

Initial Experience of Musculoskeletal Physiotherapy Problem Based- Learning

Thusharika Dilrukshi Dissanayaka

Department of Physiotherapy, Faculty of Allied Health Sciences, University of Peradeniya, Sri Lanka

Abstract- The purpose of this study was to assess third year physiotherapy students' perception and views about initial experience of PBL in Musculoskeletal physiotherapy soon after the clinical placement. The self-administered questionnaire measured perception of PBL on a 5-point Likert type rating scale and focus group discussion used to evaluate the PBL among third year physiotherapy students of the Department of Physiotherapy, University of Peradeniya. Eighteen females and six males responded (comprising 75% of the total sample). Most students were positive that PBL contributed to improve communication skills, critical thinking and makes fun. However female students expressed that they enjoyed group work and it was effective in fulfilling learning objectives. These same views were expressed during focus discussion, female students made reference to enjoying the group work of PBL. This concludes that PBL has facilitated learning concepts in musculoskeletal physiotherapy and helped students to manage patients confidently during their clinical training.

Index Terms- Female; Male; Musculoskeletal physiotherapy; Problem-based learning; Perception

I. INTRODUCTION

Problem based learning (PBL) is a popular teaching learning method and is used in many educational programs of health care professionals all over the world (1-4). Students acquire knowledge and problem solving skills via a patient problem which is presented in a case scenario during PBL group (5). PBL is mainly structured around small group discussions and the tutor is a part of the PBL session in facilitating the group discussion to the requisite depth (6-8). Three recent studies conducted among medical nursing and physiotherapy students in Sri Lanka has stated that students have endorsed the educational benefits of PBL and their perceptions on PBL method were very positive and consider it as an effective way of learning (9-11).

The four year BSc (Hons) physiotherapy degree program commenced at Universities of Peradeniya and Colombo in 2006. The physiotherapy students do not undertake any PBL sessions during their module series and the program mainly utilizes conventional lecture series supported by practical skill classes and clinical postings. Musculoskeletal physiotherapy is a main subject which discusses the diagnosis, treatment and prevention of muscle, soft tissue and joint problems and students learn this module at their third year studentship to support their clinical training. As they have not experienced PBL in their curriculum, this study aimed to investigate the third year physiotherapy

students' perception and views about initial experience of PBL in Musculoskeletal physiotherapy soon after the clinical training.

II. METHODS

Participants and study design

Thirty two third year undergraduate physiotherapy students of the Department of Physiotherapy, Faculty of Allied Sciences, University of Peradeniya participated in this study. A total of 8 sessions were allocated to cover four case scenarios related to common musculoskeletal conditions over a period of 2 months (April 2012 – July 2012) using PBL tutorial strategy. A deliberate effort was made to ensure that, the case scenarios selected for PBL tutorial strategy.

The 32 students were randomly divided into three groups of 11, 11, and 10 students each. The PBL procedures and processes were carefully explained to the students. The PBL materials consisted of four written problems involving hypothetical patients. The printed scenarios were circulated on Friday mornings and the group PBL discussion took place on the following Monday evenings. Each one of the case scenario was discussed in two PBL sessions. Students discussed the case scenario using their existing knowledge at the first session. At the second session, students discussed the case after going through given references. The materials available to the students for research were the Faculty library, personal texts, notes and electronic facilities.

Data collection

Two methods were used for collecting data. Firstly, At the end of the PBL course (8th session), the students were requested to evaluate the sessions by means of a self-administered questionnaire which contained a 5 point Likert scale to indicate their responses. The questionnaire was organized in 2 sections: demographic details and the 14 items to obtain the students' perception of the experienced PBL sessions. Students were requested to fill in the evaluation questionnaire and hand it in as they were leaving the lecture theatre. The participation was voluntary and anonymous.

The second method for collecting data was a focus group discussion. After the third year students attended their clinical training, three separate focus group sessions including females in two groups and males in one group were conducted. Sessions were moderated by the author and another lecturer attached to the department of physiotherapy. Discussion lasted between 59-70 minutes. Open ended questions focusing on student perceptions of problem based learning in general were used. In order to ensure the consistency across groups, the following topics were

used to prepare set of open-ended questions to guide the discussion:

1. Students' experiences during their PBL sessions
2. Perceived differences between lectures and PBL
3. Role of the staff and faculty to implement PBL
4. Recommendations for further improvement of PBL

Because this study was primarily descriptive, descriptive information was presented for numerical data analysis. Focus group discussion replies were read and re-read in order to identify emerging themes as headings under which categories most of the data can categorize.

III. RESULTS

Quantitative findings:

The questionnaire ratings showed a reasonable internal consistency (Cronbach's alpha 0.79), so the total score from the questionnaire was used in some of the analysis. The total questionnaire scores demonstrated that, as a group, the students were positive about this approach to learning (mean 56.7, SD 4.9, compared with the maximum possible score of 70).

There was no significant gender difference between the total questionnaire scores of females (55.9) and males (59.0), so the PBL task seemed equally appropriate for female and male according to the quantitative measures. Most mean ratings were within the range of 3.6-4.4, showing 'agreement' with positive statements about PBL. The lowest rating (means 3.6 male; 3.6 female) revealed that PBL promotes less student participation in learning process. Male and female students revealed significant differences in their responses to two attitude statements ($p < 0.05$), based on independent t-tests. Looking at the individual attitude ratings (max 5, min 1):

Female students expressed:

- PBL is more effective in fulfilling learning objectives (Female's mean rating 4.0, SD 0.72 v male's mean rating 4.8, SD 0.40)
- PBL is more interesting and provides more learning fun (Female's mean rating 3.67, SD 0.68 v male's mean rating 4.3, SD 0.51)

Male students expressed slightly greater improvement of their communication skills (mean rating 4.17; SD 0.75, compared with the females average of 3.83, SD 0.78), but this did not reach significance. These quantitative findings suggest that both male and female were positive about their initial experience of PBL. However, there were some indications that male were slightly more favorable about the collaborative nature of the learning task.

Focus group findings:

In accordance with the topics listed above, four distinct themes emerged during the focus group discussions. Differences of opinion in the female and male are reported.

Experiences

The male and female students' experiences during the PBL sessions varied but the prevailing view was that they thoroughly enjoyed the experience.

"Working as a group is better than work alone and it makes more fun while working as a group" (Female physiotherapy student)

"PBL group discussions were enjoyable" (male physiotherapy student)

Not only the fun but also they had to work hard. The hours and intensity of study increased for most of the male students. The study load on one case scenario was high within the group and time is also limited.

"I had to study hard with the responsibilities make within the group" (Male physiotherapy student)

The challenge reported by most of the both male and female students was logistic of team work.

"I felt that a lot of times everybody did not do equal shares with the group work" (Female physiotherapy student)

"What I find difficult to sense is, you know, it was difficult to get the ideas from some members as they feel shy to talk" (Male physiotherapy student)

Male students pointed to the gender impact of having to deal with female students within the group. Female students agreed with having male students as their group members.

"I think that within the group there should be at least two male students. Otherwise it is difficult to make and express our ideas" (Male physiotherapy student)

"The help of male students is essential when doing a group work" (Female physiotherapy student)

Both gender physiotherapy students asked to reduce the first session time duration and increase the second session time duration. Moreover they felt that the resources like internet facility, books and journals within the department and faculty are adequate to conduct future PBL sessions.

"It would be good if the time allocate for second session is increased by reducing the time allocate for first session" (Female physiotherapy student)

"I felt the resources in the department are enough to conduct PBL sessions and support got from the staff and the faculty was better" (Male physiotherapy student)

Knowledge and skills

Upon entering the PBL sessions, both male and female students are confronted with their own very limited knowledge compared to that of other members within the group. As a result they were motivated to study hard.

"I felt that I am empty while sharing factual knowledge with other members" (Male physiotherapy student)

"I was motivated to study hard by comparing others knowledge" (female student)

Both genders had equally experienced deficiencies in basic knowledge and in their ability to apply it. Deficiencies in basic science modules like anatomy and physiology were mentioned and confirmed by both genders.

"Anatomy is the very worst" (Male physiotherapy student)

"There is a lot I do not know yet. I find it very frustrating when discussing anatomy in the first session of PBL with current knowledge" (Female physiotherapy student)

Both male and female students also observed that some anatomy and physiology areas were difficult; they did understand those during the group discussion than from textbooks:

“On my first PBL session I didn’t remember the anatomy of the brachial plexus and during the second session discussion one member of our group explain it clearly with images. Within that discussion that knowledge was drilled into me, and then I could remember it even now what it is which I find difficult to learn from text books” (Female physiotherapy student)

In general both male and female students felt well prepared with regard to clinical skills in particular. However, it was confusing for the students when different hospitals and physiotherapists had different notions of treatment protocol. Therefore students recommended to schedule future PBL sessions within the clinical training under the guidance of clinical coordinators.

“But you can never do it right, because each physiotherapist has his own method and says: no, you have to do it this way. And next time, when you do it like that, another physiotherapist will tell you: no, you should do it this way” (Male physiotherapy student)

“It is better to conduct PBL sessions within the free time in clinical training under clinical coordinators. From that we can get an idea about their different treatment protocols” (Female physiotherapy student)

Female physiotherapy students felt their listening and presentation skills were developed with the PBL group work. Hence they stated that their respect for others views also improved. However male physiotherapy students valued the PBL sessions guidance on use of resources like books, journals and internet. Furthermore male students felt their communication skills were developed with PBL.

“I learnt to work as a group which I did not practice previously in relation to academic work. I helps me to listen and respect others views. That gave me a valuable base during my clinical rotation while handling patients.” (Female physiotherapy student)

“I have not read many books during the lecture time. But I had to go through several books, journal articles and internet to search new knowledge in PBL discussions.” (Male physiotherapy student)

“At the second session I had to present what I learnt, it improves my presentation skills by reducing fear to the audience which I had experienced previously” (Female physiotherapy student)

“I had to communicate in English while doing the PBL discussions and it encourage me to talk in English. Also improved my communication skills” (Male physiotherapy student)

Both male and female valued the PBL sessions, which helped them, refresh and integrate their prior knowledge and skills and fill the most important gaps in their knowledge, thereby improving their preparedness for the clinical training.

“I think lectures as well as PBL both should be in the curriculum. I do not think a lecture only is the ideal way to teach students” (Male physiotherapy student)

Clinical reasoning

One of the most dramatic differences with lecture method was the self-regulated learning which students had learned as separate entities within a time period, although the PBL targeted to improve student directed learning through critical thinking. This was experienced by both male and female students.

“During the lectures we learn everything in packages, you know: stretching, mobilization, orthopedic examination... And in clinical training you need to do mix up all these to make a treatment protocol to apply to a real patient. With the PBL case scenario all these were able to do by imagine the case as a real patient” (Female physiotherapy student)

“PBL helps me to think deeper on one area, which we do not practice previously during the lectures” (Male physiotherapy student)

The students said that use of real patient as the case scenario in the PBL sessions will be more important than just a case written in the piece of paper. Both genders express this idea as a recommendation for future PBL sessions and they also said that it will be very useful to conduct these PBL sessions at the clinical training setup.

“It is better to conduct the PBL session in the clinical setup. Because it will help us to experience the real clinical setup and reduce our fear to real patients and exams by improving our confidence to tackle the problems rise during the clinical training.” (Female physiotherapy student)

Learning

There was general agreement that motivation to study increased during PBL discussions. The main motivators were case scenario and group members. Both gender students enjoyed being able to apply their knowledge gain from PBL in their clinical training.

“I did not have time to study with the extra works. But I was really motivated to study within the group” (Male physiotherapy student)

“When other group members discuss the matters in the case then you do not want to make a fool of yourself. So yes, that motivated me to really study some subject matter” (Female physiotherapy student)

Most of the female physiotherapy students expressed that they learnt to share knowledge, manage time and respect to others views. Also male physiotherapy students accept those views as they felt more comfortable while working with female students at later PBL sessions as the female students attitudes were changed day by day.

“I felt I know something that I can share with others and it helps to improve their knowledge and my critical thinking capability also” (Male physiotherapy student)

“I learnt to work as a group which I did not practice previously in relation to academic work. It helps me to listen and respect others views. That gave me a valuable base during my clinical rotation while handling the patients.” (Female physiotherapy student)

“I learnt how to manage time with the limited time given to discuss the case scenario” (Male physiotherapy student)

Discussion

Both the quantitative measures of attitudes to PBL and the focus group discussion comments suggested that the students

were generally positive about their initial experience of PBL in musculoskeletal physiotherapy. The positive experience that students associated with PBL correspond quite closely to the features that Spencer and Jordan (12) identify as most conducive to adult learning. They describe adults as learning most from task that relate to the learners interest and goals, connect with previous knowledge focus on real world problem in a process that is participatory, reflective and based on mutual trust and respect.

Both male and female physiotherapy students were generally positive about the PBL experience, and there were no gender difference in total attitudes scores. However some gender differences emerged on specific attitude statements. Female students, according to the quantitative attitude ratings, were more interested and felt that PBL was more effective in fulfilling learning objectives. These quantitative findings were in some ways supported by the qualitative responses gain from the focus group discussion. Female students were more likely to refer to working with others as a group, and collaboration, when explaining what they had experience from the PBL. The value that female placed on the connected learning style was noted by several previous researches (13-15).

Belenky et al. (14) and Gawełek et al. (15) have noted that female do not always have a "voice" in class. But this was not compatible with our study findings which the quantitative evaluations provided evidence that male physiotherapy students felt indefinite to voice their opinion during the PBL group discussions due to the less number of male students within the group. Many PBL groups consisted of less number of males due to less number of male students in the participated physiotherapy student group. This was observed in all the physiotherapy undergraduate batches studying at the department of Physiotherapy, Faculty of Allied Health Sciences, University of Peradeniya, Sri Lanka.

Students felt well prepared for clinical practice and did not feel daunted by a large gap between lectures and clinical training with the experience they got from the PBL. Negative experiences were related to the increased workload, time consuming and perceived knowledge deficiencies. Although these feelings differed somewhat amongst the students, they were largely deemed to be a normal aspect of their first experience of PBL.

Third year physiotherapy students of both sexes were generally positive about their initial experience of problem-based learning during musculoskeletal module. Both male and female students valued the experiences that group work provided for developing and sharing knowledge, applying theory to practice, learning about each other's and respect others views. However the gender difference were limited by the small number of male students and further research into implement PBL to other modules is needed.

IV. ACKNOWLEDGEMENT

The author wants to express her gratitude to Dr. Kosala Marabe, Director, Medical Education Unit, Faculty of Medicine, University of Peradeniya for her enormous guidance. Also the thanks go to the students and the staff of the Department of

Physiotherapy, Faculty of Allied Health Sciences, University of Peradeniya who enthusiastically participated in the PBL sessions and focus group discussions.

REFERENCES

- [1] Chung EK, Hitchcock MA, A-Oh S, Han ER, Woo YJ. The relationship between student perception of tutor performance and tutors background in problem based learning in South Korea. *International Journal of medical Education*. 2011; 2: 7-11.
- [2] Neufeld V, Woodward C, MacLeod SM. The McMaster M.D. program: A case study of renewal in medical educations. *Academic Medicine* August, Invited Article. 1989; 423-432.
- [3] Hawthorne L, Minas H, Singh B. A case study in the globalization of medical education: Assisting overseas-born students at the University of Melbourne. *Medical Teacher*. 2004; 26 (2): 150-159.
- [4] Wood DF. Problem based learning. *British medical journal*. 2003; 326(7384): 328-330.
- [5] McParland M, Noble LM, Livingston G. The effectiveness of problem based learning compared to traditional teaching in undergraduate psychiatry. *Medical Education*, 2008; 38: 859-867.
- [6] Kingsburg MP, Cymn J. Problem based learning and large student group: mutually exclusive or comparable concepts- a pilot study. *BMC medical education*. 2008; 8: 35.
- [7] Klegeris A, Hurren H. Impact of problem based learning in a large classroom setting: student perception and problem solving skills. *Advance physiotherapy education*. 2011; 35(4): 408-415.
- [8] Reynolds F. Initial experience of inter professional problem based learning: A comparison of male and female students' view. *Journal of Inter professional case*. 2003; 17(1): 35-44.
- [9] Senevirathne RDA, Samarasekara DD, Karunathilake IM, Ponnalperuma GG. Students' perception of problem based learning in the medical curriculum of the Faculty of Medicine, University of Colombo. *Ann Acad Med Singapore*. 2001; 30: 379-81.
- [10] Jayarathne YGSW, Marambe KN. B. Sc. Nursing Students' Perception of Problem Based Learning in the Adult Nursing Module. *Proceeding of the Peradeniya University Research Sessions, Sri Lanka*. 2011; 16: 219.
- [11] Dissanayaka TD, Marambe KN, Liyanage E. Physiotherapy students' perception on problem based learning in Musculoskeletal physiotherapy. *Sri Lanka Journal of Bio-Medical Informatics*. 2012; 3(3): 76-82
- [12] Spencer J, Jordan K. Learner centred approaches in medical education. *British Medical Journal*. 1999; 318: 1280-1283.
- [13] Gilligan C. In a different voice: psychological theory and women's development. Cambridge, Massachusetts: Harvard University Press. 1982
- [14] Belenky MF, Clinchy BM, Goldberger NR, Tarul JM. Women's ways of knowing: the development of self, voice and mind. US: Basic Books. 1986
- [15] Gawełek MA, Mulqueen M, Tarule JM. Woman to women: understanding the needs of our female students. In *Gender & academe: feminist pedagogy and politics*. Eds. S. Munson- Deats & L. Tallent- Lenker. London: Rowman & Littlefield Publishers. 1994

AUTHORS

First Author – Thusharika Dilrukshi Dissanayaka, Department of Physiotherapy, Faculty of Allied Health Sciences, University of Peradeniya, Sri Lanka

Correspondence Author – Thusharika Dilrukshi Dissanayaka (BSc in physiotherapy), Department of Physiotherapy, Faculty of Allied Health Sciences, University of Peradeniya, Sri Lanka, Telephone: +94(0)716305852, Email addresses: thushfhs@yahoo.com

