

Perceptions regarding Problem-Based Learning as a Teaching Learning Strategy among medical students

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Abstract: Background & Objectives: Problem-based learning (PBL) in medical education can be considered as the most significant innovation in educational tools in the past 35 years. This study was conducted to evaluate the students' perceptions regarding PBL which will provide inputs to rectify the curriculum. Methods: The study was conducted in two years on two batches of 100 students each. Six PBL exercises on different topics were successively allotted to each batch of students in groups of 15-18. At the end of each year, the students were asked to fill a 21-item questionnaire on a 5-point Likert scale, regarding their perceptions for PBL. The mean/median scores of ≥ 3 was considered as positive attitude towards PBL. Results: For 20 items related to PBL as T-L strategy and its effect on professional attitude, the mean/median scores was observed to be ≥ 3 . Mean score of 2.04 and median score of 2 was found for the item that considered PBL as a waste of time; reinforcing the liking for PBL. Interpretation and Conclusion: PBL empowers students to engage in collaborative learning, improves inter-personal skills, enhances pre-existing knowledge and develops a professional attitude. It is recommended that it should be integrated in future Indian medical curriculum. [Manisha JNJIRM 2016; 7(4): 87-91]

Key Words: Perceptions, Problem based learning, Teaching Learning Strategy

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Introduction The main focus of medical education since ages has been to impart the theoretical knowledge to the students and the practice has been to ask too many questions of reciting, defining, describing or listing the facts. Much stress is not given on promoting the inference making, evaluation, thinking and rethinking capabilities of students. Students usually practice this process of passing knowledge to and fro without going into the depth of the subject and learning its practical applications¹

During the last century, the point of extensive debate had been that whether knowledge can improve the medical expertise. Flexner emphasized that acquiring knowledge improved the medical expertise. However, Osler, the father of modern medicine, asserted that practice-oriented teaching method was more relevant in medical education. In early 1970s, this view was endorsed by learning through Problem based learning (PBL) approach, which emphasised on learning by solving problems whereas, knowledge was assumed to be learned automatically, during the process².

PBL in medical education can be considered as the most significant educational innovation in the past 35 years. It is being increasingly recognized as a novel teaching learning method in medical education in which students learn basic sciences by solving clinical case scenarios³. Problem-based learning is defined as

“an instructional (and curricular) learner-centred approach that empowers learners to conduct research, integrate theory and practice, and apply knowledge and skills to develop a viable solution to a defined problem”⁴. PBL is a process, which is carried out as follows: firstly, a problem is assigned to students, who, in a groups of 10-12 students organize their ideas, define its nature and try to find its solution with available knowledge; then students undergo brainstorming on the problem and identify aspects of it that needs to be clarified and requires research (learning issues); followed by prioritization of the issues and planning to solve it; when the students meet again, they share and explore the collected knowledge about the learning issues and utilize it to propose an informed solution to the problem and after finishing working with the assigned problem, the students evaluate themselves, their peers (group members), and the process⁵.

Thus, PBL is a powerful class room process, which uses real-world problems to motivate students towards identification and application of research concepts and information, and encourages them to work collectively and communicate effectively. PBL enhances students' skills such as problem solving, argumentation rules⁶, collaborative spirit⁷ and peer tutoring⁸. It motivates them towards self-directed learning.

Proper evaluation of any novel teaching learning strategy should be carried out to review its implementation^{9, 10}. So, the rationale of study was to evaluate the students' perception regarding PBL which will provide inputs to rectify the curriculum.

Material and Methods: A total of 200 first year medical undergraduate students of School of Medical Sciences and Research, Sharda University participated in the study. Ethical approval from the Institutional Ethics Committee for conducting the study was obtained. The study was conducted over a period of two years on two batches of 100 students each. The students were initially briefed about the principles, methodology, and practice of Problem Based Learning. For each PBL exercise, the students were then divided into groups of 15-18 students and each group was allotted a facilitator. A common clinical case scenario was assigned to all groups at one time followed by brainstorming and self learning by students for one week. Subsequently, two sessions of 2 hour formal discussions over two weeks were conducted for each exercise. Six such exercises on different topics were conducted over a period of one year for each batch. At the end of all the PBL exercises, the objective of this research study was explained to the students and they were invited to participate. The students who gave their informed verbal consent were included in the study. None of the students refused to participate in

the study. The students were asked to fill a 21-item questionnaire evaluating their perceptions for PBL pedagogy as they had experienced it. The students' perceptions regarding PBL were measured by a 5 point Likert scale. The Likert scale is an ascending order of score(1, 2, 3, 4 and 5 standing for Strongly disagree, Disagree, Partially agree, Agree and Strongly agree respectively)

Statistical Analysis: The data was entered and analysed using Statistical Package for Social Sciences (SPSS version 16). Percentage frequencies of responses for each item were obtained. Mean Score with Standard Deviation as well as Median Score for each item were calculated. The mean/median score of any item ≥ 3 indicated a positive attitude towards PBL curricula.

Results: Table1. shows that in majority of items, the mean score/median score was found to be ≥ 3 indicating the positive attitude of students towards PBL as a teaching learning strategy. In only one item i.e. PBL is a waste of time, the mean score was 2.04 and median score was 2 which indirectly indicated positive inclination of students towards PBL. In Table 2, the mean/median score with respect to perceptions regarding attitude and professionalism were ≥ 3 in all the items which strongly suggested that PBL Teaching Learning strategy helped in developing professional attitude.

Table1. Students' Perceptions Regarding PBL as a Teaching Learning Strategy

Statement	Frequency of Responses for each statement (N=200)					Mean Score (SD)	Median Score
	Strongly Disagree n (%)	Disagree n (%)	Partially agree n (%)	Agree n (%)	Strongly Agree n (%)		
PBL makes Learning more interesting	0(0)	9 (4.5)	45 (22.5)	92 (46.0)	54 (27.0)	3.96(0.82)	4
PBL is an active learning methodology	0(0)	6(3.0)	33(16.5)	103(51.5)	58(29.0)	4.07(0.78)	4
Helps to identify problem & generate hypothesis	0(0)	8(4.0)	30(15.0)	114(57.0)	48(24.0)	4.01(0.74)	4
PBL helps in defining learning needs	3(1.5)	12(6.0)	62(31.0)	96(48.0)	27(13.5)	3.66(0.84)	4
PBL stimulates effective discussion	1(0.5)	7(3.5)	42(21.0)	78(39.0)	72(36.0)	4.07(0.87)	4
Helps in integrated learning	1(0.5)	9(4.5)	39(19.5)	116(58.0)	35(17.5)	3.88(0.76)	4
PBL is a waste of time	66(33.0)	92(46.0)	22(11.0)	9(4.5)	11(5.5)	2.04(1.06)	2
Clinical case scenario is better understood	15(7.5)	14(7.0)	70(35.0)	62(31.0)	39(19.5)	3.48(1.11)	4
Enhances pre-existing knowledge	4(2.0)	19(9.5)	76(38.0)	88(44.0)	13(6.5)	3.44(0.83)	4

Encourages self directed learning	0(0)	17(8.5)	58(29.0)	87(43.5)	38(19.0)	3.73(0.87)	4
Overall experience was good	0(0)	12(6.0)	41(20.5)	113(56.5)	34(17.0)	3.84(0.77)	4
I would like to use PBL as a T-L Methodology	15(7.5)	16(8.0)	73(36.5)	58(29.0)	38(19.0)	3.44(1.12)	3

Table 2. Students' Perceptions regarding PBL with respect to attitude and professionalism

Statement	Frequency of Responses for each statement (N=200)					Mean Score (SD)	Median Score
	Strongly Disagree n(%)	Disagree n (%)	Partially agree n (%)	Agree n (%)	Strongly Agree n (%)		
PBL develops effective interpersonal skills	7(3.5)	20 (10.0)	81 (40.5)	76(38.0)	16 (8.0)	3.37 (0.90)	3
Made me understand teamwork and group dynamics	0(0)	16(8.0)	74(37.0)	88(44.0)	22(11.0)	3.58(0.79)	4
Helped me realize my shortcomings and ways to over-come them	1(0.5)	21(10.5)	67(33.5)	98(49.0)	13(6.5)	3.51(0.79)	4
PBL helped to develop attitude of providing and accepting constructive feedback	0(0)	27(13.5)	33(16.5)	124(62.0)	16(8.0)	3.65 (0.81)	4
Group discussion helped in understanding the best way to put forward my views	5(2.5)	42(21.0)	66(33.0)	62(31.0)	25(12.5)	3.3 (1.02)	3
Made me more perceptive and sensitive to the needs of others during group-work	1(0.5)	20(10.0)	86(43.0)	67(33.5)	26(13.0)	3.49 (0.86)	3
Gave me an opportunity to understand how to chair a session better	0(0.0)	19(9.5)	73(36.5)	88(44.0)	20(10.0)	3.55 (0.80)	4
Made me learn to respect views of other students	10(5.0)	20(10.0)	41(20.5)	63(31.5)	16(8.0)	3.37 (1.06)	4
Led to better rapport and friendly behaviour among group members	12(6.0)	28(14.0)	29(14.5)	51(25.5)	30(15.0)	3.39 (1.23)	4

Discussion: Problem-based learning is one of the innovative and challenging approach to medical education. Innovative as it is a new way of using clinical material to help students learn, and challenging as it demands the medical teacher to use facilitating and supporting skills rather than didactic approach. For the student, problem-based learning puts emphasis on the application of knowledge and skills to the solution of problems rather than the recall of facts¹¹.

Various studies have been conducted to evaluate the outcomes of PBL in medical school curricula. In the

present study, the students found PBL as an interesting method of learning. This finding is well supported by the studies carried out by Nahar¹² among Saudi medical students and Nanda¹³ among the medical students of Karnataka, both of which reported that PBL stimulates interest in learning. A study by Al-Naggar¹⁴ among Malaysian medical students also found the PBL strategy to be interesting. In our study, majority of the

students found PBL to be an active way of learning. Similar are the findings of Nahar¹² in which majority of the students found PBL to be intellectually stimulating learning method. The findings of the present study reflected the fact that PBL helped in identification of problems which is reinforced through a study by Shamshan¹⁵ in a Saudi medical school which found that majority of the students had an opinion that PBL helped in understanding the problems and finding objectives. As per the findings of the present study, PBL stimulated integrated learning for which supportive evidence is from a study conducted by Thirunavukkarasu¹⁶ among medical students in Chennai, in which 58% students responded that PBL enhanced integrated learning. In our study, majority of the students perceived that their approach to the clinical case scenario improved with PBL. This finding is well supported by a systematic review by Koh¹⁷ based on 15 studies on problem based learning which also emphasized that the clinical skills of the students got enhanced with PBL. The current study reflected the fact that PBL motivated the students for self-directed learning which has also been observed in the study by Al-Naggar¹⁴ conducted among Malaysian medical students. The students' perceptions regarding the enhancement of knowledge was appreciable in the present study and same had been reported by Al-Naggar¹⁴. The study by Al-Naggar¹⁴ reflected that PBL strategy was more time taking than conventional teaching but majority of the students in our study believed that this exercise was not a waste of time.

In the present study, for the perceptions regarding attitude and professionalism, the response was favourable from students and in majority of items the mean/median score was found to be equal to or more 3. PBL enhanced the interpersonal skills among the students as found in the present study and supported in the study by Koh¹⁷. The current study reflected the fact that PBL inculcated the habit of teamwork among the students as had been reported by Koh¹⁷ and is also well supported in the study by Nahar¹². One of the major advantages of PBL as found by students was that it helped them to forward their views in an effective way. Shamshan¹⁵ also found in his study that PBL improved the expression skills of the students.

Conclusion and Recommendations: The findings of this study reflected that the overall experience of students with PBL was very good and they expressed their interest to use PBL as a teaching learning strategy

in their curriculum. The great majority of students believed that PBL enhanced their pre-existing knowledge, helped in integrated learning, encouraged teamwork and stimulated interest towards learning. This study also emphasized that PBL developed direct responsibility of the students for their own learning, inculcated positive attitude and professionalism, and improved interpersonal skills. However, it is recommended that further studies should be carried out among the medical students of India and abroad to determine the level of students' satisfaction with PBL and to measure its impact on students' deep learning. These studies would help in providing valuable inputs towards integrating PBL into future Indian medical curriculum.

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