

PHARMACOLOGY ELECTIVE POSTINGS IN COMPETENCY-BASED MEDICAL CURRICULUM: FINAL-YEAR MBBS STUDENTS' PERSPECTIVES AND EXPERIENCES

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ABSTRACT

Background: The National Medical Commission (NMC) incorporated elective postings into the Competency-Based Medical Education (CBME) framework to foster self-directed learning, research inclination, and career exploration among undergraduate medical students. Limited data exists on student experiences with pharmacology electives. The aim is to assess perceptions and experiences related to pharmacology elective postings among final-year MBBS students.

Materials and Methods: A questionnaire-based cross-sectional study was performed among Phase III Part 2 MBBS students who selected Pharmacology as their elective at a medical college in Pune, Maharashtra, India; following Institutional Ethics Committee approval. A structured, content-validated questionnaire measured perceptions and experiences associated with this elective posting. Responses were collected using a Google Form survey and analyzed descriptively. Findings are presented as frequencies and percentages.

Result: Thirty-one students who participated in the present study, where 33.84% of them mentioned faculty members as the major sources of information about electives and 26.15% got to know from their seniors. Pharmacology was the first-choice elective for 64.52% of respondents, motivated chiefly by interest in clinical pharmacology, rational prescribing, and drug safety. Awareness of attendance and logbook obligations for the elective posting was high among the students and 93.55% of them understood the objectives of this elective. Students reported favorable perception about these electives with 96.76% agreeing for effective faculty guidance and 93.53% found departmental resources adequate. The elective posting rated most beneficial was "Dose individualization with gamification" (32.26%). Major challenge reported was allotment of a non-preferred elective due to limited availability (38.71%) where 67.74% students supported allocation based on student interest. **Conclusion:** Pharmacology elective postings demonstrated high levels of student awareness, overwhelmingly positive learning experiences, strong faculty support, and perceived enhancements in self-directed learning and research orientation. Expanding availability of preferred electives and implementing interest-based allocation strategies may improve the effectiveness and acceptability of elective postings within the CBME curriculum.

INTRODUCTION

In 2019, Medical education in India underwent a transformative shift with the National Medical Commission (NMC) implementing a Competency-Based Medical Education (CBME) curriculum.^[1] As outlined in the Graduate Medical Education Regulations (GMER) 2019, unlike traditional approaches centered on time-based learning and

predefined skills, CBME emphasizes outcomes by fostering structured competencies that enhance knowledge, practical abilities, and definable clinical activities.^[2] This skill-oriented framework equips Indian Medical Graduates with essential competencies for effective medical practice.^[3,4] A key innovation within CBME is the integration of elective modules, which promote learner-driven exploration.^[5]

In September 2020, the National Medical Commission (NMC), succeeding the Medical Council of India (MCI), released guidelines for elective modules to facilitate nationwide implementation in medical institutions. As per the NMC guidelines, an Elective is an area or a stream that a specialty will offer which will help the students to learn and explore something new. As per these directives, a 1-month (4-week) elective period follows MBBS Phase III Part I exams and precedes Phase III Part II. This comprises two 15-day blocks: Block 1 in preclinical, para clinical, basic laboratory sciences, or under an active research project; and Block 2 in clinical settings such as intensive care, casualty, super-specialties, or specialties. Electives must be hosted within the institution or at urban/rural community clinics.^[6,7] These short-duration, experiential courses enable students to pursue personal interests, engage in self-directed learning, and cultivate lateral thinking ultimately shaping future physicians into scholars, researchers, specialists, and scientists.^[8] This self-directed approach promotes profound student involvement and supports future career growth.^[7] Documenting feedback from students on the elective module offers valuable data to refine its design, ensuring a more immersive and effective learning experience for subsequent students.^[9] To date, limited Indian research has explored undergraduate medical students' views on pharmacology electives within the CBME framework.^[9,10]

Hence the present study planned to assess the knowledge, perceptions, and feedback of final-year undergraduate medical students regarding pharmacology elective postings, and to identify challenges faced during their implementation.

MATERIALS AND METHODS

Study Design and Setting: This was a questionnaire-based, cross-sectional study conducted at a medical college in Pune, Maharashtra, India, during March 2026, after obtaining approval from the Institutional Ethics Committee (REF: BVDUMC/IEC/96/26-27).

Study Participants: The study population comprised final-year undergraduate medical students who had opted for pharmacology as their elective Block II posting in Phase III Part - 2 MBBS. Informed consent was obtained from all participants and confidentiality and anonymity of participants were strictly maintained.

A batch of 5-7 students is allotted these afternoon elective postings and the students are then associated with a faculty of every department for a duration of 15 days.

A purposive sampling method was employed, and all eligible students were invited to participate.

Study procedure: Questionnaire: A structured questionnaire was developed to assess students' perspectives and experiences regarding pharmacology elective postings.

Content validation: The multiple-choice questionnaire was reviewed by faculty members from the department of Pharmacology for relevance, clarity, and comprehensiveness.

Each faculty independently rated items for accuracy, relevance, clarity, and alignment with learning objectives; their feedback refined the final instrument. Inter-rater agreement derived from expert ratings showed more than 80% consensus, confirming strong content validity.

Expert validation: Further validation was performed by a medical education expert to ensure appropriateness of content, language, and construct. The questionnaire was pilot-tested on ten students from supplementary batch not included in the main study to ensure clarity, feasibility, and timing suitability. Ambiguous items were modified accordingly.

Data Collection Procedure: The finalized questionnaire was converted into a Google Form and circulated to eligible students through a WhatsApp group. Prior to participation, students were provided with a brief explanation of the study objectives. Informed consent was obtained electronically, and participation was entirely voluntary. Confidentiality and anonymity of the participants were strictly maintained throughout the study. Only responses from students who provided consent and completed the questionnaire were included in the final analysis. A total of 31 students participated in the study.

The questionnaire included five questions on the awareness about elective postings and seven questions regarding the perception of their learning experience during this posting while four questions were based on feedback about this posting.

The questions about awareness were in 'yes' or 'no' format, and the questions for their perception were on a 5-point Likert scale from strongly agree to strongly disagree. Data regarding their choice of electives were also obtained.

Data Management and Analysis: Data collected through Google Forms were exported to Microsoft Excel for analysis. The responses were summarized using descriptive statistics, with categorical variables expressed as frequencies and percentages. Responses obtained from the Likert scale were analyzed and presented as proportions.

RESULTS

Teachers in the department of Pharmacology implemented electives in accordance with NMC regulations after careful planning and preparation. Each elective was offered in Block II (Phase III Part - 2 MBBS) and conducted for two weeks. Among the 31 students that filled out the questionnaire and took part in the study, 15 were male and 16 were female. For source of information regarding choice of electives, more than one response was permitted. The most often cited sources were faculty members (33.84%), followed by seniors (26.15%) and then

batch mates (21.52%). Orientation sessions accounted for 15.38% of responses, while self-made decision was least opted choice (3.07%), from a total of 65 responses. [Figure 1]

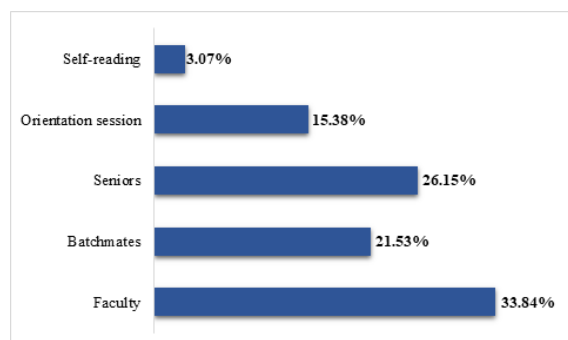


Figure 1: Source of Information about Pharmacology Elective Postings among students

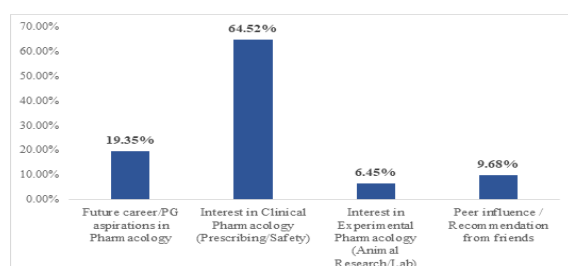


Figure 2: Primary reason for choosing the Elective Posting in Pharmacology

Interest in clinical pharmacology particularly prescribing and drug safety, was the predominant motivation for choosing the department among

64.52% of participants, while 19.35% selected the elective due to future career or postgraduate aspirations in pharmacology. 9.68% of students selected the elective due to peer influence, selecting the posting because friends had enrolled in it. [Figure 2]

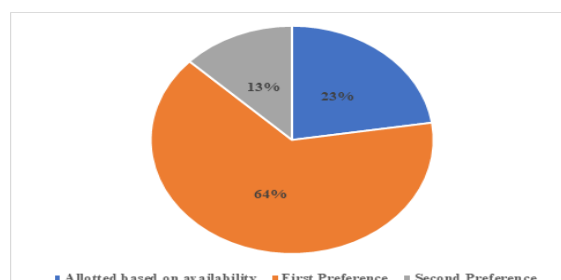


Figure 3: Students' preference for Elective Posting in Pharmacology

When asked about the reason for the choice of electives, the majority of the students answered that they chose their postings as first preference, because they were interested in the subjects (64.52%). While 22.58% were allocated to Pharmacology elective due to availability rather than preference, reflecting limited choice access for some students. [Figure 3]

The awareness regarding elective postings was good among the participated students. All respondents (100%) were aware of the attendance requirement and the necessity to complete the elective logbook with related assignments, and the majority of students (93.55%) comprehended its purpose and significance.

Table 1: Perception of student participants regarding Elective Postings

Sr. No.	Statement	Strongly Disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly Agree n (%)
1	The elective posting provided skills that were not covered in routine classes	0	3 (9.67)	11 (35.48)	11 (35.48)	6 (19.35)
2	The elective posting helped in developing research orientation	0	1 (3.22)	6 (19.35)	14 (45.16)	10 (32.25)
3	The elective posting encouraged self-directed learning	0	0	5 (16.12)	12 (38.70)	14 (45.16)
4	Pharmacology department provided all necessary resources/equipment	0	0	2 (6.45)	12 (38.70)	17 (54.83)
5	The duration of the elective posting was adequate	0	2 (6.45)	3 (9.67)	12 (38.70)	14 (45.16)
6	Faculty members were supportive and guided us effectively	0	0	3 (9.67)	8 (25.8)	20 (64.51)
7	The logbook system helped in structured learning	0	1 (3.22)	5 (16.12)	15 (48.38)	10 (32.25)

Student perceptions of the elective postings were assessed using a 5-point Likert scale which is summarized in [Table 1]. Nearly 64.51% of students strongly agreed that faculty were supportive and effectively guided them to resolve doubts. 54.83% participants strongly agreed that the department

provided the necessary resources and equipment, and 45.16% strongly felt that the elective posting significantly fostered self-directed learning and the two-week duration was considered adequate to achieve these goals. [Table 1]

Table 2: Feedback and Challenges faced by study participants throughout the Elective postings

Sr. No.	Questions	Responses (n=31) n (%)
1	Amongst the electives which area did you find most beneficial for your future career?	
	Animal Handling & Experimental Research	3 (9.68)
	Branded, Jan Aushadhi and Generic Medicine Knowledge	6 (19.35)

	Dose individualization with gamification	10 (32.26)
	Drug discovery and Drug Trials	4 (12.90)
	Feedback on rational prescribing	1 (3.23)
	Rational Prescribing and Prescription Auditing	7 (22.58)
2	What was the biggest challenge you faced during this elective?	
	Difficulty in understanding research methodology	7 (22.58)
	Excessive documentation/logbook work	6 (19.35)
	Inadequate orientation before starting	6 (19.35)
	The elective was allotted due to the non-availability of preferred elective option	12 (38.71)
3	How would you prefer the elective topics to be allocated for the future students?	
	Academic merit (Marks-based)	6 (19.35)
	Lottery system	1 (3.23)
	Random rotation through all modules	3 (9.68)
	Student's choice (Interest-based)	21 (67.74)
4	Overall, how would you rate your elective posting experience in the department of Pharmacology	
	Excellent	17 (54.84)
	Good	8 (25.81)
	Satisfactory	6 (19.35)
	Poor	0 (0)

As seen in [Table 2], elective posting ‘Dose individualization with gamification’ was perceived most beneficial elective for future career development by 32.26% of students, followed by ‘Rational Prescribing and Prescription Auditing’ (22.58%) and then ‘Branded, Jan Aushadhi and Generic Medicine Knowledge’ (19.35%).

When asked about challenges faced in selecting and completing elective postings, the most frequently reported challenge was being assigned electives other than their preferred choices because preferred options were unavailable (38.71%), whereas difficulties in understanding methodology were reported by 22.58% of participants. With respect to future allocation of elective topics, most students (67.74%) favored an interest-based, student-choice system. Overall impressions regarding the electives conducted by the department of Pharmacology, were positive with 54.84% rating their experience as excellent and 25.81% as good [Table 2].

DISCUSSION

The National Medical Commission (NMC) introduced a Competency Based Medical Education (CBME) curriculum in India in 2019, and the NMC later introduced an elective module for the MBBS program that we implemented at our institution as well.

Elective postings are brief academic placements that encourages students to select preclinical and clinical domains, promote self directed learning, and provide opportunities for exploration outside the main curriculum. Such experiences can enhance academic engagement, deepen practical understanding, and foster interest in research and future career options.^[5] In line with NMC regulations, we at the department of Pharmacology planned and delivered the electives as two week Block 2 rotations, providing focused, structured learning opportunities for undergraduate students.

Present study was planned to assess students’ perceptions and experiences about the elective program in the department of Pharmacology,

including challenges encountered during its implementation. Findings will guide future improvements in the design and implementation of pharmacology electives for subsequent batches.

Electives in pharmacology were selected as first-preference by 64.52% of students in this study, primarily due to their interest in the subject. At our institution, for elective allocation students’ preferences and academic merit are combined. However, when the designated intake capacity for a particular elective exceeds, candidates are sent to the next alternative elective based on merit and availability. This strategy is consistent with findings of other studies, favoring the merit-based allocation while maintaining a wide range of elective alternatives for students.^[11,12]

Positive attitude towards the elective module observed in our study were in line with the findings reported by in other studies.^[12,13] Ahsin et al from Pakistan reported that participants actively participated in electives and stated them as beneficial for career planning, professional behaviour, communication skill development, and medical knowledge enhancement.^[13] Students in our cohort said that the pharmacology electives were a valuable educational experience with clear academic advantages.

A high level of awareness about pharmacology elective postings was evident among participants in this study. All respondents knew about the attendance requirements and the mandatory completion of the elective logbook and related assignments, and most of the students understood the purpose and significance of these postings. These results are comparable to those reported by Priyanka S. et al, who similarly reported that most students were well informed about the existence, objectives, and requirements of elective which was an outcome attributed to targeted orientation sessions delivered during the foundation course and prior to postings.^[9] In contrast, Sinha N. et al documented in their study about inadequate awareness and limited knowledge among students regarding elective structure, duration, and departmental allocation, and

recommended dedicated orientation sessions to address these gaps.^[6] The relatively higher awareness in our cohort likely reflects effective pre posting orientation and communication regarding the elective postings at our institution.

Majority of students had favorable opinions of the elective posting in this survey where 64.51% firmly believed that the faculty provided good mentorship during the rotation by being helpful and approachable for questions and 54.83% strongly agreed that the department had adequate resources and equipment for the elective. Additionally, 45.16% of respondents stated that the elective postings encouraged self-directed learning, and believed that the two-week period was sufficient to achieve the specified learning goals. These findings are consistent with those of Justina et al., who found that students thought the postings were well-structured and clinically relevant. They also reported positive student opinions regarding objective attainment, faculty support, improvement of subject knowledge and skills, and the overall usefulness of electives in the undergraduate curriculum.^[12] Previous studies indicate that carefully designed elective programs, supported by proactive faculty involvement and strong institutional backing, consistently improve students' learning outcomes and their attitudes toward the elective component.^[5,12]

CONCLUSION

Pharmacology elective postings demonstrated high levels of student awareness, positive learning experiences, strong faculty support, and perceived enhancements in self-directed learning and research orientation. Expanding availability of preferred electives and implementing interest-based allocation strategies may improve the effectiveness and acceptability of elective postings within the CBME curriculum.

Strengths and Limitations: A major strength of present study was the use of a systematically created and validated questionnaire. The questionnaire tool underwent content validation by faculty from the department of Pharmacology and expert review by a medical education specialist to ensure relevance, clarity, comprehensiveness, and alignment with learning objectives. Pilot testing of the questionnaire was not feasible due to limited sample size and unavailability of comparable participant pool as this study focused on subject specific (Pharmacology) elective postings and similar electives could not be conducted in other departments.

When interpreting the results of the current investigation, important limitations should be taken into account. It evaluated only students' perceptions of the elective postings whereas faculty opinions on planning and implementation were not included,

which would have allowed for a more thorough evaluation. Generalizability was limited by the study's small sample size and restriction to a single department and institution due to their varied ways of conduction.

The questionnaire only measured immediate feedback, so long-term educational outcomes, skill retention, and impacts on career choice were not assessed. To more accurately assess elective postings in undergraduate medical education, multicenter studies with bigger sample sizes and inclusion of both student and faculty perspectives are recommended.

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