

## Students' Perception of Pharmacology and Teaching - Learning (T-L) Methods Used in Pharmacology

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### ABSTRACT

**Introduction:** Sound knowledge of Pharmacology plays a significant role in safe and rational use of drugs in clinical practice but the subject is difficult to understand and retain. Moreover many new drugs are introduced and older ones are banned too frequently. So it becomes difficult for students to keep pace with ever changing scenario. It is thus very important to know students' perceptions and preferences for better conceptual understanding of Pharmacology.

**Methods:** A feedback questionnaire was designed and given to 2<sup>nd</sup> year MBBS students in 5<sup>th</sup> Semester. Students filled their answers using 5 point Likert Scale. Open ended questions were also asked to get students' suggestions.

**Results:** Out of total 150 students, 125 returned the completed questionnaire. 77% students considered blackboard teaching as best method for teaching pharmacology but suggested adding case based learning, group discussions and MCQs. Students also wanted some topics of pharmacology to be covered in final year in integration with clinical subjects.

**Conclusions:** There is a need for some improvement in current teaching methodology like introduction of MCQs, CBL,

group discussions and integration with clinical subjects for better retention and applicability of knowledge.

**Key words:** Teaching - Learning (T-L) Methods, Perception, Feedback.

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### INTRODUCTION

Pharmacology is the foundation stone of clinical therapeutics and acts like a bridge between basic and clinical sciences. Basic Pharmacology gives an insight into drug kinetics and molecular mechanisms of action. Clinical Pharmacology enables students to understand indications for use, cautions, adverse drug reactions and modifications of drug action by other simultaneously used drugs or disease states. Thus a sound knowledge of basic and clinical Pharmacology plays a significant role in rational use of drugs for maximising disease control while minimizing adverse events. Pharmacology is a textual, volatile and ever evolving dynamic subject. There is ongoing rapid change in content of pharmacology because of introduction of new drugs / combinations / dosages forms / drug delivery systems on one hand and ban/ cautions / contraindications to use of some previously used drugs due to detection of their long term or special group adverse effects on other hand. It is becoming increasingly difficult for students to keep pace with the change. Thus curriculum and T-L methods in pharmacology must be

carefully reframed keeping in mind the vast dynamic nature of subject, time allotted and learning capabilities of students. Traditionally didactic lectures, prescriptions, interaction writing exercises, animal experiments and polypharmacy practicals were commonly employed T-L methods in Pharmacology in most of the medical institutions across the country. But, now-a-days with ban on animal experimentation for undergraduate teaching, decreased practice of polypharmacy and introduction of numerous novel dosage forms and drug delivery systems, there is a need to revise instead of change the curriculum and T-L methods for Pharmacology. Although there are some changes in the form of demonstration of computer aided animal experiments, various dosage forms and drug delivery systems but these are far from adequate. Hence to make teaching of Pharmacology more effective and useful, it is important to know students' perception about current curriculum and T-L practices to be able to make appropriate modifications in the same for enhancement of their knowledge and retention of Pharmacology.<sup>1</sup>

**MATERIAL AND METHODS**

**Study Population**

150 MBBS students of 5<sup>th</sup> Semester of Punjab Institute of Medical Sciences, Jalandhar, who were due to appear in University examinations of 2<sup>nd</sup> professional in Nov. 2017 participated in the study.

**Study Design**

It was a cross-sectional, observational study.

**Procedure**

After approval by IEC, a self-structured, prevalidated, 28 items questionnaire, using 5 point Likert Scale was administered to 5<sup>th</sup> semester students. The completed questionnaires were collected. Data was tabulated and analysed. The results were expressed as frequency distributions and Median as a measure of central tendency.

**OBSERVATIONS & RESULTS**

125 Students returned the completed questionnaire. Table I shows students' perceptions about the subject of Pharmacology. There was a consensus among respondents ( $Q_2 = 4.32$ ) that knowledge of Pharmacology will be very useful for them in clinical practice. They realized that conceptual knowledge of General Pharmacological principles especially pharmacokinetic parameters (85.6%), adverse drug reactions & Pharmacovigilance (88%) will promote rational drug use. In practical Pharmacology most (60%) of students don't favour reintroduction of animal

experiments. Rather they like prescription writing (84.6%) and spotting exercises (25%) as these are clinically relevant.

Almost 89% students perceived Pharmacology as an interesting subject with ANS been reported as most interesting topic by 48% students followed by CVS (30%), CNS (14%) and Autacoids by only 8% students. (as shown in Fig. I.)

Only 0.8% students (n=1) favored Pharmacology as a subject for post graduation. Most common reasons cited for not pursuing MD Pharmacology were more inclination towards clinical subjects, high difficulty level of Pharmacology and lesser financial gains etc. Table II shows students' preferences for T-L (teaching- learning) methods and their suggestions for further improvement. In teaching learning methods, the TL method preferred by majority of students (77%) is didactic lectures, using chalk and blackboard. However 58% suggested more use of audio visual aids and providing handouts (50%) at end of lecture can improve learning further. 74% opined that explanation in vernacular language can help in better conceptual understanding.

In addition students suggested that introduction of case based discussions (90%), group discussions (72%), addition of MCQs in tests / tutorials (74%) and revision classes at end of each unit (63%) can prove to be very helpful in learning Pharmacology. Although most of the students (81%) felt that one and half year is sufficient for learning Pharmacology but 79% feel that some topics be taught in vertical integration with clinical subjects during final year for better applicability and retention. (Fig. II.)

**Table I: Students' perceptions about the subject of Pharmacology**

S. No	LIKERT ITEMS	Strongly disagree 1 n (%)	Disagree 2 n (%)	Neutral 3 n (%)	Agree 4 n (%)	St. Agree 5 n (%)
<b>PERCEPTION OF PHARMACOLOGY</b>						
1	Conceptual knowledge of general Pharmacological principles will be useful in clinical practice	1(0.8)	1(0.8)	15 (12)	53 (42.4)	54 (43.2)
2	Knowledge of ADRs and Pharmacovigilance will promote rational drug use	1(0.8)	3(2.4)	8 (6.4)	50 (40)	60 (48)
3	Prescription writing exercises are interesting and clinically relevant	0 (0)	1(0.8)	18 (14.4)	52 (41.6)	54 (43)
4	Pharmacology is an interesting subject	1(0.8)	1(0.8)	10 (8)	52 (42)	59 (47)
<b>Total Responses</b>		3(0.6)	6(1.2)	51(10)	207(42)	227(46)

**Fig I: Interest of students in different topics of pharmacology**

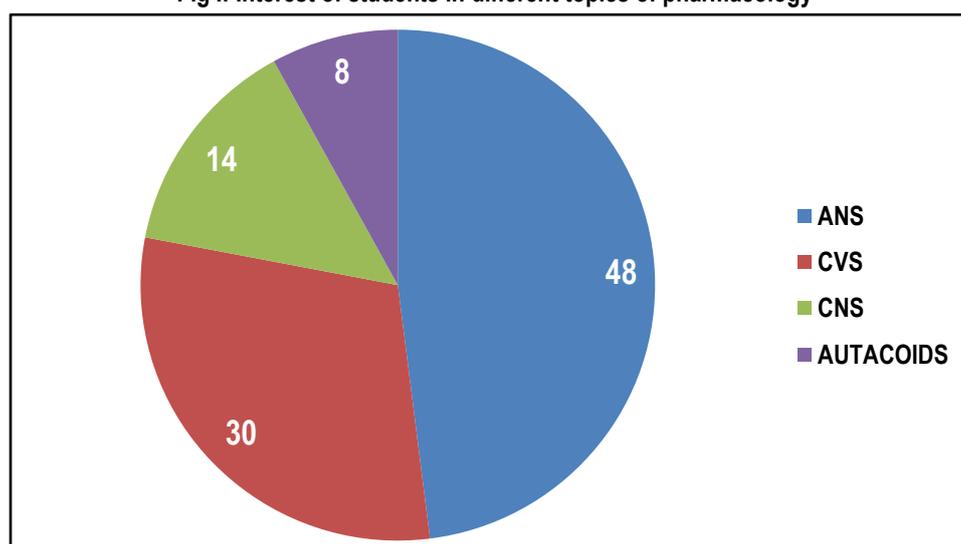
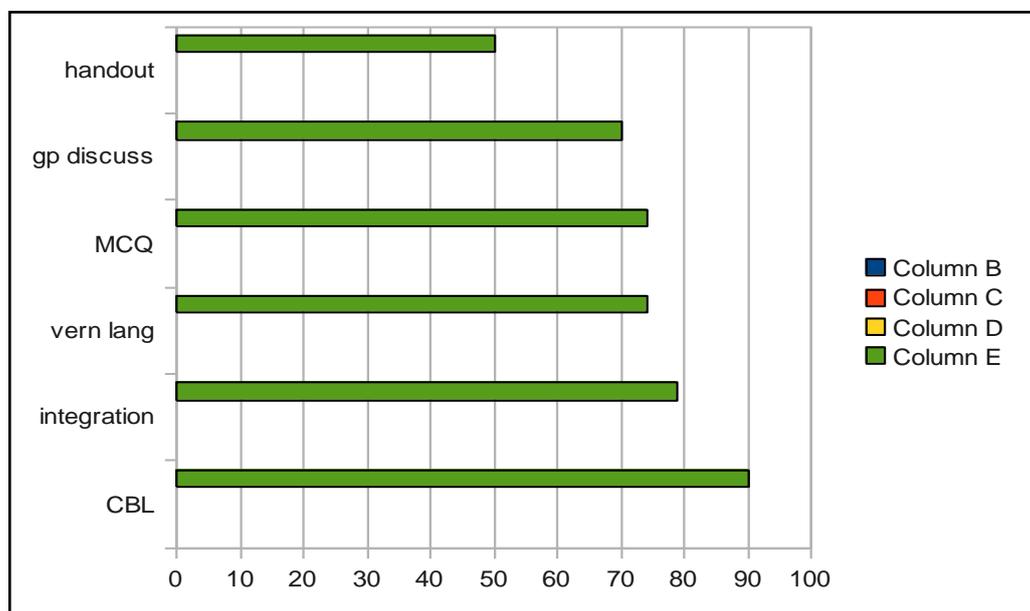


Table II: Students' suggestions about T-L methods in pharmacology

S. No.	Students' suggestions about T-L methods in pharmacology	n	%
1.	Didatic lectures using chalk & blackboard are gold standard for T-L Pharmacology	96	77.00%
2	Explanation in vernacular language improves conceptual understanding	93	74.00%
3	Handouts should be provided at end of lecture	63	50.00%
4	Case based learning should be emphasized	112	90.00%
5	Group discussions can prove to be helpful	87	70.00%
6	Some topics should be covered in integration with clinical topics	99	79.00%
7	MCQs should be in integration in tests and tutorials	93	74.00%

Fig II: Students' suggestions about T-L methods



## DISCUSSION

Pharmacology is progressing each day like all other medical sciences, requiring appropriate changes in content and methodology of teaching. Regular review of students' perceptions and preferences may thus assist in bringing about desirable changes in the curriculum. Thus students' perceptions were studied in detail.

Our study reveals that for 77% students didactic lectures are still the gold standards for teaching Pharmacology. Similar figures have been reported by Garg A et al.<sup>2</sup> However our students preferred lectures using black or white board. Our findings are in agreement with those of Pukhta MA et al.<sup>3</sup> and in contrast to findings of Kavita Sekhri where students preferred LCD to be the preferred audio visual aid for Pharmacology lectures.<sup>4</sup> Prescription writing was rated as most interesting practical exercise. This is in agreement with study by Bhosale UA.<sup>5</sup>

A large majority of students (90%) suggested introduction of case based learning in the curriculum as reported by other studies also.<sup>6,7</sup> As in other studies<sup>8</sup> students wanted group discussions to be introduced, but % age of such students in our study (72%) is much more than that (27%) reported by Vibha R et al.<sup>9</sup> In agreement with findings of a study by Garg A<sup>2</sup>, 79% students in our study wanted Pharmacology to be taught in vertical integration with clinical subjects during 3rd year for better retention and applicability. Feedback also included other suggestions like explanation in vernacular language, more use of pneumonics and introduction of MCQs etc.

It is interesting to note that although most of the students considered Pharmacology to be an important subject of undergraduate medical curriculum that will be useful in their clinical practice, very few wanted to opt Pharmacology for post-graduation. This has been reported by other authors also<sup>10,11</sup> and is a cause of concern.

As this phase is a phase of change, more such studies should be conducted at multiple centres to see things from students' perspective and incorporate valid suggestions in the curriculum.

## CONCLUSION

Study revealed positive, constructive perception of students towards Pharmacology. Several areas requiring further inputs are also highlighted.

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