

Competency-Based Medical Education: Perception and Challenges among Students

Jyoti S. Patil, S. Latha, Vijaya Patil¹, Leela Hugar

Department of Pharmacology, BLDE (DU)'s Shri B M Patil Medical College, ¹Department of Surgery, Medical Education Unit, BLDE (DU)'s Shri B M Patil Medical College, Vijayapura, Karnataka, India

Abstract

Introduction: Competency-based medical education (CBME) addresses students' achievement of discernible skills in a time-independent, learner-centered manner. The curriculum emphasizes all three learning domains (cognitive, psychomotor, and affective). A major focus is given on early clinical exposure (ECE) with foundation course (FC) and renewing the teaching and assessment methods, helping the student's conceptual thinking, skill development, and inclusion of the Attitude Ethics and Communication (AETCOM) module. The global adaption of CBME raises an alarming need to review its usefulness and limitations in the Indian context. The faculty makes tremendous efforts for its effective implementation, but the students may face many challenges in accepting the new curriculum. There is a need to assess undergraduate medical students' perception and challenges faced with CBME that can be accountable for acceptance of CBME and allows for effective revision of the shortcomings in the new curriculum. **Materials and Methods:** This questionnaire-based cross-sectional study included 1st and 2nd professional year students of seven medical colleges in North Karnataka. Google forms were used to collect the data. **Results:** Among 596 students included, majority found that the new curriculum encouraged students' enthusiasm and various other aspects of the curriculum like FC, ECE, teaching methods, and AETCOM module, which helped them in better understanding and retaining concepts. Yet the duration of the professional year is inadequate, the curriculum is stressful and time-consuming, and the maintenance of the log book is a challenge. **Conclusion:** Although the new curriculum improves medical education standards, it requires effective revision regarding time and stress management.

Keywords: Attitude ethics and communication, assessment, competency-based medical education, early clinical exposure, foundation course

INTRODUCTION

The primary purpose of medical education is to prepare graduates to address society's health demands efficiently. The medical profession comprises employing person-centered science to effectively manage the health of individuals and the community as a whole. The field of medicine is dynamic, and it may be the result of decades of experience and research. It attempts to reduce morbidity and improve people's quality of life through lowering morbidity.

Currently, National Medical Council (NMC) is the highest statutory authority in India for regulating medical education standards. After the last amendment in 1998, the Medical Council of India (MCI) launched a thorough revamp of

the medical curriculum for undergraduate (UG) students in alignment with the global shift toward competency-based learning.

The new "curriculum for the Indian Medical Graduate (IMG)" – Which comprises of three volumes totaling 890 pages – Is being adopted across the nation from the academic year 2019 to 2020. As per the new curriculum, an MBBS student must obtain 2949 competencies at the end of the course.^[1] As a result, by integrating the medical curriculum, the NMC aims to provide IMGs with a much superior learning perspective.

Address for correspondence: Dr. Leela Hugar,
Department of Pharmacology, BLDE (DU)'s Shri B M Patil Medical College,
Vijayapura, Karnataka, India.
E-mail: leela146@gmail.com

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The earlier medical education system was a subject-centered, time-based curriculum. The fundamental goal of the new UG curriculum is to stress all three domains, such as cognitive, affective, and psychomotor, rather than concentrating solely on the cognitive domain, as with the previous curriculum design. Most evaluations were summative and offered limited room for feedback. Activities for teaching and learning as well as evaluation procedures emphasized knowledge more so than attitudes and skills. Because of this, graduates lack the essential clinical skills necessary in practice as well as soft skills like communication, building doctor-patient relationships, professionalism, and ethics, even though they have great knowledge.^[2] These issues may be resolved through Competency-Based Medical Education (CBME), which has been proposed as a potential approach. “Competency is described as the observable ability of a health professional that integrates knowledge, skills, values, and ability” and CBME is a strategy to make sure that graduates acquire the skills necessary to satisfy the demands of the patients in society.

The revised UG curriculum is centered on assisting students in making shift from gaining knowledge to gaining skills. The implementation of the new curriculum depends heavily on the alignment and integration of several disciplines. Elements of the new curriculum include the foundation course (FC), early clinical exposure (ECE), attitude ethics and communication (AETCOM), elective postings, alignment, and integration. Other features include opting for electives, self-directed learning (SDL), problem-based learning (PBL), structured feedback, and maintenance of logbook.^[3-8] The benefit of the new curriculum is that it has an advantage in the cognitive, psychomotor, and affective domains as compared to the cognitive domain of the prior curriculum.^[9] There has been a paradigm shift from an approach that is examination- and classroom-centered to one that is student-centered.

During their first 2 months of MBBS, students are introduced to the FC. The main objectives of this program are to acclimate UG s to every facet of the medical college atmosphere, provide them with some basic yet essential patient care skills, and improve their communication. The ECE component of the MBBS curriculum gives students the chance to correlate whatever they study in the I-professional year with clinical application.^[6] “Being a life-long learner” is one of the competencies expected of an IMG by the NMC; hence, students must be provided ample opportunities for SDL.^[2] Small-group discussion (SGD) is a student-centered approach that permits students to eagerly engage in the teaching–learning process.^[10] PBL makes a significant contribution to the development of interpersonal communication and presentation skills and the improvement of knowledge and learning skills. Assessment is a critical component of the new curriculum. Formative assessments with feedback are one of the essential components of CBME. Frequent assessments with qualitative feedback from teachers would be required to guide the students in the right direction.^[2] A few techniques for assessing students include multiple-choice questions, case-based discussions,

theory examinations, viva voces, skill assessments, Objective Structured Clinical Examinations, Objective Structured Practical Examinations, seminars, and assignments. The most important qualities for a medical student to acquire are communication skills, and a medical professional’s ability to communicate effectively with patients is the key to success. A good patient-doctor relationship is essential for diagnosis, treatment, and patient satisfaction.^[11]

Although the CBME is expanding globally and represents a glacial shift in the previous method of medical education and teaching, there are many challenges in implementing it at the institutional level. In order to change from a teacher-centered to a student-centered curriculum and satisfy the demands of lifelong learning, which is the fundamental competency of the new curriculum, it is essential to alter significantly the teaching–learning structure and process.^[12] Faculty members may feel overwhelmed by this abrupt change in the curriculum. The efforts put by faculty members in implementing the new curriculum will be fruitful only if it reaches the students effectively and is perceived appropriately. Yet there may be many challenges that the students might face while understanding, which may be ignored.

As the revised curriculum is all new and only a handful of studies are there to assess the problems faced by students to accept the new curriculum, we felt the need to assess the perceptions and challenges faced by UG medical students in accepting the CBME by MBBS students of the 2019 and 2020 batches, considering the issues mentioned above.

MATERIALS AND METHODS

A questionnaire-based cross-sectional study was conducted in seven medical colleges of Northern Karnataka. The study was carried out from January 2022 to May 2022 after receiving approval from the Institutional Ethics Committee (BLDE [DU]/IEC/590/2021–2022) from BLDE (DU)’s Shri B. M. Patil Medical College, Vijayapura, Karnataka. The study included MBBS students of 1st and 2nd professional year (CBME batches) after obtaining consent from each participant. A prevalidated structured questionnaire was used to collect data which also included a statement on willingness to participate in the study. The questionnaire was validated for its appropriate structure, language, and content by two experts from Medical Education Unit. Questionnaires included closed-ended questions, the majority of which were assessed on a 5-point Likert’s scale. Google Forms, an online survey tool, was used to collect data from the participants. The statistical data gathered via Google forms was exported and processed in Microsoft Excel to generate the final results and graphs. Percentages were used to represent the results in a table.

RESULTS

Curricular aspects

Out of 596 pupils who participated, 98% were aware of the newly introduced CBME curriculum. Students were

optimistic about the curriculum, like the new curriculum enhances the enthusiasm of the students from the beginning to develop medical professional careers (91%), prepares them to handle lifetime situations (82%), and the curriculum defines competencies of knowledge and skills appropriately (82%). Ninety two percent of respondents opined that curriculum improves the standards and quality of the health management system in the upcoming years. Sixty-five percent of the students consider the new curriculum is academically more stressful and time-consuming, whereas 35% disagree with the statement. As per the curriculum, around 56% of the students show a positive attitude towards maintaining a separate log book for each department, whereas the remaining 44% assume it to be difficult. About 61% of the students stated that the scheduling of semesters for each professional year appears insufficient to learn effectively. While 31% gave a neutral response to the above statement [Table 1 and Figure 1].

Foundation course

Seventy percent of the students were pleased with the inclusion of the FC at the commencement of the MBBS course, while 24% were neutral about whether or not it is a good initiative taken by the MCI. 36% of the students felt the duration of the course was too long, and 46% were neutral about the statement. Of the different components of the FC, professionalism and ethics and basic life support training received highly positive responses (86% and 85%, respectively), followed by language and communication skills (81%) and field/health center visits (80%). The Time management (73%), Stress management (71%), and Information Technology (IT)/Computer skills sessions (64%)

received relatively fewer responses compared to the other components. Using a five-point Likert’s scale, the responses for different elements of the FC are recorded as summarized in Table 2.

Early clinical exposure

Among 596 participants, 89% opined that ECE would allow the students to integrate basic knowledge with clinical scenarios, and 85% felt that it fosters improved patient interactions and problem-solving skills. Eighty-four percent of students agreed that ECE is a boon to budding doctors, and 83% believed that it establishes basic science correlation and basic clinical skills and makes learning more applicable and contextual. Seventy-eight percent of the total students conveyed that ECE results in a better understanding of the subject and better retention of the topic than didactic lectures [Figure 2].

Teaching–learning methods

Out of 596 respondents, 96% favored that PBL enhances critical thinking and decision-making skills, 93% agreed that vertical and horizontal Integration helps them to understand the topic better, and 86% considered that the Integration of topics provides a comprehensive and better understanding of the subject. 83% of students appreciated that skill lab training provides more contextual learning opportunities, and 79% welcomed the idea of MCI introducing a skill-based approach to learning the subject taught right from the 1st year of MBBS builds their confidence. 69% of students favored the SDL sessions in CBME, which are vital to initiate self-motivation and creativity among the students. Only 67% of students supported that SGD will increase their understanding and

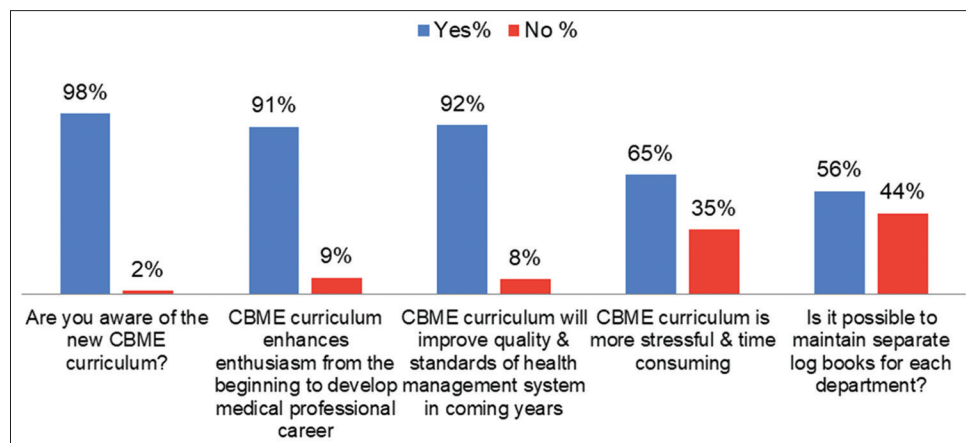


Figure 1: Perception and challenges faced by students on curricular aspects. CBME: Competency based medical education

Table 1: Curricular aspects

Components	A (%)	SA (%)	N (%)	D (%)	SD (%)
1. Do you agree that the new curriculum prepares you to handle lifetime situations?	387 (65)	99 (17)	98 (16)	7 (1)	5 (1)
2. Do you agree that the new curriculum defines competencies of knowledge and skills appropriately?	397 (67)	88 (15)	96 (16)	8 (1)	7 (1)
3. Do you agree with the distribution of semesters for each professional year appears inadequate to learn effectively?	293 (49)	70 (12)	183 (31)	36 (6)	14 (2)

A: Agree, SA: Strongly agree, N: Neutral, D: Disagree, SD: Strongly disagree

interest in a particular subject, while the remaining 33% have not agreed with it. Learning some phase II and phase III concepts in phase I was satisfactory to 55% of the participants, but 31% gave a neutral response [Table 3 and Figure 3].

Assessment methods

Ninety-two percent of the participants agreed that including multiple choice questions (MCQs) in the new curriculum helps prepare for the exit exam, and 86% of students opined that including MCQs in the new curriculum is a good initiative by MCI. The examination pattern of formative assessment

and feedback scheme in the curriculum was satisfactory for 82% of the participants. On the contrary, only 68% agreed that formative assessment with feedback would improve their overall learning ability, and 27% of the students gave neutral responses. Sixty five percent of the participants felt that 100 marks theory paper for each subject is stressful, while 35% did not agree [Figure 4].

Attitude ethics and communication

The addition of the AETCOM module in the new curriculum was well accepted by 88% of students, who agree that it is

Table 2: Foundation course

Components	A (%)	SA (%)	N (%)	D (%)	SD (%)
1. Foundation course is necessary at the start of MBBS course	297 (50)	117 (20)	142 (24)	32 (5)	8 (1)
2. Do you think that duration of foundation course is too long?	152 (26)	57 (10)	271 (45)	90 (15)	26 (4)
3. The following components of foundation course' were helpful for your career					
3a. Basic life support training'	353 (59)	157 (26)	76 (13)	6 (1)	4 (1)
3b. Field/health center visits	340 (57)	136 (23)	104 (17)	10 (2)	6 (1)
3c. Time management	311 (52)	125 (21)	130 (22)	20 (3)	10 (2)
3d. Stress management	305 (51)	121 (20)	133 (22)	24 (4)	13 (2)
3e. Language and communication skills	332 (56)	147 (25)	98 (16)	11 (2)	8 (1)
3f. Professionalism and ethics	353 (59)	162 (27)	72 (12)	6 (1)	3 (1)
3g. Biomedical waste management	348 (58)	118 (20)	110 (19)	14 (2)	6 (1)
3h. IT/computer skills	292 (49)	89 (15)	169 (28)	29 (5)	17 (3)

A: Agree, SA: Strongly agree, N: Neutral, D: Disagree, SD: Strongly disagree, IT: Information technology

Table 3: Teaching learning methods

Components	A (%)	SA (%)	N (%)	D (%)	SD (%)
1. Is it desirable to learn some of the II nd and III rd professional year concepts in I st professional year (nesting)	269 (45)	59 (10)	183 (31)	73 (12)	12 (2)
2. Skill-based approach in learning the subject introduced right from the 1 st year of MBBS improves confidence	349 (59)	116 (20)	110 (18)	14 (2)	7 (1)
3. Skill lab training provides you more contextual learning opportunities	364 (61)	133 (22)	88 (15)	8 (1)	3 (1)
4. SDL sessions in CBME are vital to initiate self-motivation and creativity among the students	342 (57)	70 (12)	140 (23)	29 (5)	15 (3)
5. Do you agree that integration of topics provide comprehensive and better understanding of the subject?	413 (69)	100 (17)	74 (12)	6 (1)	3 (1)

A: Agree, SA: Strongly agree, N: Neutral, D: Disagree, SD: Strongly disagree, SDL: Self directed learning, CBME: Competency Based Medical Education

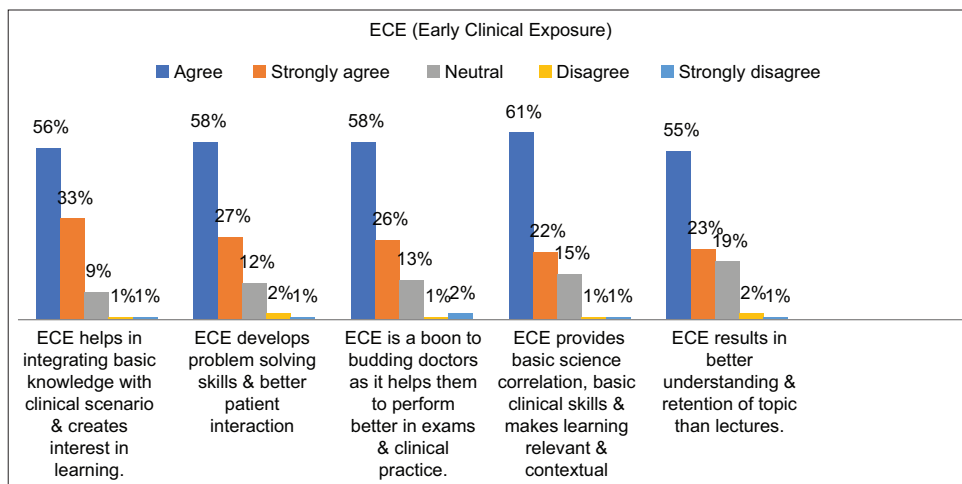


Figure 2: Student's opinion on early clinical exposure

essential right from 1st professional year. Ninety-two percent of the respondents state that the AETCOM module is important for building doctor–patient relationships. Eighty percent of the students rate the AETCOM module as improving their clinical and communication skills on a Likert scale [Figure 5].

DISCUSSION

The MCI introduced CBME, an outcome-based approach to medical education. But also aims to provide medical students with a curriculum on AETCOM.^[13] The present study was thus conducted to study students’ perspectives and challenges about the newly implemented CBME curriculum, for which we have used various aspects of coursework like curricular aspects, FC, ECE, teaching–learning methods, Assessment methods and AETCOM module-related questions.

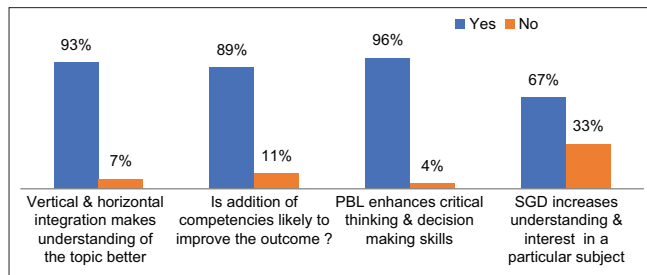


Figure 3: Student’s response on teaching learning methods. PBL: Problem-based learning, SGD: Small group discussion

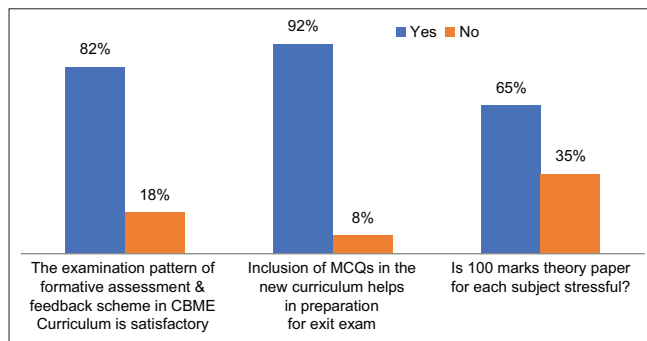


Figure 4: Student’s view on assessment methods. MCQs: Multiple Choice Questions, CBME: Competency-based medical education

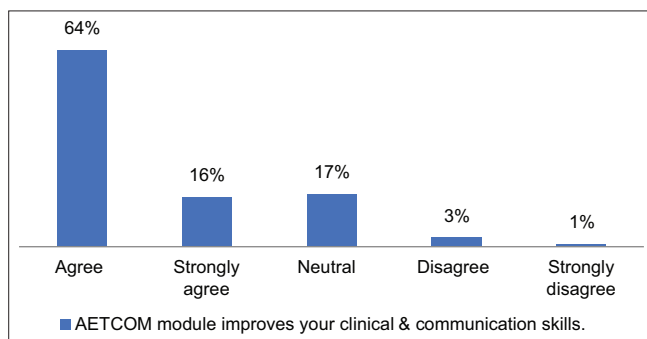


Figure 5: Student’s perspective on AETCOM module. AETCOM: Attitude ethics and communication

Regarding the curricular aspects, according to our study, almost all the students were aware of new CBME curriculum and the competencies of knowledge and skills. They also believed that the new curriculum enhanced enthusiasm to develop medical professional careers and handle lifetime situations. A similar study done by Selva and Rithikaa. showed that 71.8% of participants opined that to achieve the roles and goals of IMG implementation of the new curriculum in MBBS would be immensely helpful, but this study included both students and teaching faculty.^[14] A few students also gave some negative impacts, like the duration of the professional year is inadequate and the new curriculum is more stressful, time-consuming, and the maintenance of separate logbooks for each department was another hurdle. Research by Ramanathan *et al.* produced similar findings, with barely one-third of students believing they can satisfactorily keep log books for each subject.^[15]

About the FC, students had a positive attitude to begin it in the first professional year itself. Few students felt that duration of FC was too long. Of the various components of FC, professionalism and ethics, basic life support training received high responses, followed by language and communication skills and field/health center visits. Regarding time management, stress management, and IT/Computer skills sessions, responses were comparatively low. A similar study by Ramanathan *et al.* also demonstrated that three-fourths of students who were interested in FC, field visits, and basic life support training elicited a lot of extremely positive responses from the students, whereas IT/computer skills elicited the least.^[15] Another study by Dixit *et al.* also showed that the FC helped students to cope with the vast areas of knowledge and skill requirements of the new CBME, including professionalism and ethics.^[16]

Majority of the study participants in our study opined that ECE would allow the students to integrate basic knowledge with clinical scenarios and also promotes better patient interaction and problem-solving skills. The students’ integration of fundamental information with clinical circumstances would be made possible by ECE, which also fosters improved patient connection and problem-solving abilities. They also believed that ECE is a boon to budding doctors, which aroused interest and provided them with the correlation of basic science and basic clinical skills, making learning pertinent and applicable with better understanding and retention of the topic. In a study done by Tayade *et al.* students with ECE imparted better clinical context, knowledge assimilation, and good learning satisfaction as compared to traditional teaching methods.^[17] According to another study by Kumar. also, majority of the students responded that ECE module was helpful. Showing a video was more interesting followed by a discussion would create interest in the topic.^[18] Regarding the teaching–learning methods, the majority of the student favored PBL, as it enhances critical thinking and decision-making skills. These results are in coordination with another study by Baheti Tushar *et al.*, which studied the effectiveness of case-based learning (CBL). According to which, CBL showed significant improvement compared to didactic lecture groups, with great satisfaction

and understanding of the subject.^[19] In the present study, the majority of the students agreed that vertical and horizontal integration of topics provides comprehensive learning. Furthermore, students appreciated that skill lab training provided more contextual learning opportunities to build their confidence from the 1st year itself. Still, only a moderate number supported that SGD will increase their understanding and interest in a particular subject. In our study, around two third of students accept that SDL sessions are vital to initiate self-motivation and creativity among the students. According to a related study by Muraleedharan *et al.*, vertical integration and SGDs were beneficial to all of the pupils. Seventy-eight percent of pupils favored SDL and near-peer teaching.^[20] A study by Ramanathan *et al.* also suggested that newer curricular elements such as ECE, SGDs, SDL and reflective learning had a good impact on students in that order.^[15]

Regarding the assessment methods, the inclusion of MCQs in the new curriculum helps the students to prepare for the exit examination, and is a good initiative by MCI. They also agreed that the examination pattern of formative assessment and feedback scheme is satisfactory and that formative assessment with feedback would improve their overall learning ability. Majority of the participants felt that 100 marks in theory paper for each subject is stressful. In a study by Vegi *et al.*, a large number of students claimed that preparation that is MCQ oriented will help them for MBBS professional (theory and practical) examinations with strong concept-based learning.^[21] On contrary, the study by Muraleedharan *et al.*, 65% of the participants felt that 100 marks theory paper for each subject is stressful.^[20]

Attitude ethics and communication

In order to make an IMG accountable to patients, the community, and his profession, AETCOM is addressed in his roles. Major study participants of our study welcome the AETCOM module as it is important for building doctor-patient relationships, which improved their clinical and communication skills. A study by Sharma *et al.* revealed similar outcomes, according to which almost all the students agreed on the importance of having medical ethical knowledge.^[22]

Another study found that the AETCOM Module was beneficial in boosting patients' confidence, helpful for them personally and professionally in the future, and also an outstanding technique for improving diagnosis. A few students sought out several such exposures consistently throughout their UG course, which helped them learn to avoid medicolegal issues.^[23]

CONCLUSION

The present study provides valuable insights into students' perception of various components of CBME. The CBME curriculum makes learning relevant, hastens interest and creativity among students and makes the IMG liable and responsible for patients, community, and the profession. Although the introduction of components of FC at the start of the MBBS program has been well received by students, most

of them are of the opinion of reducing the duration of FC. Although the new curriculum improves medical education standards, it requires effective revision regarding time and stress management. Despite many challenges and concerns related to its framework, strategies, and guidelines, CBME is an excellent initiative and novel approach to make graduates competent enough to handle real-life situations. Based on stakeholders' perceptions, curriculum revisions should be an ongoing activity.

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Conflicts of interest

There are no conflicts of interest.

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