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Problem Based Learning in I MBBS Anatomy

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Abstract: *Problem Based Learning (PBL) is an instructional approach to learning where students tackle problems in small groups under the supervision of a facilitator. The main objective is to introduce PBL to I MBBS students in Anatomy, enumerate learning outcomes and compare with Traditional Didactic lecture (TDL). 80 students were divided into two groups A & B randomly. Two topics were chosen. Under each topic one group was educated by PBL & other group by TDL acting as control. Later on results were analysed by Peer reviewed Multiple Choice Questions and compared. Feedback from students was taken in the form of questionnaire. Mean±SD values were higher with PBL method of study. The P values in Topic 1 and 2 are statistically highly significant (p<0.0001). 79% of the student's prefered PBL in their feedback forms. PBL is a better mode of teaching when compared to TDL in anatomy for certain clinically relevant topics which enhances self directed learning, Problem solving attitude and analytical skills which is statistically significant.*

Key Words: *Comparitive study, Mean, Problem based learning in anatomy, P value, Standard deviation, Traditional Didactic Lecture*

I. Introduction

The quality of medical education has attracted considerable interest during the last few years. Emerging changes in today's society and lifestyle may require a revision in the present system of education in such a way that students of health profession are trained to deal with problems in the future, preparing themselves to become active, independent learners and problem solvers rather than more or less passive recipients of information. It gives a holistic approach with a good understanding of the regions of the body and the mutual relationship of the organs and systems.

Problem Based Learning (PBL) involves students working self-directed usually in small groups using a clinical problem as the driver to seek knowledge [1]. In such an approach Professors serve as facilitators who attempt to guide students to take responsibility for their learning [2]. This approach enables students to explore problems and engage directly with alternate views likely to be held within the group. Such approaches are believed to provide better integration of knowledge [3] as well as fostering the skills of academic self-efficacy and problem solving [4]. Indeed most of the focus on the benefits regarding PBL relating to anatomy has been on the attributes it develops such as life-long learning skills [5] and there has been little focus on actual attainment of knowledge.

The exposure of students to such a method of study in a budding institute from Telangana was the need for study. Problem Based Learning is considered as an instructional approach that may solve some of the important problems of medical education such as the difficulties encountered by students to use the knowledge gained, lack of integration of knowledge acquired in different disciplines and the need for continuing education.

II. Objectives

The main objectives of the study are
*****Introduction of PBL to I MBBS students in anatomy.
*Enumerate learning outcomes.
*Comparision of PBL with regular didactic lecture.

III. Methodology

Institutional Ethical Committee of Government Medical College, Nizamabad permission was taken prior to implementation of the study and written Informed consent from students of I MBBS (2014-15 batch) was also taken. 80 students were divided into two groups Batch A & Batch B randomly. Two topics of study were chosen. Under each topic one group was educated by PBL & other group by Traditional Didactic Lecture. At the end both the groups were exposed to PBL.

TABLE 1

	TOPIC 1	TOPIC 2
BATCH A	Problem Based Learning	Traditional Didactic Lecture
BATCH B	Traditional Didactic Lecture	Problem Based Learning

Later on results were analysed by MCQ's and compared. Later on Feedback from students was taken in the questionnaire form and analysed.

IV. Results

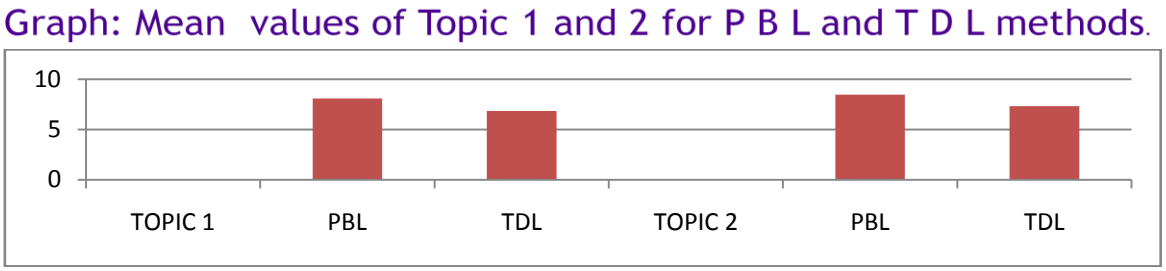
According to graph the mean and SD values in Topic 1 Fertilization with PBL method is 8.07± 0.73 compared from TDL 6.85 ± 1.27 ; in Topic 2 Gametogenesis with PBL is 8.47 ± 1.32 where as in TDL 7.32 ± 1.35 depicted in table 2 & 3. The P values in Topic 1 and 2 are statistically highly significant (p<0.0001) .

Table 2 Topic 1

METHOD	MEAN	STANDARD DEVIATION	P VALUE
Problem based learning	8.075	0.73	P< 0.0001
Traditional didactic lecture	6.85	1.27	

Table 3 Topic 2

METHOD	MEAN	STANDARD DEVIATION	P VALUE
Problem based learning	8.475	1.32	P<0.0002
Traditional didactic lecture	7.325	1.35	



The student's perception towards the PBL method with the help of Likert scale is represented in table II. 79% of the students preferred PBL method of teaching.

TABLE 4: Students Perception For PBL

S.No	ITEM	< Average	Average	Good	Very good	Excellent
1	Explained important concepts	7	6	21	26	40
2	Stimulated interest	4	6	14	18	58
3	Was interactive	5	7	20	17	51
4	Were queries explained	0	5	10	25	60
5	Early clinical exposure	4	10	17	22	47

V. Discussion

The PBL method is one of the novel methods in education. Some of the conventional schools in India are incorporating components of PBL in their existing conventional curricula [6]. Problem-based learning uses real or simulated case scenarios and so is close to experimental learning. It creates the feel of a real situation so that students engage with the case if they are learning from their own experience, developing critical thinking skills as suggested by other researchers [7,8,9]. Problem-based learning also enables students to have a planned experience of cooperation, communication [10] and teamwork through small group work. Problem-based learning encourages students to actively engage with their learning through questioning, discussing and researching the problem in hand. These skills prepare students to be lifelong learners [11]. Problem-based learning also encourages reflection.

Findings of this study support evaluative literature related to PBL and deep learning as students valued the connection between theory and practice and showed improved understanding and retention of content. This is consistent with the deep learning associated with PBL reported previously[12,13,14]. According to our results, the mean score on tests which had been taught to students traditionally and via PBL demonstrate that the PBL method was probably more effective in helping students to learn the material and gain higher scores. The review of other studies demonstrated that PBL resulted in a greater score in anatomy exams in four studies [15,16,17,18]. The differences can also be observed in the mean scores of students in the examinations after traditional teaching and PBL (Graph). This demonstrates that the median and the mean obtained for these methods are in favour of PBL. These findings are comparable to those of other authors [19,20,21,22].

The p values obtained from our questionnaires demonstrated that the PBL improved student's perception regarding their anatomical knowledge, which has also been reported by others [23]. Feedback from students commented that PBL enhanced their understanding of anatomy and motivated them to read more. PBL

enabled them to remember the subject better and helped to integrate their knowledge. All these outcomes are due to active involvement of students and motivation in teaching learning process in PBL. Most of the students expressed desire & a need to continue PBL sessions in future also. On contrary they don't want to replace all the lectures by PBL but suggested a hybrid method. The problem that surfaced during the study as per students perception was that PBL is time consuming which was also felt by faculty.

VI. Conclusion

PBL drives student centered learning, incorporates integration and practical application of the knowledge of basic science, simultaneously helping students to become lifelong learner. It helps in development of self centered learning, problem solving attitude and analytical skills. PBL is a better mode of teaching when compared to traditional didactic lecture in anatomy. This can be done for certain clinically relevant topics. The study in future will be extended to most of the curriculum in anatomy and analysed.

Limitations of the Study

Only small group can be taught. Requires trained facilitators. Time is a major constaint. Student's attention has to be maintained for a long time. Only clinically relevant topics can be taught through PBL (prior basic knowledge is necessary for the student).

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References

[1] Colliver, J. (2000). Effectiveness of problem-based learning curricula: research and theory. Academic Medicine,75(3), 259-266.
[2] Slavich, G.M., &Zimbardo, P.G. (2012). Transformation teaching: Theoretical underpinnings, basic principles, and core methods. Educational Psychology Reviews,24(4), 569-608.
[3] Prince, K.J.A.H., van Mameren, H., Hylkema, N., Drukker, J., Scherpbier, A.J.J.A., &van der Vleuten, C.P.M. (2003). Does problem-based learning lead to deficiencies in basic science knowledge? An empirical case on anatomy. Medical Education, 37(1), 15-21.
[4] Koh, G.C-H., Khoo, H.E., Wong, M.L., &Koh, D. (2008). The effects of problem-based learning during medical school on physician competency: a systematic review. Canadian Medical Association Journal,178(1), 34-41.
[5] Dolmans, D.H.J.M., de Grave, W., Wolfhagan, I.H.A.P. (2005). Problem-based learning: future challenges for educational practice and research. Medical Education,39(7), 732-741.
[6] Das N, Deepak KK , Sabherwal U , Khan ZH , Raju KR. Problem based module for the Integrated learning of anatomy, biochemistry and physiology for undergraduate medical training at all India Institute of MedicalSciences, New Delhi, India. Trends Med. Educ. 1997; 4: 10–17.
[7] Hodges, H.F. (2011). Preparing New Nurses withComplexity Science and Problem-Based Learning.Journal of Nursing Education, 50, 7-13.
[8] Magnussen, L., Ishida, D., & Itano, J. (2000). The impact ofthe use of inquiry-based learning as a teachingmethodology on the development of critical thinking.Journal of Nursing Education, 39, 360-364. Data accessed September 10, 2012
[9] Oja, K.J. (2011). Using Problem-Based Learning in theClinical Setting to Improve Nursing Students' Critical Thinking: An Evidence Review. Journal of NursingEducation, 50, 145-151.
[10] Utsun, B. (2006). Communication Skills Training as Part of a Problem-Based Learning Curriculum. Journal of Nursing Education, 45, 421-424.
[11] Kocaman, G., Dicle, A., & Ugur, A. (2009). A LongitudinalAnalysis of the Self-Directed Learning Readiness Level of Nursing Students Enrolled in a Problem-Based Curriculum. Journal of Nursing Education, 48, 286-290.
[12] Abraham, R.R., Vinod, P., Kamath, M.G., Asha, K., &Ramnarayan, K. (2008). Learning approaches of undergraduate medical students to physiology in a non-PBL- and partially PBL-oriented curriculum. Advances in Physiology Education, 32, 35-37.
[13] Fyrenius, A., Silen, C., & Wirell, S. (2007). Students'conceptions of underlying principles in medical physiology: an interview study of medical students' understanding in a PBL curriculum. Advances in Physiology Education, 3, 364-369
[14] Nayak, S., Ramnarayan, K., Somayaji, N., & Bairy, KL.(2006). Teaching anatomy in a problem-based learning(PBL) curriculum. Neuroanatomy, 5, 2- 3.
[15] Khaki, A.A., Tubbs, R.S., Zarrintan, S., Khamnei, H.J., Shoja, M.M., Sadeghi, H., &Ahmadi, M. (2007). The first year medical students' perception of and satisfaction from problem-based learning compared to traditional teaching in gross anatomy: Introducing problem-based anatomy into a traditional curriculum in Iran. International Journal of Health Sciences, 1(1), 113-118.
[16] Cowan, M., Arain, N.N., Assale, T.S.A., Assi, A.H., Albar, R.A.A., &Ganguly, P.K. (2010). Student-centred integrated anatomy resource sessions at Alfaisal University. Anatomical Sciences Education, 3(5), 272-275.
[17] Loffler, S., Feja, C., Widman, J., Claus, I., Von Lindeman, K., &Eisnach, K. (2011). Interactive versus reproductive learning, a comparison of medical school graduates with participants of a postgraduate CPD session. GMS Zeitschrift fur Medizinische Ausbildung, 28(4), Doc 57.
[18] Vasan, N.S., DeFouw, D.O., &Compton, S. (2011). Team-based learning in anatomy: An efficient, effective, and economical strategy. Anatomical Sciences Education, 4(6), 333-339.
[19] Norman GR, Schmidt HG. 1992. Thepsychological basis of problem-basedlearning: a review of the evidence. Acad Med 67:557-565.
[20] Vernon DTA, Blake RL. 1993. Doesproblem-based learning work? A Metaanalysis of evaluative research. Acad Med68:550-65.
[21] Verhoeven BH, Verwijnen GM, Scherpbier AJJA, Holdrinet RSG, Oeseburg B, Bulte JA, Van der Vleuten CPM. 1998. An analysis of progress test results of PBL and non-PBL students. Medical Teacher 20:310-316.

[22] Ganske I, Su T, Loukas M, Shaffer K. 2006.Teaching methods in anatomy courses in north American medical schools: the role of radiology. Acad Radiol 13:1038-1046.
[23] Musal B, Gursel Y, Taskiran H.C, Ozan S,Tuna A. 2004. Perceptions of first and third year medical students on self-study and reporting processes of problem-based learning. BMC Med Educ 4:16.