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Original Research Article

Perceptions and implementation gaps of elective modules under the CBME curriculum: a cross-sectional study among faculty and students

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ABSTRACT

Background: Electives are student-centered learning components within the competency-based medical education (CBME) curriculum, designed to enhance clinical competence, professional development and self-directed learning. Although well-established globally, electives are relatively new in the Indian medical education context. This study aimed to assess faculty and student knowledge, perceptions and experiences regarding elective rotations to identify implementation gaps and optimize their integration with evolving educational needs.

Methods: A cross-sectional observational study was conducted at a tertiary care teaching hospital in Tumkur, Karnataka, involving 165 Phase III Part II MBBS students and 60 faculty members. After Institutional Ethics Committee approval, data were collected using a pre-validated online questionnaire. Responses were analyzed using Microsoft Excel and JASP software.

Results: Faculty awareness of electives was high, with 100% awareness among preclinical/para-clinical faculty and 93.3% among clinical faculty. However, discrepancies were observed regarding scheduling, duration and compulsory block requirements. Student engagement was high, with 99.4% maintaining $\geq 75\%$ attendance, 97.6% receiving preceptor guidance and 98.8% understanding learning objectives. Post-elective Likert scores exceeded 4.2 across all assessed domains including active participation (4.47), professional development (4.40), supervision (4.39) and perceived program benefit (4.40).

Conclusions: Electives were positively perceived by faculty and students and demonstrated potential to enhance professional development, clinical preparedness, active participation and reflective learning. Improved communication, structured faculty orientation, adequate resources and periodic program review in accordance with evolving NMC guidelines may facilitate uniform and effective integration of electives within the CBME framework.

Keywords: Competency-based medical education, Electives, Faculty perception, Student Learning

INTRODUCTION

In alignment with the national vision of “Health for All”, the Government of India and the NMC have introduced CBME across all medical colleges to prepare Indian Medical Graduates as competent clinicians, communicators, leaders, professionals and lifelong learners in the healthcare system.¹ Electives have been a part of medical education in Western countries for many

years, but they are a relatively newer concept in the Indian context. By recognizing their value, the NMC in India has incorporated them into the CBME curriculum to offer students a broader and more diverse learning experience.² Electives are student-centric learning experiences embedded within the medical curriculum, designed as short courses during the undergraduate period that allow learners to explore areas of personal or professional interest through self-directed study, supporting future academic or career pursuits.³ Including elective

opportunities allows medical students to supplement core learning, explore medical specialties aligned with their career goals and pursue individual academic interests in greater depth.⁴ After completing the Third MBBS Part I examination and before beginning Part II, students undertake two elective rotations over an eight-week period. Block 1 is completed in a preclinical, paraclinical or research setting, while Block 2 is carried out in a clinical department such as a specialty, super-specialty, ICU, blood bank or casualty depending on the elective options available at the institution.⁵ Electives are a vital component of medical training that enhance career opportunities and career readiness, highlighting the need for all medical institutions to sensitize faculty and implement a broad range of elective courses for the benefit of students.⁶

Electives are widely recognized for promoting transformative learning, which includes both instrumental and communicative learning while instrumental learning emphasizes task-based problem-solving to enhance clinical performance, communicative learning focuses on developing the ability to understand and respond to others needs, feelings and intentions.⁷ However, there is limited data regarding the perceptions and insights of faculty and students on electives within CBME in India. Hence, a cross-sectional observational study was conducted to assess their knowledge and perception of electives among faculty and students, with the aim of optimizing elective programs to align with the evolving needs and expectations of medical students and educators.

METHODS

A cross-sectional observational study was conducted over a period of 10th April 2025 to 30th July 2025 at a tertiary care teaching hospital in Tumkur, Karnataka, to assess the knowledge and perceptions regarding elective modules among faculty and MBBS students. The study population comprised 165 Phase III Part II MBBS students who had completed or were undergoing elective training and 60 faculty members (preceptors) directly involved in guiding or evaluating students during the elective module, including 30 faculty members from preclinical/paraclinical departments and 30 from clinical departments. Students who were absent during the data collection period or had not yet participated in elective modules were excluded. Faculty members who were not involved in the elective programme or who declined participation were also excluded. Participants were selected using purposive sampling.

Data were collected online using a self-administered questionnaire developed for the study, comprising both open-ended and closed-ended questions. The questionnaire underwent content validation by a panel of subject experts in pharmacology and members of the medical education unit (MEU), followed by pilot testing among 20 participants. The reliability of the questionnaire was assessed using Cronbach's alpha. Following validation and pilot testing, the final questionnaire was

circulated among eligible students and faculty members through Google Forms. The collected data were compiled and entered into Microsoft Excel and statistical analysis was performed using JASP software. Ethical clearance and approval for the study were obtained from the Institutional Ethics Committee of the tertiary care teaching hospital, Tumkur, prior to commencement of the study.

RESULTS

A combined analysis of surveys from 30 pre-clinical and para-clinical faculty members, 30 clinical faculty members and 165 Phase III Part II MBBS students who participated in the elective program provides a comprehensive evaluation of the elective component in the UG curriculum.

Among the 30 pre- and para-clinical faculty, 18 (60.0%) were female and 12 (40.0%) were male, with representation from pharmacology (26.7%), anatomy (23.3%), pathology (20.0%), physiology (13.3%), community medicine (13.3%), biochemistry (10.0%) and microbiology (6.7%). Designations included professor (43.3%), associate professor (30.0%), professor and HOD (13.3%) and assistant professor (10.0%), with a mean teaching experience of 13.5 years. In contrast, the 30 clinical faculty comprised 12 females (40.0%) and 18 males (60.0%), primarily from general surgery (20.0%), general medicine (16.7%), dermatology (10.0%), ENT (10.0%), anaesthesiology (10.0%) and other clinical specialties. Their mean teaching experience was 11.8 years, with 48.3% holding professor/HOD positions (Table 1).

Faculty training and awareness differed slightly between groups. Among pre- and para-clinical faculty, 83.3% were trained in RBMET/BCME/CISP/ACME, while 58.6% of clinical faculty reported such training. Awareness of electives was nearly universal, at 100% in pre- and para-clinical and 93.3% in clinical faculty. Both groups predominantly identified two elective blocks (80.0% pre/para-clinical vs. 90.0% clinical), with scheduling mostly recognized as "just after Phase III Part I examinations" (63.3% vs. 73.3%). Duration responses showed variation: 66.7% of pre/para-clinical faculty indicated 4 weeks (23.3% said 8 weeks), compared to 53.3% and 36.7% respectively among clinical faculty, reflecting inconsistent institutional messaging.

Compulsory nature remained a point of confusion, with 53.3% of pre/para-clinical faculty believing all blocks compulsory (30.0% one block) versus 30.0% and 40.0% in clinical faculty. Knowledge accuracy on operational aspects was higher among clinical faculty. For instance, 60.0% of pre/para-clinical and 58.6% of clinical faculty correctly stated no regular classes occur during electives. The maximum student limit per elective varied widely in both groups, with clinical faculty more commonly citing 10 (41.4%) and pre/para-clinical citing 12 (30.0%). The incorrect advantage statement ("make up for missed classes by faculty") was accurately identified by 80.0% of

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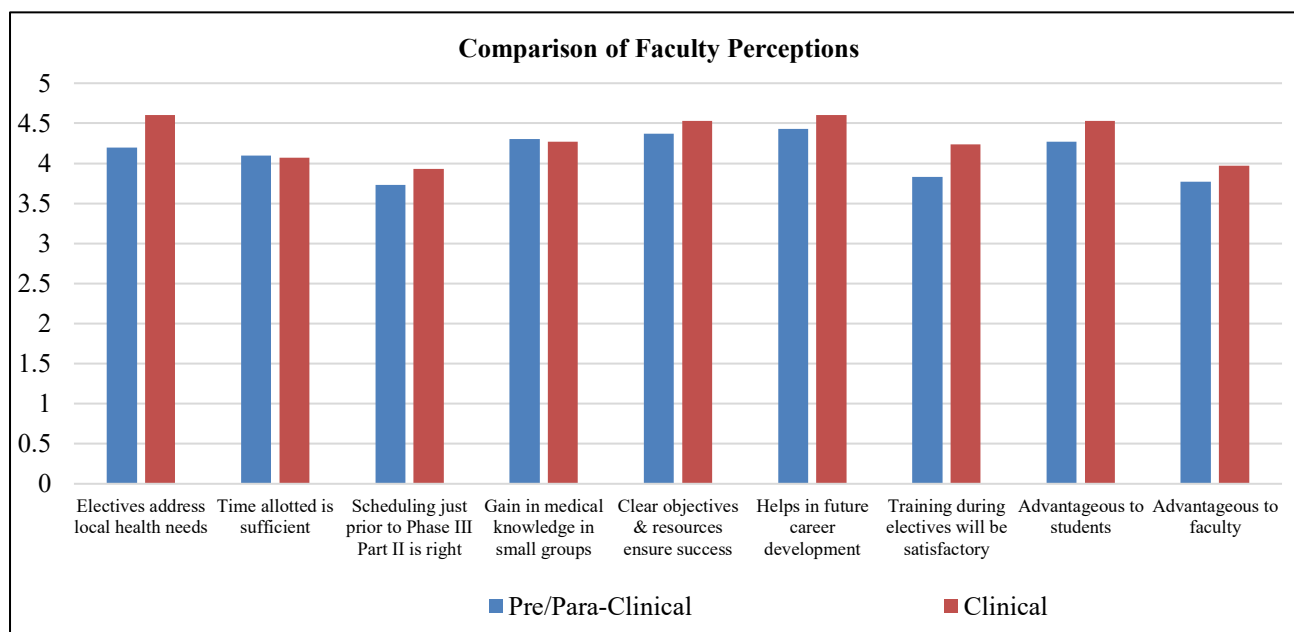


Figure 1: Comparison of faculty perceptions.

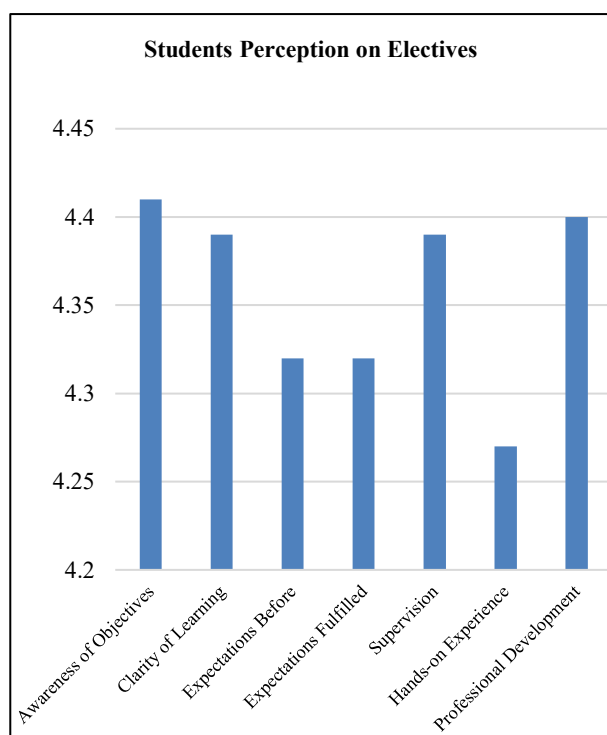


Figure 2: Students perception on electives.

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Perceptual differences emerged on a 5-point Likert scale. Pre- and para-clinical faculty rated local health relevance (4.20), time sufficiency (4.10), scheduling appropriateness (3.73), small-group knowledge gain (4.30), resource clarity (4.37), career development (4.43), training satisfaction (3.83), student advantage (4.27) and faculty advantage (3.77). Clinical faculty rated these higher overall: local needs and career development (4.60), resource clarity (4.53), knowledge gain (4.27), student advantage (4.53) and faculty advantage (3.97), though scheduling (3.93) and training satisfaction (4.24) were moderately viewed. Both groups strongly endorsed electives for student outcomes but perceived limited personal or scheduling benefits (Figure 1). Student responses (n=165) revealed 65.5% female and 34.5% male participation, with 73.3% posted in their branch of choice. Common postings included

microbiology (10.9%), biochemistry and anatomy (9.7% each), physiology (9.1%) and pathology (7.3%), alongside clinical areas. nearly all students (99.4%) maintained $\geq 75\%$ attendance, 97.6% had allotted guides, 98.8% received explained objectives and 93.9% were provided with learning resources. Logbooks (99.4%) and portfolios (91.5%) were nearly universally completed, with assessment primarily daily (58.8%) or combined daily/end-of-posting (22.4%). Pre-elective student perceptions showed high awareness (4.41) and excitement (4.38) but lower mental preparation (2.72). Post-elective outcomes were overwhelmingly positive, with means exceeding 4.2 across active participation (4.47), professional development (4.40), supervision (4.39), confidence (4.39) and program benefit (4.40). Students rated the elective highly for relevance, learning, resources and timing (all ≥ 4.36), confirming strong satisfaction and perceived value (Figure 2).

Table 1: Demographic characteristics of faculty participants.

Characteristic	Pre/paraclinical faculty (n=30)	Clinical faculty (n=30)
Sex		
Female	18 (60.0%)	12 (40.0%)
Male	12 (40.0%)	18 (60.0%)
Mean teaching experience (in years)		
Mean (in years)	13.5	11.8
Designation		
Professor	13 (43.3%)	—
Associate professor	9 (30.0%)	—
Professor and HOD	4 (13.3%)	—
Assistant Professor	3 (10.0%)	—
Unspecified/unaccounted	1 (3.3%)	—
Professor/HOD	—	14 (48.3%)
Other designations	—	15 (51.7%)
Department		
Pharmacology	7 (23.3%)	—
Anatomy	6 (20.0%)	—
Pathology	5 (16.7%)	—
Physiology	4 (13.3%)	—
Community medicine	3 (10.0%)	—
Biochemistry	3 (10.0%)	—
Microbiology	2 (6.7%)	—
General surgery	—	6 (20.0%)
General medicine	—	5 (16.7%)
Dermatology	—	3 (10.0%)
ENT	—	3 (10.0%)
Anaesthesiology	—	3 (10.0%)
Other clinical specialties	—	10 (33.3%)

DISCUSSION

This cross-sectional study at a tertiary care teaching hospital, Tumkur, offers a robust evaluation of the elective module within the CBME framework, capturing

perspectives from 165 Phase III Part II MBBS students and 60 faculty members (30 pre/paraclinical and 30 clinical).

The findings indicate strong institutional compliance with NMC guidelines, high levels of student engagement and broad faculty endorsement, while simultaneously

identifying critical gaps in implementation uniformity, awareness dissemination and resource management that merit strategic improvement. Student participation and engagement were exemplary, reflecting effective institutional execution. Nearly all students maintained $\geq 75\%$ attendance (99.4%), received faculty mentorship (97.6%) and were briefed on clear learning objectives (98.8%), highlighting a well-structured operational design.⁸ The 73.3% match rate between student preference and actual posting emerged as a key driver of satisfaction, reflected in post-elective Likert means exceeding 4.3 across domains such as active participation (4.47), professional development (4.40), supervision (4.39) and confidence building (4.39).⁹ These outcomes validate the NMC's vision of electives as vehicles for transformative learning, blending instrumental (skill-based) and communicative (empathy-building) competencies. Students particularly valued hands-on exposure (e.g., laboratory techniques, clinical procedures, autopsy observations) and early specialty exploration, which enhanced career clarity and research orientation and outcomes consistent with global evidence from elective-rich curricula in the US and UK that report improved self-efficacy and career clarity.¹⁰ Faculty perceptions, while overwhelmingly positive toward student-centric benefits, revealed differences between pre/paraclinical and clinical cohorts. Both groups strongly endorsed electives for addressing local health needs (4.20 vs. 4.60), supporting career development (4.43 vs. 4.60) and ensuring program success through clear objectives and resources (4.37 vs. 4.53). However, clinical faculty consistently rated outcomes higher (8 of 9 domains), with the largest gap in training satisfaction (+0.41) and student advantage (+0.26). This divergence likely stems from clinical faculty's direct involvement in Block 2 electives, where real-time observation of student growth in ICUs, wards and super-specialties fosters greater optimism.¹¹ In contrast, pre/paraclinical faculty, primarily engaged in Block 1 (research/lab-based), expressed lower confidence in training quality (3.83) and scheduling appropriateness (3.73), possibly due to limited longitudinal contact with student's post-elective.^{12,13}

Despite high awareness (100% pre/paraclinical, 93.3% clinical), knowledge inconsistencies undermined program coherence. Only 63.3%- 73.3% correctly identified scheduling and duration responses split (53.3%–66.7% said 4 weeks; 23.3%–36.7% said 8 weeks), signalling poor dissemination of NMC guidelines. Compulsory block requirements were equally ambiguous (53.3% pre/paraclinical believed all blocks compulsory vs. 40.0% clinical saying one block). Such discrepancies risk uneven student preparation and faculty coordination, particularly in institutions scaling elective offerings.¹⁴

Resource and workload pressures emerged as shared concerns. Faculty highlighted time insufficiency, faculty shortages and infrastructure deficits, while students reported heavy concurrent academic loads and variable practical exposure in non-preferred postings.¹⁵ These align

with implementation challenges documented in early CBME adopters across India, where service demands in clinical departments often eclipse elective mentorship. Notably, faculty perceived limited personal gain (3.77 pre/paraclinical; 3.97 clinical), suggesting electives are viewed primarily as student development tools rather than faculty enrichment opportunities.¹⁶

This study's major strength lies in capturing perspectives from both faculty and students using a validated questionnaire and robust sample size, offering comprehensive insights into elective implementation under CBME. However, its single-institution, cross-sectional design limits generalizability and captures perceptions only at one time point. Reliance on self-reported data may have introduced recall or social desirability bias and variations in departmental implementation without objective performance measures may have constrained a fuller evaluation of elective effectiveness

CONCLUSION

The study underscores the growing momentum of the NMC-CBME elective framework as a vital component of medical education in India. Faculty and students shared positive perceptions, recognizing electives as transformative in enhancing professional growth, clinical competence and self-directed learning. Nonetheless, inconsistencies in scheduling, operational clarity and implementation highlight the need for improved communication, structured faculty training and better institutional coordination. Sustained progress will depend on regular review, adequate resource support and feedback-driven refinement to ensure effective and uniform integration of electives within the CBME curriculum.

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