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Changing Trends in Medical Education - An Overview

C.S.Bhaskaran
Retd. Director of Medical Education &
Ex. Vice-Chancellor, Dr.NTR University of Health Sciences,
Andhra Pradesh

ABSTRACT

For the past several years, the state of medical education remained more or less static in India, with a few exceptions by institutions trying to carry out certain educational reforms in teaching and training. In recent times, socio-economic conditions and several other factors, including technological developments which either directly or indirectly influence the health care delivery systems have made strides. Hence there is an urgent need for all the stake holders in medical education to bring about the much desired pedagogic shift from traditional approach to a need-based approach, so that the medical education becomes more meaningful and useful. To achieve this in the present scenario, attention should be focused on the changing trends and strategies to be followed to cater to the needs of the health care delivery system and the society. An over view of these trends or innovative strategies that are being tried globally are enlightened along with future directional approach to this complex issue. However, this requires, in addition a fundamental change in the roles and commitments of educators, planners and policymakers.

Keywords : Medical education, changing trends, trends in medical education, medical curriculum, integrated medical teaching.

Correspondence : C.S. Bhaskaran, 17, Radhika Colony, West Marredpally, Hyderabad – 500 026 (A.P.)

Introduction

The evolution of medical education in the World goes hand-in-hand with the evolution of mankind and it is considered as an art of acquiring and retaining knowledge of medical subjects and practical skills or competencies required for the treatment of the patient. The basic theme of medical education is to improve the quality of health care delivered by doctors. Young medical professionals of today will have to encounter certain challenges in their professional career such as keeping in touch with the continuous explosion in scientific knowledge particularly in information technology and molecular biology. There is also the need to choose appropriate diagnostic tests among the plethora of tests available and to diagnose correctly, the need to bestow specialized attention to ever-increasing geriatric problems due to increased life expectancy and the availability of improved therapy, increasing incidence of psychiatric disorders, ethical dilemmas, and last but not the least is the changing physician – patient relationship and patient expectations. The practicing physician of today is also required morally and even legally to stay updated on recent advances in the medical field so that he can provide quality medical care.

Hence, the medical curriculum has to be changed or modified regularly to prepare the young physician entering lifetime practice. Many authorities stressed the need for a change in the educational programs of medical education and have provided the main impetus and imperatives for the changing trends by way of suggesting different strategies in this direction (1-4).

The need of the hour is to adopt innovative strategies and trends that can focus on self-directed learning, problem-based learning, competency-based learning, early clinical contact and contact with all types of health care services available in the community so that these educational programs become learner-centered. These changes are needed to prepare doctors to fulfill the expectations of society and to cope up with exponential growth of medical and scientific knowledge and inculcate the habit of continuous learning and ensure basic knowledge in information technology and to adjust the modern education system to the changing needs of health care delivery system. The medical teachers should be involved in the educational preparation of medical students at every level to ensure that the desired quality of the end product of medical education is produced. The change in attitudes is also required

among all stake-holders including those who govern and participate in medical education. The changing attitudes of the society and the student community, the emerging educational technology, besides governance and leadership issues to tackle resource mobilization should be taken into account in a systematic manner while planning and management of innovative educational programs (5).

Current Status of Medical Education in India

Most of the medical colleges in India with few exceptions are finding it difficult to maintain the right quality and quantity of medical education. For the past few decades, not only academicians but also the public have been expressing serious concern over the deterioration of standards of medical education in India (6). Although, the existing medical education system in India produced several excellent doctors who made their name both nationally and internationally, a closer examination of the education pattern show that present system has failed in serving the country in many aspects. The medical graduates who come out of the colleges are not trained well or equipped to deal with problems that they would face in the society. Medical graduates are not well conversant with ethical issues and not exposed adequately to take a leading part in improving the health of the nation. The standard of medical education has gone down to such an extent resulting in that if appears as if modern day doctors rolling out are from a conveyer belt system. During the last few years yet another force, "Market forces" has emerged and is further threatening the standards of medical education and the investments in privatization of health care has relegated teaching and research to secondary activity (7,8).

Current situation demands that medical graduates coming out of colleges should have fair knowledge of human body, mind and its diseases, about diagnosis with or without diagnostic aids, and start treatment if within his field of competence, otherwise refer the patient to a specialist. The doctor must have compassion for the patient and respect ethical values. In the current scenario existing in the country, there is an urgent need to incorporate the changing trends described in all the medical educational programs all over the country to bridge the gap between the theory and practice and to maintain much desired uniform standard of medical education.

Curriculum Reforms

A curriculum is considered as a formal educational plan, comprising of

goals and objectives to meet the identified needs, their implementation through the educational activities with a provision for evaluation, feedback for continual improvement in the educational process. During the last several decades the medical educationists have done very little to correct the major shortcomings in the curricular development that were pointed out and discussed repeatedly. The existing undergraduate curriculum in India is mainly based on the knowledge accumulated both in basic as well as in clinical sciences. It has become not only ineffective in preparing the students of tomorrow but also contributing to the problem of information overload due to rapid advances in science and technology.

The National Health Policy (1983) of the Government of India, while recommending the formulation of a National Medical and Health Education Policy, provided direction to restructure the undergraduate curriculum to train Primary Care Physician capable of providing essential health care services to the rural population. In 1986, Indian medical schools consortium recommended a revised curriculum, defining the departmental objectives, classifying the course content as 'Must Know' and 'Desirable to Know', and compiling a list of essential skills required for a Competent Primary Care Physician (7). In 1997, the Government of India, on the recommendation of the MCI, promulgated the Regulations on Graduate Medical Education (9) stipulated that undergraduate medical education should be oriented towards health and community as opposed to disease and hospital and the graduate must develop humanistic qualities in discharging professional obligations and be able to function as leader of the health team either in urban or rural settings. To meet this end, students' training must aim at inculcating scientific temper, logical and scientific reasoning, clarity of expression, and ability to gather and analyze information.

To overcome the problem of factual information overload, it is recommended to adopt the concept of "Core curriculum" by encompassing the essential knowledge, skills and appropriate attitudes to be attained by the graduates. It should be augmented by a series of special study modules, which allow students to study areas of particular interest to them in depth. The core curriculum should be system-based and integrated, to break the rigid pre-clinical/ clinical and departmental boundaries. Basic science teaching should be relevant to the overall objectives of the medical course and its relevance should be clear

to the students. Mastery of the core ensures the maintenance of standards; the options provide in-depth work and achievement of high-level competencies such as critical and generic competencies or transferable personal skills which include bio-ethics, communication skills, interpersonal skills, problem-solving ability, decision-making capability, management and organization skills, working in team, IT skills and doctor-patient relationship, essential to their roles as health professionals (10). However, the postgraduate curriculum in particular needs to be constantly revised and updated in keeping with advances in scientific knowledge, inventions in the field of medical education and changes in the epidemiologic pattern of diseases and the needs of the community to manage diseases that exist and also the emerging and re-emerging ones.

Integrated Teaching

Most of the medical colleges in our country continue to follow the traditional subject-based curriculum wherein the subjects are taught in isolation with little or no attempt to integrate the basic sciences with the clinical disciplines. Severe dissatisfaction is being expressed over this method of training since it is found that this system is wasteful (because of unnecessary repetition), disjointed (because of isolation from other 'subjects'), and confusing (because of departmental differences of opinion) and ineffective for producing a competent doctor. In early 1950s, In the USA, Cape Western Reserve University initiated an organ-system based curriculum, in which the old divisions between preclinical and clinical teaching were swept away and attempts were made to integrate the teaching of both the basic and clinical sciences throughout the students' careers (11). Such an integrated curriculum provides a meaningful learning experience as learning takes place in a context (contextual learning). It also promotes a holistic approach to patients and their problems. A move towards integrated teaching is likely to reduce the fragmentation of the medical course and motivate the students for better learning (12).

The integrated teaching can be done in two ways - Multi-professional and Multi-disciplinary. In Multi-professional, approach, students of different professions such as medicine, dentistry and nursing are taught together on some common subjects. This helps the student to share the knowledge and skills and enhances personal and professional confidence, helps attaining respect between professionals, promotes

reflective practice that ensures quality of health services. The Multi-disciplinary approach is done either by horizontal or vertical methods of teaching. Vertical integration is found to be more effective than the horizontal integration on account of early introduction of students to clinical material along with the basic sciences throughout the undergraduate program. This strategy is more effective in preparing the students for their future careers in view of early clinical contact (13, 14). Medical Council of India recommended both horizontal (e.g., anatomy-physiology-biochemistry) and vertical integration (e.g., anatomy with surgery) to be introduced throughout the curriculum (15). In an attempt to promote small-group learning, greater emphasis on health and community, problem-based learning approaches, and horizontal and vertical integration, the regulations on Graduate Medical Education for curricula were substantially revised in 1997 (9). Although integrated method of teaching is advocated by the MCI regulations, discipline-based teaching continues to remain the predominant mode of education due to several problems like departmental compartmentalization, lack of integrated course material in the departments and poor coordination between pre-, para- and clinical disciplines.

Learner-centered Approach

Currently, in most of our institutions, the undergraduate training is through didactic lectures by the teacher, which only encourages superficial or examination oriented learning by the students. This type of training having been exposed to lot of criticism has paved way for the shift from the pedagogic traditional teacher-centered approach to a student-centered approach. This alternative method of learning is an active process where the student learns through his own efforts or study and the teacher acts as a guide.

Such a Self-directed learning enables him to define his learning needs, formulate the goals, identify the human and material sources for learning, and choose appropriate learning strategies. This process, the student being an active participant, encourages in depth learning and enables him to use his learning relevant to his educational needs. The style and manner of learning can pace his learning appropriate to his ability to understand particular area (16). It is now being considered as the most effective approach in medical education and many strategies have been developed to provide self-directed

learning such as problem-based learning; discovery learning; task-based learning; experiential and reflective learning; portfolio-based learning, small-group, self instructional and project-based learning (17).

Problem-Based Learning (PBL)

Of these strategies, The Problem-based learning (PBL) has been recognized as the most important development in medical education. The principle of Problem-based learning (PBL) is based on the educational philosophy of the French educationalist; Célestin Freinet in the 1920, and is used in many subject areas including Medicine. Problem-based learning adapts learner-centered method where the students in small groups learn while working on real-life problems, activities, and teacher acts as a guide. The problems are used as a focus for learning basic sciences and clinical knowledge along with clinical reasoning in an integrated manner that follows a particular sequence such as Maastricht 'seven jump' (17).

Maastricht "seven-jump" sequence for problem-based learning is:

1. Clarify and agree working definitions and unclear terms and concepts.
2. Define the problems; agree which phenomena need explanation.
3. Analyze the problem (brainstorm).
4. Arrange possible explanations and working hypotheses.
5. Generate and prioritize learning objectives.
6. Research the learning objectives.
7. Report back, synthesize explanations, and apply newly acquired information to the problem.

The advantages of problem-based learning over the traditional learning methods of teaching are:

- Promotes deep learning rather than surface learning.
- Enhances and retains self directed skills.
- Learning environment is more stimulating.
- Promotes interaction between the learner and instructor.
- Provides collaboration between disciplines.
- More enjoyable for students and teachers.
- Promotes retention of knowledge.
- Improves motivation.

It is a systematic attempt to apply findings of cognitive psychology to educational practice (18). The Medical

School at Maastricht has taken a leading role in the development and application of active learning strategies and the WFME and the WHO have endorsed PBL as an educational strategy and several institutions all over the world have adopted this method of pedagogy (19).

Evidence-based Medical Education

Evidence-based medical education (EBM) is the practice and implementation of method and approaches to education based on the best evidence available to teachers in their practice. It is based on the evidence gained from the scientific methods and it also seeks to assess the quality of the evidence relevant to the risks and benefits of treatment (20).

In EBM, the student / consultant should be able to do an appropriate literature search, identify the literature evidence available on the clinical condition and evaluate the same critically and determine the "best evidence" to diagnose / treat / manage the patient, in the shortest possible time in an efficient manner. The practice of EBM is becoming more important since the internet revolution has brought access to these medical databases to the common man and the patients' access to the databases would also increase their expectations. Thus, e.Learning through databases and electronic versions of text books provides an important forum for EBM teaching and learning and its role is likely to expand in the future and it may become impetrative for the clinician to adopt the practice of EBM.

Further EBM will promote the "Best evidence medical education" (BEME) utilizing the research findings. Curricular changes made are to be ensured that they are evidence –based and should encompass all dimensions of medical education. All health care professionals need to understand and implement the principles of EBM to improve care of their patients. Interactive and clinically integrated teaching and learning activities provide the basis for the best educational practice in this field (21).

Competency-Based Medical Education (CBME)

Competency-based education is an approach to instruction and assessment in which the main emphasis is placed on identifying and measuring specific learning outcomes or competencies. Professional competence is defined as the habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values, and reflection in daily practice for the benefit of the individual and the

community being served. Competencies are outlined clearly as real-life abilities needed for carrying out professional practice effectively and is the basis for determining the curriculum content and its organization, teaching and learning methods, course contents, assessment modalities (22).

The Accreditation Council for Graduate Medical Education (AGGME) in 1999 identified six competencies which represent areas of skill and knowledge that residents are expected to demonstrate before graduation. These six core competencies (a) Professionalism (b) Patient Care (c) Medical knowledge (d) Practice based learning and improvement (e) Interpersonal and communication skills (f) System based practice must be kept in mind while preparing the curriculum and planning teaching and learning methods to provide the needed focus and direction (23).

Competency-based medical education differs from the subject-centered and the integrated course in three main ways a) a curriculum is organized around functions (or competencies) required for the practice of medicine in a specific setting b) it is formulated on the empirically validated principle so that students of the intellectual quality found in medical school, when given appropriate instruction, can master the prescribed basic performance objectives and c) it views education as an experiment where both student learning and the techniques used to produce learning are regarded as hypotheses subject to learning (24).

In competency based education, learning goals are explicitly stated, defined in advance and linked with competencies. The learning opportunities should be based on real-life clinical situations/problems. The experienced faculty would provide an objective basis for the self-assessment of the learner by using appropriate questions, assignments, feedback, etc to address the problem. Discussion with experienced faculty would also provide the appropriate standard for the learner to self assess and improve. It is to be remembered that all resident learners would be not of the same standard in abilities, motivation and knowledge and additional resources/ attention may be given to those who are at a disadvantage.

Community-oriented and Community-based Medical Education

Community-based and Community-oriented medical education is the topical area of interest in the current discussions about medical education. Though the

distinction between community-oriented and community-based education is not very clear, community-based education is closely related to but not the same as community-oriented education (25).

Community-orientation in Medical Education (COME) is an educational process, which focuses on population groups and individual persons in the community, and takes into consideration the health needs of the community concerned. The characteristics of COME shall be based on the objectives and the content of the curriculum of the particular institution and its relevance to health needs of the community within which the particular institution is located, rather than a mainly curative approach to health promotion. A community-oriented curriculum should also encompass health promotion, illness prevention, assessment and targeting of population needs and awareness of environmental and social factors in disease.

Whereas, Community-based education is a means of achieving educational relevance to community needs and consequently enables implementation of a community-oriented educational program. It consists of learning activities that use the community setting extensively as a learning environment, in which not only students but also teachers, members of the community and representatives of other sectors are actively engaged throughout the educational experience. Its aim is to produce community-oriented doctors who are able and willing to serve their communities and deal effectively with health problems at primary and secondary hospitals. It is now recognized as an important additional tool available in medical education to train skilled doctors needed in the primary and secondary hospitals more than in the tertiary hospitals. It is widely accepted that community setting provides a wealth of opportunities for students and trainees by exposing themselves to practice in situations out side the classroom or a teaching hospital and can help addressing some of the problems that confront them in the hospital settings. In addition, it gives students an opportunity to learn about the health needs and demands of the people that they serve later and the rural training sites are appropriate for them to learn about the range of social, political and economic forces that affect the health of the society (25, 26).

According to the WHO Study Group, the following six reasons are in favor of community-based education (25).

It gives the students a sense of social responsibility by enabling them to obtain clear understanding of local community needs and the problems.

- It enables the students to relate theoretical knowledge to practical training.
- It helps to break down barriers between trained professionals and the lay public and to establish closer communication between campus and community they serve.
- It helps to keep the educational process up-to-date by continuously confronting the students with reality.
- It helps the students to acquire competency in areas relevant to community health needs utilizing the only available health service facilities.
- It is a powerful means of improving the quality of the community health services.

Continuing Professional Development (CPD)

Medical education requires continuous updating of knowledge and skills by the medical professionals, whether a medical teacher, a consultant or the practitioner from his student days to till the day he stops practicing. This involves a life long process of learning. Continuing professional development (CPD) or continuing professional education (CPE) is the means by which members of professional associations maintain, improve and broaden their knowledge and skills and develop the personal qualities required in their professional lives to remedy practice gaps and to enable them to respond to the challenges of ever changing professional environment. It should be planned to the needs of the medical professional based on both self-assessment and peer-review. It can be achieved through continuous education and training, the period of which commences after completion of basic medical education and postgraduate training, thereafter extending throughout their professional practice.

In this direction, medical educators have to create a mechanism that encourages personal responsibility for maintaining competencies and assure the society of its fulfillment. It also should be ensured that the competencies learned through CPD programs by the new graduates are maintained and gaps in knowledge are removed so that the doctors are fully prepared to face challenges that confront them in discharge of his duties. The role of mandatory traditional

CME programs in maintaining the competence is questionable. They should include group-based activities and use quality improvement parameters. Eight principles have been suggested by various authors, (27, 28).

(a) CME planning and program development be based on needs assessment including outcome data

(b) Goal should include development of skills needed for life long learning, exercise of clinical reasoning, an understanding of decision making process and specific content acquisition

(c) Goals should be reinforced by appropriate choice of learning methods,

(d) New instructional techniques for CME should be based on their intrinsic strengths as learning tools after thorough evaluation,

e) Faculty development is important and should include exposure to new learning methods,

f) Educational activities should be supportive of and coordinated with transition to evidence-based medicine,

g) Professional and interdisciplinary interaction (if possible) should be given priority,

h) Outcome based measure of CME effectiveness and research should be introduced into the determinants of physicians practice behavior.

Such Faculty Development Programs providing teachers with the capabilities necessary to improve their teaching skills are an effective method in sensitizing medical professionals to the concepts involved in teaching and help them to develop necessary knowledge and clinical skills to make them competent and effective teachers, administrators, researchers and mentors. The newly recruited faculty should also be given training in research methodologies and assessment strategies so that he is able to conduct research projects and deliver health care in a secondary or tertiary hospital. Recognizing the need for better equipping the medical teachers with core competencies in clinical assessment skills, laboratory methodologies, interpretation skills, assessment strategies and communication abilities, Medical Council of India (by the MCI Regulations on Graduate Medical Education, 1997 (9), stated that the establishment of Medical Education Units is mandatory in all medical colleges, to ensure continuous

professional development.

Conclusion

The changing trends in medical Education essentially fall under three categories; a) Teaching, b) Training and c) Application of the skills to improve the health of the community. The need to improve medical education in the country cannot be overemphasized and should be accompanied by regular curricular reforms which should be based on the health problems of the community and its health needs. The curriculum should move away from teacher-centered to student-centered with emphasis on self-directed learning, adequate clinical contact, emphasis on ethical issues and exposure to new communication technologies. The undergraduate curriculum should be an integrated curriculum and system-based to avoid unnecessary duplication. Teaching is to be restricted to 'core curriculum' that is 'must know' and this is supplemented by 'desirable to know'. The training of the medical graduate through learned-centered education, problem based learning and competency based education with specially designed modules, enables him to attain additional knowledge that is 'desirable to know'. The teaching of basics in bioethics, molecular biology and information technology improves the scientific knowledge and communication skills of the medical graduate and increases his approach towards social responsibility. The teaching and learning methods should promote competency-based learning. However, the postgraduate curriculum in particular needs to be constantly revised and updated.

Further, application of evidence-based medicine and proficiency development through continuing medical education updates the skills and knowledge of medical professional including medical teachers. This will ensure their competency from time to time to tackle the medical problems that they face from the community they serve. The medical teachers have to keep pace with the changing trends and play a key role in implementation of changes to produce the quality end product of medical education. The teachers should undergo life-long learning by regular participation in continuing medical education program. It is just not enough if the curriculum is changed and teachers trained but also a change is needed in those who govern and participate in medical education.

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