Original Article

Innovation in Teaching Strategies for Undergraduate Medical Students at Isra University Hyderabad, Sindh-Pakistan

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ABSTRACT

OBJECTIVE: To evaluate the academic performance and to assess the experience of 4th year MBBS students before and after introduction of Problem Based Learning Curriculum (PBLC).
STUDY DESIGN: A comparative study.
PLACE AND DURATION OF STUDY: Academic session of 2006-2007 at Isra University Hyderabad, Sindh-Pakistan.
SUBJECTS AND METHODS: One-hundred and nine students of 4th year MBBS were taught Obstetrics and Gynecology by Traditional curriculum (TC) and Problem Based Curriculum; both for 150 hours. Their academic performance was evaluated by 06 continuous assessment tests (CATs) scheduled fortnightly. At the end of every curriculum their experiences were recorded on a questionnaire. Data were analyzed and Chi- square test and student's t-test were used to obtain significant values.
RESULTS: Study detected statistically significant difference of class test attendance ($p<0.001$) and marks obtained in each test ($p<0.001$) after PBLC and TC. Students liked PBLC more and their experience was excellent and good ($p<0.001$) with PBLC than with TC. Classroom attendance was not different in both curriculum as 75% of attendance was required by student to be eligible to appear in the end-semester examination as per rules of examination department of the university.
CONCLUSION: PBLC introduced in the 4th year MBBS at Isra University with traditional curriculum significantly improves the academic performance of students. Students' experience of PBLC was good and they liked it because of more understanding of the subject, feeling of independence and confident.

KEY WORD: Problem based learning, Traditional curriculum, Problem based curriculum, academic performance, continuous assessment tests.

INTRODUCTION

"Health for all" was adapted in 1977 and launched at the Alma Ata Conference in 1978 to underline the facts that large number of people and even whole countries were not enjoying an acceptable standard of health.[1] In order to achieve the goal of "Health for all" and to improve the health standards, WHO emphasized that medical schools must provide physicians who are familiar with the community and its health problems, their prevention and solutions. Then their curriculum must be expedient to this goal[2, 3]. The fact that medical students must be educated considering the health needs of the population in which they live.[4] In traditional curriculum model of medical education, the teacher's role is to establish what students must learn, to transmit information that was considered relevant, and to evaluate student's capacities to retain and reproduce the information presented. In this model, medical practice is detached from scientific practice, thereby promoting fragmentation of knowledge and neglect of the psychosocial and cultural aspects of medical activities.[5] This teaching approach has been criticized for the excess value given to the content and for its low efficacy, which brings about the subsequent need for re-qualification. Globally over the last decades medical education and its learning strategies are being made more prone to problem solving in order to produce better clinicians. Cooperation in the selection of the content, production of knowledge and development is lacking at present in most medical colleges in Pakistan including Isra University. Students are not prepared at the end of their posting to deal with the clinical problems in community and professional competence is lacking. This is assessed by patient's survey, at the end of rotation examination and literature review.[6-10] Present teaching system gives less opportunity to students to discuss and solve the practical patient's problem; therefore courses must involve students in practical activities from the beginning and promote active integration between health care service users and professionals, using methodology which reinforces student's active

participation in knowledge building; thereby bridging the gape between academic medical learning and social needs. Problem based learning (PBL) is an innovative and challenging approach to medical education. PBL emphasizes the application of knowledge and skills to the solution of clinical problem. The students meet in a small group led by facilitator and discuss carefully designed cases.[11] It has been found that PBL is more nurturing and enjoyable, these graduates perform better in clinical examination and faculty enjoy teaching using PBL.[12] Except for the few medical colleges the medical curriculum has not changed in Pakistan since its inception and that is reflected in the form of inadequacies in the health delivery system. There is a dire need for creating relevance between medical education/training and medical practice in order to introduce an affective health care system.[13] Considering the above facts to make learning more effective, self directed and to encourage team work, problem based learning curriculum was introduced along with traditionally existing teaching programme in the Department of Obstetrics and Gynecology at Isra University Hyderabad. The aim of this study was to evaluate the academic performance and to assess the experiences of 4th year medical undergraduates before and after introduction of PBL in the curriculum.

SUBJECT AND METHODS

This comparative study was conducted in the Department of Obstetrics and Gynecology at Isra University. At Isra University Obstetrics and Gynecology is taught during fourth year MBBS. In 2006-2007 batch, 109 students were posted in the department for 12 weeks. At the beginning of posting students were given syllabus and details of teaching program which was approved by Head of Department and Dean of Faculty. Teaching strategy was fully explained to them and verbal consent was taken from all students. Before the start of project, orientation meetings were arranged for facilitators and the videos on PBL were visualized to make them understand the problem based learning. Tutours guide was made to guide the facilitators about learning objectives, which also contained essential information about issues in each problem. Initially for 6 weeks (150 hours) students were taught Obstetrics and Gynecology by traditional curriculum, that is they were given lectures and tutorials followed by clinical teaching in the wards, out patients department and operation theater. For next 6 weeks (150 hours) PBL was introduced in the curriculum, larger groups were divided into smaller groups of 08-10 students. PBL sessions were conducted by Assistant Professors and Senior Registrars. Problems were developed with the involvement of whole faculty from Professor to Senior Registrars. Different scenarios were developed for different groups of students to avoid mingling amongst group and ensure independent teaching with each group. Two problems/week were given to students and majority of teaching in lectures/wards/OPD was related to these problems. For each problem schemata was created to provide navigational maps to assist students in teaching the relevant knowledge as well as facilitating a forward reasoning approach. The course contents for two curricula were different but the learning objectives were almost same to make them comparable with regards to the level of complexity. Academic performance of students was assessed by continuous assessment tests which were conducted fortnightly. These tests were of 60 minuets duration each and comprising of 20 choose one-best type questions, 5 short assay questions and 1 long assay question. Ten OSCE stations where their clinical skills were assessed. The course of the test included the topics taught during that period. A standardized questionnaire was given to all students after finishing with each curriculum and then results were compared on SPSS version 11 regarding their performance, experience of both curriculum and liking for PBLC. Chi-square test and Student's t-test were used to get significant values of variables.

RESULTS

This study has shown that students of PBL curriculum have positive attitude towards the PBL curriculum than to the traditional curriculum. The academic performance of students after PBL curriculum was better than after traditional curriculum. Their class test performance was significantly high after learning with PBL curriculum in comparison of TC ($P<0.001$). After having PBL classes students reported significantly greater autonomy and tend to use more in-depth approach of learning than they do in traditional curriculum. Majority of students rated the experience of PBLC as excellent and good ($P<0.001$) as they found the learning environment more democratic, while the experience of traditional curriculum was rated as bad and boring **(Table I)**. The attendance of students in teaching hours was not significantly different ($P=0.21$)in both types of curriculum which is due to the fact that 75% attendance was required for appearing in the end semester examination. Most common reason given by the students for liking of PBL was that the understanding of subject was more in comparison to TC; other reasons were more knowledge, improvement in the communication skills, self learning, feeling of independence and confident **(Table II)**.

TABLE I:
PERFORMANCE AND EXPERIENCE OF STUDENTS IN TC AND PBLC (n=109)

Variable	PBL	Tutorial	P value
Classroom attendance	106(97.2)	101(92.7)	0.21
Class test attendance	105(96.3)	87(79.8)	< 0.001
Class test performance	69.5±8.39*	58.4±19.3*	< 0.001
Experience of teaching methods:			
Excellent	40(36.7)	08(7.3)	< 0.001
Good	67(61.5)	101(92.7)	
Bad	02(1.8)	0(0)	

Results are expressed as number and (percentages)
* Scores expressed as Mean± Standard Deviation

TABLE II:
REASONS FOR LIKING PBL (n=109)

Variable	Frequency (%)
Understanding of subject	89(81.6)
More confident	71(65.1)
More knowledge	68(62.3)
Self learning	66(60.5)
Good communication	62(56.8)
Feeling of independence	48(44.0)

DISCUSSION

There is growing concern among medical educators that traditional modes of teaching medical students neither encourage the right qualities in students nor imparts life-long respect for learning,[14] that's why undergraduate medical program needs ongoing improvements to meet the changing demands of medical practice at the 21st century. Several studies have been done to justify the introduction of PBLC and to compare the PBLC with conventional teaching. A study done in the public sector medical college in Karachi by Baig LA and Asad F has shown the almost similar results that is a significant improvement in an analytical performance and thought process of students, and strong association between liking of PBL and group study; they also reported that the academic performance of students was improved after PBL sessions.[13] In our study average class test scores of students after PBL was significantly high, this may be due to increased understanding of the subject. PBLC stimulate medical students and better prepare them for professional practice. Problem based learning potentially contribute in the development of clinical reasoning, structuring knowledge in clinical context and developing self learning skills.[15] It has been shown that insertion of PBLC into traditionally theoretical programme improves the student's perception and performance better than traditional curriculum students[16]. Statistically significant difference is found between knowledge scores of PBLC and traditional education groups scores; PBLC groups were better.[17] Santos-Gomez et al[18] have compared the performance of 130 PBL graduates and 130 graduates of a parallel TC at University of Mexico Schools of Medicine, United States. Graduates from PBLC group received superior ratings then did the graduates from conventional group in the areas of health care costs, communication with patients and patient education. Data from Australia[19] show that graduates from the PBLC were rated significantly better than their peers with respect to their interpersonal relationship, reliability and self–directed learning. Another study showed that students of problem based learning curriculum found learning to be more stimulating, more human engaging and useful, whereas students of TC found learning to be non-relevant, passive and boring[20]. Students who use the problem based learning method showed better interpersonal skills and psychosocial knowledge, as well as better attitude towards patients.[20] Another study has revealed that students like PBL, feel that it has a positive effect on their knowledge, learning abilities and professional skills, which can make them better doctors.[21] This study has similar conclusion as in ours.

CONCLUSION

PBLC introduced in the 4th year MBBS at Isra University with traditional curriculum significantly improved the academic performance of students. Students experience of PBLC was good and they like it because of more understanding of subject, feeling of independence and confident. As PBL has proven advantages over the traditional curriculum it may be used to promote effective training for undergraduate medical students in the medical schools in Hyderabad and other regions of the country.

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