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Original Research Article

## A questionnaire-based study to evaluate perception, attitude and opinion of undergraduate medical students on the teaching-learning methodology in pharmacology

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### ABSTRACT

**Background:** Pharmacology enables medical students with the art of rational prescriptions of drugs. Reforms in undergraduate teaching are the need of the hour. The purpose of the study was to assess the student's attitude, perception, and feedback on teaching-learning methodology. Students' feedback gives an idea to evaluate teaching methods.

**Methods:** A cross-sectional study based on questionnaire. A total of 200 second-year medical students studying at Rangaraya medical college, Kakinada, were asked to fill up a pre-validated, predesigned questionnaire containing 17 questions. Descriptive statistics were used for analysis of data, and the results were expressed in percentage (%).

**Results:** Out of 200 students, 188 filled the questionnaire, and results were analyzed. 98.43% wanted case-based learning; 96.34% wanted more of clinical pharmacology in the curriculum. 83.53% wanted group discussion. Difficulty level of understanding is CVS (67%), CNS (65%), ANS (59%). 44% preferred tutorials. Combined use of LCD + Blackboard (86.58) is ideal teaching method. 81.70% of students studied textbooks only. According to students, pharmacology teachers should make subject interesting (37%) and student-friendly (31%). The need for pharmacology orientation during the internship (68.29%).

**Conclusions:** The study related to the perception and attitude of the students in learning pharmacology was positive and constructive. The students wish to learn more of clinical and practical oriented way with useful audio-visual aids, and should also be refreshed during internship. Implementation of the same would be helpful for better outcome of students.

**Keywords:** Attitude, Learning, Medical students, Perception, Pharmacology, Teaching

### INTRODUCTION

Pharmacology is a crucial subject for future medical practitioners, which undergoes continuous development and is becoming an essential component of all areas of medicine. To acquire the necessary prescribing skills, medical students must appreciate pharmacological principles and understand their application in clinical situations.<sup>1,2</sup> As far back as the 19<sup>th</sup> century researches were conducted regarding students' perceptions toward

teaching, learning, and factors that affect undergraduate programs. Studies on students' feedback focused mostly on areas such as learning outcomes, teaching and assessment methodologies, academic staff and educational environment. Students' perceptions comprise effective methods for improvement in teaching basic sciences related to clinical professions, such as pharmacology in health education. Teaching and learning of pharmacology are in a constant stage of reformation, being driven by pressure from the discipline itself, from

professional bodies, students, as well as due to changes in teaching style. Due to overload content, students often find the subject difficult to remember and recall terms, concepts and drug names.<sup>3</sup>

There is a growing awareness that learners' views of their educational experiences are valuable in assessing the effectiveness of course content and teaching methods. Student feedback is a critical component of the teacher-learner cycle.<sup>4</sup> Student feedback is considered an invaluable tool for reviewing teaching, evaluation methods, and developing teaching for improving students' performances and provide valuable inputs into the curriculum review processes to help in forming a learner-centered knowledge building process. So, therefore, Student feedback has been considered to be an effective methodology for modification of the undergraduate curriculum and making pharmacology more interesting, and practicable.<sup>5</sup> Knowledge is to acquire, retain and use the information for skill. Attitude is to react and interpret events.<sup>6</sup> Understanding current attitude, opinion, and perceptions of future practitioners about pharmacology, both as research and clinical practice, may help to improve teaching on this subject and introduce appropriate changes into the curricula where and when necessary. In recent years undergraduate training in pharmacology has been revolutionized with adoptions of new methods of teaching that focus on supportive learning through novel teaching approaches.<sup>7</sup>

Questionnaires, an objective means of collecting information about people's knowledge, attitudes, and perceptions.<sup>3,4</sup> A standardized questionnaire was administered to all participants and were asked precisely the same questions, and responses were recorded.<sup>3</sup>

The present study was conducted to determine the attitude, perception, and opinion feedback of teaching/learning Pharmacology using a pre-validated questionnaire among second year M.B.B.S. (third-term) students by Department of Pharmacology at Rangaraya Medical College, Kakinada.

## METHODS

After getting permission obtained from the Institutional Ethics Committee. A total of 200 students were provided with the pre-validated questionnaire. The questionnaire designed in a way that questions are focused on perception, attitude, and opinion on teaching-learning methodology. A pilot study on 15 students was done for questionnaire validation. A questionnaire containing 17 questions based on previous studies and suitably modified for the present set was given (Annexure). Students were asked to mark a single best suitable option in the space provided and were asked not to reveal their identity in the questionnaire. The time allotted for answering the questionnaire was thirty minutes. The completed questionnaires were collected, and the data of 188 students were entered into Microsoft Excel.

The study design was a prospective, cross-sectional, prevalidated, questionnaire-based study was done in the Department of Pharmacology at Rangaraya Medical College and Hospital, Kakinada for a period of 3 days in August, 2018. 2<sup>nd</sup>-year MBBS students were included in the study. Those who were not willing to participate and who did not return the questionnaire within the stipulated time were excluded. Descriptive statistics were used for the analysis of data and were expressed in percentage.

## RESULTS

Out of the 200 students to whom the questionnaire was administered, 188 completed questionnaires were accepted. 12 incomplete questionnaires were discarded. Out of which females were 53.5% and males were 46.5%. A total of 94% response rate was observed, as shown in Figure 1.

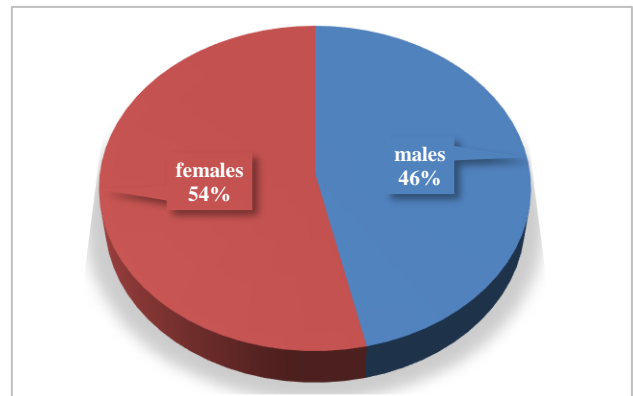


Figure 1: Sex distribution.

Regarding the changes to be done in regular pharmacology teaching, 98.78% preferred on case-based studies and introduction of more clinical orientation (96.34%), while 83.53% preferred on group discussion and 68.90% preferred on student seminar, we observed about 30% students think by increasing or decreasing of the number of lecture make the subject interesting.

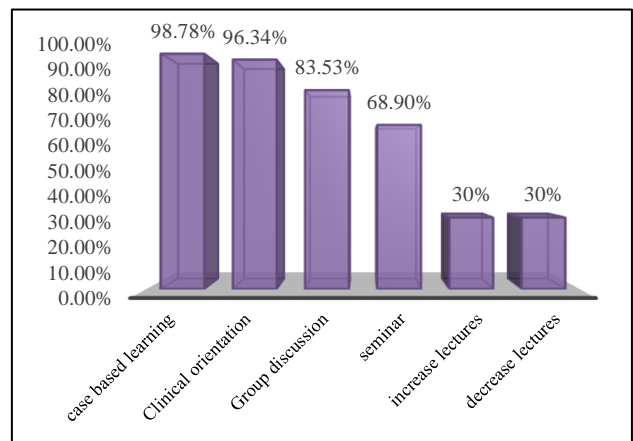
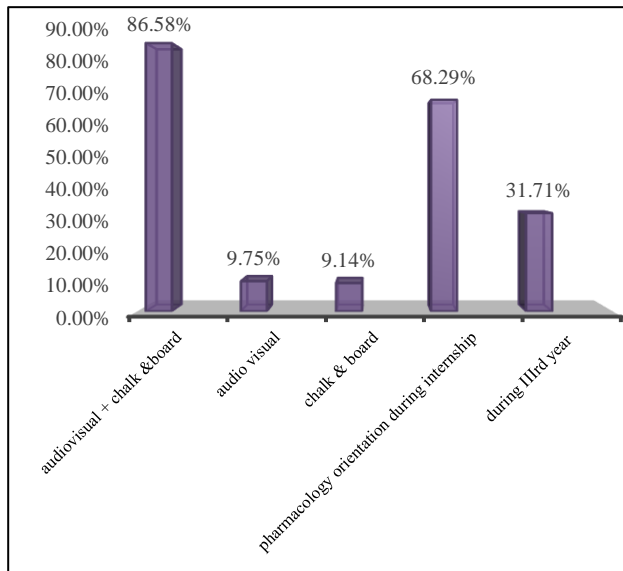


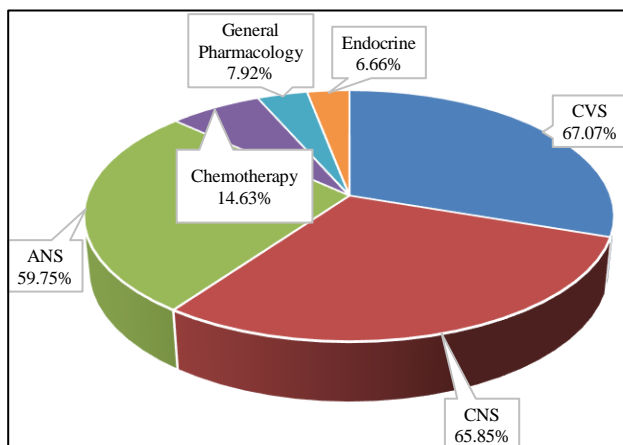
Figure 2: Students' opinion about changes in teachings.

The preferred method for classroom teaching for a majority of students 86.58% was the use of a combination of both audio-visual aids and chalk and board, 9.75% preferred only audio-visual aids and the remaining 9.14% students preferred only chalk and board method. Around 68.29% of students mentioned that pharmacology should be taught during the internship, and 31.71% of students need pharmacology to be taught in and after the 3rd year of the MBBS course.



**Figure 3: Teaching and learning methods.**

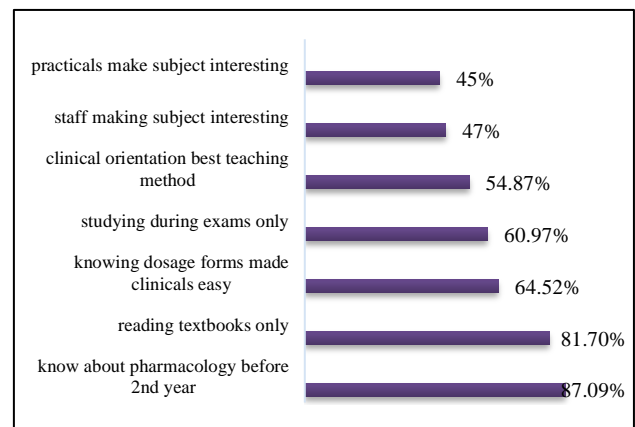
The majority of the students found cardiovascular system (67.07%), central nervous system (65.85%), autonomic nervous system (59.75%), are difficult to understand compared to chemotherapy (14.63%), general pharmacology (7.92%), and endocrine system (6.66%).



**Figure 4: Difficult topics.**

87.09% of the students came to know about the subject before their entry into 2nd MBBS. As much as 81.70% of students mentioned that they prefer studying pharmacology by textbooks only, 8.5% via the internet, 6.09% by lecture notes, and 3.65% by university tabs.

When asked about their pattern of studying pharmacology, 39.03% mentioned that they study regularly because of tests/viva and interactive classes, and 60.97% of the students' study pharmacology only during tests and exams. 54.87% students preferred clinically-oriented lectures as the best method to be added in the regular teaching curriculum, and the second-highest (28.04%) preference was given to Multiple Choice Question (MCQ)-based study and (14.63%) was to group discussions classes and (4.87%) through seminars. More than 45% students found that practical's followed by tutorials (34.20%) make the subject interesting, and the teaching staff should make the subject interesting (47%) by incorporating visual -audio clips, or by clinically oriented (22%) and also the lectures should be student-friendly (31%) to achieve maximal results in grasping students attention to the pharmacology subject. Students agreed that understanding the dosage forms made their clinical postings easy (64.52%) to interpret.



**Figure 5: Perceptions of students.**

## DISCUSSION

The present study evaluates the perception, attitude, and opinion of second year undergraduate students at Kakinada. Knowledge is to acquire, retain and use the information for skill. Attitude is to react and interpret events. Understanding current attitude, opinion, and perceptions of future practitioners about pharmacology, both as research and clinical practice, may help to improve teaching on this subject and introduce appropriate changes into the curriculum. In the present study, 54% of females and 46% were males. 98.78% opined that case-based learning is the best way of teaching and the staff should make the subject interesting was 47%. 87.09% know pharmacology before 2<sup>nd</sup> year and 81.70% read textbooks for understanding and about 60% read-only during examination. 86.58% found that the combination of audio-visual, chalk and blackboard is an effective method of teaching, and 45% of students mentioned that practicals make the subject interesting. 64.52% claim that by understanding the dosage forms made their clinical postings easy and 68.29% thought that orientation to be given during internship. According to

Bhosale et al, the questionnaire consisted of 25 questions. 45.7% were females and 54.3% were males.<sup>7</sup> About 53.2% found endocrine difficult to understand and assimilate. 50.8% thought that case-based learning, 51% by incorporating MCQ's and 41.7% of students thought that teaching staff should be student-friendly will make the subject easy to understand. 47.9% found audio-visual aids are preferred than the traditional chalk and board. 64.9% found that these sessions helped them during their clinical rotations, so about 56% thought that they need pharmacology orientation during the internship. More than 50% learn pharmacology from textbooks. In Balabalajee et al, 59% knew pharmacology as a subject even before their 2<sup>nd</sup> year of MBBS.<sup>8</sup> 28% of students found CNS difficult to understand, followed by 20% of CVS. About 35% of students opined that tutorials, practicals and staff making subjects interesting to learn. It is found that 37% of preferred clinical orientation lectures are to be added to the regular pharmacology curriculum. More than 50% found that audio-visual aids are better teaching-learning methods. Among students, 54% prefer to read from textbooks only and about 44% read during exams. 50% found that learning dosage forms made their clinical posting easy, so 37% of students thought that orientation during internship might be helpful and needful. In Dutta et al, 44% of females and 54% of males' students participated in the study.<sup>9</sup> Most of the students found ANS, followed by chemotherapy, CVS, CNS is difficult to understand and tutorials help concentrate the subject. 71% of students thought to introduce group discussion and more lectures into regular pharmacology curriculum and 65% of students are in favor of case-based learning. 75% prefer studying from the textbook and 72% prefer chalk and board much better than audio-visual aid. Students opined that teachers should incline towards clinical orientation. According to Konda et al, the questionnaire comprises of 25 questions.<sup>10</sup> 53.8% know pharmacology before 2<sup>nd</sup>-year MBBS, whereas 39.2% of students prefer reading from textbooks and about 45% study only during the examination. 34.2% mentioned that by including practicals is useful and also make the subject interesting. 35.8% wanted more lectures and 80.8% mentioned teaching staff should be student-friendly. 24.2% opined that pharmacology orientation is useful during an internship, 78.3% found LCD + blackboard is effective and 20.8% found CVS atopic is difficult. 54.2% like to include a seminar in regular pharmacology teaching, and it was found that 74.2% of students on exposure to dosage forms made their clinical rotation easy.

## CONCLUSION

Teaching and learning are a dynamic process, so the students' feedback provides essential information about the modification in the pharmacology curriculum to make it more exciting and clinically relevant. Formulating new educational strategies is the need of the hour, to mitigate the general stigma that the study of this subject is dry and boring. Curriculum evaluation is the key to the continuous

assurance of the quality of education to achieve that students are usually regarded as the best judges to evaluate the effectiveness of teaching content and methods.

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## ANNEXURE

## QUESTIONNAIRES

## 1. Students' opinions about changes recommended in teaching pharmacology.

S. no.	Opinion about changes recommended	Yes	No
1	Increase the number of lectures		
2	Introduce student Seminars		
3	Introduce Case-Based Learning		
4	Introduce more Clinical Pharmacology		
5	Decrease the number of lectures		
6	Introduce Group Discussions		

## 2. Teaching-learning methods in pharmacology.

S. no.	Item	Yes	No
7	The ideal teaching method for learning Pharmacology is a. Didactic lecture b. Tutorial c. Seminar d. Demonstration		
8	The ideal Teaching Learning media for learning Pharmacology is a. LCD projector b. Blackboard c. LCD projector + Blackboard		
9	The most difficult system to understand in Pharmacology is a. General Pharmacology b. Autonomic Nervous System c. Central Nervous System d. Cardiovascular System e. Endocrine System f. Chemotherapy		

## 3. Perceptions and opinions towards pharmacology teaching and learning by the study subjects.

S. no.	Yes	No	
10	Did you know about pharmacology before it was introduced to you in II MBBS?		
11	Lectures Practical	Tutorials	
12	Seminars Group discussion	Clinically oriented lectures MCQ's	
13	Lecture notes only Textbooks only	Internet Tabs university provided	
14	Regular	Only during exams	
15	Orientation during internship	Taught in entire III year	
16	Make subject Interesting	Student Friendly	Clinically oriented
17	Disagree	Agree	