in one sitting.

Case-based learning forms an important part of medical curriculum world-wide and the evidence is uniformly consistent in showing its efficacy[9]. However, national medical institutions are lagging behind in its implementation and are still relying heavily on traditional learning strategies. Khan et al observed that 80% of the students in their study believed that most of the teaching in their medical colleges was teacher centric[10].

There is scarcity of information about the educational benefits and practicality of CBL in our local setup. This is important for the wide-spread implementation of CBL in the country. The standards of medical education have implications for students, faculty, patients as well as the community. The results of this study will be helpful to educators and policy- makers to bring about necessary reform in curriculum along with making arrangements for resources that may be required, leading to improved standards of medical education with ultimate benefit for patients and community. Furthermore, it will add to scholarly research and literature in the field of medical education especially in our local context.

The objective of this study was to better understand the educational benefits of case-based learning in our environment by exploring the views of final year medical students doing their clinical rotation in Obstetrics and Gynaecology Department, Unit 1, Holy Family Hospital about traditional methods and CBL by a questionnaire. Statistical relationship of both methods with students' performance and satisfaction level was also assessed. To gain further insight as well as to triangulate the data, SGDs were conducted.

PARTICIPANTS AND METHODS

This sequential mixed method study was carried out in the Department of Obstetrics and Gynaecology (Ob/Gyn), Unit 1, Holy Family Hospital, Rawalpindi from January 2013 to June 2013. Quantitative and qualitative data was collected and analyzed for best understanding of the problem and to neutralize biases inherent in one method by the other.

Inclusion Criteria

- All the students affiliated with the two OB/GYN units were included for the evaluation of performance difference.
- Completely and correctly filled questionnaire responses were included
- Students who volunteered were included in FGD

Exclusion Criteria

- Incompletely or incorrectly filled responses were excluded

During their four weeks rotation in Ob/Gyn at Holy Family Hospital, the final year MBBS students were divided into two groups (Group A and B). Group A was the control group and was attached with Unit 2. Group B was the study group attached with my unit i.e. Unit 1. Permission was sought from the heads of both the departments and institutional ethics committee with clear communication of research questions and intended use of data. A total of 281 students were included in the study through non-probability convenience sampling as students were already divided into batches thus causing no disruption of the already established allotment of units to different students.

A list of topics along with the learning outcomes was given to the faculty and students at the start of rotation. Students affiliated with unit 1 (Group B) were taught by CBL and those with unit 2(Group A) were taught by traditional methods as was the routine. The cases were selected by the tutors according to the topics that were to be taught during the rotation. Tutors attended special orientation sessions on how to teach through CBL. Case presentation included history and examination. The whole group was then asked to discuss relevant investigations, differential diagnosis and management. Tutors gave their input when necessary and at the end summarized the topic of discussion. The perceptions of students in group B regarding CBL

and traditional teaching methods were obtained through a questionnaire. The questionnaire was distributed, collected and analysed by an independent staff member to minimize researcher bias. Incomplete or unclear responses were not included. Individual responses were coded and assigned numbers. Similar responses were given the same code so that number of students making similar responses can be calculated. End of rotation assessment of both groups was carried out by OSPE and Long Cases.

Quantitative data was analyzed using SPSS version 17. Descriptive statistics were used to describe the results for quantitative variable i.e. means and standard deviation (SD), while frequencies and percentages were used for qualitative variables. Independent sample t-test was used to compare students' ages and scores while chi square test was applied for gender comparison. A *p*-value of < 0.05 was considered as significant.

To further explore the views, as well as to cross-validate and corroborate the results of questionnaire, in-depth discussions were carried out during FGDs held at the end of clinical attachment of each batch. Pilot testing of the questions was carried out by two co-faculty members. Using non-probability purposive sampling, eight students from each batch who volunteered, participated in FGD after informed consent. They were given the option of withdrawing from the study at any time. Purpose of the study, procedure involved, and benefits of the study were explained to them. Moreover, they were told that they can obtain a copy of the results of the study. Anonymity of the students was maintained as they were not required to sign their names in the questionnaire and were given pseudonyms during FGDs. Patients participated voluntarily rather than being forced or coerced. The rights, needs, values and desires of the patients and students were respected and given priority.

After four batches i.e. 32 students, point of saturation was reached as no new themes emerged. FGDs were tape recorded and field notes were taken and later transcribed to identify themes. Member-checking was done to confirm the accuracy of findings. Data was analyzed through content analysis by identifying themes.

RESULTS

Age and gender-wise distribution of students in both the groups was similar. (Table 1)

Scores of students for OSPE, long case and total were similar in both the groups with insignificant difference. (Table 2)

134 students returned completely filled questionnaire giving the response rate of 95%. Responses of students are shown in Table 3.

In response to question no.1 during SGD, 30(94%) students acknowledged the positive contribution of CBL towards their learning experience. Reasons identified were: Instructions around cases increased their motivation to learn by stimulating interest (90%), contextual learning made learning easier as well as facilitated long term retention and recall (87%), applying theory to a situation enhanced decision making and problem solving (87%), interpretation of clinical findings and investigation improved clinical skills (96%), developed concepts and fostered reflection (81%). Patient encounters and case presentations improved confidence and attitude towards patients (87%). All this can be summarized in the opinion expressed by one of the participants:

CBL made me use my brain and motivated me to learn.

These views are strongly supported by the results of question no. 1-8 of the questionnaire as shown in Table-2. Remaining two students said that as CBL was new to them, more exposure is needed before they can give their comments.

While comparing traditional and CBL, almost all i.e. 33 replied that CBL is much better than traditional teaching as it encourages active involvement of learners (88%), collaborative learning environment (72%), building concepts rather than rote learning (94%), focussing on

important and relevant information thereby helping in preparation of examination (72%).

Whereas, traditional methods encourage rote learning which is passive, boring, superficial and short termed. As one participant stated:

What you hear you forget but what you see and do is always remembered. A case discussed once remains fixed in the memory thus offering long term benefits.

The quantitative analysis of question no. 9 in table 2 validates the responses under this theme. One student, however, stated that traditional teaching was better as it provided theoretical knowledge base as well as gives information about rare cases.

Practical application of knowledge(92%), interaction with patients (90%), practising clinical and presentation skills (94%), mandatory participation (20%), active discussion and collaborative learning in nonthreatening environment (94%), integration of related basic sciences and clinical medicine (92%) were cited as the most useful aspects of CBL by the students. As one participant acknowledged:

History taking and examination told us how exactly a patient can present as a whole adding the socio-economic dimensions to diagnosis and management of disease.

Results are supported by question no. 3-5, and 11 of the questionnaire.

Content analysis of question about benefits and drawbacks of CBL was quite enlightening. Twenty eight (88%) students identified vast practical experience of teachers as a major benefit of CBL. Twenty five (77.6%) students acknowledged that CBL improved student-teacher relationship. CBL was also valued by students as it guided them how to respond to actual problems that they will encounter in their fields (88%), improved their communication skills(88%),made learning enjoyable (91%), created a sense of responsibility in them (65%) and improved their confidence (76.2%). One of the participants stated:

CBL is interactive, interesting and does not let us sleep.

About the draw backs, participants stated that it was time consuming, male students need a lot of motivation and support to approach female patients with gynaecological problems, patients need counselling as not all of them are willing to be examined by the students and faculty training is essential for effective implementation of CBL.

As one participant pointed out:

CBL is comparatively tough as it needs a lot of brainstorming, good administrative and time-management skills.

The results of questions no.1, 4, 6, 9-11 of the questionnaire strongly augment these views of the participants

Table-1: Comparison of demographic variables of study and control groups.

Demographic data	Control group (A) (n=140)	Study group (B) (n=141)	*p*-value
Age (Mean ± SD)	24.21 ± 0.885	24.19 ± 0.886	0.930
Gender			
Male	54 (38.5%)	38 (27%)	0.278
Female	86 (61.4%)	103 (73%)	

Table 2: Comparison of objective structured practical examination (OSPE) and long case assessment of study and control group.

Marks	Control group (A) (n=140)		Study group (B) (n=141)		*p*-value
	Mean	SD	Mean	SD	
OSPE	41.61	12.92	44.38	10.67	0.290
Long case	38.02	6.77	37.86	8.94	0.927
Total	79.74	17.39	81.66	16.32	0.606

In response to question no.5 during SGD, almost all were of the strong opinion that CBL should be incorporated as main instructional strategy. However, the CBL vs. traditional ratio varied from 100: 0(34%), 80:20(23%), 70:30(33%), and 60:40 (10%).

Question 12 of the questionnaire support these views.

Table 3: Description of responses of study group (B) (n=134).

Questions	Strongly Agree		Agree		Cannot Comment		Disagree		Strongly Disagree	
	n	%	n	%	n	%	n	%	n	%
1. CBL improved your confidence for real patient encounter	46	34	66	49	13	10	7	5	2	1.5
2 CBL strengthens the link between theory and practice of medicine	54	40	67	50	8	6	3	2	2	1.5
3 CBL improves integration of medical science knowledge with clinical knowledge	39	29	84	63	7	5	2	1.5	2	1.5
4 CBL improved your clinical skills	76	56	47	35	1	0.7	7	5.2	3	2.1
5 CBL improved your presentation skills	40	30	67	50	14	10	9	7	4	3
6 CBL increased your interest in the subject	33	24	79	60	7	5	8	6	7	5
7 You can effectively manage same and similar cases in future	31	23	56	42	21	16	16	12	10	7
8 CBL has improved your attitude towards patients on the whole but especially towards obstetrics and gynaecology patients	39	29	52	39	31	23	7	5	5	4
9 CBL is better than traditional teaching strategies	55	41	75	56	2	1.5	1	0.7	1	0.7
10 CBL improves student teacher relationship	48	36	55	41	12	9	9	7	10	7
11 Learning environment during CBL was comfortable, collaborative and supportive	54	40	67	50	8	6	1	7	4	3
12 All teaching should be done by CBL	56	42	46	34	18	13	10	7	4	3

DISCUSSION

The definition of Case-based learning (CBL) varies depending on the discipline and type of 'case' employed. In medicine, it is commonly based on patient cases. Basic and clinical knowledge is studied in relation to the case and its clinical presentations. The learning, therefore, is experiential as it occurs in relation to real-life situations leading to analytic thinking and reflective judgement.

Studies support the role of student-centred strategies like CBL in promoting attributes like knowledge retention, problem solving, critical thinking, positive attitude, reasoning and communication skills, student satisfaction and motivation leading to self-directed and life-long learners[9,11-13]. These are important for today's medical practitioners.

Our study also showed that students valued CBL as it contributed to their learning by promoting all these attributes.

Linking of theoretical case contents with skills required for its evaluation i.e. history taking, examination and interpretation is

important and forms the basis of CBL. A study conducted by Tayyeb indicates that student's valued learning of contextually relevant material[14]. The analysis from our study shows that 90% of the participants found practical application of knowledge, interaction with patients and integration of related basic sciences and clinical medicine as the most useful aspect of CBL. 94% thought that active discussion and collaborative learning in non-threatening environment as other important aspects of CBL. Significance of supportive environment for student learning was also pointed out in a study by Prideaux[8].

Our study shows that students valued CBL as compared to traditional methods. This correlate well with a study by Srinivasan et al which concluded that CBL was preferred by 89% of the students with 52% identifying more opportunities for clinical skills application as the major reason for their preference[15]. Students criticized traditional teaching methods like lectures for being passive and promoting superficial rote learning without developing critical thinking and lack of practical aspects of medical practice. This view was also expressed by students in other studies[16,17].

Many studies have shown that increased faculty involvement led to increased student satisfaction[18,19]. Our study also supports this as 88% students during SGD acknowledged the presence of teachers being one of the advantages of CBL. Other advantages include improvement in response to actual problems that they will encounter in their fields (88%), and communication skills (88%), made learning enjoyable (91%), created a sense of responsibility in them (65%) and improved confidence (76.2%). Those, who preferred traditional methods (1.5%), did so because of theoretical knowledge base provided by them. By employing case-didactic teaching where CBL is followed by formal presentations on relevant topic can improve content knowledge coverage of CBL[22]. Students also pointed out the need for faculty training as an essential requirement for CBL to effective.

Satisfaction with training relates positively with later professional attitude and career commitment of medical students[20]. A study by Du et al showed that CBL was well accepted by students[21]. Student satisfaction and preference for CBL is evident from both the qualitative and quantitative data from our study as 76% supported that all teaching should be with CBL in the survey questionnaire and during SGD all agreed that CBL should be adopted as major strategy.

Lack of randomization is the major limitation of the study as it represents views of students who have already been selected to come to the Obstetrics and Gynaecology unit. Thus their view cannot be generalized to whole class. Analysis of qualitative data is affected by researcher's background.

CONCLUSION

Overall results indicate that students expressed strong preference for CBL as compared to traditional methods. These findings can be used by policy-makers to include CBL as a preferred instructional strategy for country's medical colleges. However, multicentre studies involving other disciplines are needed to study the effect on performance.

Conflict of Interest

This study has no conflict of interest to declare by any author.

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