

## A Study on Pharmacology Curriculum in Under Graduate Students

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### **Abstract:**

**Background:** Pharmacology, being both basic and applied science, forms the backbone of rational therapeutics in medical field. This study was done to determine the perception and feedback of teaching learning pharmacology as it is important for their betterment.

**Methods:** Descriptive cross sectional questionnaire based study was conducted in Siddhartha medical college, Vijayawada, India 2019. A questionnaire was distributed in the class and then collected. Data was analysed using the Statistical Package for Social Sciences (SPSS).

**Results:** Total of 100 students, 19 males and 81 females participated in this study. mean age  $\pm$ SD of the students was  $20.46 \pm 0.84$ . 42 students agreed that pharmacology is a favourite subject but the preferences for pharmacology as a subject in post-graduation was low (12%). 80% of students wanted the faculty members to make more use of Audio-Visual aids. 66% favoured Group discussions y, followed by Didactic lectures, 50% and Tutorial, 32%. The most difficult system to understand was autonomic nervous system (47%) followed by central nervous system, (43%)

**Conclusions:** Student's need more clinical orientation to the Pharmacology teaching at undergraduate level to make the subject more understandable and interesting with modern advancing technology of teaching and learning.

**Keywords:** Feedback, Pharmacology, Perception, Student, Teaching-learning

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### **I. Introduction**

Pharmacology, a branch of medicine is progressing by leaps and bounds <sup>[1]</sup>. Teaching and learning of pharmacology is in a constant stage of reformation <sup>[2]</sup>. The aim of pharmacology is that the student should develop transferable skills, which would help not only for undergraduate education but to learn throughout the medical career <sup>[3]</sup>. Generally, there is an opinion that teaching pharmacology in medical schools has failed to keep in pace with the rapid changes in medical practice.

Pharmacology subject although crucial for physicians, is perceived as dry and volatile by Medical students <sup>[4]</sup>. To make pharmacology teaching more innovative and interesting learning experience, efforts have been made by formulating new educational strategies to meet the educational objectives. Educational objectives can be evaluated by assessment procedures and timely feedback to achieve the learning goal <sup>[5]</sup>.

Questionnaires offer an objective means of collecting information about people's knowledge, beliefs, attitudes and behaviour <sup>[6, 7]</sup>. A standardized questionnaire is one that is written and administered, so all participants are asked the precisely same questions in an identical format and responses recorded in a uniform manner <sup>[8]</sup>. Student's feedback would probably reveal whether the so-called reforms are acceptable to them and their opinion for the betterment of teaching and learning subject <sup>[9]</sup>

### **II. Methods**

The descriptive cross sectional questionnaire based study was conducted at Siddhartha Medical College, Vijayawada, India, among second year MBBS students of 2017 Batch. Questionnaire was designed based on the literature review in this field.4,5,8 With modification including demographic data of students and distributed to students. After explaining about the aims and objectives of the study to the students, informed consent was taken and then the questionnaire were distributed to students. All students present in the class at the time of distribution were included in the study after informed consent. Thirty minutes time was given for answering the questionnaire, and then the questionnaires were collected.

**2.1 Inclusion criteria**

- All male and female students of second year MBBS who were present in the class at the time of distribution of questionnaire.
- Students who completed the questionnaire after informed consent.

**2.2 Exclusion criteria**

- Participant who did not complete the questionnaire.
- Students who did not give informed consent.

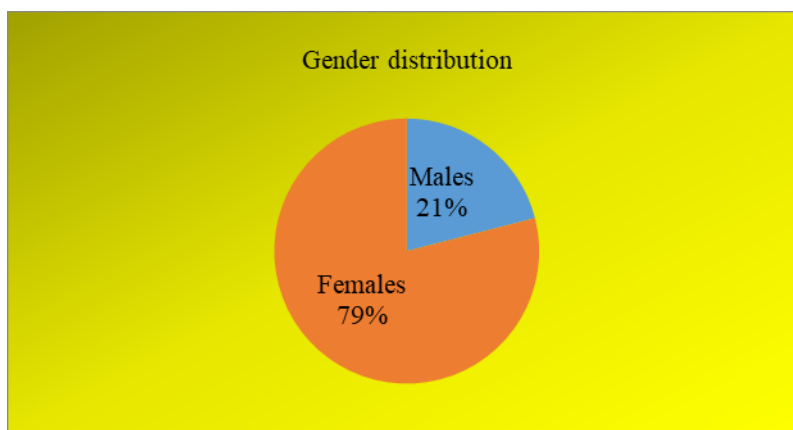
Total data collected was from 100 students and data was analysed using the Statistical Package for Social Sciences (SPSS). The results were expressed as actual numbers, mean, percentages. Unpaired T test was done and p value <0.05 was considered as statistically significant.

**III. Results**

Demographic variables of the participants Total of 100 students participated in this study. Among them 19% were male and 81% female. The mean age  $\pm$ SD of the Male student was 20.63 $\pm$ 0.92. And the mean age  $\pm$ SD of the Female student was 20.46 $\pm$ 0.84 (Table 1).

**Table 1: Gender Distribution**

Boys	Girls
19	81



**Figure 1-Gender distribution**

**3.1 Perceptions and opinion towards teaching and learning pharmacology by students**

42 students agreed that pharmacology is their favourite subject and 37 were neutral. Only students 12 considered pharmacology for post-graduation whereas 56 were neutral. 61 students agreed that pharmacology has created a knowledge base that will help them with the rational choice of drugs during future practice. 32 students mentioned that pharmacology lectures are interesting and stimulating, 52 students agreed that pharmacology is more closely integrated with the clinical sciences, and real cases from hospitals should be used during stimulated learning problems and 37 students agreed pharmacology helps in developing their skills in problem-solving and logical-reasoning. 50 students were neutral on the topic that the teaching of pharmacology should focus strongly on the health problems of India, whereas 45 agreed and 5 disagreed. Regarding the need for practical sessions on rationality of prescription and evaluation of drug advertisements, 41 students agreed and 51 are neutral. Students welcomed modules of pharmacology and therapeutics during their clinical years for which 44 students agreed and 52 students are neutral. 32 students agreed that the assessment system is fair whereas 60 were neutral and 8 people disagreed, 35 agreed with transparency of assessment. Majority of students agreed that MCQs should be included in the assessment 51 and 35 students agreed that practical sessions as well as the objectively structured practical examination (OSPE) and problem stimulated learning (PSL) more than didactic lectures and 37 agreed that pharmacology education had given them capacity for self-directed learning. 36 students agreed with that the assessment focuses on the ability to acquire facts rather than the development of problem solving skills whereas majority of 59 students maintained neutrality (Table 2).

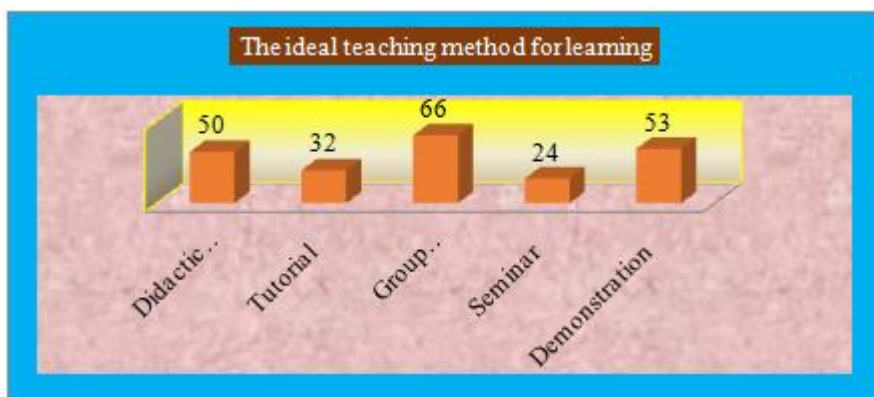


Figure 2-The ideal teaching method for learning

Table 2: Perceptions and opinion towards pharmacology teaching and learning by students (n=100).

Statements	Disagree	Neutral	Agree
Pharmacology is my favourite subject in the basic sciences.	21	37	42
The subject has created the knowledge base which will help me in choosing Drugs rationally in my future practice.	-	39	61
I find pharmacology lectures interesting and stimulating	12	56	32
I would like Pharmacology to be more closely integrated with the clinical sciences and would like real cases in hospital to be used during problems stimulated learning (PSL)	9	39	52
The subject has helped me to develop my problem-solving and logical- Reasoning skills.	6	57	37
I would like the subject to be focus more strongly on the health problems of India	5	50	45
I would like practical session on rationality of prescription and evaluation of drug advertisements	8	51	41
I would like to welcome modules on Pharmacology and therapeutics during The clinical years of my training.	4	52	44
The assessment system in Pharmacology is fair.	8	60	32
The assessment process is transparent.	8	57	35
I would like MCQs to be included in the assessment.	10	39	51
The assessment concentrates on ability to acquire facts rather than on the Development of problem-solving skills.	5	59	36
The Pharmacology teaching has inculcated in me a capacity for self-directed Learning.	11	52	37
I will consider Pharmacology as one of my subject for post-graduation	32	56	12
There should be more emphasis on objective structured practical examination (OSPE) and PSL, rather than didactic lectures	17	48	35

### 3.2 Ideal teaching learning methods in pharmacology at SMC Vijayawada

Majority of student (80%) agreed combination of LCD projector and blackboard followed by Black board (26%) as ideal teaching-learning media for pharmacology. Group discussions were favoured by 66%, followed by Didactic lectures, 50% and Tutorial, 32%. The most difficult system to understand was autonomic nervous system (47%) followed by central nervous system, (43%) (Table 3).

The ideal teaching method for learning	
Didactic lecture	50
Tutorial	32
Group Discussion	66
Seminar	24
Demonstration	53
The ideal teaching learning media	
LCD projector	7
Blackboard	26
LCD projector + Blackboard	80
The most difficult system to Understand	
Autonomic nervous system	47
General pharmacology	26
Cardiovascular system	41
Endocrine	12
Antimicrobials	24
Drug acting on CNS	43
Drugs acting on gastrointestinal system	2
Drugs acting on autocoids	17

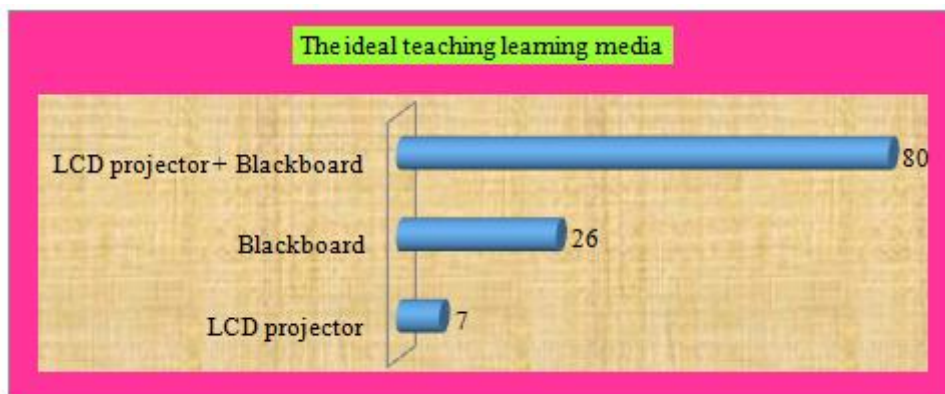


Figure 3-The ideal teaching learning media

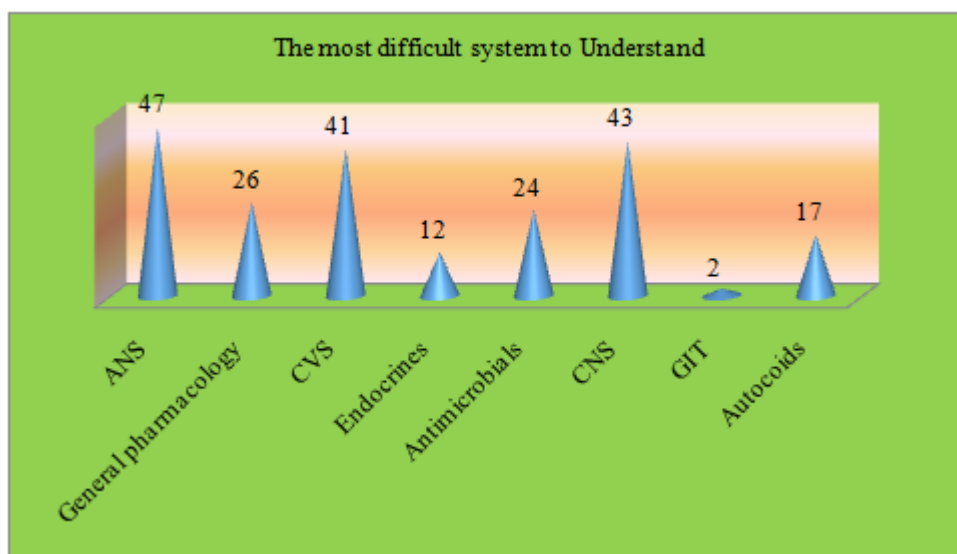


Figure 4 - The most difficult system to Understand

### 3.3 Student’s opinion about changes recommended in teaching pharmacology at SMC Vijayawada

55% of Students want to increase number of lectures and 14% students wants to decrease the number of lectures. 79% of students wanted the faculty to make more use of Audio-Visual aids. Students wanted case based learning, (92%), clinical pharmacology, (91%) and group discussions, (80%) to be introduced in the curriculum for effective learning (Table 4).

Statement	Yes	No
Increase the number of lectures	55	45
Make more use of audio- visual aids	79	21
Introduce student seminars	57	43
Introduce Case Based Learning (CBL)	92	8
Introduce more clinical pharmacology	91	9
Decrease the number of lectures	14	86
Introduce group discussions	80	20

## IV. Discussion

Pharmacology is a subject which has to be learned thoroughly in order to treat the patients. It serves as a foundation stone for clinical practice. There is a definite need for modification of undergraduate curriculum by means of conducting few microteaching sessions and clinical-oriented problem-based learning with MCQ-based revisions at the end of each class so as to make pharmacology more interesting and practicable<sup>[10]</sup>. Student feedback has been considered to be an effective methodology for modification of undergraduate curriculum and making pharmacology more interesting and practicable. Student feedback is thus considered a very valuable tool for improving students performances when suggestions obtained from students are implemented<sup>[11]</sup>.

A literature review of survey by Italian doctors has considered the pharmacology teaching they received to be mainly theoretical and opinioned that more time and attention should be devoted to issues more closely related to clinical practice<sup>[12]</sup>.

According to a study conducted by Garg et al (2004)<sup>15</sup>, 80% of the students preferred case studies and treatment as part of the regular teaching schedule. This has been confirmed in our study as well wherein majority of students feel that problem based learning and prescriptions are extremely useful in clinics. As per a study by Advani et al (2006)<sup>16</sup> more than 50% want clinically oriented lectures as restated by students in our study in which 59.8% strongly agree and 34.6% agree. Some students mentioned about the inability of doctors in writing rational prescription and it is suggested that there should be incorporation of some training of clinical pharmacology in the internship. Ruckmani A (2006)<sup>17</sup> also suggested that there should be a continuous interaction between clinicians and the pharmacologists at the level of teaching of pharmacotherapy, and pharmacology should be taught along with the clinical teaching.

In this study, Fourteen students agreed that pharmacology is a favourite subject but only 8% of students preferred pharmacology as a subject in post-graduation, which is similar with the study done by Mahfoudh A.M. et al.<sup>7</sup> It is probably due to inadequate knowledge about this subject matter which is vital for blooming careers in the clinical research and pharmaceutical industries and due to student's interests are biased towards clinical sciences rather than fundamental sciences with prospective earning far better than pharmacology careers.<sup>[13,14]</sup>

In our study, Majority of the students (21) prefer MCQs in the assessment, this is similar to finding by Jai Krishna et al 61.4%, Mahfoudh AM et al, 58.6% and by Manjunath SM et al, 79.68%.<sup>4,5,7</sup> The reason might be due to MCQs are one of the major way of examination in different competitions like post-graduation selection, medical licensing examination, even though in passing university examination and also due to student somewhere uncomfortable facing long and short essay type questions, would prefer MCQs in their examinations.

Many students (79%) wanted the more use of Audio-Visual aids for effective learning. Regarding, ideal teaching-learning media for pharmacology, 80% students preferred combination of LCD projector and blackboard. This was supported by the study of Manjunath SM et al, which was 81.25%<sup>[15]</sup>. About 88.2% of students in our study recommended for introducing group discussion as teaching learning method this results are in favour of the study conducted by Manjunath SM et al where 82% students recommend group discussion, as it impart knowledge among faculties and student with easy feedback and discussion<sup>[15]</sup>.

## **V. Limitations**

- 1) Study was done only in one institute and on 100 students only, results would have been more comprehensive and informative if the sample size and no of institutes are included
- 2) Bias being an inherent limitation of a questionnaire study. It is also seen with this study

## **VI. Conclusion**

In radiance of the results of present study all these issues must be given prime importance while updating undergraduate curriculum. Student's need more clinical orientation to the Pharmacology teaching at undergraduate level to make the subject more understandable and interesting with modern advancing technology of teaching and learning.

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