

PHARMACOLOGY AND MEDICAL STUDENT PERSPECTIVES IN A GOVERNMENT TERTIARY CARE CENTER .

Pharmacology

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ABSTRACT

Background: Pharmacology basically deals with drugs and it forms the basis for ethical and rational prescription of the drugs in future. Pharmacology is one of the most important and a dynamic subject in IInd year MBBS curriculum. This study attempts to get a feedback and suggestions to improve the methods in teaching, explore the learning methodology, knowledge seeking behavior and student's attitude towards the clinical applications of Pharmacology.

Methodology: The study was cross sectional, open labelled questionnaire based study of undergraduate (second year) Medical students in Government Medical college and tertiary care hospital. Before conducting the study Institutional Ethical clearance was obtained. The questionnaire was prepared from previous studies review of literature and validated by experts. One hundred and ninety questionnaires were distributed, out of which 185 completely filled questionnaires were included for the study

Results: Out of 185 complete responders about 35% of the students considered Pharmacology was most important and useful subject of second year MBBS curriculum. The most interesting topic was CNS 25% , 25% considered ANS as difficult topic to understand. 81% students prefer practical is interesting. Of the teaching methodology about 62% of students found audio- visual aided lectures is most helpful.

Conclusion: The students' feedback serves as an array of effective methodologies in Pharmacology teaching and it will be helpful in modifying Pharmacology teaching patterns for excellent outcomes in future. This study reflects the perceptive of medical students about Pharmacology.

KEYWORDS

Pharmacology, teaching & learning methodology, medical students, lectures, subjects.

INTRODUCTION:

Pharmacology basically deals with drugs and it forms the basis for ethical and rational prescription of the drugs in future.¹ Pharmacology is one of the most important and a dynamic subject in IInd year MBBS curriculum and is horizontally integrated with other para-clinical subjects like Microbiology, Pathology and Forensic Medicine. Pharmacology forms the background of Medicine and helps to take some therapeutic decisions in clinical practice.² It is ubiquitous subject, required for all medical and surgical faculties.

Pharmacology is a highly volatile in nature and is depicted mainly as a theoretical subject³ by most of the medical students rather than its real life implementation.⁴ Most of the students learn Pharmacological drugs by mugging up without understanding its proper utilization in clinical practice. Thus it is necessary to make Pharmacology teaching more interesting and applicable.^{5,6}

A curriculum is a vision, a road map to meet the academic objectives. Curriculum development is a scholarly process.⁷ The Pharmacology curriculum deals with both experimental and clinical sciences. The experimental Pharmacology curriculum mainly deals with drug discovery, its mechanism of action in animal setup. Whereas clinical Pharmacology mainly focuses on prescribing pattern of drug for common medical ailments in a correct dosage forms, adverse drug reaction (ADR) monitoring and drug reactions in various levels in humans.⁸

"A thousand teachers, a thousand methods." Chinese Proverb, depict the importance of teacher. Being a teacher and an educator we need to be have different insights, perspective, knowledge and methodologies. Teaching is considered as ever evolving processes especially in medical school need to be upgraded continuously. Teaching approach is a set of principles, beliefs, or ideas about the nature of learning which is translated into the classroom, while teaching strategy, is a long term plan of action designed to achieve a particular goal.

The teaching methods in Pharmacology is mainly through audio visual aids and didactic lectures. The purpose of teaching Pharmacology to medical students is to train them on rational and scientific basis of prescribing medicines in therapeutics.⁵ Training the different routes of drug administration by trained professionals is the most interesting

practical session for the students. While practical sessions are found not adequate enough to instill confidence to the students in dealing with real life situation.

Questionnaires based studies are the studies where the information is collected from the answers of MCQs filled by the subjects. This type of study forms a very effective, convenient, time saving and cost effective mode of collection of data from the students as well as learning about their behavior and knowledge. The questions can create space for self-assessment to the students of their approach in learning and updating recent inventions.⁹ Regarding questions, some of the questions are structured to be closed ended, there is no grading or scaling for these questions, while the other questions, grading was done. Confidentiality of the participating students and batch is maintained. It is accepted that the feedback from students serves as an effective tool in developing teaching methodology and evaluation methods in undergraduate teaching.

The major hurdle for the medical students in understanding the drugs is that, enormous amount of knowledge about drugs are though in a narrow schedule, and the students are expected to retain, remember and effectively interpret.³ It is accepted that reviewing the teaching and evaluation methods by feedback from students and modification of methodologies accordingly is very important for the undergraduate medical teaching.^{10,11,12}

This study attempts to get a feedback and suggestions to improve the methods in teaching, explore the learning methodology, knowledge seeking behavior and student's attitude towards the clinical applications of Pharmacology.

METHODOLOGY:

The study was cross sectional, open labelled questionnaire based study of undergraduate (second year) Medical students in Government Medical college and tertiary care hospital. The study was explained to the students and then verbal consent was obtained. Before conducting the study Institutional Ethical clearance was obtained.

The questionnaire was prepared from previous studies review of literature and validated by experts. The questionnaire consists of 15 questions with minimum of 4 option each. Some questionnaire was

open labeled. The study site was Department of Pharmacology.

Students were instructed to fill the questionnaire honestly and clearly without disclosing their identity in any form. Students were asked to mark the most appropriate option as per them and also they were instructed to be unbiased while answering the questions. One hundred and ninety questionnaires were distributed, out of which 185 completely filled questionnaires were included for the study. Incomplete and not answered questionnaires were excluded from the study.

Statistical Analysis:

Descriptive statistics was used for analysis of data and the results were expressed in percentage. SPSS version 17 was used to generate tables and graphs.

RESULTS:

Out of 185 complete responses 74 were male and 111 were female students. After analyzing the results of our questionnaire we observed about 35% of the students thought Pharmacology was most important and useful subject of second year MBBS followed by Pathology 32%, Forensic medicine 27% and Microbiology 11%. About 2% of the students were interested in all the four subjects.

The most interesting topic according to students in Pharmacology was Central nervous system (CNS) 25% followed by Cardio vascular system (CVS) for 24% and Antimicrobials (Chemotherapy) for 15%. Respiratory system, GIT, ANS & Hormones for 6%, General Pharmacology for 2% and Autocoids for 1%. About 4% of students considered all topics were interesting. **Fig:1** represent the interesting topics in pharmacology. Out of all the topics, Central nervous system, Antimicrobials (chemotherapy), Cardio vascular system, Respiratory system, Gastro intestinal system and diuretics were considered as important topics for their future.

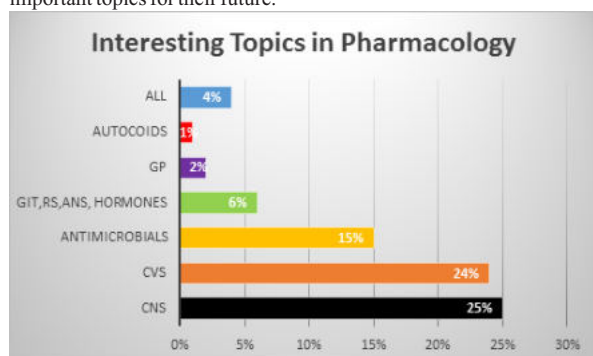


Fig:1 Interesting Topics In Pharmacology

The results of tough chapter analysis show that ANS is difficult for 25% of the students while CVS for 21% of students and Diuretics for 7% of students. The solutions given by the students to manage the difficult chapters are by repeated teaching by 62% of the students and 58% of students want to split the difficult chapters into smaller portions for teaching and internal assessment test.

Regarding theory versus practical classes in Pharmacology around 81% students prefer practical is interesting and it help in better understanding of Pharmacology. In practical sessions, 24% of the students found OSPE was interesting followed by spotters & pharmaco-economic 12%, toxicology 11% prescription writing 5% and prescription audit 4%. The most boring topic in practical sessions were pharmacovigilance 17% followed by problem solving exercise 10%, prescription audit 5%, OSPE 2% and clinical pharmacology 1%.

When students were asked about their opinion on Pharmacology teachers, we received varied suggestions and opinions on the quality of a Pharmacology teacher. About 91% students found most of the Pharmacology teachers are knowledgeable, approachable, problem solving & students friendly, should have a clear basic knowledge of the subject and are respected as expert therapeuticians undoubtedly, whereas 2% answered they had no idea.

Of the teaching methodology about 62% of students found audio-visual aided lectures is most helpful in learning, while 36% and 24% of

students rated demonstration and interactive lectures is also useful mode of learning. Only 6% of students considered didactic lecture were useful for learning. Rating the teaching sessions about 16% of the students considered pharmacology session are most interesting, 12% of them rated as interesting and about 47% students rated only few sessions were interesting like antianginal, antifungals & anti-tuberculosis, around 5% considered as boring and 7% considered as most boring.

When students were asked about the methods to make Pharmacology teaching more interesting, about 84% of students need no alteration in the present teaching methodology and the present teaching is satisfactory. Of the teaching methodology about 62% of students found audio-visual aided lectures is most helpful in learning, 14% of the students wanted to include small group discussion, 4% of them wanted to decrease the number of lectures, 2% wanted to increase the number of lectures, 3% wanted more student seminars.

When modes of teaching were analyzed (**Table.1**), about 43% of them wanted to discuss with a case scenario & faculties own experiences, 18% suggested to make video presentation for the mechanism of action, 13% wants black board teaching, 7% of the students wants break in between the lectures as continuous lecture is boring and exhausting, 5% wants to conclude with MCQs, 3% of the students wants to encourage them to ask questions during lectures to enhance the active student participation.

Table1: Student's perception on different modes of teaching in Pharmacology

MODES OF TEACHING	PERCENTAGE
Case scenario	43%
Video presentation	18%
Black & board teaching	13%
Breaks in between lectures	07%
Conclude with MCQs	03%

The studying pattern(materials) and learning methods in Pharmacology, about 87% of students, mentioned that they learn Pharmacology only during test, in this 98% used standard text books for learning. About 31% of the students prepare their own notes and 8% used handy books for learning. In method adopted for memorizing drug names 54% follow repeated recollection, 16% adopt mnemonics. About 26% of the students, study at regular bases because they are interested in Pharmacology subject and to improve the clinical knowledge. 10% of students learn Pharmacology under compulsion, as they were asked questions in clinical posting.

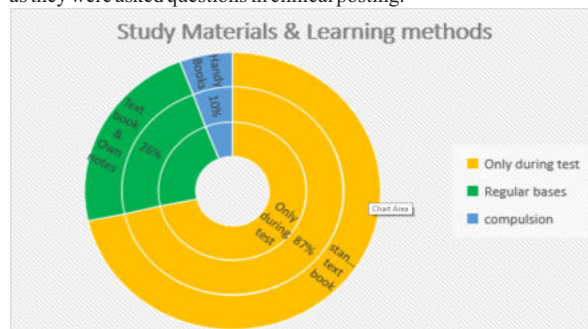


Fig:2 Study materials and Learning methods in Pharmacology

For preparing for examination, 88% students wanted regular written test and viva after completion of the system, 19% wants to conduct written and viva every 3 months, 2% of them wants once in 6 months and 2% of them do not need any exams /viva in between.

For the need of Pharmacology after second year (**Table.2**), 59% of the students were keen in learning about new drugs and recent advances, 39% needs orientation class in the final year, and 14% of them felt they had enough of Pharmacology knowledge during their one and half year Pharmacology class in second year itself.

Table.2: Need Of Pharmacology After 2nd Year

STUDENTS PERCEPTION	PERCENTAGE
New drugs & recent advances	59%
Orientation class in final year	39%
This is Enough	14%

DISCUSSION:

Pharmacology forms the backbone of rational therapeutics in drug prescription. It is important to review the teaching methods in Pharmacology and making adequate modifications to make the subject interesting and to cope with the requirements of the beneficiaries. The practical sessions like problem solving exercise & prescription audit exercises sensitize students for rational use of medicines, but these skills are minimally reinforced during clinical posting and so their practical application remains incomplete.¹³

In the present study students gave their valid suggestions which could be incorporated in teaching curriculum so as to make the subject very interesting and rewarding. In this study around 35% of students found Pharmacology as the most interesting and important subject in second year. A study conducted by Sana alam¹⁴ reveals that 55% of students considered Pharmacology as most interesting subject followed by Pathology, Microbiology and Forensic Medicine. Although majority of the students had some knowledge about Pharmacology after their completion of the second year curriculum but there are students who were unaware of the subject importance in medical and surgical field and they suggest to conduct an orientation class to refresh the subject.

The need of Pharmacology after second year, around 59% of students were keen in learning new drugs and recent advances in forth coming year, 39% are in need of orientation class in final year to refresh their knowledge on drugs and their clinical implications. Study by Manjunath⁽¹⁵⁾ 89.06% and Jaikrishna⁽¹⁶⁾ had 65% students wanted Pharmacology more closely integrated with clinical sciences. 45.42% students wanted integrated teaching to be implemented. An integrated approach can have learner centered curriculum that can develop competencies required for today's physician.¹⁷

In our study around 4% of students found all topics are interesting but majority of the students found central nervous system, cardio vascular system and antimicrobials as most interesting followed by respiratory system, GIT, hormones as less interesting and general pharmacology and autacoids as boring topics in pharmacology. While ANS and diuretics is the most difficult topic to understand, so these topics should be emphasized more to make it interesting and easy to understand. This can be done by introducing clinical case scenario, problem based learning, microteaching sessions with a strict bilateral communication. A study conducted by Uma et al¹ also revealed the same but the order of preference varies cardiovascular system, central nervous system and general pharmacology as most interesting subject. A study by Tabish¹⁷ found 41.91% interested in General Pharmacology, 13.19% in CVS, 12.31% are interested in CNS while 22.46% felt all the topics in Pharmacology are interesting.

In practical sessions, students consider Pharmacology laboratories are boring compared to Microbiology and Pathology practical classes. In Pharmacology practical session, around 24% found OSPE was more interesting followed by spotters, pharmaco-economics, toxicology, prescription writing and prescription audit. pharmacovigilance was considered as most boring topic in practical sessions in pharmacology. One of the study by Naeem SS et al,¹⁸ stated that in terms of student's perspective pharmacy practical laboratory holds little or no value in future practice as compared to the clinical laboratory.

Teaching method is a systematic way to pass knowledge and information onto their students. A teaching method comprises the principles and methods used by teachers to enable student learning. It implies an orderly logical arrangement of steps and is more procedural.¹⁹ 14% of students wants to include small group discussion and 47% of students prefer that few lectures in pharmacology are interesting. Study by Padmanabha¹³ had 98.38% students that liked clinical cases, 90.32% group discussion as it improves understanding. Lomalinda University quotes that "Newer techniques to be adopted rather than sticking on to the older methods of teaching". 43% of the students wants case presentation of respective topic followed by discussion of the drugs used in that disease or clinical condition, is preferred by most of the students and they suggest to modify the teaching sessions in Pharmacology and to implement student centered teaching method.²⁰ Study by Zaman et al²¹ had 50% students that liked clinically oriented lectures and 25% liked didactic lectures.

In our study 87% of the student's study Pharmacology only during test and 98% use standard text books and notes for learning and only 26% of the students learn Pharmacology at regular basis. Study by Rani²²

had 46.2%, by Zaman²¹ 37% and Prasad²³ had 56% students that preferred text book and lectures to study Pharmacology. Till date students heavily depend on lectures and textbooks for learning Pharmacology that are still an important source of information for learning Pharmacology.

In the current study, 18% wanted video & LCD, 13% preferred black board teaching as the modes of teaching. Study by Manjunath et al²⁴ had 81% students that felt combination of LCD projector and blackboard ideal teaching media. as a modes of teaching.

In the present study 88% of students wanted to write exams after completion of system, 19% wanted to write exams every 3 months and 2% wanted no exams in between. A study by vijayarani et al²⁵ 48.5% wanted exams at regular interval. Home assignment from time to time and viva sessions may be planned at the end of term during revision classes.

Our study suggested that, to make Pharmacology more interesting and clinically oriented to the students, it is imperative to review the teaching programs from time to time, and to foster more interaction between teachers and students and also we need to develop innovative learning modules. Better communication among students creates a significant learning environment will definitely improve the quality of budding medical practitioners. In light of the results of the present study, we should understand that all these issues must be taken into consideration in planning the teaching curriculum.

CONCLUSION:

This study has helped in knowing students' perspective regarding the learning methodology, knowledge seeking behavior and student's attitude towards the clinical applications of Pharmacology. The students' feedback serves as an array of effective methodologies in Pharmacology teaching and it will be helpful in modifying Pharmacology teaching patterns for excellent outcomes in future. The study emphasizes to make theory session interesting, interactive and clinical case based teaching and also there is a definite need for modification of undergraduate curriculum so as to make Pharmacology more interesting and practicable. The single time feedback from the students, may not be sufficient to arrive at a definite conclusion is the limitation of our study. Long term acquisition and analysis from a heterogeneous group of students will provide us with more information.

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