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PROBLEM-BASED LEARNING IN SAUDI MEDICAL CURRICULUM: A STEP FORWARD

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ABSTRACT It is well known that evaluating the effects of the PBL approach is necessary before it can be thoroughly introduced into the medical curriculum. Numerous studies have assessed the PBL in terms of acquiring knowledge and developing core competencies and attitudes. Research indicated that medical students' opinions about their curriculum substantially impact their academic success and can be essential for evaluating medical program strengths and weaknesses. The cross-sectional study was conducted at Taibah University's College of Medicine in the Al Madina region of Saudi Arabia. A total of 122, 69 male and 53 female students out of 149 enrolled in the course completed the questionnaire. Most of the students responded positively to all the items in the questionnaire. PBL is an interesting teaching methodology that leads to better understanding and long-lasting learning. We recommend inducting the PBL teaching method into the medical curriculum but with prior training for faculty members who already have experience in traditional teaching.

KEYWORDS : Problem-based learning, Methods, Curriculum, Medical Education, Madina

INTRODUCTION:

PBL is an integrated, motivating, student-centered learning method in medical education that is better retained in the clinical context and encourages developing clinical reasoning and problem-solving skills (1) and acquiring knowledge about clinical and basic science (2). PBL was started about 60 years ago in some of the North American medical schools (3) and subsequently was adopted as a preferred teaching method for some of the pioneer medical schools in the world. Many schools in America, Australia, Europe, and the Middle East have adopted the PBL (4). In KSA, some colleges have adopted it, and others are exploring and investigating the idea of PBL in their curriculum (5). Pioneer bodies concerned with medical education, like the World Federation of Medical Education, have supported and encouraged colleges all over the world to adopt the PBL-based medical curriculum instead of traditional Curricula (6), which have failed to integrate course material and understanding of concepts (7) and also are not sufficient and effective (8). In traditional teaching, an artificial divide is created between clinical and basic sciences, resulting in a waste of time in acquiring knowledge, which some find irrelevant (11). The students find it hard to apply knowledge they acquire after rigorous training, which is demotivating for the students. PBL method of Learning and teaching is more enjoyable for students and teachers (9,10), as it creates a learning environment that is more stimulating and more humane (2,9) and promotes deeper rather than surface learning (9). More interaction between students and faculty and interdisciplinary faculty collaboration is enhanced (9, 12, 13, 14). The potential threat of PBL must not be overlooked as most of the staff are trained in the traditional system, so proper staff training and some structural changes in the classroom are required for the course's successful implementation (15). It has been additionally contended that PBL is most appropriate to small schools (16) and that the procedure is non-reasonable when class sizes surpass 100 (2). However, two of Australia's most prominent medical schools, the Universities of Queensland and Sydney, have implemented PBL effectively, even though each has a yearly intake of more than 200 students. Another apparent disadvantage of PBL is that it is a generally wasteful approach to learning. It has been evaluated that the PBL educational program covers just 82% of what is covered in traditional educational programs (2). Decreased accentuation on basic science in PBL is a specific concern. Students from PBL-based schools have appeared to pass more regrettably in basic science examinations than students from traditional schools (10). In any case, it is contended that a significant part of the basic science in traditional educational programs lacks relevance and is, in this way, forgotten. An extra concern is the pressure that PBL puts on students and staff until they get comfortable with the procedure (17). Another concern of PBL is that most students come to PBL from instructive foundations where instructors direct learning.

On the other hand, in PBL, self-directed learning is effectively supported, and students might be worried that their learning methodologies are misleading or wasteful. These issues should be foreseen and addressed through orientation programs and PBL instructional exercises. However, one study examining the dimensions of students' worry in conventional and PBL educational programs observed that PBL was less distressing (18). Estimating the adequacy of PBL in acquiring knowledge and core competencies is essential prior to implementing the method in the medical curriculum (19, 20, 21).

MATERIALS AND METHODS:

The cross-sectional study was conducted at the College of Medicine, Taibah University, Al Madina region of Saudi Arabia, for second-year medical students after approval from the scientific research ethics committee of the University. A comprehensive workshop for the PBL process was conducted for the students and faculty members involved in the newly inducted PBL curriculum from those with experience and expertise. The course consisted of nine cases, each discussed around a clinical scenario in a week. The week started with a common case scenario, which was given to the entire student divided into seven male and seven female groups and was discussed by the students in the presence of a tutor who worked as a facilitator. It was called case opening, and a learning agenda was prepared in the so-called opening session of the week. Subsequently, during the week, lectures, practicals, and self-directed learning were conducted for the learning agenda, and at the end of the week, the students thoroughly discussed the learning agendas in the presence of tutors. The course was conducted for about 11 weeks. At the end of the course, a pre-set questionnaire (22) tested for its reliability and validity was given to each student, who was asked to fill the questionnaire according to a 5 5-point Likert scale score (ranging from strongly disagree to strongly agree).

Statistical Analysis:

The data were analyzed using SPSS version 16. The mean score for each item was calculated, and any score equal to or greater than 3 indicates a positive response to the PBL curriculum. Student perceptions about the PBL approach to learning were tabulated in proportion, mean score, and SD.

RESULTS:

A total of 122, 69 male and 53 female students out of 149 enrolled in the course completed the questionnaire. The majority of the students responded positively to all the questionnaire items. The majority of students strongly agreed that visual perception is better than listening to mere description and that PBL integrates basic science with clinical knowledge, increases their basic science knowledge, generates more interest and enthusiasm about basic science, improves their comprehension, encourages self-learning, and identifies the gap of knowledge (Table 1).

Most students also agreed that the PBL teaching method encourages self-learning, improves decision-making skills, develops communication skills, identifies knowledge gaps, and stimulates critical thinking (Table 1).

Table 1: Student's perception of problem-based learning (PBL) session benefits

Statements	No. (%) of positive response (4&5)	Mean± SD
Integrates basic science with clinical knowledge	85 (69.7)	3.84±0.894
It helps you to increase your basic science knowledge.	75 (61.5)	3.57±1.143
Improves the ability to retain basic science knowledge for a longer time.	67 (54.9)	3.67±1.109
Creates more interest and enthusiasm in basic science.	70 (57.4)	3.54±1.077
The visual perception of cases in PBL is better than listening to mere description.	71 (58.2)	3.69±1.053
Improves students' comprehension of basic science knowledge.	72 (59)	3.66±0.959
Encourages self-learning.	82 (67.2)	3.90±1.079
It helps you to improve your decision-making skills.	78 (63.9)	3.77±1.156
It helps you to develop your communication skills.	97 (79.5)	4.13±1.012
It helps you to identify your gap of knowledge	78 (63.9)	3.72±1.137
Stimulates your critical thinking.	80 (65.6)	3.82±1.106

Table 2 demonstrates that most students strongly agreed that the PBL method can substitute for traditional teaching. Proper student training was given before the start of the PBL session. It is an interactive teaching method, and the students contribute equally to the group dynamics (Table 2).

Table 2: Students' Perception Of The Appropriate Running Of Problem-based Learning

Statements	No. (%) of positive response (4&5)	Mean±SD
Can substitute traditional teaching.	60 (49.2)	3.34±1.154
There is proper student training before starting the PBL sessions.	52 (42.6)	3.18±1.240
An interactive method of learning.	82 (67.2)	3.87±0.987
The students contribute equally to group dynamics.	58 (47.5)	3.39±1.250

As shown in Table 3, most students strongly agreed that their tutors were well prepared to run the session and helped them adjust their depth of knowledge (Table 3).

Table 3: Tutor's facilitation of the problem-based learning sessions and their fairness in students' evaluation

Statements	No. (%) of positive response (4&5)	Mean±SD
Tutors are well prepared to run the session.	96 (78.7)	4.27±1.121
Tutors help you to adjust your depth of knowledge.	99 (81.1)	4.18±1.213

DISCUSSION:

Problem-based learning is a relatively new, innovative, and challenging approach to medical education because it helps students to learn by using clinical materials, and it is challenging because facilitating and supporting skills are required from the medical teachers rather than didactic, which is the mainstay of many traditional classrooms. For the student, problem-based learning emphasizes applying knowledge and skills to solve the problem instead of simply recalling facts (23). The present study demonstrated that most students were satisfied with PBL and agreed it would contribute to a better understanding of the concept, in agreement with other Saudi studies, which showed that the PBL framework helps develop student skills. Most of the students revealed that they were satisfied with the PBL system. It is superior to traditional teaching (24,25,26). Similar findings were observed from Kuwait University, which suggested that in the PBL-based curriculum, students performed significantly better than the didactic lecture-based curriculum students in both the theoretical knowledge and clinical examination (27).

The present study also showed that the PBL method improves decision-making skills, develops communication skills, identifies the knowledge gap, and stimulates critical thinking. Similar findings were observed in another study by Nahar (28) among medical students in Saudi Arabia, in which 77.1% of students agreed that PBL improved presentation skills. Another study carried out by Thirunavukkarasu (29) among medical students in India also found that communication skills were improved in 80% of students. Based on a systemic review carried out by Koh demonstrated that the PBL framework improves the communication skills of the students with a positive effect on most physicians' competence after graduation regarding social and cognitive dimensions (30).

In the present study, it was also found that PBL encouraged the students to assemble academic information beyond the reading textbooks, which is in accordance with the findings of a study conducted by Nanda (31) among the medical students of India in which information gathering was noted to be significantly better with PBL than the traditional teaching. Among other reasons for liking PBL as a teaching framework in our study was that PBL made learning more interesting and improved the habit of teamwork and problem-solving skills among the students. A study conducted by Al-Naggar (32) among Malaysian medical students also highlighted that PBL holds the students' enthusiasm and promotes their problem-solving skills.

The present study also showed that PBL integrates basic science clinical knowledge and improves their clinical, in accordance with other studies by Schmidt and van der Molen (33) at Maastricht University. They observed that learners who experience PBL have a more substantial clinical orientation. Vernon and Blake, in another review, concluded that PBL was equal to traditional approaches in terms of scores on medical board examinations and superior in demonstrating better clinical problem-solving skills (34).

Conclusions And Recommendations:

The present study discovered that PBL is a self-learning technique that enables students to participate in critical thinking and collaborative learning and improves confidence, presentation, skills, and critical thinking. It has been observed to be a fascinating instructing procedure that prompts better understanding and durable learning. Students mainly support this methodology as it upgrades their capacity to deal with and take care of genuine issues. However, a few of the difficulties with the PBL procedure need to be investigated to solve it. Additionally, further studies should be done among medical schools in KSA and abroad to review the advantages and disadvantages of PBL, which would give helpful information on the implementation of PBL in Saudi medical educational programs. Further, those with experience and expertise should also be involved.

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Ethical Approval

Approved by the scientific research ethics committee of the University

Conflict Of Interest

The authors have no conflict of interest to declare

Authors' Contribution
All authors contribute equally to the work.

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Abbreviations: PBL= problem-based learning

REFERENCES:

1. Barrows HS (1983). Problem-Based, Self-directed Learning. JAMA,250(22):3077–3080.
2. Albanese MA, Mitchell S (1993). Problem-based Learning: a review of literature on its outcomes and implementation issues. Acad Med, 68:52–81.
3. Campbell E.J.M (1970). The McMaster Medical School at Hamilton, Ontario. Lancet II, 763–767.
4. Bligh J. & Wilkinson P (1997). Report of a workshop on problem-based learning and its implications for medical education in the UK. Postgraduate Medicine Journal, 73, 449–459.
5. Khalid BA (2008). The current status of medical education in the Gulf Cooperation Council countries. Ann Saudi Med, 28(2):83–88.
6. Walton H.J. & Matthews M.B (1989). Essentials of problem-based learning. Medical Education, 23: 542–558.
7. Kamien M (1993). The reform of medical education. Medical Journal of Australia, 158: 226–227.
8. Berkson L (1993). Problem-based learning: have the expectations been met? Academic Medicine, 68: S79–S88.
9. Norman G.R. & Schmidt H.G (1992). The psychological basis of problem-based learning: a review of the evidence. Academic Medicine, 67: 557–565.
10. Vernon D.T. & Blake R.L (1993). Does problem-based learning work? A meta-analysis of evaluative research. Academic Medicine, 68: 550–563.
11. Johnson S. & Finucane P (2000). 'The emergence of problem-based learning in medical education. Journal of Evaluation in Clinical Practice, 6: 281-291.
12. Barrows H.S. & Tamblyn R (1980). Problem-Based Learning: An Approach to Medical Education. Springer, New York.
13. Blumberg P. & Michael J (1992). Development of self directed learning behaviours in a partially teacher directed problem-based learning curriculum. Teaching and Learning in Medicine, 4(1), 3–8.
14. Dolmans D.H.J.M. & Schmidt H.G (1996). The advantages of problem-based curricula. Postgraduate Medical Journal, 72, 535–538.
15. Des Marchais J.E (1993). A student-centred, based curriculum: 5 years' experience. Canadian Medical Association Journal, 148, 1567–1572.
16. Donner R.S. & Bickley H (1993). Problem-based learning in American medical education: an overview. Bulletin of the Medical Library Association, 294–298.
17. Miflin B.M., Campbell C.B. & Price D.A (1989). A lesson from the introduction of a problem-based, graduate entry course: the effects of different views on self direction. Medical Education, 801–807.
18. Moore-West M., Harrington D.L., Mennin S.P. & Kaufman A (1989). Distress and attitudes toward the learning environment: effects of a curricular innovation. Teaching and Learning in Medicine, 151–157.
19. Ibrahim NK, Banjar S, Al-Ghamdi A, Al-Darmasi M, Khoja A, Turkistani J, et al (2014). Medical students' preference of problem-based learning or traditional lectures in King Abdulaziz University, Jeddah, Saudi Arabia. Ann Saudi Med, 34(2): 128-133.
20. Alessio H. Student perceptions about and performance in problem-based learning (2004). J Scholarship Teach Learn, 4: 23-34.
21. Khoshnevisasl P, Sadeghzadeh M, Mazloomzadeh S, Hashemi Feshareki R, Ahmadiafshar A (2014). Comparison of Problem-based Learning With Lecture-based Learning. Iran Red Crescent Med J, 16(5).
22. Masic I, Pandza H (2018). Medical Informatics Education - Past, Today and Future. European Journal for Biomedical Informatics, 14(2): 40-45.
23. J. Bligh (1995). Problem-based learning in medicine introduction. Postgrad Med J, 71(836): 323–326.
24. Shamsan B, Syed A (2009). Evaluation of Problem Based Learning Course at College of Medicine, Qassim University. Saudi Arabia. Int J Health Sci, 3:249–58
25. AlHaqwi A (2014). Learning Outcomes and Tutoring in Problem Based-Learning: How do Undergraduate Medical Students Perceive Them? Int J Health Sci, 8:125–32.
26. Al-Drees AA, Khalil MS, Irshad M, Abdulghani HM (2015). Students' perception towards the problem based learning tutorial session in a system-based hybrid curriculum. Saudi Med J, 36:341–8.
27. Zahid MA, Varghese R, Mohammed AM, Ayed AK (2016). Comparison of the problem based learning-driven with the traditional didactic-lecture-based curricula. Int J Med Educ, 7:181–7.
28. Nahar L, Salem RO, Nuzhat A, Alakrash L, Dipro SA (2014). Medical Students' perceptions and Satisfaction with Under-graduate Medical Hybrid Problem Based Learning curriculum in a Saudi Medical School. International Journal of Education, 6(3): 70-80.
29. Thirunavukkarasu J., Latha K. and Nalini A (2012). Assessing the acceptance of problem based Learning methodology (PBL) by II MBBS students. Recent Research in Science and Technology, 4(6): 17-20.
30. Koh GC, Khoo HE, Wong ML, Koh D (2008). The effects of problem-based learning during medical school on physician competency: a systematic review. CMAJ, 178(1):34-41.
31. Nanda B, Manjunatha S (2013). Indian medical students' perspectives on problem-based learning experiences in the undergraduate curriculum: One size does not fit all. J Educ Eval Health Prof , 10: 11.
32. Al-Naggar RA, Bobryshev YV (2012). Acceptance of Problem Based Learning among Medical Students. J Community Med Health Educ, 2(5):146.
33. Schmidt, H. G., & van der Molen, H. T (2001). Self-reported competency ratings of graduates of a problem-based medical education curriculum. Academic Medicine, 76: 466–468.
34. Vernon, D. T. A., & Blake, R. L (1993). Does problem-based learning work? A meta-analysis of evaluation research. Academic Medicine, 68(7): 550–563.