Original Article

Comparison of students and facilitators' perception of implementing problem based learning

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Abstract

Objective: To evaluate the perception of facilitators and students on the implementation of PBL, based on their experience

Method: A questionnaire based survey was conducted on 186 first and second year students and 25 faculty members.

Result: The responses of faculty members and students were analyzed using Chi- square and a P-value < 0.05 was considered significant. Comparison between faculty members and students for implementation of PBL showed that in the faculty (both junior and senior) 26.27% disagreed, 27.09% were neutral and 46.22% agreed with implementation of PBL whereas in the students group 9.87% disagreed, 10.94% were neutral and 79.17% agreed (p = 0.000). When senior and junior faculty was compared the seniors showed that 36.8% disagreed, 32.2% were neutral and 30.98% agreed whereas in the junior faculty 18.2% disagreed, 22.8% were neutral and 58.97% agreed (p = 0.000).

Conclusion: For implementing this strategy there is support from the academic administration (principal and faculty responsible for implementation of the PBL-based curriculum). Junior faculty members (instructors) give encouraging results. Students are supportive of this strategy and learning attained by this method. However senior faculty is not very enthusiastic about implementation of this strategy

Keywords: PBL, Perception, Facilitators, Students (JPMA 61:332; 2011).

Introduction

A few medical schools in Pakistan are turning towards Problem-Based Learning, this is a strategy used in integrated, community-oriented curriculum.[1] Harden's famous article on integration "The Integration Ladder" plays a major role in changing the mind set of medical school's faculty members.[2] Bahria University Medical and Dental College follows a hybrid system which is based on integration of basic medical sciences subjects via PBL and conventional lectures. At present our curriculum consists of thirty percent PBL objectives planned to increase each year.

Medical students are over burdened with medical information but we cannot expect them to master everything.[3,4] If the basic sciences subjects are taught in relevance to real life clinical scenarios the burden of memorization would reduce. This is where the relevance of PBL-based curricula lies. Several studies have been published in favour of and against the strategy of problem based learning. PBL studies have reported that this strategy has four main objectives which may be summarized as 1) application of basic knowledge 2) develop reasoning 3) self-directed learning 4) promotion of team work.[5-7]

Learning based on clinical cases can be achieved through the seven jumps strategy of problem solving.[8] Initially the process of formulating a problem includes two check lists. One check list is for the process and the second for assessing the problem. The process of solving the problem is as follows:

Jump I- read the problem, identify difficult words and give probable meanings based on their prior knowledge. Jump II- Define the problem and list the phenomena, Jump III- Give as many explanations of the phenomena, Jump IV- Put information in a coherent manner, Jump V- Derive learning goals (gaps in knowledge), Jump VI-Research via self study to fill the gaps and Jump VII-Discuss the answers determined by every student. In this way students spend 6-8 hours per week to cover their course objectives by applying a constructivists approach to learning.[9]

PBL-based learning has been a part of our curriculum for the past year, and in order to determine the perception of students and facilitators based upon their experience about implementation of this strategy, an evaluation was carried out.

The objective of this study was to compare the perceptions of students and facilitators, based on their experience about implementing PBL.

Methodology

An organized framework has been formulated to conduct PBLs at Bahria University Medical and Dental

College. Three core principles of PBL were first identified by Charlin, Mann and Hansen in 1998.[9] These principles were that learning should be focused around a problem, the implementation of PBL should be an educational approach and it should be centered on the learner.

Curricula following PBL strategies are a very challenging task for the faculty. In order to achieve these, PBL proceedings, PBL formulation and PBL approval checklist are followed. Faculty members go through a tedious exercise to develop a single PBL case. To evaluate the perception of the faculty members and the students who are exposed to this strategy, a questionnaire was developed by the medical education department keeping in view the areas to be addressed and distributed among the faculty members and students. The anonymous questionnaire (Appendix) was completed and placed in a drop box provided; In this way true perception of the students and faculty members were sought. This was a cross sectional study in which the students and faculty members of Bahria University Medical and Dental College, Karachi were recruited by Purposive Sampling. Of 35 faculty members only 25 responded and of 200 first and second year students 186 responded.

Statistical Analysis:

Statistical package for social sciences (SPSS) version 17 was used for analysis. The data were collected in the form of an ordinal scale 1-3. The responses of the students were compared with that of the faculty members on the basis of items in a questionnaire to assess the perception of the groups. The responses of the senior (professors, associates and assistant professors) and junior (lecturers) faculty were also compared. Chi-square value was calculated and a P-value < 0.05 was considered significant.

Results

The response rate of the total faculty was 71.42% (25 of 35 faculty members responded) and the response rate of the total first and second year students was 93% (out of 200 students 186 responded). The questions in the questionnaire (Appendix) were designed in a way that the statements favoured the strategy. Therefore those who agreed with the statements were of the opinion that PBL should be implemented in the curriculum and vice versa. All the lecturers are MBBS and have been exposed to the PBL strategy for the past one and a half years. The professors, associates and assistants are mostly MBBS, MPhil and PhD

Appendix:

Bahria University Medical and Dental College Department of Medical Education

Criteria to assess perception of students/facilitators about implementation of PBL

DA=Disagree. N=Neutral. A=Agree

Please tick appropriate box:

Professor ☐ Associate Professor ☐ Assistant Professor ☐ Lecturer ☐ Student ☐.

No	DA	N	A
For students and facilitators:			
1. The PBL strategy is interesting			
2. The proper training of PBL was given before its implementation			
3. The knowledge gained is more thorough than it would be by conventional teaching(lectures)			
4. The course is focused on real medical problems making it more relevant to the interest			
5. Understood the objectives of the course better than if it has been much lectured in the conventional way			
6. This strategy takes more time than conventional lectures			
7. Knowledge is organized around problem rather than disciplines			
8. Learner assume responsibility for their own learning			
9. Learners become active processors of information			
10. Learners activate prior knowledge and learn to elaborate and organize their knowledge			
11. The curriculum should be completely PBL- based			
12. Enhances the ability to find the information using the internet/library			
13. Helps in identifying the areas of weakness for improvement			
14. Pushes the learner to the limits of knowledge and abilities			
15. Enables the learner to establish a concrete action plan to achieve their learning goals			
16. Enhances the ability to speak in front of people			
17. Increases ability to manage the time effectively			
18. Helps to convert from passive to active life long learner			
19. The role of facilitator in the process is helpful			
20. Improves the decision making skills			
21. Improves the problem solving skills			
22. Develops the competence in self directed learning			
23. Develops the confidence in self directed learning			
For facilitators only			
24. PBL is an effective instructional strategy			
25. Work load of PBL is easily manageable			
26. Work load for PBL is too challenging			
27. The time spend for PBL process is adequate			
28. The time spend for PBL making is adequate			
29. Good integration of basic and clinical sciences			
30. Clinicians are easily approachable for reviewing the PBL scenario			

Table-1: Responses of all faculty and students.

Group	DA n (%)	N n (%)	A n (%)	Total	p-value
Senior and Junior FM	191 (26.67)	194 (27.09)	331 (46.22)	716	0.000**
First and second Year Students	418 (9.87)	463 (10.94)	3350 (79.17)	4231	

Table-2: Response of senior and junior faculty.

Group	DA n (%)	N n (%)	A n (%)	Total	p-value
Senior FM	120 (36.8)	105 (32.2)	101 (30.98)	326	0.000**
Junior FM	71 (18.2)	89 (22.8)	230 (58.97)	390	

FM= Faculty member.
DA= disagree. N= neutral. A= agree.
**p-value= <0.05, highly significant.

and have varied exposure to PBL strategy.

When the responses were calculated and compared for all faculty members and students the results of the faculty members (Table-1) showed that a total of 26.67% disagreed, 27.09% were neutral and 46.22% agreed to the statements in the questionnaire whereas the responses of all the MBBS students showed the following result 9.87% disagreed, 10.94% were neutral and 79.15% agreed (p = 0.001). Similarly response of senior and junior faculty members (Table-2) was determined showing that 36.8% of the senior faculty disagreed, 32.20% were neutral and 30.98% agreed whereas in the junior faculty 18.2% disagreed, 22.8% were neutral and 58.97% agreed (p = 0.001). However most of the participants disagreed with a totally PBL-based curriculum indicating that most were of the opinion that a hybrid curriculum is more applicable.

Discussion

PBL is increasingly gaining popularity in Pakistan, however it is of great concern that PBL should only be implemented after careful deliberation. This strategy requires rigorous planning, faculty training and most importantly, commitment and proper understanding of the philosophy behind its implementation.[10] The perception of implementing PBL shows interesting variations, although most of the faculty is in favour of implementing this strategy, they feel that it is too cumbersome or too time consuming.[11] However they do consider its advantages but have their own reservations. Students on the other hand are the recipients and find this learning strategy more interesting than conventional lectures. They feel that it is a more conducive environment and that the attitude of the facilitator also changes since they take over the role of a guide which is highly motivating for the students who learn to become life long learners via this procedure.[12] Present medical practice heavily relies on evidence based medicine in clinical and public health decision making. The aim is to create a workforce which uses best available up to date information and evidence, possesses the skills of innovation and creativity and can apply their knowledge and skills for the benefit of the health system. Conventional teaching methods rely more on the tutor and ready made materials, but in real life it does not teach us the attributes required as a health professional for problem solving, efficient use of resources and how to acquire an eagerness for knowledge. Problem based learning is a relatively new method, compared to the more traditional system of teaching. PBL tries to equip students with needed skills for efficient professional development.

PBL as an instructional strategy, is student centered and consists of many characteristics such as fostering problem reasoning based upon real-life scenarios, developing problem solving skills, enhancing knowledge acquisition, retention and application and facilitation of self-directed learning skills.[13,14] The strategy used for learning in a course must be coherent with the objective contents and with the system of evaluation. Hence focusing PBL not only on the process but the outcome is also considered and has much importance.[11]

The case that is formulated should be focused around the course objectives of a particular module or semester. The 7-jump process is formally designed so that the students solve the problem in a coherent manner and also achieve their course objectives around which the problem is designed. Also for this strategy to be accepted, students must be assessed via PBL- not only by formative assessment but also by summative assessment. Here, however lies the weakness of PBL that in spite of major efforts there are only a few assessment tools reflecting learning outcomes particularly attributed to PBL.[13] In a review study by Smit PBA et al 2002,[15] it has been mentioned that there is no evidence consistent enough that has proven that PBL was superior to other educational strategies. There is not enough proof that it increases one's knowledge or performance in the clinics and hospitals but there is moderate amount of evidence that it results in higher satisfaction. As noted in our study that students favour this strategy because they are actively involved in problem solving, this has been shown to create more interest in the basic sciences subject. Junior faculty members also show great interest in devising and conducting PBLs. Some studies over the past few years regarding PBL have been conducted and published in Pakistan. Studies mention students support and appreciate PBL as a learning methodology. It is also mentioned that students were of the opinion that along with refining their problem solving capabilities it also helps in enhancing their communication skills and interpersonal relations.[16-18] An earlier study

conducted by Huda N and Brula AQ[19] states that students are able to perform better in small groups and via PBL strategy. The faculty of Ziauddin Medical University, Karachi was also of the opinion that students benefit from this learning strategy.[19] In another very comprehensive review by Neville AJ 2009[20] it is seen that different studies on PBL curriculum outcomes between 1993 and 2008 show a clear trend towards higher rating of clinical performance from PBL graduates as assessed by their clinical supervisors. Educators have incorporated findings from the cognitive psychological literature and PBL literature for the past 2-3 decades due to the flexibility inherent in the structure and form of PBL curricula.[21] Neville however says that the future upcoming curricula can be seen as a hybrid by which the students are exposed to conventional lectures which is elaborated in small groups facilitated by knowledgeable tutors who are trained to provide feedback on the understanding and learning by students. Such a curriculum will be both integrated and PBL-based and the fundamental concepts are interwoven in a coherent and stepwise fashion throughout the curriculum.

Conclusion

The students' perception and understanding of the learning methodology by the process of PBL is favoured by both 1st year and 2nd year MBBS students. The junior faculty members are prepared to promote transfer of concepts across the curriculum by use of appropriate methodology of PBL. There is support from the academic administration (principal and the faculty responsible for the implementation of this PBL-based curriculum). However senior faculty members did not show a strong inclination towards PBL and are still in favour of didactic lectures. It has however been emphasized that for proper implementation of PBL curriculum careful and enthusiastic training of the faculty and students is the key factor for success.

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