PROBLEM-BASED LEARNING WITHIN SURGICAL CLERKSHIP IN GUYANA: A PILOT PROJECT TO ADDRESS BARRIERS AND FUTURE CONSIDERATIONS

ABSTRACT:

**Background:** Problem-based learning (PBL) is widely considered to be an effective method of medical education. There exist unique cultural and logistical barriers to the incorporation of adjunctive PBL curricula in developing nations.

**Objective:** To elicit the perceptions of surgical clerks at the Georgetown Public Hospital Corporation (GPHC) towards PBL, and to evaluate cultural and logistical factors challenging the incorporation of PBL into the existing surgical clerkship curriculum at GPHC.

**Methods:** In partnership with McMaster University, an adjunctive PBL pilot curriculum was developed, implemented and assessed within the surgical clerkship rotation at GPHC. Surgical clerks (n=15) participated in PBL tutorials for 4 weeks. Student perceptions of PBL as a method of learning were ascertained, and surveys were used to gain an understanding of cultural and logistical barriers to PBL implementation from students and faculty tutors.

**Results:** Students and faculty who participated in this pilot project viewed PBL as a useful educational tool, and positive addition to their existing surgical clerkship curriculum. Qualitative surveys identified logistical and cultural barriers to PBL implementation, including the need for increased faculty support and tutor incentives to ensure PBL curriculum sustainability. The need for a non-hierarchical approach to the student-tutor relationship was emphasized to optimize collaborative learning and minimize intimidation.

**Conclusions:** The experience of PBL was well-received by students and faculty, although several cultural and logistical barriers challenge the successful implementation of PBL at GPHC. Further needs assessment and cost-benefit analysis is required before PBL is more fully incorporated into the existing surgical clerkship curriculum at GPHC.
INTRODUCTION:

Problem based learning (PBL) as a form of education has been widely adopted by different disciplines around the world. To date, over 150 medical schools globally have adopted PBL into their curriculums in some form.1 PBL was first developed in 1969 at McMaster University’s Faculty of Health Sciences in Canada.2 Its inception represented a radical change in medical school pedagogy, shifting from traditional didactic methods to student-centered small-group tutorials and self-directed learning.2 This unique educational paradigm requires self-motivation and collaboration, with the intent of fostering skills that enable life-long learning.3

The value of implementing a PBL curriculum has been discussed extensively in the published literature.4-7 Literature supporting PBL curricula has reported that graduates are not only competent, but also have greater self-perceived teamwork abilities, interpersonal skills, and a greater ability to deal with patients’ emotional and social needs.8-10 Studies have also found that students and faculty express high levels of satisfaction with PBL.8, 11

Medical institutions considering the implementation of PBL should be cognizant of the challenges inherent in the adoption of this learning style. In developing nations, human resources, in the form of qualified tutors, and physical resources such as teaching spaces, access to current literature, and monetary compensation for staffing are often scarce and present barriers to the implementation of PBL curricula.5, 7, 12-16. In addition, PBL requires a cognitive shift for students and faculty accustomed to didactic teaching approaches, as student-directed learning presents a stark contrast to the more passive role students hold in traditional didactic curricula.17 This issue becomes a particular challenge in cultures where the authoritative role of medical educators remains firmly established. Despite these obstacles, many medical schools in developing countries have still chosen to integrate PBL into their curriculum, estimating that the potential benefits outweigh the costs.5,7,12-16,18

PBL PILOT PROJECT

In 2012, educators at the University of Guyana School of Medicine (UGSM) (Georgetown, Guyana) and its affiliated teaching hospital, Georgetown Public Hospital Corporation (GPHC), in collaboration with faculty and students of McMaster University (Hamilton, Ontario, Canada), implemented a 4-week pilot project to incorporate PBL into the UGSM program’s existing surgical clerkship rotation, which offers a purely didactic learning approach.19 The objective of the pilot project was two fold: first, to elicit the perceptions of surgical clerks towards PBL; second, to gain an understanding of cultural and logistical factors affecting the feasibility of incorporating PBL at GPHC. The study was approved by the Post Graduate Education Committee at GPHC and the Hamilton Health Sciences/Faculty of Health Sciences Research Ethics Board at McMaster University.

The director of UGSM and a group of four surgeons at GPHC collaborated with McMaster curricular planners to select and design tutorial topics. Students and faculty had access to information resources through the World Health Organization HINARI programme, which enables developing countries to gain access to up-to-date health literature.20 Participating PBL tutors engaged in a tutor-training program, which was taught in Guyana by McMaster University staff.

The PBL pilot participants included fifteen surgical clerks, divided into three tutorial groups. All 15 surgical clerks provided written informed consent before participating in the study. Students were informed that the results of the study would not impact their formal evaluation. Students were assigned codes to maintain participant and data confidentiality. Four tutorials were conducted with each group as an adjunct to their existing curriculum. Student perceptions of PBL were assessed formally pre- and post-pilot through a “PBL Perception Scale” questionnaire, which was modeled after McFadyen et al. “Interdisciplinary Education Perception” scale.21 In addition, a weekly open-ended feedback survey created by the authors was administered to students to identify perceived strengths of PBL, as well as perceived barriers to its implementation. All surveys were collected by McMaster students and a 100% response rate was obtained. Finally, feedback was elicited from the GPHC tutors via an unstructured interview conducted by McMaster students post-pilot.

Of the 15 study participants, 14 (93.3%) perceived PBL to be an equally (9 students, 60.0%) or more effective (5 students, 33.3%) learning method when compared with their existing didactic approach. Furthermore, 11 participants (73.3%) acknowledged the importance of collaborative practice, agreeing that “shared learning will help us think positively about working on healthcare teams.” All four tutors felt that the PBL curriculum encouraged non-hierarchical interaction among students and faculty, and that PBL fostered more responsibility among learners. However, all expressed concern over the lack of time and incentive for their involvement. Three faculty also noted that self-directed learning was challenging for students accustomed to a didactic style. In keeping with this, two students (13.3%) expressed concern over the use of faculty as tutors, feeling their presence at tutorials was intimidating, limiting free discussion and collaboration among students. Six students (40.0%) also identified that the level of collaboration required for effective PBL was somewhat discordant with their otherwise competitive academic environment.

DISCUSSION

This pilot project has identified pertinent cultural and logistical variables related to the utility of PBL and the challenges involved with incorporating it into the surgical clerkship curriculum at GPHC. It has also assessed student perceptions of PBL as compared with their existing didactic approach. Noteworthy limitations to our study include its short duration of four weeks, small sample size of 15 students, and subjective measures comparing PBL to didactic methods. We believe this pilot project has served its intended purpose by shedding necessary light on the logistical and cultural factors impacting PBL implementation at GPHC.
PROBLEM-BASED LEARNING WITHIN SURGICAL CLERKSHIP IN GUYANA

Overall, students and faculty who participated in this pilot project viewed PBL as a useful educational tool, and a positive adjunct to their existing surgical clerkship curriculum. Our findings are in keeping with similar studies in the literature. H.E. Khoo reviewed PBL studies conducted across 11 Asian countries, and found that in general medical students across Asia adjusted well to PBL and enjoyed its open learning style.22 At Walter Sisulu University in South Africa, medical students found the PBL curriculum to be “an innovative and useful model for learning.”23 Given that performance is ultimately influenced by the learner’s attitude and commitment to their learning environment, establishment of positive student perceptions of PBL is important.24

As a component of our current assessment of student perceptions of PBL, surgical clerks acknowledged that the opportunity to work together in small group settings facilitates collaborative learning and promotes a positive learning environment that benefits the multidisciplinary nature of health care practice. This suggests that students have a desire to engage in team-based, collaborative experiences during their medical education, and are willing to adopt PBL for this purpose. However, the students also expressed mixed feelings about the effectiveness of learning environments that derive knowledge from working with their peers. This mirrored the concerns of O’Conner et al., who incorporated PBL into the nursing program curriculum at the University of Guyana and noted that the students’ competitive academic environment may have hindered collaborative learning.13

Lastly, participants expressed doubt about the use of their evaluating faculty as PBL tutors. As the success of PBL is dependent on an academic environment that is non-judgmental and encourages inquiry among all participants, this may have prevented some students from fully engaging in PBL sessions.5, 25 When asked how to address this challenge, all four tutors believed that over time, the long-term incorporation of PBL would allow tutors and students to form working relationships that would provide direct support and reassurance to students. Unfortunately, tutor concerns regarding the lack of time and incentive for their involvement currently presents a barrier to the ongoing implementation of PBL. However, as previous PBL literature has indicated, content experts are not necessary.1, 2

Our pilot project found that overall, PBL was well received by students and faculty at GPHC. Our assessment outlined some of the cultural and logistical factors that may affect the implementation of PBL into medical schools on an individual level. However, curriculum changes also require an assessment of systems-level factors such as financial resources and educational goals. Thus, the GPHC faculty and UGSM administrators should complete a comprehensive needs assessment to determine whether educational gains from PBL outweigh the barriers identified. A cost-benefit analysis would include a determination of the availability of financial or professional incentives for recruitment of tutors amongst doctors and other professionals. Student gains could subsequently be determined through a longitudinal study comparing didactic learning to PBL using performance-based measures.

CONCLUSION

The results of our pilot project, combined with data from the PBL literature outlined in this paper, suggest early evidence for the role of PBL in medical curricula in resource-limited settings. However, conducting the comprehensive assessments described above require significant commitment and resources on behalf of the administrators involved. Ultimately, the decision to use PBL as an adjunct to existing traditional curricula must balance students’ learning needs with the resources available.

References:


17. Ahn D. Visiting elective students at the University of Toronto from the Korea University Medical College. Med Educ 1999; 33(6):460-465.


