Problem-based learning facilitates vertical integration of basic and clinical sciences in medical curriculum

Editorial

Vertical integration aims to break the barriers between the basic and clinical sciences to provide medical students with enhanced learning opportunities to facilitate the knowledge development which is relevant and significant to clinical practice, is retrievable and deep to be a part of lifelong learning process. Hence, basic science as anatomy is represented obviously in the medical curriculum within the clinical settings throughout the undergraduate education years and elsewhere in postgraduate training and ongoing professional development. So, vertical integration of anatomy with surgery and orthopedic specialties is considered to be more relevant and meaningful to students.

The most suitable teaching strategy to implement vertical integration between basic and clinical sciences is problem-based learning (PBL). My personal experience in faculty of medicine in King Abdulaziz University where the medical curriculum used information – oriented approach. Medical student learns basic and clinical sciences, through understanding the essentials of each science separately. Since 2009, PBL was implemented through system modules for the third year students. PBL session help students to think, discuss and share their current knowledge, analyze and generate ideas to test possibilities underlying problem scenarios which represented common health problems in the community. The advantages of PBL for better joining of basic and clinical sciences which lead to improvement of the learning outcome domains where, the students declared that PBL enabled them to gain learning skills and, more satisfaction, and better outcome after graduation.

The integrated approach reduces the knowledge fragmentation, promote staff collaboration and increase student motivation. Through implementation of PBL in system-based modules, vertical integration was gained the basic and clinical sciences. They used the integration ladder which is a valuable tool to plan, implement and evaluate the medical curriculum. Students developed integration between knowledge in different subjects and realize the significance of studying basic science as anatomy in relation to clinical patient’s problems. PBL encourage medical students to be self-directed learners, working with peers in teamwork, gain communication skills, clinical and scientific reasoning.

Challenges to implement PBL

The majority of staff members (Saudi and non-Saudi) in faculty of medicine, King Abdulaziz University were graduated from traditional medical colleges. They thought that new teaching strategy as PBL has no additional benefit over traditional methods. Majority of staff members did not believe in PBL process as a teaching strategy. This made them resistant, to change and rethink about their teaching. In addition, they see lectures to large groups are cost-effective and provide more time for them to do research for their promotion.

PBL need more time to prepare and design the problems to be align with the curriculum objectives and to assess student learning. The evidence to support PBL instead of traditional approaches is not strong and insufficient, for many staff members, to rationalize the changing to a new education system. Another important challenge during implementation of PBL in faculty of medicine, King Abdulaziz University is that more demands on resources and staff be needed. Previously researchers reported that several causes stand against PBL implementation as PBL cost a lot, need staff time and training workshops. PBL is stressful for students and staff, students gain less knowledge of the basic sciences and large number of students, difficult to implement PBL. Resources should be available for regular PBL training for staff development and also should be available for students to support the acquisition of knowledge.

Recommendation

A. Problems should be about the most common health problems in Saudi Arabia.

B. A taskforce will be formed to review PBL progress in the college. It will include members from medical education, clinical and basic sciences.

C. Organize several workshops on PBL, tutoring and facilitation skills for all faculty members especially new comers. Detailed guidelines on PBL to explain the facilitator role and the group dynamics.

D. Write and design scenarios for PBL to be as real cases, relevant to the common diseases within the community, related to the module objectives, inspiring and encouraging the students to search, and appropriate to the students’ level of knowledge.

E. PBL facilitators’ educational background is frequently checked. Their performance is thoroughly monitored by course coordinator follow up, student feedback, and performance records in students’ examinations.

F. Increase number of problem per module as only one problem is discussed in each module
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G. Try to implement PBL in year 2 medical students as in the year 3.
H. To encourage staff to participate, promotion and salary increases should be linked with participation in PBL activities.

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Conflict of interest

Author declares that there is no conflict of interest.

References

1. Hassan Sh. Concepts of vertical and horizontal integration as an approach to integrated curriculum. Education in Medicine Journal. 2013;5(4):e1–e5.
2. Ibrahim NK, Banjar Sh, Al Ghamdi A, et al. Medical students’ preference of problem-based learning or traditional lectures in King Abdulaziz University, Jeddah, Saudi Arabia. Ann Saudi Med. 2014;32(4):128–133.
3. Alshehri MY. Medical curriculum in Saudi medical colleges: current and future perspectives. Ann Saudi Med. 2001;21(5–6):320–323.
4. Harden RM. The integration ladder: a tool for curriculum planning and evaluation. Medical Med Educ. 2000;34(7):551–557.
5. Vernon DT. Attitudes and opinions of faculty tutors about PBL. Acad Med. 1995;70(3):216–223.
6. Shanley DB, Kelly M. Why PBL? School of Dental Sciences, Trinity College, Dublin, in ADEE 20th Meeting, USA; 1994.
7. Berkson L. Problem based learning: have the expectations been met? Academic Medicine. 1993;68(10 Suppl):S79–S88.
8. Des Marchais JE. A student-centered, problem-based curriculum: 5years experience. CMAJ. 1993;148(9):1567–1572.
9. Vernon DT, Blake RL. Does problem-based learning work? A meta-analysis of evaluative research. Acad Med. 1993;68(7):550–563.
10. Albanese MA, Mitchell S. Problem-based learning: a review of literature on its outcomes and implementation issues. Acad Med. 1993;68(1):52–81.
11. Newblem DI, Cannon RA. Teaching in a problem based course. In: A Handbook for Medical Teachers. 4th ed. Netherlands: Springer Science and Business Media; 2007. p. 111–112.
12. Roberts C, Lawson M, Newble D, et al. The introduction of large class problem based learning into an undergraduate medical curriculum: An evaluation. Med Teach. 2005;27:527–533.
13. Wood DF. Problem based learning. BMJ. 2003:328–330.
14. Gameel WO, Beeri AO. Problem-based learning in the National University–Sudan: A reflection on the experience. Sudan Medical Monitor. 2016;11:87–90.