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Review Article

Competency-Based Medical Education in India: A Brief Review

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Abstract: With the increase in number of medical colleges in the country, the Medical Council of India (MCI), has put forth Graduate Medical Education regulations which aim to provide training for medical undergraduates to recognize the health right of all citizens, learn every aspect of national health policies and thus fulfill the health needs of the society. Over the years, there has been a widening gap between the societal health needs, health care available, and the medical education provided. While a lot of research and efforts have gone into addressing the first two, it is only now, that we are looking at the much needed reforms in the Medical Education in the form of Competency Based Undergraduate Medical Curriculum/ Education (CBME).This article presents a review of the new CBME curriculum introduced in India from august 2019.
Keywords: competency, medical education, CBME.

Introduction

Medical Education in this part of the developing world is waking up to the reality that there is a need for change from the currently mostly knowledge-based education, to focus on skills that are needed to perform duties as a health care professional. This is mainly because, the knowledge base has expanded exponentially through gains in scientific facts or new knowledge expedited by the tools now made available in this information technology age. Hence, as a result of this, what is new knowledge becomes obsolete in a shorter period of one's lifetime. Compounding this is the fact that in this information technology world, it is easier to get information you want and so the need to remember lot of things is no longer as important as it used to be than knowing how to get the information you need and use it for problem solving which is often required in health care delivery.

In the developed world, this has led to changes in medical education with emphasis shifting from teacher-centered (cognition or knowledge transfer by teacher) to student-centered (ensuring learning by students and equipping them with meta-cognition, i.e., how to learn) and from discipline-based (knowledge dominant teaching of individual disciplines in water-tight departments) to integrated learning (system-based or organ-based) to problem-based learning (the health problem triggering and motivating the student to learn what they need to learn to solve the problem to improve health) so that in an Information Technology user-friendly world, the health care provider is equipped with skills to enable them to solve real-life problems in the hospital or the community. This led to the focus shifting to development of competencies needed to carry out the professional tasks [1]. The Lancet Commission's report [2] studying the past reforms in medical education and the needs of the health professionals education to prepare them for the 21st century's health systems describes these

changes in terms of three generation of educational reforms starting from informative (with focus on information plus skills to produce "experts") moving on to formative (focus on socialization and values to produce "professionals") to transformative (with focus on leadership attributes to produce "change agents"). They along with the World Health Organization (WHO) initiative [3] recommended the need for Health Professions Education to not only be competency-based to produce competent professionals who could carry out the tasks their duties require them to do to fulfill health care needs of the people they serve but also for them to be transformative leaders of health teams who can work effectively together in teams that deliver health care. This requires doctors to have leadership competencies so that they can become effective change agents [Figure 1] to transform the way the health care is delivered by a health care system team they would be leading. This article presents a review of the new CBME curriculum introduced in India from August 2019.

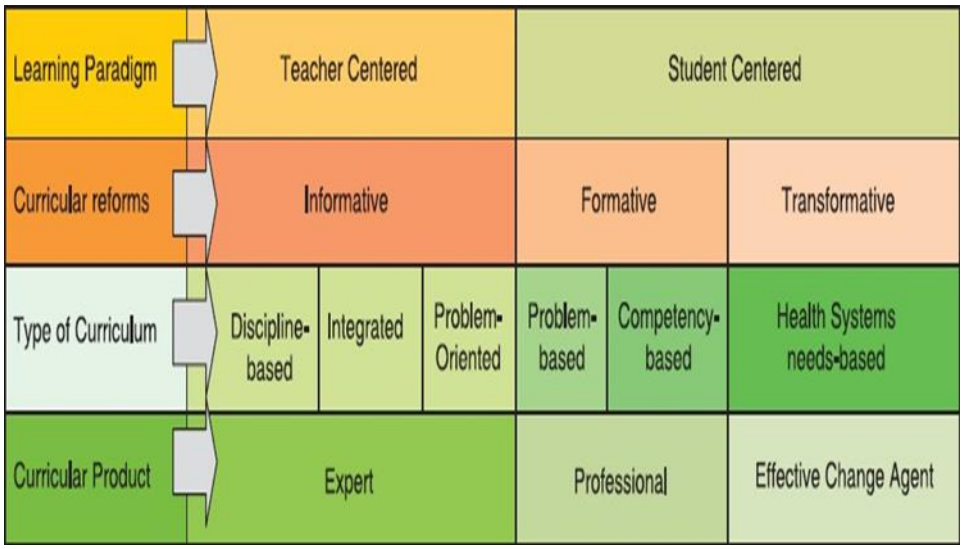

Figure 1. Trends and Change in Focus in Medical Education across the World

Competence, Competency, and Competency-Based Education

Competence means the acquisition of sufficient knowledge, psychomotor, communication and decision-making skills, and attitudes to enable the performance of actions and specific tasks to a defined level of proficiency [3]. Describing it in the professional clinical context Epstein and Hundert [4] defined it 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." Whereas the words competency and competence are often used interchangeably in the literature, the term competency is used for the skill itself and competence as an attribute of the performer's ability to perform the skill.

Table 1 shows difference between traditional teaching methods and competency based medical education.

Fraser and Greenhalgh [5] recommended that in the present complex changing world, there is a need to move beyond competencies to capabilities. Here, capabilities reflect the extent to which individuals can adapt to change, generate new knowledge, and continue to improve their performance. In addition, Gruppen et al. [6] highlighted other unique features of competency-based education paradigm:

- ✓ A competency focuses on the performance of the end product or the goal state of the instruction
- ✓ It uses a standard for judging competence that is not dependent on the performance of other learners
- ✓ A Competency informs learners as well as other stakeholders about what is expected of them

- ✓ It is self-regulated with flexible learning options in terms of time and sequence of what is to be learned by the learner.

Table 1. Difference between Traditional Teaching Methods and Competency Based Medical Education

Variables	**Structure and Process Based Education**	**Competency Based Education**
Curriculum driving force	Content i.e. knowledge acquisition	Outcome i.e. knowledge application
Process driving force	Teacher	Learner
Responsibility for content	Teacher	Teacher and learner
Assessment tool	Proxy, mostly subjective	Authentic i.e. mimics real professional tasks
Type of assessment	Emphasis on summative	Emphasis on formative
Program completion	Fixed time	Variable time till attainment of competency

Advantages of Competency-Based Education

The advantages of competency-based education include:

- ✓ The primary advantage is that the focus is on success of each participant by ensuring they achieve competencies required in the performance of their jobs. Other advantages include:
- ✓ Being focused on learning for mastery of specific skills, it builds their confidence in being ready for the job.
- ✓ Training time is used more effectively and efficiently as the trainer is facilitator of learning as opposed to a provider of information.

In addition, Gruppen et al. [6] have also highlighted the beneficial role competency-based education can play in improving Global Health particularly in resource-poor settings. This is because competency-based education is more focused and tailored to achieving competencies the graduates would need to discharge their professional duties as health care professionals. This forces the curriculum planners to discuss and identify what competencies are needed to address the priority health care needs of the country. Once the list of competencies needed for health care of the people is arrived at, it helps academic policy makers and planners to consider whether some of these can be "task shifted" to other health care professionals rather than loading only doctors. Furthermore, competency-based education besides ensuring clinically competent professionals also focuses on leadership and thereby helps them to be job-ready to function effectively in the health system which in resource-poor settings badly needs capable leadership inputs to ensure policy formulation, effective management, and the direction of interdisciplinary teams.

One of the earliest treatises that are available in the literature on competency-based education is the one by McGaghie/WHO [7] and it provides the framework for the steps to be taken in implementing competency-based curriculum:

1. Identifying the elements of competence:

- ✓ Analysis of physician's activities through self-reports, observation, and task analysis.
- ✓ Critical elements of behavior for capturing qualitative dimensions of care through critical incident study to distinguish between poor and good professional performance of the task.
- ✓ Health care needs determine the competencies needed and are identified from public health statistics of the country and medical records.

2. Learning for mastery:

- ✓ Time self-paced by the learner's need for mastering the competencies.

- ✓ Program organization: The sequencing of competencies and their learning experiences,

Program organization for mastery:

- ✓ Specification of learning objectives.
- ✓ Development of instructional units.
- ✓ Encouragement of self-pacing.
- ✓ Recognition of competence levels.
- ✓ Frequent assessment of learning.

3. Assessment of competence:

- ✓ Entry level assessment–assessment of the baseline level and readiness for further learning.
- ✓ Formative assessment–assessment of what has been learned and what remains to be learned.
- ✓ Summative assessment–assessment of attainment of the required level of competency.

4. Preparation of teachers, students, and institutions for the:
New educational roles of the teacher

- ✓ Focus shifts from teaching to facilitator of student learning.
- ✓ Teachers need to engage in continuing professional development.
- ✓ Teacher as a planner.
- ✓ Defining the competencies and the levels of to be attained.
- ✓ Do planning of learning experiences for the student to learn and the sequencing of these to ensure achievement of competency progression.
- ✓ Teacher as a manager of instructional resources.
- ✓ Teacher as a performance assessor to test student's attainment of the expected level of competency and evaluator or effectiveness of educational learning experiences.

New educational roles of the student:

- ✓ Take personal responsibility for learning instead of passive listening and learning.
- ✓ Adopt self-directed learning methods (deliberate practice and receive feedback on progress made) and demonstrate and document evidence of acquisition of competency.

Carraccio et al. [6] reviewed implementation of competency-based education in various centers around the World and reported that a stepwise approach to curricular design was adopted most often. The four major steps that were common across most centers were the following and a brief note by them about how to go about it is helpful for better understanding to facilitate implementing each step:

1) **Identification of competencies**: using a Delphi technique for consensus of individual experts; use of nominal group technique for obtaining group consensus; task analysis by investigator through observation of professionals on-the-job; critical incident survey and behavior-event interview of a "star performer" to identify good and bad practice, etc. and the simplest one being practitioners survey.

2) **Determining the components of the competency and the expected performance levels**: The competency components include professional tasks which either sequentially or in sum to make up the competency. The tasks serve as performance indicators or benchmarks which must be measurable in the aggregate determine achievement of a competency and performance criteria set the threshold for demonstrating competence. The expected performance level for each benchmark must then be defined to determine whether competence has been achieved.

3) **Assessment of the competency**: The preferred method for this is use of criterion-referenced measures that compares performance against set standards or threshold; Shumway and Harden [8] have reiterated in their AMEE Guide on outcomes assessment of competency, various

methods and tools to make measurement of "shows how" (clinical and practical assessment) and "does" (observation, portfolios, logs, peer assessment) levels within the Miller's pyramid of learning assessment. Norcini and MacKinley [9] have given a more detailed practical overview on issues and newer measurement tools used in performance-based clinical assessment including use of a framework for selection of the assessment method. Norcini and Burch have emphasized the important role of formative assessment and feedback as well as various tools that have been found useful for this at the workplace for performance assessment and so are useful for measuring and documenting evidence of competency progression and so is a useful resource for reference while planning and implementing assessment of competency in your institution; and

4) **Overall assessment of the process (process evaluation)**: This helps the program implementers to identify processes that are amenable for further improvement to make the process more efficient.

Shortcomings in the Conventional System of Medical Education

The traditional method of teaching has many flaws associated with it [10]. Firstly, it is a teacher-driven curriculum, where the responsibility for the content and the learning lies with the teacher [11]. Moreover, the main force for learning is to acquire the knowledge, instead of the practical application of the same.

In addition, the assessment process is predominantly summative and norm-referenced test. This is again a big problem, as summative assessments do not give any chance for the learners to improve. In contrast, competency-based medical education (CBME) emphasizes on formative assessment, multiple assessments and removes subjectivity through the adoption of the rubrics of milestones during the assessment. Additionally, as the assessment in CBME is criterion-referenced test and not norm-referenced test, it does not compare the performance of one learner with another. Moreover, the assessment tools employed in the conventional system cannot be used in authentic settings. Finally, the duration of the course is fixed in conventional curriculum (unlike in CBME which is relative independence of time in training), which is not right as each learner may differ from other and expecting them to master within the specified time does not suit with different category of learners. As we know, the volume and details required by the student to master each subject that comprises the overall MBBS program is considerable. Subject based instruction provides an opportunity for the student to acquire both vast and deep knowledge of each subject. This structure of instruction, however, may lead to lack of appreciation by the student of the interconnected nature of knowledge in the various subjects, their relatedness, and importantly their relevance to patient care. Additionally study in silos alone may lead to redundancy in instruction.

Prospects of Competency Based Medical Education and Challenges

CBME is a very thoughtful approach to develop physicians in their future practice and encourages better accountability and flexibility. However, there are various challenges associated with the implementation of CBME. The success of CBME depends on the presence of a supportive administration/management, resources and requires proper planning, and supervision of the implementation process to ensure that intended objectives are met [1, 5, 6]. The successful implementation of CBME program essentially depends on the sensitization programs for all the faculty members and dedicated faculty members [4, 5, 6].

At the same time, the introduction of CBME might overcomplicate medical training, as competencies are divided into key competencies, which are then further divided into milestones [5, 6]. As a whole, it becomes quite exhaustive and impractical, as the process of setting descriptors, designing of rubrics, doing internal and external validation for each of the subject-specific evolutionary program-induction algorithms is difficult [5, 6]. Moreover, the practical difficulties to assess competencies such as professionalism or lifelong learner can also not be ignored [6]. Even though the idea of negating the issue of total duration of the course (keeping it variable) looks okay,

but in reality, already the medicine course is quite long and making it even more longer might not go well with many of the learners as well as administrators [2, 5, 6].

Several innovative methods have been developed over the years to address these challenges including various levels of integration of instruction that diminishes and removes boundaries within subjects both horizontally in a phase and vertically across phases. While appreciating the value of these approaches, the proposed Graduate Medical Education Regulations (GMER) 2019 [12] has sought to strike a balance that will retain the strength of traditional subject-based teaching and the reality of subject based assessment while providing the relevance, opportunity to understand the interconnectedness and reduce redundancy in the subjects being taught.

In order to achieve this, the MBBS curriculum will become a) aligned to the extent possible– meaning that as much as possible topics in different subjects in the same phase that have similar threads will be grouped together in the timetable and b) integrated to a limited extent both vertically and horizontally. The purpose of horizontal integration (within a phase) is to remove redundancy and provide interconnectedness. In the earlier phases, the purpose of vertical integration (across phases) is to emphasise the applicative use of the basic science concept taught. In the later phases, its purpose is to utilize and build on prior knowledge and emphasise the foundations of clinical practice.

Conclusions

To summarize, competency-based education is more efficient than the traditional informative models of education since it focuses on "mastery learning" to help the learner acquire competencies needed for doing the professional tasks and duties that are in alignment with health needs of the country. This can be achieved through a systematic process of curriculum planning which helps the learner to go through a series of planned learning experiences that provide series of opportunities to engage in deliberate practice and receive formative feedback, document progress in mastery of skills for competency progression up to the level that the student upon graduation would be job-ready for the tasks and responsibilities that would be entrusted to her/him.

The main hurdles for implementation are the lack of awareness about the need as well as the required knowhow about benchmarking of assessment, the need for change in teacher and learner ethos and garnering resources for the learning resources needed for the competency-based learning paradigm. And these obstacles can be overcome mainly through faculty capacity-building so that they become familiar with the new learner-centered ethos through a series of faculty-development retreats or a formal longitudinal faculty development program which facilitates the faculty to learn on-the-job the skills needed for this type of educational paradigm.

Conflict of Interest: The authors have no conflicts of interest to declare.

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