Case Based Learning Model in the Surgical Trainee Educational Program

Pedagogiskt docenturarbete

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Summary:

The problem based learning (PBL) has been used in many schools specially the medical ones as an alternative to the traditional teaching. There are few publications which illustrate the role of PBL in the educational program for the junior doctors. A case based learning (CBL) is a modification of the original PBL. The hypothesis is that CBL can partly replace the traditional educational course for the junior doctors during their ST (specialist training) period. This could improve the quality of the trainees’ educational program as well as to enhance the shift to person-centred care approach [1].

My plan is to write about the possibility of implementing a case based learning model in the Plastic Surgery speciality educational program.

Background

The plastic surgery speciality depends on a number of skills and techniques that are used in a single or combined ways to solve patient’s problem. The plastic surgeons usually customize the learned techniques in order to create a tailored treatment plan for each patient.

The newly surgical trainees are usually stressed in the first few months focusing most on learning how the system works. Additionally, they try to prove that they are capable of achieving the assigned tasks perfectly. Thereafter, they start to acquire most of their knowledge and skills from the other colleagues through different ways: repetition of a treatment protocol similar to the other colleagues, taking decisions based mostly on similar situations happened with colleagues, and even surgical procedures are often repeated based on what learned from the others. This way of acquiring knowledge has its place; however, the application of the above mentioned skills could be in question when it is applied to other patients with a similar disease but different circumstances. Circumstances as skin colour, age, sex, socioeconomic status and personal preference could play a pivotal role in the choice of the treatment.

The theoretical part of the education program in our department is done regularly (3-4 times each term) by meeting a senior doctor who has experience in a certain subject in addition to a weekly journal club. The junior doctors prepare in advance a short presentation of a specific part of the subject to be discussed. Generally, in plastic surgery practice, the doctors may prefer specific techniques, in which they have a good experience with, although they may not be optimal for all patients. This would in general limit the learning process for trainees. They ought to gain a wider knowledge regarding the different treatment
alternatives during their educational program so they can customize the treatment to the patient’s problem and situation.

**Aim**

- To outline a possible implementation of group based learning (PBL or CBL) in the specialist trainee educational program at plastic surgery department at Linköping University Hospital.
- To explore the pros and cons in these learning models when applied in such clinical settings.

**Introduction**

**Problem based learning**

PBL has appeared as one of the novel alternatives to the traditional learning in 1960s in McMaster University. The education system thereafter spread rapidly in several hundred universities in the worlds principally the medical schools. This educational approach is based on self-directed learning integration across disciplines, small-group learning and decision-making strategies [2]. The advantage with the PBL is that it allows more space for the student to self-acquire knowledge and consequently this knowledge can be retained in mind easier. Challenging the learner with open ended questions extracted from a well-designed problem is invaluable in the PBL method. Interpretation of a particular problem can be done in collaboration with the other members in the group. Brainstorming facilitates exchange of ideas among the group members which is required to reach the study questions in a spiral approach that needed to be answered for knowledge acquisition. The study questions should be in line with the course curriculum in which the role of the tutor is to cautiously guide the group discussion to be in line with the curriculum [2, 3]. Additionally, PBL promotes the student lifelong learning, open inquiry, teamwork, critical thinking and reasoning as the students struggle themselves with a minimal role for the facilitator to analyse and formulate the learning objective required to solve the problem[4].

**Case based learning**

The case based learning (CBL) model links theory to practice, through the application of knowledge to the cases, using inquiry-based learning methods. It has similarities with PBL, however, it differs in some aspects such as the advance preparation of students before the session (Figure 1). Both students and facilitators share the responsibility to reach cardinal learning points. A clinical problem is usually presented to the learners, in which they have time to struggle and explore the possible learning objectives. The role of the facilitators is to use guiding questions to bring them back to main objectives [5, 6]. The facilitator is usually
an expert in the field [7, 8]. The aim of CBL is more directed to manage specific situations in the clinical setting which may require a person-centred solution individualized to the patient.

**Reflections from the author’s experience**

Both models are well known for undergraduate teaching, however, the literature is unclear regarding their application as a method of teaching to clinical trainees. A search was done in Google Scholar for the words PBL, CBL, surgical trainees, surgical training. I retrieved six related publications directly to CBL and PBL to post graduate trainees [7-12]. Only two publications had discussed the possibility of using PBL/CBL as method of teaching to the new surgical trainees in a real life small group discussion [7, 8]. One of these had the focus of surgery [7] while the other [8] reported using case based group session with the focus on the patient safety, and the facilitators had special training in the subject.

The other publications were not in line with the intended aim of this essay. One [11] addressed electronic case-based learning in Urology using a brief clinical scenario and a series of questions followed by answers on successive slides. The cases was designed to be concise, the average process time per case was 10 minutes, the review of the cases was voluntary and was not monitored. It was not clear in the publication if this process done solitary by the trainees or in an electronic group meeting.

Another publication [9] showed higher score of pre-operative preparedness of trainees in spine surgery when using a problem and scripting based learning method compared to conventional learning. However there was no difference regarding theoretical examination, intra-operative performance, and overall satisfaction of the trainees. The preparation of the trainees consisted of writing a script that highlighted the critical steps in the surgical procedure and relevant surgical skills. A follow up was done by the attending surgeon by giving individual feedback to the trainee.

The third publication [12] described a platform for virtual cased based discussion in orthopaedics in which the trainee present the history and images of a selected case. The last publication [10] described a case-based approach to teach ethics to surgical trainees.

During my undergraduate studies, it was hard to understand how to use PBL when it applies studying of basic science subjects such as microbiology, pathology and biochemistry, however, it helped us to understand how we could address a specific problem using brain storming and spiral approach. When applying the PBL in the clinical parts of my undergraduate education such as surgery or medicine, the advantage of the PBL was remarkable. Additionally, I think the small group discussions done during this stage (clinical) was more similar to CBL than PBL regarding the advance preparation, the active participation of the facilitator and the clinical focus of the scenarios.
Method in favour

From the clinical perspective, the CBL method may fit more accurately. The priority, focus and aim for learning differs in this context (clinical focus) to that of undergraduate learning (exam focus). Therefore, the learner (ST trainee) could have more benefits of CBL than PBL. The types of scenarios based on CBL will focus on the plastic surgery versatility regarding the techniques and management plans. The advance preparation in CBL for both trainees and the facilitator will encourage a more fruitful discussion. The active role of the facilitator can be more rewarding for the facilitator as well as the trainees [4]. The knowledge acquired will be balanced between the experience of the facilitator and the references from the literature gathered by the trainees. The time factor (Figure 1) will also be in favour for the CBL in which the sessions will be more time effective with advance preparation and facilitator guidance, in contrary to PBL which theoretically requires more time per session. It is always difficult to arrange for the educational sessions in the usually tight schedule of the surgical trainees.

How to design a good scenario

We need first to outline the topics where there is a debate regarding the management approach. The next step is to design a case scenario based on a real patient in which the information could be retrieved from the medical records. The preliminary plan is to start with two scenarios each term then an evaluation will be done based on the feedback from both tutors and trainees. The feedback results will determine the suitable number of scenarios required. According to Herreid CF [13], a good case should be authentic, written in a story form, aligned with defined learning outcomes, have an educational value, have general applicability, promote decision making and stimulate interest of the students.

Challenges

There is a number of challenges that need consideration, firstly to develop a good scenario which fulfils the above mentioned criteria requires to put time and effort on a good design. This could be done in collaboration with the senior specialists in the clinic in which they
could propose examples of difficult cases with a good educational value. Then the proposals will be refined to those which are most suitable according the criteria for the good scenario.

The second challenge is to implement the way of thinking according to the PBL/CBL to the trainees and the potential facilitators willing to join this model, who have long-term experience in the field/subject. Implementation could be done in two steps; a short presentation about the role of the facilitator, how to guide the trainees to the planned objectives and to discuss the different approaches for management even those which are not preferred by the facilitator. This presentation can be done at the doctors daily morning meeting illustrating the potential benefits and challenges with applying the PBL/CBL, this will hopefully open the thoughts for a constructive discussion for those who are interested regarding the selection of cases and the way of implementation. The second step will be a follow up by an observer during the sessions aiming for a constructive feedback to the facilitator and trainees.

The third possible challenge is trainees who come from a different educational system and they are not familiar to the PBL method. They will receive a short introductory period about how it works with brainstorming over scenarios and problem solving.

Another challenge is to do a valid evaluation of the benefits of using this model. The evaluation could be in the form of a survey filled by the trainees [3, 9].

**Conclusion**

I think that CBL can be a useful method to improve the current educational system. It does not need to replace 100% of the current program as the traditional method is well established among the senior doctors and works fairly in many situations. The suggestion is to implement CBL for learning topics which could require person-centred solution individualized to the patient.
References


