



Need-Based Changes in Undergraduate Pharmacology Teaching in Dental College – A Survey on Student Perspective

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ABSTRACT:

Background: Pharmacology knowledge is the base of clinical practice. The goal of studying Pharmacology for dental students is to acquire and gain knowledge on rational therapeutics. As so many new drugs are added the subject became voluminous and undergraduate students find it difficult. **Objectives:** To know how the students feel about the pharmacology teaching and learning process and their feedback on the Pharmacology syllabus for dental undergraduates. **Methodology:** A comprehensive observational, cross-sectional questionnaire-based survey comprising 25 questions for both the learning and teaching (theory/practicals) process, was given to all the dental students. Responses were collected and data were compiled in Microsoft excel and statistically analyzed. **Results:** A total of 167 students participated in this survey. Students opinions revealed that cardiovascular system, antimicrobials followed by general pharmacology were the most favorite topics. ANS pharmacology is a difficult topic to understand. Clinically oriented exercise is preferred for the future preparatory exams. **Conclusion:** Students opinion is more important and noteworthy as they are the fully focused audience which must make them more interested to learn the pharmacology subject is the need of the hour. Since the sample size is small, it has to be tested in large populations of dental graduates.

Keywords: BDS undergraduates, Dental Pharmacology, Teaching and Learning process.

1. INTRODUCTION

Pharmacology is the study of drugs. It forms the backbone of rational therapeutics, being both a basic and applied science ⁽¹⁾. Prescribing is an important skill required for newly graduated clinicians. In such cases, pharmacology knowledge is the base of clinical practice. As so many new drugs are added the subject became voluminous and undergraduate students find it difficult. As dentists are concerned, some drugs are specifically used in dentistry so it is expected to have knowledge both in general along in dental pharmacology. Is the pharmacology syllabus for dental undergraduates too heavy? Does it burden them? In India, pharmacology is introduced in the second year of the BDS course to the students along with other Para-clinical subjects like Pathology and Microbiology ⁽²⁾. Though the subject is considered vague and tough, it should be made all over India to make the teaching of Pharmacology more interesting and relevant by modification in teaching-learning perception. Focusing mainly on clinical case discussion, problem-solving, and prescription writing which helps the students in a further year of study.

A coin has two sides, here one side is the teacher and the other one is the students. We wanted to know the student's viewpoint in this regard. So, a questionnaire-based study was planned among the present batch and passed out to Undergraduates and present Postgraduate's students. The second part of the study would be conducted among teachers of Pharmacology in different dental colleges. The result of the study would help us to redefine and reform the Pharmacology syllabus for Undergraduates.

The present study was undertaken to get the student's feedback for teaching/learning Pharmacology subject. It is analyzed in such a way that the reforms are acceptable to the students and implementation of the subject in clinical practice.

A number of papers have been published to emphasize the importance of pharmacology teaching and learning. It is an important discipline with continuous development so the knowledge of the drugs has to update regularly. A questionnaire-based study of students' opinions on the teaching and learning methods in pharmacology in a medical school in India was conducted to gather students' perceptions about pharmacology teaching and learning methods. 62% of students considered the importance of pharmacology above all subject's various topics were considered interesting such as cardiovascular pharmacology, central nervous system, and

chemotherapy. Of the teaching methodologies more than half of the students (62%) found interactive lectures most helpful, whilst 39 % rated audio-visual aided lectures, whilst 39 % rated audio-visual aided lectures. In terms of reforms, 48 % of the students suggested introducing small group discussion hours, 44 % suggested making use of more audio-visual aids and 21 % wanted more clinical Pharmacology. Discussions at the end of class (55 %), and encouraging students to ask questions during lectures (38 %) were the main ways to enhance active student participation. the study concluded with positive feedback to make the teaching program more interesting^(3,4,5,6,7)

In another study, similar aspects were analyzed for the student's perception of Pharmacology teaching and learning. Students' opinions revealed that Gastrointestinal followed by general Pharmacology and cardiovascular system were the most favorite topics. The majority preferred studying from "standard textbooks" and the method of learning was "understanding" the subject rather than mugging. The majority of the students said that preferred lectures have taken via LCD projectors and rated viva and MCQ as the preferred method of evaluation of university exams. Interactive classes and tutorials were the most preferred techniques⁽⁸⁾.

This questionnaire survey influenced us to do this kind of study in our college to analyze Pharmacology teaching. Most of the time it's a voice heard from many students that pharmacology is a very tough subject to understand and study. This creates an interest to know what the difficulties students face and to bring in changes and modifications in methodologies for imparting sound knowledge of pharmacology to make the subject easier also.

2. AIM

To get the student's feedback on Pharmacology theory & practical syllabus and teaching.

OBJECTIVES

- ❖ Any additional topics required
- ❖ Any topics to be deleted
- ❖ Changes needed in practicals
- ❖ The desired teaching method

3. MATERIALS & METHODS

Approval from the Institutional Ethics Committee {Human Studies} was obtained before starting this study

Type of Study: Qualitative cross-sectional study,

Study area: Dental College campus

Study population: Students studying UG in dental college

Study period: 2 months

Sample size: The questionnaire was distributed to all the students of the college which is around 200 and the responses obtained are about 167.

Selection criteria: Students who volunteered themselves for the study were included, once they fit into the following,

Inclusion criteria: 1. UG & PG BDS students

2. Volunteers only

3. Students who are from our dental college campus only.

Exclusion criteria: 1. Non-Volunteers

2. Allied health students

Data collection procedures

1. After a brief introduction about the scope and procedures involved in the study were explained to them. The assurance of confidentiality of the data collected was given. Written Informed consent was obtained. Pre-designed and validated questionnaire having both open & close-ended questions was used. Explanations were given if the students could not understand the items. They were asked to tick the appropriate options. Adequate time is given to them to answer the questionnaire. Data were collected and analyzed statistically.

4. OBSERVATIONS & RESULTS

Data collected were tabulated and compiled in MS Excel and grouped into, 1. Data of the entire samples, 2. Year of study 3. Gender difference. Statistical analysis was done using the Chi-square test for trend, for a set value of $p < 0.05$.

Out of a total of 167 students, 26 were males and 141 were females. The mean age of the students was 19.8 ± 1.4 years and ranged between 17 to 25 years. Girls outnumbered boys in volunteering for the study (15.6%, 84.4%).

Table 1 explains the student's view on pharmacology. 83.2 % of the students revealed the subject is interesting to study. 99.4% understand the importance of the subject. 60.5% of the students said that the senior opinions do not influence their views on pharmacology. 93.4% of the students are willing to learn more clinical conditions in the final year, which makes it easy to correlate the drugs & diseases during their clinical practice. 55.1% of the students accepted that the time period is sufficient to understand the subject in the II year. But most of the students opt that the Current BDS pharmacology curriculum is not as sufficient for MDS preparative exam i.e around 59.3 %. So the curriculum can be designed in such a way as to overcome this valid parameter. 53.3% said that pharmacology taught in BDS is sufficient for clinical practice. 92.2% accepted the value of pharmacology knowledge would be useful for the contributions to various drug-related policies/ national health programs. 97.6% accepted that a proper understanding of pharmacology would make a better clinician.

Table 1: Student's view on pharmacology (n=167)

Parameter	Frequency (Percent)	
	Yes	No
Do you think pharmacology is interesting	139(83.2)	28(16.8)
Do you think pharmacology is important	166(99.4)	1(0.6)
Senior student's opinions on pharmacology influenced my opinion on the subject	66(39.5)	101(60.5)
Pharmacology, if learned along with clinical conditions in the final year, makes it easy to correlate drugs & diseases	156(93.4)	11(6.6)
The time period is sufficient to understand the subject	75(44.9)	92(55.1)
The current BDS Pharmacology curriculum Is sufficient for MDS preparative exam	68(40.7)	99(59.3)
Is Pharmacology taught in BDS sufficient for clinical practice	89(53.3)	78(46.7)
Do you think Pharmacology knowledge would be useful for the contributions to various drug-related policies/ national health programs	154(92.2)	13(7.8)
Do you feel the proper understanding of Pharmacology would make you a better clinician	163(97.6)	4(2.4)

Table 2 explains how they like to learn pharmacology Majority of the students are willing to study from the standard textbooks (65.3%) by repeated reading practice (62.3%). 38.9% of the students study the subject only during class tests and internal exams and 33.5% study regularly because the subject is volatile. From a student's point of view, 47.3% said the general principles of pharmacology, 32.3% antimicrobials, and 15% cardiovascular pharmacology as the most relevant topic in the BDS pharmacology curriculum. The most difficult topics are ANS pharmacology (53.3%), Cardiovascular system (15%), Endocrines (11.4%), and General pharmacology (13.2%). If the option is given to students to remove the topics from the pharmacology curriculum, 55% of the students are willing to delete the Psychopharmacology, 9.0% Cardiac arrhythmias, 16.8% Parkinsons/Dementia, 19.2% Protozoal infections.

Table 2: Learning Methods (n=167)

Parameter	Frequency (Percent)
From where do you prefer studying Pharmacology	
Self-prepared notes	44(26.3)
Textbooks	109(65.3)
Class notes (running notes)	14(8.4)
How did you study Pharmacology?	
By repeated reading	104(62.3)
By mugging/ Cramming	13(7.8)
By writing practice	50(29.9)
What is your pattern of study in pharmacology?	
Regular because the subject is volatile	56 (33.5)
Regular because of tests/ viva and interactive classes	46(27.5)
Only during class tests and internal exams	65(38.9)
Which topic/topics do you think are more relevant?	
General pharmacology	75 (47.3)
Autonomic Nervous System	4(2.4)
Cardiovascular system	25(15.0)
Endocrines	4(2.4)
Antimicrobials	54(32.3)
Drugs acting on the GIT system	5(3.0)
Others –Specify-----	Nothing 103(61.7) local anesthetics 2 (1.2)
Which topic/topics are most difficult to understand?	
General pharmacology	22(13.2)
Autonomic Nervous System	89(53.3)
Cardiovascular system	21(12.6)
Endocrines	19(11.4)
Antimicrobials	15(9.0)
Drugs acting on the GIT system	1(0.6)
Others –Specify-----	ANS 2%, Nothing 126
Any of the following topics can be deleted?	
Psychopharmacology	92(55)
Cariac arryhtmias	15(9.0)
Parkinsons/Dementia	28(16.8)
Protozoal infections	32(19.2)

Table 3 explains the methods handled for teaching pharmacology. This parameter creates more interest and knowledge of the pharmacology subject. 43.1% of the students prefer the LCD/OHP projecting lectures. 70.7% of the students would like to add a special topic as the Drugs used in dental emergencies. This will help the students in clinical practice and also in future preparatory exams. 65.3% said Regular class tests are the preferred method of evaluation. 37.1% of the students marked as descriptive method and 36.5% said the MCQ & short answers type of questions in the examination. Both can be considered because of the closeness of the frequency percent. 33.5% said that they want to get clear the doubts of the teachers.

Table 3: Teaching Methods (n=167)

Parameter	Frequency	(Percent)
Which method of teaching do you like?		
Traditional method (Chalk/blackboard)	58	34.7
Lectures using LCD/OHP projector	72	43.1
Seminars/Tutorials/Role play	37	22.2
Which of the following special topics would you like to add?		
Rational use of drugs/Drug interactions	19	11.4
Drugs used in Dental Emergency	118	70.7
Drug-induced oral complications	25	15.0
HIV & Hepatitis B & C	5	3.0
Which method of evaluation do you prefer?		
Regular class tests	109	65.3
Term exam every 3 months	40	24.0
No test, only the final exam	18	10.8
What type of questions would you like to have in exams?		
Essays & Short notes	62	37.1
Essays /Problem-based questions	44	26.3
MCQ & short answers	61	36.5
How will you mostly clarify your doubts?		
From the teachers	56	33.5
Seniors/friends	32	19.2
Through the internet/Library	79	47.3

Table 4 explains the responses for Teaching Methods (Practicals), dispensing pharmacology plays an important role and makes the students understand the value of compounding and dispensing the drugs. Here they start to learn the art of prescribing. 50.9% said that 75% of the dispensing pharmacology is relevant to the present clinical practice. 68.3% reveal that Prescription writing, which is part of the practical, is very useful. 33.5 % want the problem-solving case history would be more applicable to clinical practice.

Table 4: Teaching Methods (Practicals) (n=167)

Parameter	Frequency	(Percent)
Percentage of the relevance of dispensing pharmacology to present clinical practice?		
75% and above	59	35.3
75%	85	50.9
less than 75%	23	13.8
Which part of the practical do you find very useful?		
Prescription writing	114	68.3
Dispensing Practical's	15	9.0
Spotters	38	22.8
Which of the following would be more applicable to clinical practice?		
Problems related to:		
Dose calculations	32	19.2
Clinical case history	56	33.5
Adverse drug reactions	51	30.5
Drug-Drug interactions	28	16.8

5. DISCUSSION

This study examined the student perspectives of Undergraduate Pharmacology Teaching at Dental College. It is the need of the hour to know the student's views towards teaching, learning, and evaluation methods are more important in bringing in changes and modifications in the course for the betterment of students and teachers as well.

The main objectives of the study are to add any additional topics, any topics to be deleted, Changes needed in practicals, and the desired teaching method. Students' feedback reveals

that they want to study the subject with the incorporation of clinical case discussions in the form of problem-solving/group discussions. Also, to give more importance to dental-relevant topics. This will help the students to apply this knowledge of understanding in clinical practice.

All the topics are important and have their own value. As for dental students at the UG level, some topics like antipsychotics, and antiparkinsonian drugs can be given fewer lecture hours and more importantly can be targeted on students' favorite topics. This study shows the interesting and important things to be noted and modify according to students' perceptions to make the subject more understandable. Most of the students prefer lectures in the form of PowerPoint presentations in LCD projections. Along with traditional methods, digital lectures can be incorporated to illustrate a more diagrammatic presentation of the subject. For question no 24, 1.8 % of students answered along with the regular topics, more importance to given Clinical based Seminars, conceptual-based discussion, and dose calculations of drugs.

In this study, the majority of the students rated essays and short answers and to the same extent, MCQs were also given as a choice for a good evaluation method and preparation for exams.

6. SUMMARY

To summarize the study, a questionnaire survey was conducted for undergraduate pharmacology teaching in dental college to get the student's opinions. A self-designed questionnaire containing 25 questions based on teaching and learning methods given to 2nd year dental students. Responses were collected and data were compiled in Microsoft Excel and statistically analyzed. A total of 167 students participated in this survey. Students' opinions revealed that cardiovascular system, antimicrobials followed by general pharmacology were the most favorite topics. ANS pharmacology is a difficult topic to understand. The majority preferred studying from textbooks and has to get their doubts clear from the faculties. The majority of the students said that preferred lectures taken via LCD projectors and rated by means of short answers and essays. MCQ is the preferred method of evaluating university exams. Interactive classes and tutorials were the most preferred techniques. Clinically oriented exercise preferred for the future preparatory exams.

7. CONCLUSION

The study concluded pharmacology is an interesting and important subject as s positive feedback from the respondents. Along with conventional methods, LCD-based lectures should be incorporated into the learning-teaching program of pharmacology. Dose calculation, clinical case discussions, and problem-solving practices are much expected aspects. Students' opinion is more important as they are the fully focused audience which has to make them more interested to learn the pharmacology subject is the need of the hour. Every year, many students come out as BDS graduates ensured as qualified healthcare professionals reflecting on society and public health.

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CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

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