

# A study of student feedback on Competency Based Medical Education (CBME) - a cross sectional study

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## ABSTRACT

### Introduction

The Competency-Based Medical Education (CBME) curriculum aims to produce competent medical graduates. CBME and medical education technology conducts formative assessment. Regular student feedback is essential to evaluate the effectiveness of the curriculum, and make improvements if necessary.

Aims and objectives:

1. To ascertain the perceptions of students on their experience with the CBME curriculum.
2. To assess the impact of various components of CBME on the creation of competent Indian Medical Graduate

### Methods

A cross-sectional study was conducted among undergraduate medical students in a tertiary care institute in North Maharashtra. A pre-tested, semi-structured questionnaire was used to collect feedback on various aspects of the CBME curriculum. A stratified sampling technique was used. From every phase of the course, around 30-50 students were randomly selected to achieve a sample size of 90. The attrition rate was 30% and hence the final sample size was 120.

### Results

A total of 120 students participated in the study. The majority of students reported that the syllabus was properly covered, and teaching methods were incorporated as prescribed by NMC. Most students reported a changing pattern of assessment especially for Phase 3 students. This has created extra difficulty on top of an already-demanding medical curriculum.

### Conclusion

The curriculum and its contents were effectively communicated to students. A lack of uniformity in assessment formats has created challenges for phase 3 students. Formative assessment techniques need to be revised to be more standardised and less time-consuming.

### Recommendations

A trusted partnership can be developed between students and curriculum designers with consistent communication and feedback.

**Key-words:** Curriculum, CBME, feedback, assessments, Teaching-learning

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## INTRODUCTION

The Competency Based Medical Education (CBME) curriculum is a significant shift in medical education, focusing on competency development rather than mere knowledge acquisition.<sup>1</sup> CBME endorses creation of Indian Medical Graduate by incorporating various levels of assessments, creation of content which will not only incorporate basic physician skills but also sensitize learner towards practical aspects by utilizing various models like Family Adoption programme.<sup>1,2</sup> Student feedback is crucial in understanding the strengths and weaknesses of the curriculum. Broadly, three steps of competency-based curriculum planning and strategies for implementation in the Indian context have been described, namely, identification of competencies, content identification and program organization, and assessment planning and program evaluation. Curriculum map as a tool can be used to ensure that the competencies, the teaching-learning methods, and assessment methods are constructively aligned.<sup>1-5</sup>

After enrolling the CBME in the year 2019 for undergraduate medical education it becomes inadvertent to take feedback from the most important stakeholder of CBME that is student himself from every phase. We need to dig into feedback if students are confident and trusting the CBME guidelines for becoming competent Indian medical graduate.<sup>4</sup>

### Aims and objectives:

1. To ascertain the perceptions of students on their experience with the CBME curriculum.
2. To assess the impact of various components of CBME on the creation of competent Indian Medical Graduate

### Methods

This study was conducted after taking approval from institutional ethical committee. A permission from Head of Institute was taken up in advance. A cross-sectional study was conducted among undergraduate medical students of the Community Medicine

department at JMF'S ACPM Medical College, Dhule. A pre-tested, semi-structured questionnaire was used to collect feedback on various aspects of the CBME curriculum, including Clarity of curriculum objectives, Relevance of curriculum content, Effectiveness of teaching-learning methods, Assessment and evaluation methods, Overall satisfaction with the curriculum. Undergraduate medical students in their clinical years were included in the study after taking the informed consent.

The sample size formula for stratified sampling  
Sample Size Formula

$$n = (Z^2 * p * (1-p)) / e^2$$

Where: n = total sample size

- Z = Z-score corresponding to the desired confidence level (e.g., 1.96 for 95% confidence)

- p = proportion of students with response rate of more than 50% (e.g., 0.5 for a neutral estimate)

- e = margin of error (e.g., 0.05 for a 5% margin of error)

To allocate the sample size to each stratum, you can use the following formula:

$$nh = (Nh / N) * n$$

Where:

- nh = sample size for stratum h

- Nh = population size for stratum h

- N = total population size

- n = total sample size

A sample size of 90, and you have 3 phases with an equal number of students, you can allocate 30 students to each batch.

A stratified sampling technique was employed. From every phase around 30-50 students were randomly selected to achieve the sample size of 90, attrition rate was 30% and hence final sample size was 120.

### Results

In our study 64 males and 56 females participated from three phases. (Table 1)

**Table 1: Phase wise distribution of students participating in the study**

Phase of MBBS	Male	Female	Total
Phase 1	26	21	47
Phase 2	23	20	43
Phase 3	15	15	30
Total	64	56	120

The majority of students (91%) reported that the entire syllabus was covered as prescribed by NMC. However, there were some variations in responses across phases. Most students (95%) agreed that the teaching-learning methods adopted were as per the curriculum. Students generally agreed that integration with other subjects was carried out effectively. Most students (96%) reported that their queries were addressed during the course. The

majority of students (94%) reported that the curriculum was covered before assessments. Students were generally satisfied with the formative and summative assessments. Most students (96%) agreed that the assessment was conducted as per Maharashtra University of Health Sciences (MUHS) and National Medical Commission (NMC) norms. (As in Table 2).

**Table 2 : Phase wise distribution of students regarding NMC norms of Teaching Learning and assessments**

	Phase 1	Phase 2	Phase 3	Significance
Whether your entire syllabus was covered as prescribed by NMC	45	36	29	Non significant
Whether your entire syllabus was covered as prescribed by NMC	45	36	29	Non significant
Whether the teaching learning methods adopted as per the timetable	42	43	30	$\chi^2=8.10, df=2$ $p=0.017$

Whether the integration was carried out with other subjects	43	41	29	Non significant
Do you think your queries were addressed during , before and after the session	43	43	30	$\chi^2 = 6.43$ df=2 p=0.040
Whether your Curriculum was covered before assessment ?	43	42	28	Non significant
Do you think formative assessments were conducted satisfactorily	43	40	30	Non significant
Do you think summative assessment were conducted satisfactorily	43	42	29	Non significant
Whether your assessment was conducted as per MUHS and NMC norms	42	42	30	Non significant

Ratings were highest among Phase 1 (First professional MBBS course year) students for DOAP and OSPE/OSCE (47.1%) and lowest among Phase 3 (Third professional MBBS course year) students (36%). Phase 2 students (Second professional MBBS course year) demonstrated the greatest benefit from clinical placements and family adoption initiatives. The ratings for Phase 3 are consistently lower than Phase 1 and Phase 2 across all aspects. The Family

Adoption Program and Clinical posting content received high ratings in Phase 1 and Phase 2. The ratings for Health Educational visits and Practicals show an increase from Phase 1 to Phase 2. The ANOVA test indicates that there are statistically significant differences in the ratings across the three phases ( $F = 34.65$ ,  $df = 2, 18$ ,  $P\text{-value} = 0.000001$ ). (As in Table 3)

Table 3 -Phase wise distribution of satisfaction of students for creating overall competent IMG (Indian Medical Graduate) (score more than 4 on likert scale )

	Phase 1	Phase 2	Phase 3	Significance
Please rate the overall effectiveness of content of curriculum	20	22	13	The ANOVA test indicates that there are statistically significant differences in the ratings across the three phases (F = 34.65, df = 2, 18, P-value = 0.000001).
Please rate overall effectiveness of CBME curriculum	22	21	15	
Please rate overall effectiveness of Health Educational visits	24	27	16	
Please rate overall effectiveness of Assignments	19	22	13	
Please rate the overall effectiveness of Family Adoption Program	27	30	17	
Please rate overall effectiveness of practicals	21	29	14	
Please rate overall effectiveness of content of clinical posting	26	29	17	

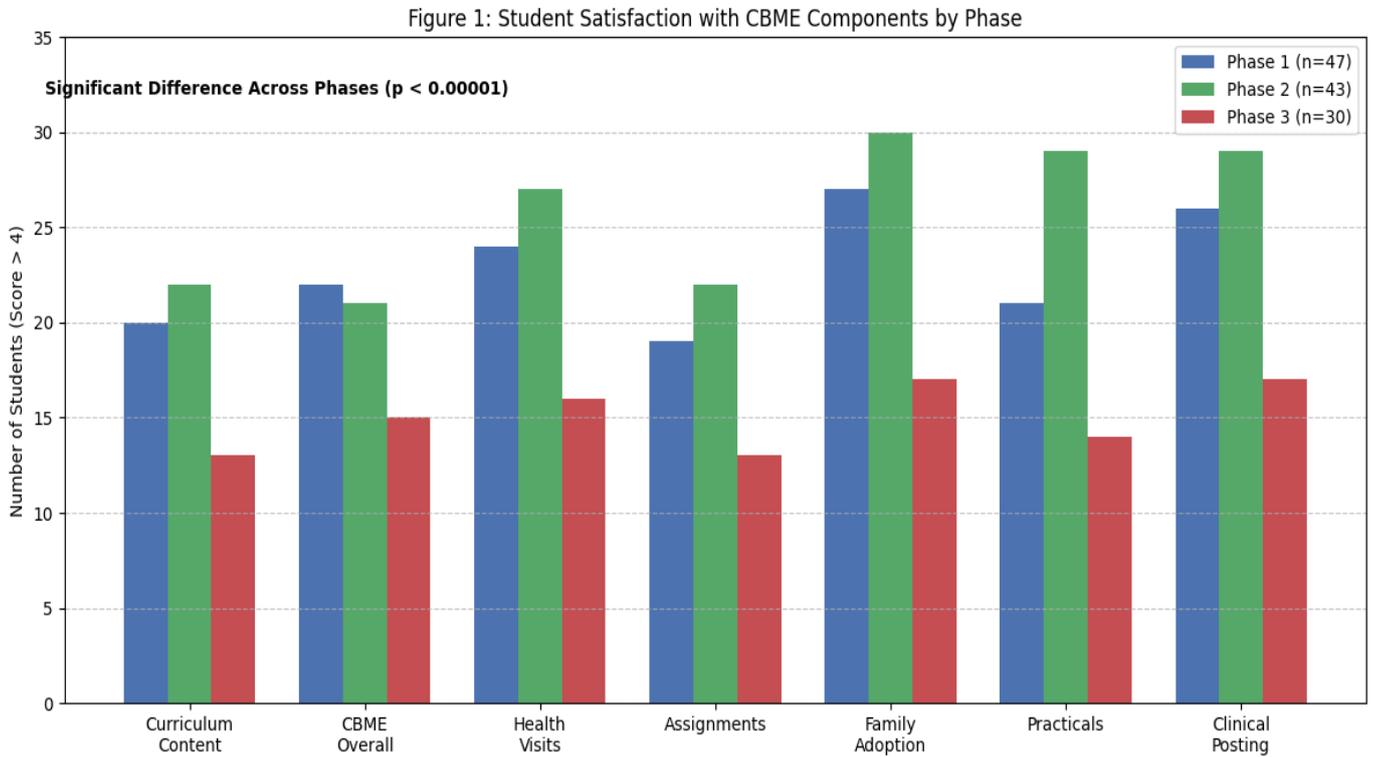
In our study, we have observed that there have been lower rates of participation from students during the third phase of their studies. This might be due to the poor awareness among the students from batches earlier than 2021 about feedback as a teaching and learning method. This result correlates with the introduction of a new curriculum support program and teaching methods for enrolment, which is still developing to promote overall student growth. The

finding reported by Gupta et al. reported that a mixture of various teaching methods, leading to early clinical exposure such as clerkship, Family Adoption Programme, will lead to significantly better learning.<sup>5-6</sup> The results showed significant differences in the ratings across the phases, with Phase 2 generally receiving higher ratings than Phase 1 and Phase 3. A study conducted in Huxham in 2008 reported that even at different levels of education,

senior batches that have undergone an educational transition will report lower ratings than those that come after them.<sup>7-9</sup> In the year 2019, Basheer et al

reported that the continuous evolution of CBME will pose challenges in terms of satisfaction in both faculties and students during initial years.<sup>10</sup>

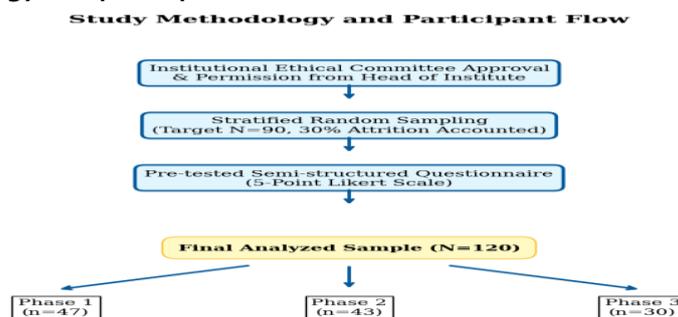
Figure 1- Student satisfaction with CBME components by phase



The ANOVA test revealed statistically significant differences in the ratings across the three phases, indicating that the phases had a significant impact on the perceived effectiveness of the curriculum for creating competent graduates. The post-hoc tests further revealed that the ratings for Phase 3 were significantly lower than those for Phase 1 and 2.

These findings are similar to those from a study conducted by Ai Li et al in 2023 in their program evaluation study. Students reported gaining significant value from CBME, in terms of the professional competency it gave them.<sup>4,11-13</sup> Our study did not discuss the phase wise difference in this.

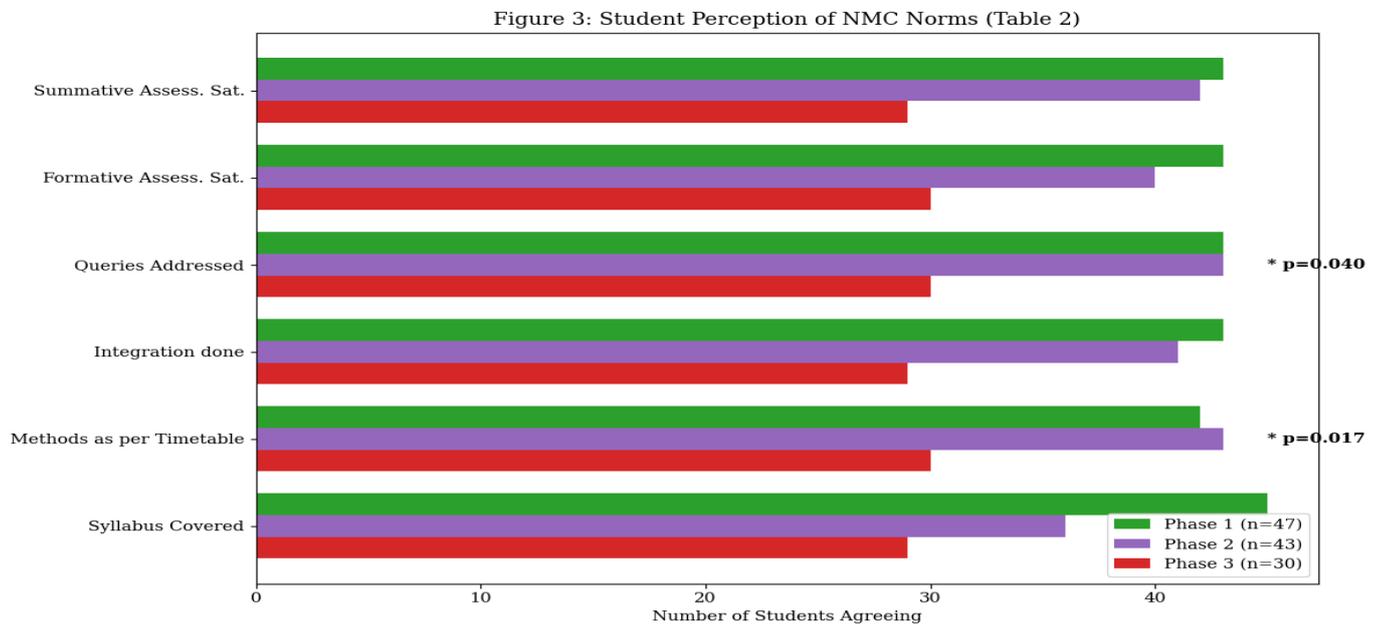
Figure 2 - Study methodology and participant flow



The findings suggest that the curriculum's effectiveness may have increased over time, with Phase 3 receiving lower ratings than the phase 2 and 1. This could be due to various factors, such as changes in the curriculum's design or implementation, or shifts in the students' expectations or needs. Similar findings have been

reported in multiple studies done to evaluate the CBME for creating competent IMG, where senior batches immediately after implementation will identify themselves burdened with curriculum design, a lot of field work which are beyond their expectations.<sup>14-17</sup>

Figure 3 - Student perception of NMC norms



**Conclusions**

The CBME curriculum was well received by students in regards to content, assessment, and clinical rotations by students. The senior phases were given lower ratings due to initial enrolment challenges. Other issues cited included the evolving nature of assessment and content delivery.

**Recommendations**

The course content was effectively communicated to students. A lack of uniformity in assessment

techniques created challenges, particularly for phase 3 students. Assessment techniques need to be more standardised and less time consuming.

**Limitations**

Further research is needed to confirm the findings and explore the underlying reasons for the differences in ratings across phases in coming years. Regular evaluation and refinement of the curriculum, based on student feedback is essential.



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