

Original Research Article

Exploring student's Perspectives of Competency Based Medical Education

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Abstract: **Background:** Competency-Based Medical Education (CBME) was introduced in India to transform undergraduate medical training from a time-based model to an outcome-oriented framework. Evaluating students' perceptions is essential to assess the effectiveness and feasibility of this reform during its early implementation phase. **Objectives:** To assess medical students' perspectives on the CBME curriculum, including the foundation course, innovative teaching-learning strategies, assessment reforms, and implementation challenges. **Methods:** A cross-sectional study was conducted from March to August 2024 among 271 medical students from two randomly selected medical colleges in Chengalpattu district. Multistage sampling was employed. Data were collected using a pre-tested, semi-structured online questionnaire covering socio-demographic details, perceptions of the foundation course, and various CBME teaching-learning components. Data analysis was performed using SPSS version 21, with descriptive statistics and chi-square tests applied; a p-value of <0.05 was considered statistically significant. **Results:** Among the participants, 57.6% were males and 50.2% were pre-clinical students. Nearly 80% perceived the foundation course as necessary. More than half of the students positively rated self-directed learning, early clinical exposure, reflective learning, and small-group teaching. A majority supported early introduction of the AETCOM module and elective postings after Phase III. Key challenges reported included inadequate resources and diagnostic facilities in community settings, communication barriers, difficulty adapting to rural postings, and insufficient supervision. **Conclusion:** Medical students generally perceive CBME as a positive and relevant reform that promotes clinical relevance, professionalism, and holistic competency development. Strengthening infrastructure, faculty development, and community-based learning environments is essential for successful and sustainable CBME implementation.

Keywords: Competency-Based Medical Education; Medical students; Foundation course; Teaching-learning methods; AETCOM

INTRODUCTION

Competency-Based Medical Education (CBME) represents a paradigm shift from traditional time-based teaching towards an outcome-oriented, skill-focused approach aimed at producing a competent and socially responsive Indian Medical Graduate

(IMG) (1). The National Medical Commission (NMC) introduced CBME for MBBS students in 2019 with the intention of integrating knowledge, attitudes, skills, ethics and communication into day-to-day medical training (2). The curriculum incorporates early clinical exposure, integrated teaching, skill laboratories, the AETCOM module,

small-group learning and self-directed learning, moving beyond lecture-based pedagogy and summative assessment (3).

Globally, CBME has been applauded for bridging the gap between theory and practice; however, its success depends greatly on the perception and readiness of students who are the primary beneficiaries of this reform (4). In the Indian context, student feedback becomes especially crucial because this curriculum is still in the early phases of large-scale implementation. Understanding learners' perspectives is therefore essential for identifying strengths, curricular gaps and challenges that may hamper its effectiveness (5).

Existing studies suggest that Indian medical students perceive CBME as more clinically relevant and engaging than the traditional pattern; they appreciate early clinical exposure, foundation modules and integration of disciplines (6). At the same time, they have reported difficulties such as increased workload, inadequate orientation to self-directed learning, poorly aligned assessments and logistical constraints in skill labs and small-group activities (7). Moreover, although attitudes and communication skills are emphasised, students feel that assessment mechanisms often remain knowledge-heavy and do not fully capture competencies (8). These mixed perceptions highlight the need for systematic documentation of student experiences to guide evidence-based curricular modifications.

Since students are direct stakeholders in CBME delivery, their perspectives offer valuable insights into acceptability, feasibility and actual learning experiences within the reformed curriculum (5). Exploring their views can uncover barriers to implementation, areas for faculty development, and opportunities for feedback-driven policy refinement. Therefore, the present study aims to explore medical students' perspectives regarding the CBME curriculum, focusing on perceived benefits, challenges and alignment with competency development. The findings may support curricular strengthening and contribute toward more learner-centric and outcome-oriented medical training in India.

MATERIAL AND METHODS

Study Design and Setting

This cross-sectional study was conducted for a period of 6 months from March 2024 to August 2024 among the medical college students in Chengalpattu district. The sample size was calculated considering 80% as the prevalence from the study conducted by Dr. Rashmi Ramanathan et al.(3) with 5% absolute error, 95% confidence interval, resulting in a required sample size of 246. With an additional non-response

rate of 10%, the final sample size was calculated to be 271.

Sampling method

The study participants were selected by Multistage sampling method. Out of the 8 medical colleges in the Chengalpattu district, of which two medical college has been selected by simple random sampling method and the line list will be prepared for the selected college. The sample interval was calculated to be 9. The first Sample was selected randomly by lottery method. Subsequently, the remaining samples were selected by systematic sampling method for every 9th student until the required sample size was reached.

Data collection method

Data was collected by Online forms with a pre-tested semi-structured questionnaire under 3 domains.

- A) Sociodemographic details of the students
- B) Students' perspectives on the Foundation courses
- C) Questionnaire regarding different teaching patterns under CBME curriculum

A pilot study was conducted among 30 participants using the semi-structured questionnaire. Based on the responses and feedback received the questionnaire was modified. To assess the awareness regarding CBME. Reliability analysis for the questions was done, yielding a Cronbach's alpha of 0.9

Statistical Analysis

The data were analyzed using SPSS (Statistical Package for the Social Sciences) version 21. Descriptive statistics, including mean, median, standard deviation, and percentages, were used to summarize demographic characteristics and responses to each questionnaire item. Inferential statistics, such as the Chi-square test, were used to assess associations between demographic variables and attitudes or perceptions towards CBME. Results were presented with 95% confidence intervals, and a p-value of < 0.05 was considered statistically significant.

Ethical consideration

The study was conducted following ethical guidelines and approval was obtained from the Institutional Ethics Committee. All participants were provided with detailed information regarding the study's purpose, voluntary nature of participation, and the confidentiality of their responses. Written informed consent was obtained from each participant before data collection. Anonymity and confidentiality of the data were maintained throughout the study.

RESULTS

Table 1: Socio-demographic variables of the study participants

Table 1 describes the baseline characteristics of the 271 medical students who participated in the study. Males constituted 57.6%, while females accounted for 42.4%, indicating a slight male predominance among respondents. Students were almost equally distributed across phases of training, with 50.2% from the pre-clinical phase and 49.8% from the clinical phase, ensuring balanced representation of early and advanced learners.

Regarding exposure to CBME, a majority (73.1%) had experienced the curriculum for more than three months, suggesting adequate familiarity with CBME components. Only 15.1% had less than one month of exposure, minimizing the likelihood of uninformed responses. In terms of community exposure, most students (66.4%) were posted in urban settings, while 20.7% were exposed exclusively to rural areas and 12.9% had experience in both. This distribution provides important context for interpreting challenges related to community-based learning.

Figure 1: Student's Perception on necessity of Foundation Course

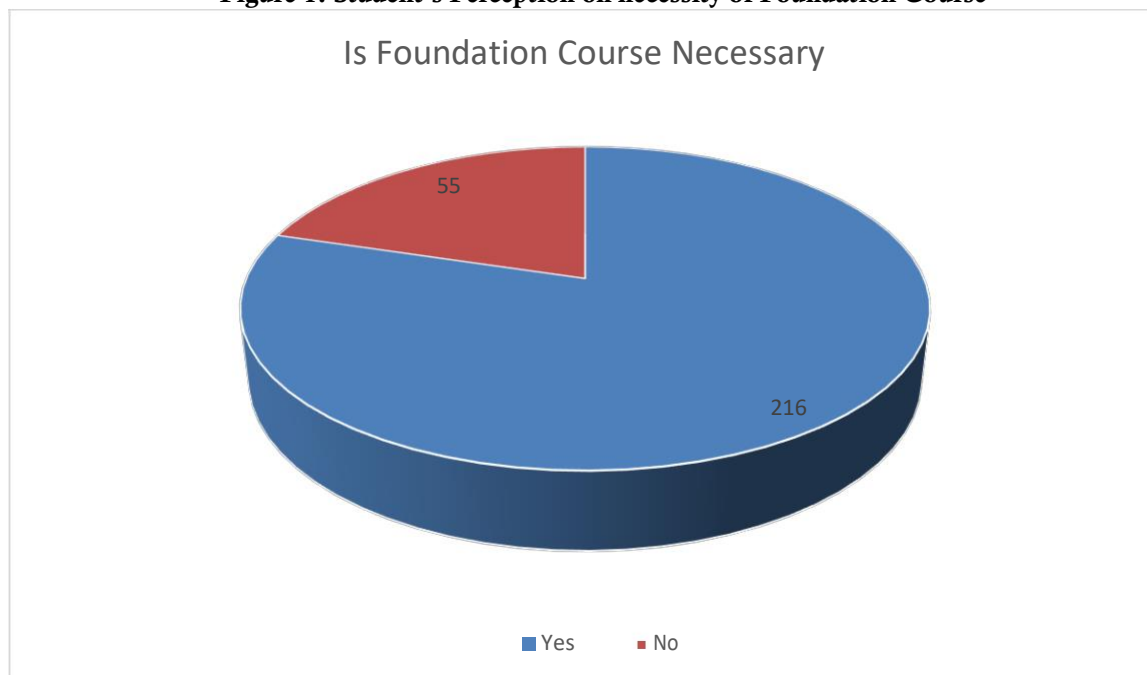


Figure 1: The pie chart illustrates students' opinions on the necessity of the foundation course under the CBME curriculum. Out of 271 participants, a large majority of 216 students (79.7%) reported that the foundation course is necessary, while 55 students (20.3%) felt it was not required. This overwhelming support indicates that most students perceive the foundation course as an important component of undergraduate medical education. The findings suggest that the foundation course plays a vital role in orienting students to the medical profession, enhancing essential skills such as communication, professionalism, and stress management, and easing the transition into the CBME framework.

Table.2. Student's Perception on Foundation Course

Do you find the following components of the CBME foundation course helpful	Strongly Disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly Agree n (%)
Basic life support training	33 (12)	38 (14)	45 (16)	75 (27)	80 (29)
Field/health centre visits	34 (12)	37 (14)	44 (16)	74 (27)	82 (30)
Time management	35 (12)	36 (13)	43 (16)	76 (28)	81 (30)
Stress management	35 (13)	36 (13)	42 (16)	75 (28)	83 (30)
Language and communication skills	36 (13)	36 (13)	41 (15)	74 (27)	84 (31)
Professionalism and ethics	37 (14)	35 (13)	41 (15)	73 (27)	85 (31)

Table 2 highlights students' perceptions regarding various components of the CBME foundation course. Overall, responses showed a predominantly positive perception. For all listed components, more than half of the participants either *agreed* or *strongly agreed* that the sessions were helpful.

Basic Life Support (BLS) training received favourable responses, with 56% of students agreeing or strongly agreeing, reflecting its perceived practical relevance. Field and health centre visits were also positively viewed, indicating that early exposure to real healthcare settings enhanced understanding of community health. Time management and stress management sessions were well received, suggesting that students valued non-academic skill development during the transition into medical education.

Language and communication skills, as well as professionalism and ethics, received the highest levels of strong agreement, highlighting the importance students place on soft skills and ethical grounding early in their training. Only a small proportion of students expressed disagreement, indicating overall acceptance of the foundation course structure.

Table.3. Perceptions of Newer Curriculum Elements

Do you think the following newer curricular elements are helpful	Strongly Disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly Agree n (%)
Self-directed learning	38 (14)	35 (13)	40 (15)	72 (27)	86 (32)
Early clinical exposure	39 (14)	34 (13)	40 (15)	71 (26)	87 (32)
Reflective learning	40 (15)	34 (13)	39 (14)	70 (26)	88 (33)
Small group Teaching/Learning	41 (15)	33 (12)	39 (14)	69 (25)	89 (33)

Table 3 assesses perceptions of newer CBME teaching-learning strategies. Self-directed learning (SDL) was perceived positively by most students, with 59% agreeing or strongly agreeing that it was helpful. Early clinical exposure also received strong endorsement, emphasizing its role in bridging theoretical knowledge with clinical practice.

Reflective learning and small group teaching were similarly well regarded, with approximately 58–59% of participants expressing agreement or strong agreement. These findings suggest that students appreciate learner-centered approaches that encourage reflection, discussion, and active participation. However, a notable proportion of neutral responses indicates that some students may still be adapting to these newer methodologies.

Table.4. Perceptions of AETCOM and Innovative Assessment Methods

Do you think the following newer curricular elements are helpful	Strongly Disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly Agree n (%)
Do you think AETCOM training must start from phase I MBBS itself	42 (16)	33 (12)	38 (14)	68 (25)	90 (33)
Do you think Elective posting is needed after Phase III	43 (16)	32 (12)	38 (14)	67 (25)	91((34)
100 marks for each paper in the theory exam would be difficult to complete on time	44 (16)	32 (12)	37 (14)	66 (24)	92 (34)
Inclusion of multiple-choice questions in the new curriculum is acceptable	45 (17)	31 (11)	37 (14)	65 (24)	93 (34)

Table 4 explores students' views on AETCOM, electives, and assessment-related changes under CBME. A majority of students (58%) supported the initiation of AETCOM training from Phase I itself, reinforcing the perceived importance of early exposure to ethics, communication, and professionalism.

Similarly, 59% agreed that elective postings after Phase III are necessary, reflecting students' interest in flexible, interest-based learning opportunities. Regarding assessment, over half of the students felt that 100 marks per theory paper would be difficult to complete on time, indicating concerns about feasibility and exam pressure.

The inclusion of multiple-choice questions (MCQs) in assessments was found acceptable by 58% of respondents, suggesting openness toward diversified evaluation methods. Overall, this table reflects cautious optimism toward assessment reforms, with some apprehension regarding implementation.

Table.5. Perceived Barriers and Challenges

Variable	Strongly Disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly Agree n (%)
The resources in community settings were insufficient for effective learning.	46 (17)	31 (11)	36 (13)	64 (24)	94 (35)

The lack of diagnostic tools made CBME less valuable.	47 (17)	30 (11)	36 (13)	63 (23)	95 (35)
I found it challenging to adapt to working in rural community health centers.	48 (18)	30 (11)	35 (13)	62 (23)	96 (35)
The communication barriers with patients were difficult to overcome.	49 (18)	29 (11)	35 (13)	61 (23)	97 (36)
The supervision and guidance during CBME were inadequate.	50 (19)	29 (11)	34 (13)	60 (22)	98 (36)

Table 5 outlines the challenges faced by students during CBME implementation, particularly in community settings. A significant proportion of students (59%) agreed or strongly agreed that resources in community settings were insufficient for effective learning. Similarly, lack of diagnostic tools was perceived as a major limitation, affecting the perceived value of CBME.

Adapting to rural community health centers was reported as challenging by over half of the participants, reflecting gaps in preparedness and infrastructure. Communication barriers with patients were also commonly reported, indicating the need for stronger language and cultural competence training.

Inadequate supervision and guidance emerged as another key concern, with 58% of students agreeing or strongly agreeing. These findings highlight systemic and logistical challenges that may hinder optimal implementation of CBME, despite its strong conceptual framework.

DISCUSSION

The present study assessed medical students' perspectives on the implementation of Competency-Based Medical Education (CBME) in medical colleges of Chengalpattu district. Since CBME was introduced nationally in 2019 by the National Medical Commission (NMC), understanding students' experiences is essential for evaluating its acceptability and effectiveness during the early phase of implementation in India(9)

In the current study, males constituted 57.6% of participants, and students were almost equally distributed between pre-clinical and clinical phases. Similar demographic distributions have been reported in other Indian CBME perception studies, suggesting comparability of findings(10) The majority of students had more than three months of exposure to CBME, indicating that their perceptions were based on sufficient experience with the curriculum rather than initial orientation alone.

A significant finding of the study was that nearly 80% of students perceived the foundation course as necessary. This is consistent with findings from Datta et al., who reported that foundation courses helped students adapt to the medical environment and improved confidence, communication skills, and professionalism (11) The strong agreement observed for professionalism, ethics, and communication skills highlights the value students place on non-cognitive competencies, which were largely underemphasized in the traditional curriculum.

Basic Life Support training and field visits were also positively perceived in the present study. Early exposure to clinical and community settings has been

shown to enhance contextual learning and motivate students by linking theoretical knowledge to real-world practice(12) Similar appreciation for early clinical exposure was reported by Ramanathan et al., where students felt more engaged and clinically oriented under CBME.

With regard to newer teaching-learning methods, more than half of the participants agreed that self-directed learning, early clinical exposure, reflective learning, and small-group teaching were helpful. These findings align with global CBME literature, which emphasizes learner-centred approaches and active participation as key strengths of competency-based frameworks (13) However, the relatively high proportion of neutral responses suggests that some students may struggle with adapting to self-directed and reflective learning, possibly due to inadequate guidance or prior exposure to teacher-centred pedagogy.

The majority of students supported early introduction of the AETCOM module from Phase I MBBS, reinforcing the need for early training in ethics, attitudes, and communication. Similar findings have been reported by Sethuraman et al., who observed that students valued structured communication and professionalism training in clinical disciplines(14) Support for elective postings after Phase III reflects students' desire for flexible and interest-based learning, which is a core principle of CBME.

Assessment reforms under CBME received mixed responses. While inclusion of MCQs was largely accepted, many students felt that 100-mark theory papers would be difficult to complete on time. This

concern mirrors earlier Indian studies that reported assessment overload and misalignment between competency-based teaching and traditional summative examinations (15). Harden has also emphasized that assessment systems must evolve alongside outcome-based curricula to truly measure competence rather than factual recall.

Several implementation challenges were highlighted in the present study. More than half of the students reported inadequate resources and diagnostic facilities in community settings, difficulty adapting to rural postings, communication barriers with patients, and insufficient supervision. These challenges are consistent with stakeholder-based analyses conducted across India, which identify infrastructural limitations, faculty shortages, and uneven implementation as major barriers to effective CBME delivery (16). Addressing these issues through faculty development, infrastructure strengthening, and standardized implementation strategies is crucial.

Overall, the findings suggest that while CBME is positively perceived and considered more relevant than the traditional curriculum, its successful implementation requires systemic support. Continuous student feedback, improved faculty training, and strengthening of community-based learning environments are essential to achieve the intended goal of producing a competent and socially responsive Indian Medical Graduate.

Limitation

This study has certain limitations that should be considered while interpreting the findings. Being a cross-sectional study, it captures students' perceptions at a single point in time and does not assess changes in attitudes as students progress through different phases of CBME. The study relied on self-reported responses, which are subject to social desirability and recall bias. As the study was conducted in only two medical colleges in Chengalpattu district, the findings may not be generalizable to all medical colleges in India with varying infrastructure and faculty preparedness. The use of an online questionnaire might have excluded students with limited access or engagement, potentially introducing selection bias. Additionally, although quantitative perceptions were assessed, qualitative insights that could have provided deeper understanding of students' experiences were not explored.

CONCLUSION

The present study highlights that medical students largely perceive the Competency-Based Medical Education (CBME) curriculum as a positive and necessary reform in undergraduate medical training. The foundation course, early clinical exposure, self-

directed learning, small-group teaching, and AETCOM modules were widely appreciated for enhancing professionalism, communication skills, and clinical relevance. However, notable challenges such as inadequate resources in community settings, limited diagnostic facilities, communication barriers, and insufficient supervision were also reported. These findings suggest that while CBME aligns well with students' expectations of holistic and competency-driven learning, its optimal success depends on strengthened infrastructure, faculty development, and better implementation strategies. Continuous student feedback and systemic support are essential to ensure that CBME achieves its intended goal of producing competent, ethical, and socially responsive Indian Medical Graduates.

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