



WWJMRD 2017; 3(8): 75-78
www.wwjmr.com
International Journal
Peer Reviewed Journal
Refereed Journal
Indexed Journal
UGC Approved Journal
Impact Factor MJIF: 4.25
e-ISSN: 2454-6615

BGS Chandramouli
Final MBBS Part 1 Medical
student, RIMS Medical
College, Ongole, NTR
University of Health Sciences,
Andhra Pradesh, India

M. Siva Durga Prasad Nayak
Tutor, Department of
Community Medicine, RIMS
Medical College, Ongole, NTR
University of Health Sciences,
Andhra Pradesh, India

K. Valleswary
Professor and Head,
Department of Community
medicine, RIMS Medical
College, Ongole, NTR
University of Health Sciences,
Andhra Pradesh, India

Correspondence:
M. Siva Durga Prasad Nayak
Tutor, Department of
Community Medicine, RIMS
Medical College, Ongole, NTR
University of Health Sciences,
Andhra Pradesh, India

A pilot study on Problem based learning to assess its usefulness in integration of preclinical and para clinical subject's knowledge with clinical subjects

BGS Chandramouli, M. Siva Durga Prasad Nayak, K. Valleswary

Abstract

Medical graduation is a very lengthy course which includes learning of pre-clinical, para clinical & clinical subjects. But many medical students opined that, they didn't understand the link between Preclinical & para clinical subjects with clinical subjects. Problem based learning (PBL) technique is an innovative tool to resolve the problem. Based on this background we conducted a study with an aim to assess the usefulness of PBL technique. Materials and Methods: The current study was an experimental pilot study conducted among the 4th semester MBBS students of RIMS Medical College, Ongole during the month of June 2016. A total of 20 students were selected & grouped in to 2 groups by randomization. Traditional class was taken for one group & Problem based learning technique was applied on another group. Pre-session knowledge and post-session knowledge of students were assessed with a structured questionnaire which includes both cognitive & affective domain questions. Data was analysed with the help of SPSS-21 trial version. Results: The average marks obtained by the students in pre-session & post session evaluation were 10 ± 1.86 & 10.96 ± 2.39 respectively out of 20 marks. The average marks obtained by the students in post session evaluation in traditional class group & PBL class group were 10.1 ± 1.85 & 11.8 ± 2.65 respectively. All the students in PBL class group stated that overall satisfaction was good & only 60% students in traditional class group stated that overall satisfaction was good. Conclusion: PBL class group students scored more marks in post session evaluation and were more satisfied with teaching method when compared to traditional class group students.

Keywords: Integrated teaching, Medical Education, Medical students, Problem Based Learning, Students satisfaction

Introduction

Medical graduation is a very lengthy course with five and half year's duration. It includes learning of pre-clinical subjects, para clinical subjects and clinical subjects in nine semesters and one year compulsory rotatory internship period. All the medical students will study preclinical subjects like Anatomy, Physiology and Biochemistry during their 1st year of MBBS course. Later they will learn para clinical subjects viz, Microbiology, Pharmacology, pathology and Forensic Medicine during 2nd MBBS period. In their final MBBS course they will study clinical subjects such as ENT, Ophthalmology, SPM, Medicine, Surgery, Gynaecology, Paediatrics & orthopaedics etc.

But many medical students opined that, they didn't understand the link between Preclinical and para clinical subjects with clinical subjects. Some of the students also opined that, the advancement in the clinical subjects were not matched with knowledge acquired by them when studied pre and para clinical subjects. (1)

Problem based learning technique is an innovative teaching method to resolve the problem faced by students in their transition period from pre-clinical to clinical subjects. It encourages the students to find the answers to their doubts and teaches them to draw conclusion for a given problem. It integrates all the subjects associated with the given problem.

PBL is an instructional learner centred approach that empowers learners to conduct research, integrate theory and practice, and apply knowledge and skills to develop a viable solution to a defined problem. (2)

Based on this background we conducted a pilot study with an aim to assess the usefulness of Problem based learning technique for integrating preclinical and para clinical subjects knowledge with clinical knowledge.

Materials and Methods

The current study was an experimental pilot study conducted among the 4th semester MBBS students of RIMS Medical College, Ongole, Prakasham District of Andhra Pradesh during the month of June 2016. A prior consent was taken from Principal. A total of 20 students who were willing to participate were selected. They were grouped in to 2 different groups by randomization technique. The knowledge of the both group's students was assessed with a structured questionnaire. The questionnaire had a set of ten cognitive domain questions, a set of ten affective domain questions and asset of five questions to tell about their opinion about the class. Traditional class was taken on Diabetes for one group. Problem based learning technique was applied on another group. Figure no.1 showed the flow of events in study the current study.

Procedure of PBL technique: Figure no.2 depicted the Procedure of Problem based learning technique used in the study. A case of Diabetic ketoacidosis was given to the students group and asked them to tell the differential diagnosis. Listed out all the diagnoses told by the student s and ranked them. Facilitated them to draw one final conclusion from the listed diagnoses. Gave them additional information about the case and facilitated them to draw one final conclusion. Later asked them to write notes on the anatomical deviations, physiological dysfunctions, biochemical changes, pathology of diabetes and treatment for the diabetes. We gave subject materials and encouraged them for group discussions. Finally we evaluated the knowledge acquired by the students.

The knowledge acquired by both group students after teaching sessions was assessed with same structured questionnaire. Student's opinion about the teaching method was also recorded. Data was analysed with the help of SPSS-21 trial version and Student-t test was used to assess the strength of significance in the results.

Results

Table no.1 depicted the marks obtained by the students in both pre-session and post session evaluation about Diabetes. Total marks for each exam was for 20 marks which include 10 marks for cognitive domain and 10 marks for affective domain.

The average overall marks obtained by the students in pre-session evaluation was 10 ± 1.86 with a range from 6 to 13 marks. The mean cognitive and affective domain marks in pre-session were 6.8 ± 1.28 and 3.2 ± 1.19 respectively. After attending to a teaching session, the mean overall marks was raised to 10.96 ± 2.39 . The average cognitive and affective domain marks in post-session evaluation were 7.3 ± 1.26 and 3.6 ± 1.93 respectively.

In post-session evaluation, the overall marks average in traditional class group was 10.1 ± 1.85 . The mean cognitive and affective domain marks in post-session evaluation in this group were 6.9 ± 1.10 and 3.2 ± 1.22 respectively. In post-session evaluation, the overall marks average in PBL class group was 11.8 ± 2.65 . The mean cognitive and affective domain marks in post-session evaluation in this group were 7.8 ± 1.31 and 4 ± 2.44 respectively.

The marks scored by the students in Overall marks, cognitive and affective domains marks in PBL class group were more when compared to the marks scored by the students in traditional class group. But the differences were not statistically significant. (Unpaired Student-t test Overall marks $t=1.659$ $p=0.114$. Cognitive domain marks $t=1.659$, $p=0.115$. Affective domain marks $t= 0.923$, $p=0.372$.)

Figure no.3 depicted the opinion of students about the teaching methods used in the study. All the students in PBL class group were opined that, student's role was active, interaction with teacher was present, class was interesting and useful and overall satisfaction was good. Where as in Traditional class group only 40% of students stated that student's role was active and 60% students opined that interaction with teacher was present in classes and overall satisfaction was good. At the same time all the students in Traditional class group also stated that class was interesting and useful.

Discussion

The goal of medical education is to create doctors with full knowledge about the disease and it's underlying causative mechanism. Quarks will treat the disease based on the symptoms only. They don't know about the causative factors of the disease and further complications of the disease. That underlying knowledge can be obtained only by learning the pre-clinical and para-clinical subjects. But because of lack of integration between the knowledge of pre and para clinical subjects with clinical subjects, medical students getting more confusion while dealing the clinical cases. Studies conducted by Kausar Abid et al., Paul Bradley and Karren Mattick, and G Gunner et al., also stressed the importance of integration of pre and para clinical subjects with clinical subjects in medical education (1,3,4).

In the current study the study participants already had some knowledge about Diabetes. They already completed 3 semesters and learned about the Diabetes in the previous semesters in various subjects' classes. Hence they got average overall marks of 10 ± 1.86 in pre-session evaluation. But after attending to the class the average overall marks were improved to 10.96 ± 2.39 . Both cognitive and affective domain marks were also improved by mere attending to the class.

In post-session evaluation the average marks of overall marks, cognitive and affective domain marks obtained by the students in traditional class group were not much higher than the marks obtained by the students in pre-session evaluation. At the same time PBL class group students showed much improvement in overall marks, cognitive and affective domain marks when compared to pre-session evaluation.

Internal comparison among the two groups revealed that, the average marks obtained by PBL class group students were higher than the average marks obtained by Traditional class group. But the difference had no statistical significance probably because of less number of study participants. It proved that, integrated teaching will improve the students' performance both in cognitive and affective domain scores. Various studies conducted on Problem based learning also reported that, Problem based learning technique is a better tool than the traditional teaching methods in integrative teaching of different subjects (5,6,7,8,9).

Students also opined that, student’s role was active and interaction with teacher was present in PBL classes and overall satisfaction was good in PBL classes. This finding was consistent with Kauser Abid et al., study. They also reported that, students welcomed integrated teaching like

Problem Based learning right from the start of their medical schools (1). PBA smit study also reported that doctors were more satisfied with PBL technique (9).

Tables and Figures

Table 1: Distribution of marks obtained by the students in Pre-session and post-session evaluation

| Session | Marks (Total marks) | N | Min | Max | Mean ± SD |
|--------------------------------|-----------------------|----|-----|-----|------------|
| Pre-session marks | Overall marks (20) | 20 | 6 | 13 | 10±1.86 |
| | Cognitive domain (10) | 20 | 5 | 9 | 6.8±1.28 |
| | Affective domain (10) | 20 | 1 | 5 | 3.2±1.19 |
| Post session marks | Overall marks (20) | 20 | 7 | 16 | 10.96±2.39 |
| | Cognitive domain (10) | 20 | 5 | 10 | 7.3±1.26 |
| | Affective domain (10) | 20 | 0 | 8 | 3.6±1.93 |
| Post session Traditional class | Overall marks (20) | 10 | 8 | 14 | 10.1±1.85 |
| | Cognitive domain (10) | 10 | 5 | 9 | 6.9 ± 1.10 |
| | Affective domain (10) | 10 | 1 | 5 | 3.2 ± 1.22 |
| Post session PBL class | Overall marks (20) | 10 | 7 | 16 | 11.8±2.65 |
| | Cognitive domain (10) | 10 | 6 | 10 | 7.8 ± 1.31 |
| | Affective domain (10) | 10 | 0 | 8 | 4 ± 2.44 |

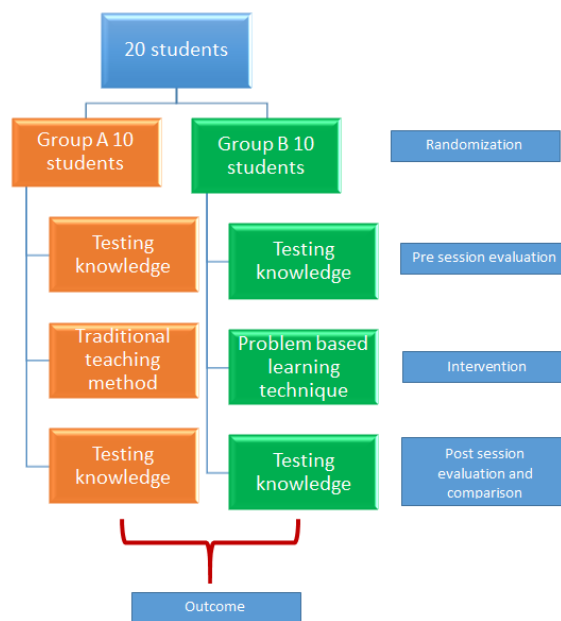


Fig. 1: Study Procedure

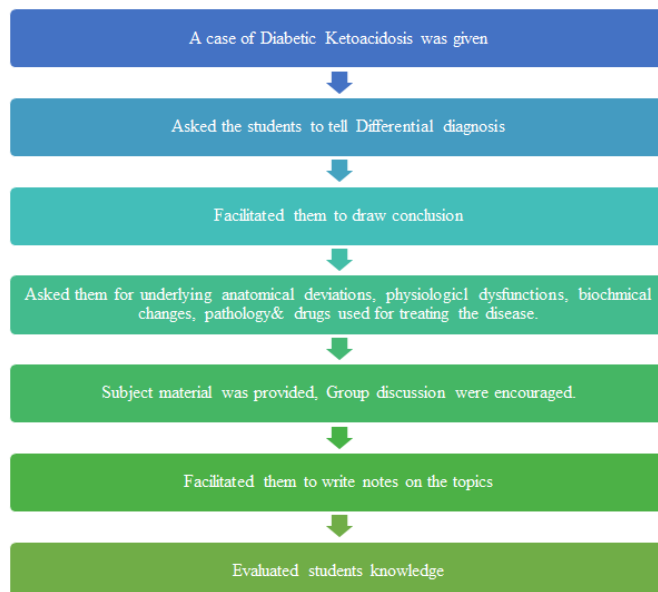


Fig. 2: Procedure of Problem based learning technique

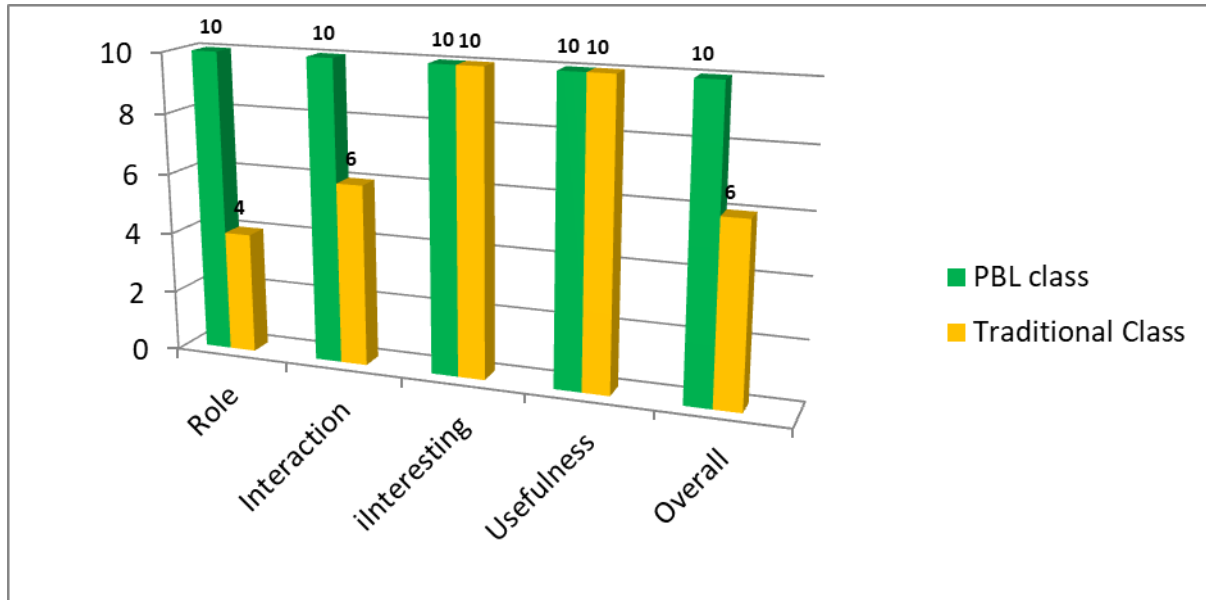


Fig. 3: Opinion of students regarding the traditional and Problem based learning teaching methods

Conclusion: Problem based learning technique improved the knowledge of students in both cognitive and affective domains when compared to traditional teaching method. Students also satisfied more with Problem based learning teaching method rather than with Traditional teaching method.

Limitations: Teaching capability of teacher in Traditional class and Learning capability and knowledge seeking behaviour of students in Problem based learning classes were the limitations of the study. Problem based learning technique is suitable for small group of students consists of 6-10 students only, hence the study was conducted in a small number of students. Larger studies and more number of studies are needed for generalizing the results obtained in the study.

Acknowledgment: We are very thankful to the participants of the study for their valuable support. We are very grateful to the Principal of RIMS Medical College, Ongole for her valuable support in conducting study.

References

1. Kauser Abid, Abdul Majid, Farzana Majeed. Stepping towards an Integrated Medical curriculam: A journey from Talent to skills – A pilot study. Journal of Islamabad Medical & Dental College(JIMDC);2015:4(2):81-84
2. John R.Savery. Overview of Problem Based Learning: Definitions and Distinctions. Essential readings in problem-based learning: Exploring and extending the legacy of Howard S. Barrows. West Lafayette:Purdue University Press.;2015
3. Paul Bradley and Karren Mattick. Integration of Basic and Clinical Sciences – AMEE 2008
4. G Guner, M Sakizil, I Erdamar, B Onuvural and K Ceryan. Preclinical Medical Training Using the Integrated system in Dokuz Eylul University Medical school. Biochemical Education;1995:23(1):21-24
5. David T.A Vernon, Robert L. Blake. Does Problem Based learning work? A meta-analysis of evaluative research. Academic Medicine;July 1993;68(7):550-563
6. Geoffray R Norman, Henk G Smidt. Effectiveness of problem-based learning curricula:theory, practice and paper darts. MEDICAL EDUCATION 2000;34:721-728
7. Hmelo-Silver CE. Problem-based learning: what and how do students learn? Educ Psychol Rev 2004;16:235-266
8. Barrows HTamblyn R. Problem-based learning: An Approach to Medical Education. Medical Education Volume 1. New York: Springer Pub. Co.; 1980.
9. Smits P B A, Verbeek J H A M, de Buissonjé C D. Problem based learning in continuing medical education: a review of controlled evaluation studies BMJ 2002; 324 :153