EDITORIAL

PROBLEM BASED LEARNING IN MEDICAL EDUCATION

In problem based learning (PBL), learning is based on the preparation and study of complex problems encountered in the real world. Such problems act as a stimulus for learning, integrating and organizing learned information in ways that will ensure its recall and application to future problems [1]. The problems in PBL are also designed to challenge learners to develop effective problem-solving and critical thinking skills. PBL is a motivating way to learn, as learners are involved in active learning, working with real problems and what they have to learn in their study is seen as important and relevant to their own lives.

It is one of the best described methods for interactive learning and is thought to be superior and more effective than traditional methods, as well as, life long learning skills are concerned [2]. In postgraduate medical education PBL has long been used as the main mode of medical learning. In undergraduate learning majority of the studies favour this and most of the medical schools are using PBL in some percentage if not all, but still a few question the value of PBL in undergraduate medical education [3,4]

In the PBL of medical education the learners encounter a problem and attempt to solve it with information they already possess and further to identify what they need to learn to better understand the problem and how to resolve it. After this the learners engage in self-directed study using different resources like books, journals, reports, online information and e.learning etc. After gaining all the information the learners then return to the problem and apply what they have learnt to understand and resolve the problem from different sources [5,6]. After they have finished their problem work the learners assess themselves and each other to develop skills in self-assessment and the constructive assessment of peers. Self-assessment is a skill, essential to effective independent learning.

Curriculum for PBL

The curriculum for PBL is based on series of problems encountered by learners. All these problems are put together as a group. The learning of these problems then covers the content appropriate to the course. In the PBL process sometimes learners characteristically learn far more and in areas relevant to their personal needs. The curriculum therefore requires selection and organization of contents which should be relevant to graduates.

PBL Teacher/Tutor

The principle role of the teacher in PBL is that of a facilitator and usually called a "tutor" guiding the learners in the PBL process. The tutor becomes less active in PBL as the learners become more proficient in the PBL learning. This is a new skill for many teachers and specific training is required. Some institutes arrange special workshops for the training of tutors [7,8]. The role of the tutor is to guide the students through the problem, judge the level of understanding, correct mistakes by questioning and direct students to do more in areas where knowledge is insufficient. It is important that tutors are respectful of students and keen to voice their own opinions and ideas. Tutors need to be able to communicate effectively in the language used by students. They should be capable of operating in a less formal context. They need to be able to establish and maintain a feeling of goodwill and cooperation in the group. Tutors should be knowledgeable in the area under study [9].

PBL Groups

Learning is ideally in small groups of 5 to 7 (maximum 15) learners. As the group members work together to solve and learn the problems, they acquire collaborative or team learning skills. This emphasis on small groups

can be linked closely to the notion of student-centered learning, students being more independent and self-directed in their learning, contrasting with a didactic approach in traditional subjects. The type of learning engendered by PBL frequently described as deep learning (as opposed to surface learning). PBL is also held to promote life-long learning. It also mimics the 'natural' way in which adults tend to learn

Essentials for PBL

For the acquisition of an extensive, integrated knowledge, and for the development of effective and efficient, problem-solving or clinical reasoning skills, clinical skills, self-directed learning skills, team skills, there are a few minimal essentials as follows,

- Students should have the responsibility for their own learning.
- The problem / simulations used in PBL must be structured in such a way to allow for free inquiry by the learners.
- Learning should be integrated. It should be from the wide range of disciplines that are related to understanding and treating patient problems. The learning should be basic to the science of medicine. Participation by each student and a minimal number of didactic presentations.
- Close collaboration during study and learning is essential
- What students learn during their self-directed learning must be applied back to the problem with reanalysis and resolution.
- A closing analysis of what has been learned from work with the problem and a discussion of what concepts and principles have been learned is essential

Problem Based Learning Modules (PBLM's)

PBLM's are actual patient cases that permit free inquiry. The learner prepare their learning objectives (LO's) and then start searching the answers to their questions from different sources already mentioned. In a typical well structured PBLM each step may lead back to a previous step, and lead on to the next. While preparing a PBLM it is very important to take utmost care as whole of the learning process will depend on proper construction of a module. The module should show association between learning needs and selected variables. It should take into account the present knowledge, experience and focus of learning [10]. Problems should be well-structured and relevant, and it should generate curiosity, pose questions and motivate students.

Assessment and Feedback in PBL

Multimodal assessment and feedback, for the process and contents is used in PBL to assess knowledge, skill and attitude. The assessment is both, formative and summative. The multimodal assessment includes contextual integrated assessment of knowledge by short answer questions, best choice questions, and written assignments for longitudinal themes. Viva voce for reasoning skill and behaviour is assessed by group work to build team and community visits. Skill is assessed by OSCEs, OSPEs, short and long cases etc. Web based assessment is another way. It is important that the assessment process should not hamper learning or adversely affect attainment of the goals of the curriculum [11,12].

For PBL to be successful, students as well as tutors need an adequate introduction to the concept. Guidelines for working in groups are useful, as it is said that it is difficult to be self-motivated from the start. Students need to realise that there may be a diminishing level of guidance as the subject and/or the course progresses. Self-motivation is important aspects which need to be supported and

reinforced by tutors as well as by other students in the group. It would seem that success is linked to a positive attitude among students and this may be done by involving them in negotiations over group formation and assessment and treating students as colleagues during the implementation of PBL [9].

PBL, while being student-centered, is very costly. Institutional support for PBL could include specific funding of initiatives in this area by individual departments as well as the provision of courses and hands-on workshops for staff involved in PBL as tutors or problem designers. This would overcome feelings of isolation and would provide tangible support for individual members of staff experiencing difficulties [8,9]. Sometimes in difficult fiscal circumstances, there will be tendency for departments and institutions to favour didactic teaching modes such as the large lecture format because of the reduced staffing costs of such measures compared with the costs of multiple tutors which might be required for PBL. Such temptations must be resisted vigorously. Clearly, a reliance on purely financial considerations could adversely affect the implementation of PBL. The moves to reward quality of teaching might help in protecting and nurturing PBL and other forms of student-centred learning. Those wishing to implement PBL need to consider seriously the space available and its suitability for small group sessions. Some factors that need to be considered in this context include the style and arrangement of furniture, the availability of black/white boards, free from interference by other groups and access to resource materials.

The concept of PBL is relatively new in Pakistan. It is fully implemented in only one medical college, whereas various other medical institutes are experimenting it. At Army Medical College we are also trying to implement it gradually. One workshop was conducted for the faculty by the visiting faculty members of medical education department of Aga Khan University hospital. There is a dire need of fully functional medical education department before any endeavour is made to make PBL as part of curriculum of medical education.

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