ORIGINAL ARTICLE

PBL WRAP UP SESSIONS: AN APPROACH TO ENHANCE GENERIC SKILLS IN MEDICAL STUDENTS

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Background: Problem based learning (PBL) tutorials are being used in various medical schools world wide. Students' active participation is a must for the success of a teaching program. The objective of this study was to evaluate the effectiveness of PBL Wrap-up sessions in an integrated modular medical curriculum in enhancing the generic skills of medical students. **Methodology:** This study was conducted on 100 students of 2nd year MBBS who had been taking PBL sessions since 1½ years. Each session concluded with a wrap-up session where students demonstrated their acquired knowledge in the form of PowerPoint presentations, concept maps, skits, models etc. A questionnaire based survey was conducted to find out overall effectiveness of PBL sessions including wrap-up sessions. The questionnaire comprised of 15 questions. Students were asked to rate all those sessions on a likert scale of 1 to 5. **Results:** Student's responses showed 'Moderate improvement' in 8 out of 15 skills like communication with peers and teachers, presentation skills, self confidence, application of acquired knowledge, using internet and other resources and understanding group dynamics. Improvement in abilities like problem solving, time management, creativity, motivation in studies and self-directed learning was 'Minimal'. In addition students recommended continuation of PBL in the same way for future classes. **Conclusion:** PBL with wrap-up sessions contributed in bringing moderate enhancement of generic learning skills in students which were not properly addressed in the traditional curriculum and are therefore recommended for future implementation.

Keywords: PBL, learning skills, teaching techniques, Student-centred Classroom,

INTRODUCTION

Education should be aimed at preparing students to deal with problems in the future, training them to become self directed, lifelong learners and problem solvers, rather than passive recipients of information. In recent decades, many medical schools have revised their curricula and tried to overcome the known concern of dissociation of Basic Sciences and Clinical practice by developing horizontally and vertically integrated curricula.[1,2]

Problem based learning (PBL) tutorials are being used in various medical schools world wide. PBL is considered as an instructional methodology that may solve some of the important problems of medical education such as the difficulties met by students to apply the clinical knowledge in an actual clinical setting, the lack of integration of the knowledge acquired in the different subjects studied in the whole curriculum and the practice for continuing self directed education.[3] It also addresses the concerns of clerkship coordinators regarding graduates lacking problem solving skills, collaborative and leadership skills for working within a group, and communication skills.

Problem-based learning in medical education provides a learning environment in which students critically evaluate the problems and gain competence and knowledge through inquiry based learning. Traditionally problem based learning tutorials take place in two sessions spaced by 4–5 days. In the first session, groups of 8–10 students led by a facilitator are provided with PBL cases developed by multidisciplinary teams comprising basic and clinical science faculty. PBL cases are the clinical case studies (mostly descriptive, narrative type)[4] or other 'triggers' like newspaper clippings, videos or journal articles, from which students derive their own learning objectives. The group adjourns for independent, self study making use of various resource materials, i.e., internet, reference books, concerned faculty, before returning for group discussion session (session 2) where they share, integrate and enrich their attained knowledge. A typical PBL tutorial usually concludes in this session, but several variations exist which follow a similar series of steps.[5–8]

At Foundation University Medical College (FUMC), we started system based integrated modular teaching including PBL for 1st and 2nd year MBBS classes from Jan 2009. Students' active participation is a must for the success of a teaching program.[9–12] Therefore we brought about an innovation in the form of PBL wrap-up session. In each PBL block, after two regular sessions we carry out a PBL Wrap-up Session. In the wrap-up

session students present their understanding of the Learning Objectives of the PBL case in the form of PowerPoint presentations, models, concept maps, videos, skits etc in front of their class. A specimen of topics covered in one of the wrap-up session in 'Skin and Musculoskeletal Module' is shown in Table-1. The sessions are attended by most of the basic and clinical sciences faculty involved in the development and facilitation of that PBL case and students are provided with valuable feedback. Since this mode of running PBL with a detailed wrap-up session at the end is only practiced at FUMC in Pakistan, we investigated into the effectiveness of these wrap-up sessions in terms of enhancement of generic skills and learning attitudes of students and whether or not it should be continued for upcoming classes.

Table-1: Topics covered in a wrap up session by 1st year MBBS students through power point presentation in PBL block titled 'Ismail's tragedy' a part of skin, musculoskeletal module

Group 1	Muscles of shoulder joint & their nerve supply
Group 2	Movements around shoulder joint
Group 3	Excitation contraction coupling
Group 3	Radiography of shoulder joint
Group 4	Basis of muscular hypertrophy and atrophy
Group 5	Nerve injuries to upper limbs
Group 6	Breaking bad news to a patient
Group 7	Nerve conduction studies
Group 8	Electromyography
Group 9	Rehabilitation of patients
Group 10	Medico-legal aspects of driving without license

The objective of this study was to find out the effectiveness of PBL Wrap Up sessions for students of 2nd year, and to decide on its continuation on the basis of students' feedback.

METHODOLOGY

This study was carried out on second year MBBS students (Session 2009-2013) of Foundation University Medical College. This class of hundred students had been undertaking regular PBL sessions during their modules since first year MBBS. At foundation University Medical College we are practicing PBL on Maastricht's "seven jump" process with a little modification i.e. conducting a wrap up session at the end of the PBL

When study was started second year students had gone through seven PBL blocks in first year and five PBL blocks in 2nd year class. Each of these sessions concluded with a structured Wrap up Session.

In every PBL block near the end of the second session students are provided with diverse topics in groups, covering all the Learning Objectives of PBL case (including both must to know and nice to know learning objectives), to prepare for their wrap up sessions. They are given choices to demonstrate their acquired knowledge in the form of power point presentations, models, role plays or concept maps. Students could take help from PBL facilitators, various websites, books and subject specialists acting as resource persons. In the wrap up sessions students were encouraged to present their work as a group reflecting creative and analytical thinking, humour, computer literacy, time management & presentation skills. Feedback from peers, facilitators and subject specialists was invited for enhancement of students learning.

Class taking part in the study had been exposed to 12 PBL sessions. There were 100 students in the class varying in age from 19–22 years. We designed the study questionnaire to evaluate the effectiveness of wrap up sessions in enhancing the generic skills of students. The pilot questionnaire was run on a sample of 10 students. A few statements were found to be ambiguous and were corrected according to the student's feedback to make them easily understandable. Revised questionnaire was distributed in the class during self study time. The questionnaire comprised of 15 questions regarding acquisition of generic learning skills after PBL sessions (table 1). Students were asked to respond on a likert scale of 1 to 5 in the boxes provided where:

1=No change, 2=uncertain, 3=Minimum improvement, 4=Moderate improvement, 5=Definite Improvement

RESULTS

Survey response rate was 98%. Twenty-seven boys and 71 girls participated, 2 students were on leave. Averages and percentages for each response on individual survey question on given likert scale were determined along with overall percentage for each of the five response categories, from 98 students (Table-2, 3).

Students' response showed '**moderate improvement'** in 8 out of 15 skills like communication with peers and teachers, presentation skills, self confidence, application of acquired knowledge, using internet and other resources and understanding group dynamics. Improvement in abilities like problem solving, time management, creativity, motivation in studies and self directed learning was '**minimal'**. In addition 56% students recommended continuation of PBL sessions with wrap-ups for future classes.

Table-2: Average responses of individual questions on a likert scale of 1–5

S/No	Questions	Average Response
1	Do you feel your problem solving skills have improved after PBL sessions?	3.3
2	Do you feel your communication skills with peers have improved after PBL sessions?	4
3	Do you feel your communication skills with teachers have improved after PBL sessions?	4
4	Do you feel your interest / motivation in studies has increased?	3.4
5	Do you feel your Planning /Organizing skills have improved?	3.3
6	Do you find improvement in your time management skills?	3.3
7	Do you find improvement in your presentation skills?	4
8	Do you feel improvement in your self confidence?	4
9	Do you find improvement in application of knowledge after PBL sessions?	4
10	Do you find improvement in your creativity through PBL presentations?	3.4
11	Do you think your level of adaptation to formal rules and policies has improved?	3.1
12	Do you feel your ability of acquisition of knowledge from internet and other learning resources has increased?	4
13	Do you think your ability to work as team improved?	4
14	Do you find inculcation of self directed learning habits in your self?	3.2
15	Do you recommend PBL sessions for next class?	4

Table-3: Percentage (%) responses of individual questions in survey questionnaire on likert scale of 1–5

	Likert scale:	1	2	3	4	5
Q1	Do you feel your problem solving skills have improved after PBL sessions?	6.38	4.2	29	41.4	19
Q2	Do you feel your communication skills with peers have improved after PBL sessions?	3	7.2	16.4	42.2	30.9
Q3	Do you feel your communication skills with teachers have improved after PBL sessions?	2	8.1	14.2	43.8	31.6
Q4	Do you feel your interest / motivation in studies has increased?	11	12.2	20.2	37.7	18.3
Q5	Do you feel your Planning /Organizing skills have improved?	11.4	8.3	27	38.5	14.5
Q6	Do you find improvement in your time management skills?	11.2	10.2	28.5	34.6	15.3
Q7	Do you find improvement in your presentation skills?	4	4.1	18.7	45.8	27
Q8	Do you feel improvement in your self confidence?	8	3	12.2	47.9	28.5
Q9	Do you find improvement in application of knowledge after PBL sessions?	6	9.2	23.7	30.9	29.8
Q10	Do you find improvement in your creativity through PBL presentations?	9.1	11	27.5	35	17.3
Q11	Do you think your level of adaptation to formal rules and policies has improved?	16.4	5	29.8	37.1	9.2
Q12	Do you feel your ability of knowledge acquisition from internet and other learning resources has increased?	6.1	4	17.5	46.9	35
Q13	Do you think your ability to work as team improved?	7.1	13.4	20.4	35	21.4
Q14	Do you find inculcation of self directed learning habits in your self?	12.3	6	24.7	18.75	15.4
Q15	Do you recommend PBL sessions for next class?	8.3	9	10.4	35	56.2

1=No change, 2=uncertain, 3=Minimum improvement, 4=Moderate improvement, 5=Definite Improvement

Table-4: Summary (overall improvement)

SCALE	1=No change	2= Uncertain	3= Minimum Improvement	4= Moderate Improvement	5=Definite Improvement
Average No of Respondents/97	8	7.5	20.7	37	24
Total Percentage	8.3	7.7	21.3	38	24.7

DISCUSSION

Learning in small groups helps students not only in attainment of knowledge but it also improves certain generic skills like better communication skills, problem solving, responsibility for own learning, team work and respect for other group members.[6]

PBL can be considered as a small group learning methodology that combines the acquisition of knowledge with the improvement of generic skills and attitudes. Provision of clinically based scenarios as the stimulus for learning allows students to attain more knowledge resulting in better problem solving skills but also garners more interest in subject matter and makes them self directed learners.[7] PBL tutorials can be modified in several ways according to institutional circumstances and curricular need.

Literature review reveals that greater student participation is required for more active learning. Studies at other institutes worldwide claim that practicing innovation in teaching, particularly with student involvement has beneficial outcomes.[8–12] Gentry pinpoints capabilities like self confidence, desire to achieve, analytical skills and teamwork abilities, as intellectual skills that students attain through a problem based learning that are hardly visible in a traditional classroom format.[13] This concluding wrap-up session activity for students was designed to improve their subject knowledge and overall professional grooming/ competency, which is evident from students feedback where 73% students felt that their communication skills with peers and teachers had moderately improved whereas 41% students felt that their problem solving capability was also moderately improved. Almost 30% students felt definite improvement in their presentation skills, self confidence and internet operating skills. Fifty-six percent students were of definite view that these sessions should be continued for the future classes. Overall, 38% of our student body communicated an enhancement in their generic skills and learning

behaviour after having gone through PBL with wrap up sessions. Our students' achievement may be attributed to their active participation as also suggested by students' feedback from University of KwaZulu-Natal, South Africa where gastrointestinal and endocrine pathophysiology was taught in an innovative way to improve understanding of the subject. Their students were reviewed on the basis of presentations, posters, written assignments and role plays. Over 50% of this study respondents indicated that presentations not only helped in their understanding but also encouraged them to use internet sites and reference books. They also felt more responsible for their learning. The innovative group activity had improved their social interaction, presentation and peer review skills.[14] Another result from a study by Prince et al. with 1,159 Dutch students from five medical schools showed that 83% of PBL graduates were satisfied with their training in communication skills like interaction with patients or other health professionals compared to 41% of non-PBL graduates.[15] There are number of studies and reports which suggest advantages of PBL curricula which are summarized in a review article by Koh *et al* in 2008. They deduced that PBL approach of teaching promoted social, emotional and cognitive competencies required by physicians.[16–18]

CONCLUSION

We advocate acquisition of contextual knowledge as well as development of professional demeanour in our students. The results of twelve PBL tutorials with student centred concluding wrap-up sessions were encouraging. Students felt more confident in their overall learning abilities and attitudes and more than 50% strongly recommended them for future classes.

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