

Exploring Student Perspectives on Clinical Pharmacology as Elective Posting as a Part of CBME Elective Programme: An Observational Study

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Abstract

Background: Presently Medical education in India is in transforming phase from traditional curriculum to competency-based medical education (CBME) and clinical pharmacology as block 1 elective is a part of it. We found no research done in this field in our country and there is lack of knowledge about the impact of implementing clinical pharmacology as Block 1 elective posting. The areas like prescription audit, prescription writing, case follow up, Pharmacoeconomics, Peer group teaching and skill performance were included.

Aims: Our aim was to formulate ideas for successful implementation of clinical pharmacology as elective posting.

Settings and Design: The study was a prospective, observational, cross-sectional study done on final prof part 2 students of our institution who pursued clinical pharmacology as elective in SRIMS Durgapur from 12/05/2023 to 10/06/2023.

Materials and Methods: The outcome measured in terms of validated feedback questionnaire supplied in printed format. Data were analysed using SPSS version 17 and Microsoft Excel 2007. The data obtained were expressed as mean, SD and SEM.

Results: A total of 35 students from 38 allotted students responded. 94% students responded that the course details adequately explained to them.

Nearly 91% students were able to interact ask questions to the facilitators. 89% students thought that facilitators focused on communication skills. Most of the students found (83%) the course organised well.

Conclusions: The students chosen clinical pharmacology as elective were benefitted by getting more clinical pharmacology exposure that will help them in further development of clinical knowledge and practice.

Keywords: Clinical Pharmacology, Medical Education, Teach-Back Communication.

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Introduction

Electives are learning areas, which are learner centric and created in the teaching curriculum itself to opportunities for the learner to uncover and explore the areas of interest in the medical profession. These are a group of short duration courses served during undergraduate period as per new CBME curriculum [32], students get to choose electives as per their interest or career preferences. This self-directed learning activity may provide the opportunity to the student to explore interest area to supplement future study.[1] Clinical pharmacology involves all aspects of the relationship between drugs and humans, sets out to describe, explain, and predict the action and the effects of drugs in our system, developed as a discipline in the 1960s in the West. At the same time, clinical pharmacology began in India due to efforts of stalwarts like Dr. U.K. Sheth, Dr. Ranjit

Roychaudhary, Dr. P. L. Sharma, and many others.[2] Clinical pharmacology learning is mandatory for areas like prescribing practice in medicine, adverse drug reactions, clinical trial and pharmacovigilance in future professional life of a student.[3] Clinical pharmacologists can play the role in clinical practice in multiple ways: (1) responding to drug-related problem cases and extending referral services to other specialist practitioners; and (2) necessitating patients with suspected drug-related problems to directly refer to them seeking relevant care.[4] With modifications in accordance with CBME curriculum in Undergraduate medical education, roles of the young medical aspirants have changed. Instead of passive listening, students must take personal responsibility for learning by adopting self-directed learning (SDL) methods (library/on-line access),

performing under supervision in skill-lab and dealing real and simulated patients. The learner must demonstrate and document the evidence of acquisition of competency.[5]

From advent of medical education to recent times, feedback is an important and integral constituent of medical teaching in our country and worldwide for both teacher and learner part, as it helps to enhance and enrich the student's knowledge, skills and professional performance and helps to modify the Teaching Learning Method(TLM) based of feedback perceived from the students. [5,6,7,8,9]

After extensive literature review, we found no study focused on the role of clinical Pharmacology as elective subject in undergraduate medical education as per CBME Curriculum in India.

Unfortunately, this so important branch of Clinical Pharmacology facing lack of relevance presently due to mostly classroom-based teaching, lack of faculty involvement, regional disparity in medical

colleges and training programs, lack of interest among medical students.[2]

There in significant gap of knowledge in Effective Implementation, TLM method selection planning and Outcome of teaching clinical Pharmacology as an Elective Subject in view of present changes made in new CBME Curriculum.

Materials and Methods Study design and setting

A cross-sectional, Pharmacology Department-based study was carried out in a tertiary care centre and a medical college of West Bengal after taking ethical clearance from the institutional ethics committee. Complete confidentiality of students was maintained throughout the research as we used anonymous responses. The study was carried out over a period of 7 months (May 2023- November 2023).

Chart 1 shows the posting allocation and activities performed in this allocation period.

Flowchart: Study Related Activities

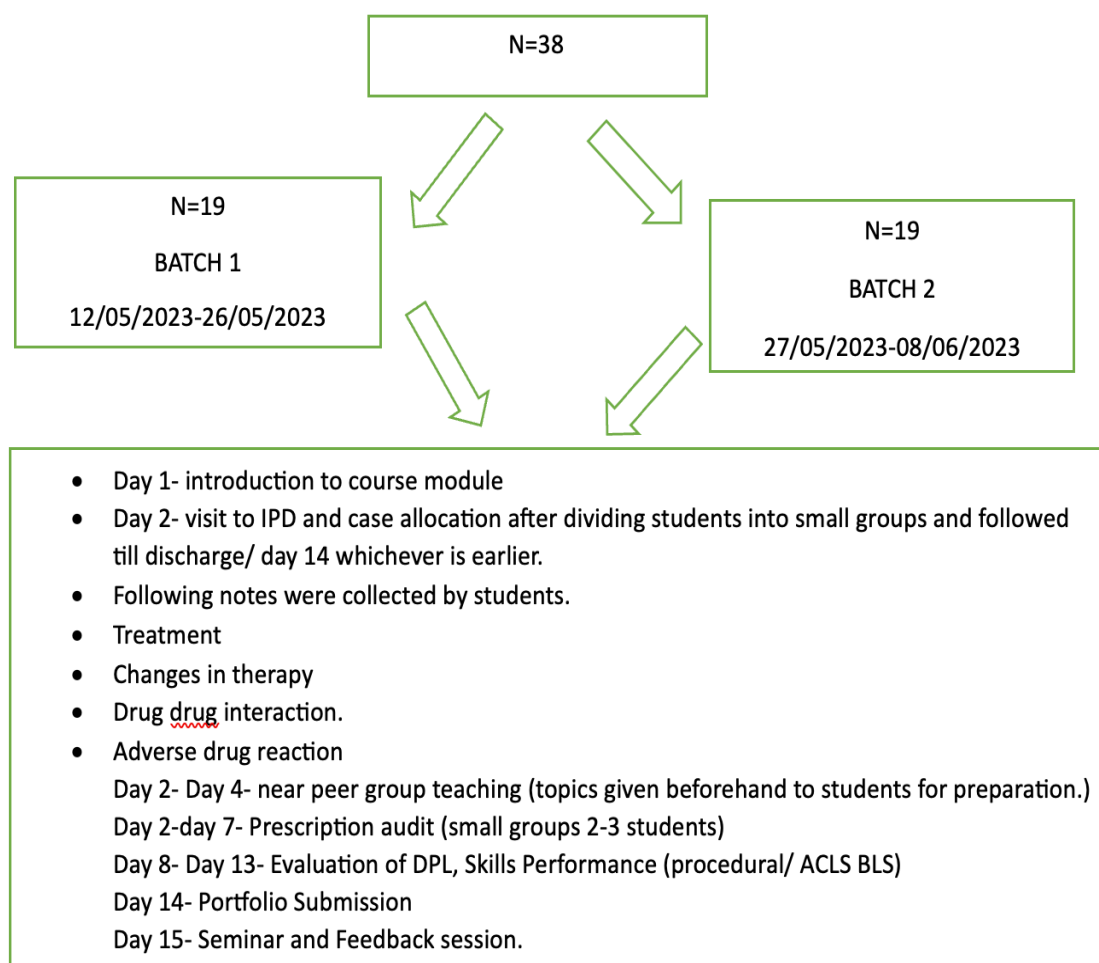


Figure 1: The posting allocation and activities performed in this allocation period.

Study Period

1. Preparatory Phase-1 month
2. clinical pharmacology related activities and feedback - 1month (2 batches)
3. Data entry and analysis -2months
4. Report writing -2months.

Table 1:

Activities	Time in Months						
	1	2	3	4	5	6	7
I. Preparatory Phase-1 month							
II. Clinical pharmacology related activities and feedback -1month (2 batches)							
III. Data entry and analysis -2months							
IV. Report writing -2months							

Study participants and sampling

Study subjects included in our study were senior teaching faculties and second and final year undergraduate students who selected clinical pharmacology as elective. Purposive sampling method was used.

Data collection tool and technique

A semi-structured questionnaire (including both open- and closed-ended questions), eliciting the learners' perception on various facets of new curriculum was developed. The questionnaire was validated for its feasibility of content, construction, and language by three experts in the field of medical education.

A pilot study was conducted to validate the questionnaire and eliminate all ambiguous words. Majority of the questions were framed on a 5-point agree-disagree Likert's scale [10]. Data collection was done by collecting the responses from the students.

Ethical issues in the study

After having approval (SRIMS & SH /IEC/PROT/0003/2023) from the Institutional ethics committee, Informed consent was taken before participation into the study. Each participant received self-administered paper-based questionnaire after explaining the purpose of the study, their freedom to participate and a confirmation of confidentiality. Their identity was kept anonymous in questionnaire considering sensitive nature of some of the items. After checking information elements in our new data collection tool in this cross-sectional study, principal investigator collected data from a total of 38 study participants.

A scoring system was developed based on the responses. The maximum score for the positive response was given five points and the next better response was given a score of four and so on. Responses obtained were analysed in Microsoft Excel©. Responses to the questions were expressed as percentages and tabulated.

Results

Among 38 students who took Clinical Pharmacology as block 1 elective posting, 35 students had submitted the feedback forms whereas 3 students did not submit.

Around 82.86% students (n=29) were highly satisfied that the posting was well-organized and 62.86% (n=22) think the elective posting as it was able to address their specific needs, on the other hand only 28.57% (n=10) were highly satisfied with their preparation. 94.29% students (n=33) liked how the facilitators explained the topics to them.

Around 88.58% students (n=31) were highly satisfied how the facilitators focused on communication skills, Majority of students 68.57% (n=24) were highly satisfied with skill training.

Around half 51.43% students were reasonably satisfied with the resource material available for them. Most of the students (91.43%) were liked how they were able to interact and ask questions to the facilitators.

Among these students, 37.14% (n=13) wanted more focus on skill training, 22.86% (n=8) wanted more peer group teaching whereas 8.57% (n=3) felt duration of elective posting should be increased.

Around 2.86% (n=1) wanted more student- student interaction while 2.86% (n=1) wanted more presentations. 25.71% students (n=9) did not want any change to be made in this learning style.

Around 37.14% students (n=13) had overall good experience, 22.86% (n=8) felt the faculties were friendly and skilled, 5.71% (n=2) learned from peer group teaching while 2.86% (n=1) found this interactive learning suited them well and 2.86% (n=1) learned many things from the posting.

Around 28.57% students (n=10) did not have any feedback.

Figure 1 and Figure 2 is the depiction of the summary of results (N=38, All values in percentage).



Figure 1:

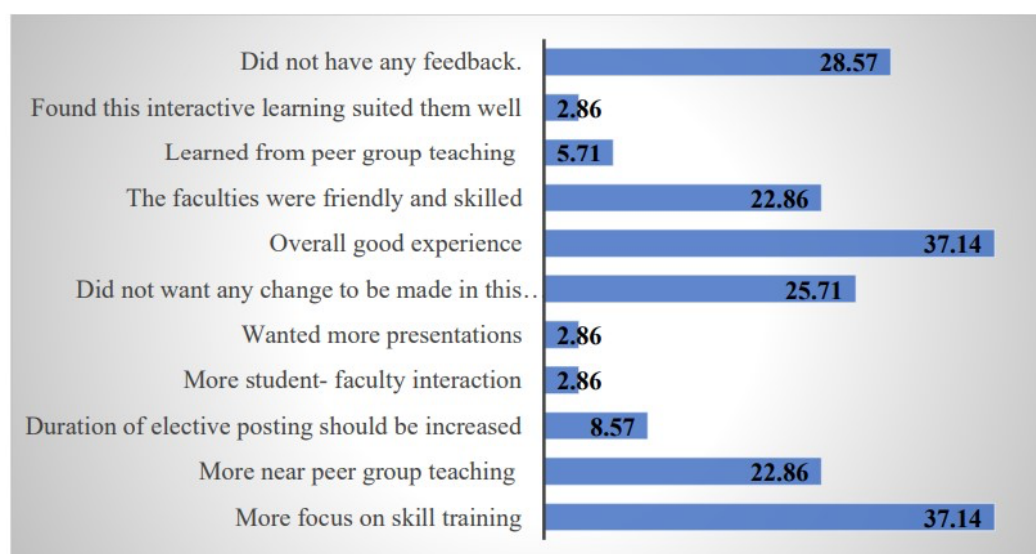


Figure 2:

Discussion

Electives are short periods of placement undertaken by a student. These are chosen by the students depending on their interest. These are chosen by the students to explore any areas of preclinical or clinical subjects. They are self- motivated to learn and believe this as beneficial. This may add to their success in the academic field. It may perhaps help them pursue research later. [11]

We found no clinical research focusing the experience of clinical pharmacology as elective as per CBME Curriculum for medical students in India. We have discussed and tried to develop a valid and reliable external feedback questionnaire by standardized methods[12] and formulated a five-point Likert scale.[13,14,15].

After discussion, we incorporated the following domains of clinical pharmacology like ADR FORM fill up, Basics of Pharmacoeconomics, Case follow up, Drug Interaction Finding, Prescription Audit,

Writing Prescription for few common scenarios, BLS and ACLS training, Evaluation of DPL, Peer Group Teaching.[16,17,18].

Near- Peer group teaching

Near - Peer Teaching is a method in which certain topics taught by students who are senior to them by one or two years. They may also teach certain skills. This practice has been present in medical education, But not formally. This helps to build communication skills, facilitate learning in both the tutor and the medical students.[19]

We conducted Near – Peer Teaching activity by allowing every student in their elective period to prepare relevant topics and discuss with students of phase 2. The exercise conducted under the supervision of the faculties in the department. We made a list of essential topics and then circulated among the students. They chose the topics. We then provided them guidance regarding the resources, teaching methodology and the allotted time. Then

small group teaching performed. Amber Whitmill et al (2020) concluded that one-on-one peer tutors and large-group teaching should be included worldwide in medical education and they also received good open ended feedback from the participants.[20] Meenakshi Khapre et al (2021) found no significant difference in knowledge and skill scores among students taught by near-peers compared to faculty/expert. Overall, students were satisfied with the near peers teaching skill and their ability to create a comfortable learning environment and it is helpful with advent of so many new medical colleges in faculty deficient setting. [21]

Annette Burgess et al (2020) discussed how peer group teaching in observed setting can significantly improve teaching and learning skills. [22]

Informal NPT is always there in place, though junior students naturally gravitating toward senior students for teaching, guidance, and support. An increased awareness of NPT may allow learners and teachers full disclosure of its potential pitfalls, as well as its benefits and so offer better preparedness for seeking and implementing this important process within the medical school culture.[23]

Case based learning:

Majority of students (73%) liked the case-based learning among all domains.

But we found them reluctant to do regular follow-up to the patients allotted to them.

According to Garg et al (2022) the firsthand experience and more immersive learning is possible through electives. Emphasis laid on case-based learning (CBL) as one of the components of the elective Clinical Pharmacology. Case based learning is a student-centred teaching learning (TL) method. This helps the students to develop analytical skills. Applied knowledge of pharmacology to real life situations leads to deeper understanding of the subject.[24]

The students picked up cases in inpatient departments of the Sanaka hospital on day one of their postings in Clinical Electives. They then followed up the patients till they discharged. The diagnosis and drugs noted.

The changes in treatment in terms of routes, doses, addition or removal of drugs, drug-drug interactions, adverse drug reactions noted. In cases of adverse drug interactions, they filled up the Adverse Drug Reporting Form. They calculated the direct and the indirect costs of therapy.

This enabled them to discuss the treatment with the concerned faculty and applied their knowledge of pharmacology to predict drug interactions and how to reduce these.

Vora et al (2015) This Case based follow up gave them a platform to acquire skills of analysis and communication. The knowledge domain strengthened by their pursuance of developing Self Directed Learning. Case-based learning provides firsthand training in a classroom setting. Case-based learning also provided students the opportunity to embrace the principles of problem solving, critical thinking, and lifelong learning. Case based learning and Modified Case Based Learning widely recognised as an Effective TLM.[26,27,28].

Prescription Writing

Prescription writing and prescription communication skills are integral part of future life of a medical student. In recent years, medical researchers observe deficiencies in health care occurring due to prescribing errors, which arise because of two factors. One could be due to decision making and the other due to defect in the art of writing prescriptions. The factors related to the former could be inappropriate prescription, irrational prescription, under prescribing, or over prescribing. Those related to the latter is purely because of inappropriately writing the prescription. Theranjan et al (2016) found prescription writing provides strong contextualization and more relevance to learning.[29]

In a recent study by Krishnan et al (2023) found prescription communication skills Role play found more effective than SGD in teaching prescription communication skills to MBBS students. [30]

Pharmacoeconomics

We included simple cost-effective analysis for students.

In the existing curriculum of pharmacology for medical undergraduate, the students are taught the various drug therapies and prescription writing by rote. The disadvantage of this is that the students are not exposed to the cost effectiveness of the treatment and the economic reality of the prescription and drug therapies. This may result in prescribing costly drugs or brands in prescription leading to incomplete drug treatment, poor patient compliance resulting in increased morbidity and mortality rate. Under such background, pharmacoeconomics (PE) plays vital role in the treatment of diseases, as it deals with both cost and consequences of therapeutic decision making (Kulkarni et al 2010) [31].

The areas for elective postings include areas like Pharmacoeconomics that students are not normally exposed to as part of their regular curriculum and students are expected to do a project and enhance self-directed learning, critical thinking, and research abilities.[32]

Prescription Audit

Prescription audit is a quality improvement process that seeks to improve patient care. It involves the review of prescriptions to assess their accuracy, legibility, and appropriateness. The goal of prescription audit is to identify and correct errors in prescribing, dispensing, and administration of medications.

MBBS students, as future medical practitioners, must develop strong skills in prescription audit. This includes understanding the components of a prescription, such as the patient's name, date, medication name, dosage, route of administration, and prescriber's signature. It also involves knowledge of common abbreviations and symbols used in prescription writing.[33]

ACLS and BLS

The National Emergency Life Support (NELS) launched recently by the Ministry of Health and Family Welfare in India for doctors, nurses, and paramedics TO Reduce the number of deaths and disabilities caused by medical emergencies Improve the patient experience Strengthen the healthcare system.[34]

The importance of Basic Life Support (BLS) and Advanced Cardiac Life Support (ACLS) training in the MBBS curriculum cannot be overlooked. BLS training is a fundamental course that equips healthcare providers and individuals with the knowledge and skills to provide immediate care to patients in life-threatening situations.[35,36]

The recommendation states that all medical professionals involved in patient care either directly or indirectly should know how to give basic CPR as they might witness a cardiac arrest in the hospital.

ACLS training builds upon BLS and teaches ECG reading, administering medication during an emergency, administering IVs, and more specific expertise to better prepare the individual to manage emergencies three. However, it is important to note that ACLS certification requires a higher degree of medical expertise to perform effectively. [37]

A study conducted among interns completing their internship and first-year MBBS students who underwent BLS training during their foundation course revealed that knowledge about BLS was poor amongst both groups 2. The study concluded that knowledge about BLS among medical students who underwent training during foundation course was poor and hence needs inclusion of periodic revision of the knowledge about BLS in the curriculum.[38]

DPL

Tayade et al in 2021 found that Like doctors, medical students exposed either during their

medical course or during internship to drug promotion. Hence, if prescribers rely on the information from drug advertisements, it can result in irrational prescribing. Hence, to prevent irrational prescribing, there is a need to educate practitioners regarding critical analysis of drug advertisements. The good prescribing practices successfully restored by imparting knowledge regarding drug advertisements during the MBBS course second year and as a part of Clinical Pharmacology in elective curriculum. [39]

Deolkar et al 2019 Acquiring skills to write a rational prescription, critically evaluate a written prescription and the drug promotional literature as well as contribute to the pharmacovigilance program of India are among the competencies that students must get certified in clinical pharmacology.[40]

This module well appreciated by the students. They said that this helped them consolidate their own knowledge of the topic. They also felt that this gave them an understanding of the difficulties that they had endured to grasp the topic as a student. They had anxiety as to how they would manage the doubt clearing session. This session helped them develop mentoring skills too. They said that it helped them to even organise their time. This they perceive as a positive way to prepare for their roles as an Indian Medical Graduate.

Badyal et al (2018) found that students often express that they have difficulty in memorising new names of drugs. Additionally, they must remember the doses. This feedback led to changes in the curriculum of Pharmacology.

Logbook

Logbooks are an essential tool in medical education as they help learners reflect on their experiences and learning process. [42,43].

Logbooks provide a collection of learning objectives to ensure consistent educational standards in clinical training. [44]

In the undergraduate setting, the ideal logbook is a tool that guides medical students through their clinical rotation by highlighting important clinical objectives, promoting self-reflection, and providing an opportunity to obtain feedback from preceptors .[44]

It is important that the logbook reflects the spirit and purpose of the Competency-driven Curriculum, captures, and documents the acquisition of chosen competencies and the progress of the student without being unwieldy and inefficient. [45] Regular workshops or fostering continuous medical education on the importance of reflection can help learners understand the importance of reflection and what reflection means .[46]

What went well?

Selection Choice: initially the subjects present in elective posting informed to students, they submitted their choices to College Authority. And they were allotted according to their choice only.

Learning & Supervision: Internal preceptor and her team of each placement area facilitated the learning of students under her supervision. They also found their interest in pharmacology subject.

Teaching of skills: Internal preceptor and her team of each placement area taught skills following specific learning objectives of the subject help them in their future professional life.

Assessment: The internal preceptor and her team conducted formative assessment by discussing their day-to-day activities and giving.

Monitoring: Monitoring by the external supervisor of each placement area and overall monitoring by the Director Medical Education was satisfactory. The students also maintained portfolio of their work and at the end of posting students were given topics for short presentation.

Conflict

We found deficiency of involvement of nursing personnel in hospital wards in helping students to do case follow up and reluctancy in reporting adverse drug effects to students or to pharmacology department.

Arrival of students

One or two students arrived late on some of the days at some of the placement areas. Two Students were absent in the time of elective posting. They were posted for elective posting in later date.

Limitations

1. We couldn't offer certificate to the students who completed their elective in clinical pharmacology this being major limitation.
2. We couldn't take summative assessment at the course duration is short and we incorporated multiple topics.

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