Academia and Clinic

Evidence for the Best Modality of Delivering Undergraduate Medical Curriculum

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ABSTRACT

Shifa College of Medicine, Islamabad, Pakistan in its quest for excellence in medical education has adopted an integrated medical curriculum approach where basic and clinical science subjects have been integrated horizontally as well as vertically across the five years of undergraduate medical curriculum. The mode of curricular delivery is an area where we are experimenting with Interactive large group discussions, Structured Interactive Sessions, Problem based learning and Case based Instruction formats. There is always a divide in the faculty to accept as to which modality of curricular delivery is the best for the students and ultimately for the patients who are at the receiving end of this exercise. (Rawal Med J 2008;33:249-251).

Key Words: Curriculum, learning, study.

INTRODUCTION

If we view broadly, the ultimate aim of medical education is to provide the best possible health care services to the people and the communities. People and communities, therefore, remain important stake holders in the health care industry. Thus, best medical curriculum and the best mode of its delivery would be the one which caters to these needs. “Properly planned and carefully conducted medical education is the foundation of a

comprehensive health service. If such a service is to have continuing vitality it must be founded on highly developed and vigorous systems of general and professional education for members of medical and allied professions, and it must evoke the enthusiastic and intelligent cooperation of the general public." [1] The importance of public involvement in the health care industry is so vital that the aims of medical education have been described as: "guiding medical students to such development of mind and character as will enable them when qualified to give maximum service to the community. It must help a student to acquire a scientific foundation for his professional work, a proper outlook on the promotion of mental and bodily health, an adequate knowledge of disease, a sympathetic understanding of people and their environment, a sound judgment and the ability to observe accurately, reason logically and assess the claims of new knowledge."[1]

LIFE LONG LEARNING

To impart the skills such as logical reasoning, critical analysis of data by assessing the claims of new knowledge, self learners and life long learners medical educationists at leading Institutions around the world have been experimenting to find the best possible modality of delivering undergraduate medical curriculum. "Medical education begins in prehistory as part of magic, mystery and religion, and it reaches the 21st century with an increasing role of technology and science. The knowledge base in medicine is expanding at an exponential rate, and opportunities to improve health, healthcare and quality of life increase by the day. In such circumstances how can we best educate our doctors and ensure that those working in hospitals or the community keep in touch with developments and put new findings into practice for the benefit of patients and society?"[1]

At Shifa College of Medicine, Islamabad, Pakistan, we are experimenting with Interactive large group discussions, structured interactive sessions, problem based learning (PBL) and case based instruction formats.[2] Some faculty members favor didactic lectures, others want to adopt problem based learning and still others favor case based instruction. Still others favor a hybrid curriculum where a variety of different teaching and learning strategies are employed. The teachers of the basic science subject think that too much emphasis has been put on self-directed learning overriding other learning methods like practicals, which may be counterproductive. The New integrated curriculum definitely needs larger faculty to sustain the newer learning

methods in small groups. The students have a mixed reaction to this modular curriculum in the sense that majority of them enjoy and are actively involved in the PBL and small group discussions while, some still like to have bulk of didactic lecture system. We must give due consideration to the fact that that the best method of curriculum delivery is the one which is best in providing patient care.

CURRICULUM DELIVERY

One way to resolve the issue of the mode of curriculum delivery is to accumulate the available evidence in this regard and also come up with fresh questions which might need to be answered subsequently in carefully conducted Randomized controlled trials. PBL was introduced for the first time by McMaster University, Canada in 1969.[3] This PBL curriculum emphasized small-group tutorials, self-directed learning, a minimal number of didactic presentations, and student evaluation that was based almost entirely on performance in the tutorials.[3] Various medical, dental and nursing institutions all over the world introduced PBL in their curricula. Others maintained a hybrid of PBL and lecture in their curriculum. Table 1 gives a summary of various studies which primarily compare PBL with the traditional lecture in terms of desirable attributes in an undergraduate medical student.

Table 1: PBL vs didactic lecture in imparting the desired attributes to undergraduate medical students.

Attributes	Institution conducting the study	Population studied	Sample size	Evidence	Reference
Critical thinking dispositions	Faculty of Medicine, University of Hong Kong	Nursing students	PBL (n=40) Lecture (n=39)	Compared with lecture students, PBL students showed significantly greater improvement in overall California Critical Thinking Disposition Inventory (CCTDI) (P = 0.0048)	4
Structural and psychological empowerment	Women's College Health Sciences Centre, Toronto, Canada	Nursing students	PBL (n=41) Lecture (n=67)	Students in the PBL program had significantly higher perceptions of structural and psychological empowerment than students in the Conventional Lecture Learning program	5
Reflective thinking	Department of Human Nutrition, Kansas State University, USA	Undergraduate dietetics students	n=32	Students in problem-based modules demonstrated greater gains in reflective thinking with stable memorization, suggesting improved critical thinking skills	6
Factual knowledge	Department of Pharmacology, University of Cologne, Germany	3rd year medical students	PBL (N=55) Lecture (n=57)	No significant difference was found in the mean scores of the two groups (22.4±6 vs 22.2±6)	7
Knowledge accrual and student satisfaction	Department of Pediatrics, Albert Einstein College of Medicine, USA	3rd year pediatric clerkship students		Use of PBL in a clinical clerkship was associated with higher scores on the NBME subject examination and increased student satisfaction.	8
Use of additional learning resources (self learning), team work and learning fun.	Department of Pharmacology, University of Cologne, Germany	Basic pharmacology students	PBL (n = 63) Lecture (n=60)	Students reported positive effects of PBL in terms of use of additional learning resources, interdisciplinarity, team work and learning fun.	9

PROBLEM BASED LEARNING

Factual knowledge might not necessarily differ between students exposed to PBL or lecture based system, but there is a significant difference in the areas of critical thinking dispositions, reflective thinking, psychological empowerment, student satisfaction team work, learning fun and self directed learning. Although evidence to-date goes in favor of PBL but newer modalities of curricular delivery are emerging and challenging the PBL format. Case based learning (CBL) which uses a guided inquiry method and provides more structure during small-group sessions has been compared with PBL which is said to be an open inquiry.[10] From logistic regression, students preferred CBL because of fewer unfocused tangents (59%, odds ratio [OR] 4.10, P = .01), less busy-work (80%, OR 3.97, P = .01) and more opportunities for clinical skills application (52%, OR 25.6, P = .002).[10] This study concluded that given the dense medical curriculum and need for efficient use of student and faculty time, CBL offers an alternative model to traditional PBL small-group teaching.[10] Constantly evolving mode of curricular delivery needs to be investigated further, preferably by Randomized Controlled Trials (RCT) addressing several questions (table 2).

Table 2: Some of the evolving Research questions in medical education.

Need for more Evidence	Type of studies needed
Is CBL superior to PBL in attaining learning objectives	RCT
Case based learning (guided inquiry) in comparison to Problem based learning (open inquiry) for management of patients	RCT
Which mode of curriculum delivery produces physicians who are self-directed as well as life-long learners?	RCT
Which mode of curriculum delivery produces better practicing physicians?	RCT
Which mode of curriculum delivery is better in improving the quality of healthcare delivery and patient satisfaction?	RCT

The revolution in medical education witnessed in the 20th and 21st century can be very well summarized by a quotation from Abraham Flexner in The Flexner Report, "On the pedagogic side, modern medicine, like all scientific teachings, is characterized by activity. The student no longer merely watches, listens and memorizes; he does….an education in medicine nowadays involves both learning and learning how; the student cannot effectively know, unless he knows how."[11]

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