Print ISSN: 2319-2003 | Online ISSN: 2279-0780

IJBCP International Journal of Basic & Clinical Pharmacology

DOI: http://dx.doi.org/10.18203/2319-2003.ijbcp20180659

Original Research Article

Student's perception about teaching methodologies used in pharmacology: a questionnaire based cross sectional study

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Received: 19 December 2017
Accepted: 29 January 2018

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ABSTRACT

Background: Pharmacology is one of the most clinically applied subjects which are highly volatile. Hence new methodologies have to be introduced in medical curriculum which must be in line with the students' preferences. The study aimed to determine the opinion of students regarding the teaching of pharmacology, the best way of knowing and retaining the subject and application of the subject in future practice.
Methods: The study will be conducted at private Medical college in Mangalore. It is an observational, KAP cross-sectional questionnaire-based study. Convenient sampling method is used in which 140 Second year MBBS students were enrolled. SPSS version 21 was used to generate tables and graphs. Results of the study are based on descriptive statistics.
Results: Questions which were not answered were taken as invalid response. Results show that majority preferred newer learning methodology, case-based learning, integrated teaching were more appealing, and peer associated teaching like group discussion was better for applied topics. Attitude of students in learning has shifted from traditional text book to the recent concept of knowledge sharing.
Conclusions: In general students' perceptions regarding learning pharmacology was observed to be positive. The study highlights the need for interactive teaching. Practical sessions can be used to teach basic concepts and rational use of drugs. Knowledge seeking behaviour needs improvisation by teacher.

Keywords: Feedback, Learning, Perceptions, Pharmacology

INTRODUCTION

Pharmacology, is an ever-changing medical subject like other branches of medical sciences. It is a significant subject, included in the third, fourth and fifth semesters of the Bachelor of Medicine and Bachelor of Surgery (MBBS) curriculum in India and is horizontally integrated with other second year subjects like Microbiology, Pathology and Forensic Medicine. Pharmacology is a subject, which has to be learnt thoroughly in order to treat patients effectively. It serves as a foundation stone for clinical practice.[1]

Currently teaching of pharmacology in the medical curriculum especially in India is primarily drug-centred and imparts factual knowledge instead of therapeutic skills.[2]

As opposed to traditional and passive didactic lectures, active-learning strategies address the educational content in an interactive learning environment to develop interpersonal, communication, and problem-solving skills needed by future doctors to function effectively in their new roles.[3]

In Pharmacology, the students are familiarized with drug classification, mechanism of action of drugs, drug interactions, side effects of drugs and medications used in various diseases.[4] The educational focus has shifted from basic sciences to clinical sciences and integrated courses to provide medical graduates with higher levels of competence and specialized skills.[5,6]

Understanding current perceptions and opinions of medical students regarding learning pharmacology may prove useful in improving the teaching of this discipline further.

Pharmacology, like any other branch of medicine, is progressing by leaps and bounds. Consequently, reforms in undergraduate teaching are the need of the hour. It is generally agreed that reviewing the teaching program at regular intervals and modifications in the methodologies of imparting basic knowledge about drugs and drug therapies is a must. Many attempts have been made by various colleges all over India and abroad to make the teaching of pharmacology more interesting and relevant. Expertise in teaching develops after years of experience following use of various teaching methods.[7-9]

There is a growing awareness that learner's view of their educational experiences is valuable in assessing the effectiveness of courses and teaching methods.[10] Furthermore, reviewing the teaching program at regular intervals and modifications in the methodologies of imparting knowledge is a must. So, in order to assess the strength of our pharmacology curriculum and students learning experience in this setting, collection of the student's feedback through a questionnaire must be done so that necessary reforms can be implemented for the betterment of teaching/ learning the subject.[11]

This study aimed to determine the opinion of students regarding the teaching of pharmacology, by the best way of knowing and retaining the subject and application of the subject in future practice.

METHODS

The study will be conducted at Private Medical College in Mangalore.

It is an observational, KAP cross-sectional questionnaire-based study.

Sample size

Convenient sampling method is used in which 140 Second Year MBBS students (university exam going students) were enrolled.

Before study, The KAP questionnaires toward pharmacology as subject were developed and peer viewed of all questions by expert faculties from pharmacology department of our institute. These questions were designed based on earlier studies for assessing KAP of pharmacology.

After taking oral consent, the questionnaire was administered to 140, 2nd year MBBS students. The questionnaire consisted of 16 questions having 4-8 options. Students were asked to tick the options whichever they feel appropriate. The students were asked to be truthful and unbiased in answering the questions and to mark more than one option if they find it necessary. Sufficient time was given to fill the questionnaire. They were asked not to reveal their identities in order to make them express freely. The completed questionnaires were collected and the data was entered into Microsoft excel. And SPSS version 21 was used to generate tables and graphs. Results of the study are based on descriptive statistics.

RESULTS

Out of a total 140 number of students participated in the study, around 62 students (51.5%) were somewhat aware and 63 students (44.6%) were having no knowledge about pharmacology before coming to second year MBBS.

Answer to the next question where asked about the opinion of their seniors about pharmacology - students believes that only 20% of their senior students felt that pharmacology is very useful, interesting and important and majority 60.8% of senior students felt it is useful but boring.

Regarding their own opinion with respect to their interest in pharmacology, we were happy to note that 43% of students found the subject very useful, interesting and practically important and 33% of students felt it was useful but boring.

Table 1: Student's perception of Interesting, useful and toughest topic.

Question	Autocoid	Chemotherepy	ENDO	RESPI	GP	GIT	CNS	CVS	ANS
Interesting topic	2.10%	8.10%	19.60%	9.30%	3.80%	23%	3.20%	18.40%	12.50%
Useful topic	3%	5.20%	7.30%	11.60%	1%	10.90%	18%	18%	23%
Toughest topic	1.3	18%	5%	2.40%	9.10%	5.20%	15%	19%	25%

ENDO- Endocrine drugs, RESPI- Drugs used in respiratory disease, GP- General Pharmacology, GIT- Drugs used in gastrointestinal disease, CNS- drugs act in central nervous system, CVS- Cardiovascular drugs, ANS - Autonomic drugs

Students were asked which topics they find interesting, useful in internship and toughest topic in pharmacology. And their response showed most interesting (23%) topic to them is drugs used in gastro intestinal disease (GIT) and least interesting (2.10%) topic is Autocoid. Most useful (23%) topic is Autonomic Drugs (ANS) and least useful (1%) is General pharmacology (GP). And toughest (25%) is also Autonomic Drugs and least tough (1.3%) is Autocoid (Table 1).

Regarding Interesting teaching methodology in pharmacology, most preferred is clinical patient related approacg method (25%), followed by audio visual method (22%) and least interesting is museum demonstration method (Figure 1).

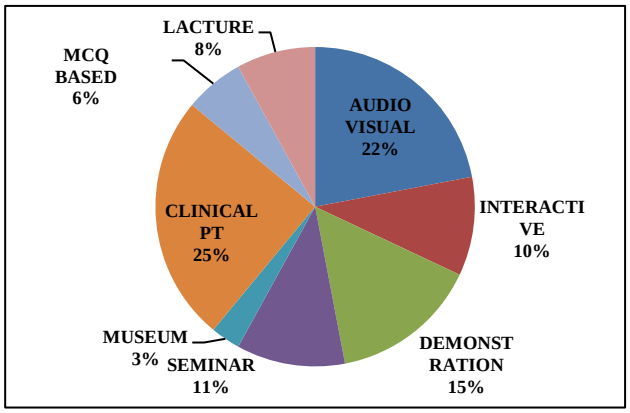

Figure 1: Interesting teaching methods.

Our participant also felt that by inclusion of MCQs as an evaluating tool can help poor scorers to gain confidence, and a practice to face future competitive exams, and therefore most preferred MCQ test (67%) and least preferred was VIVA (6%) (Figure 2).

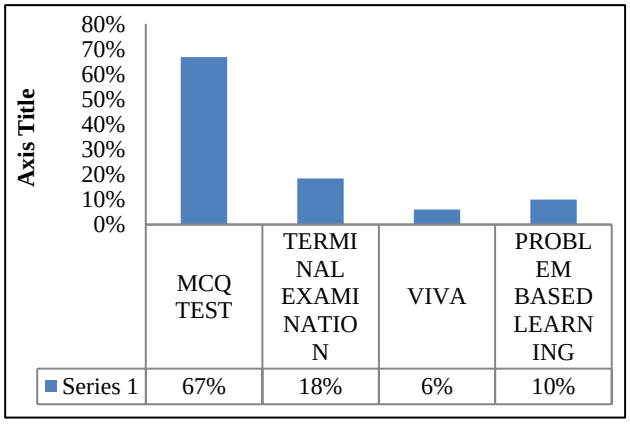

Figure 2: Best evaluation method for exam.

Most of the students (33%) preferred text book to study Pharmacology, some preferred (28%) teacher's notes. (Figure 3). Most of the students (71%) accepted the fact that they study Pharmacology only during tests and exams. When asked about their way of studying the subject, about 53% of students clearly told that they learnt Pharmacology only by mugging (53%) and least by grasping things (11%). Majority of students mentioned that prescription writing is most interesting and useful in future (Table 2).

Table 2: Student's perception on pattern of study, learning methods, most interesting and useful practical in pharmacology.

Question	Most preferred	Least preferred
Pattern of study	Only during test and exam (71%)	Regular because if interest (4%)
Learning method	Mugging (53%)	Grasping things (11%)
Most interesting practical	Prescription writing (47%)	Pharmacy exercise (9%)
Practical pharmacology useful in future	Prescription writing (57%)	Pharmacy exercise (4%)

Special topics such as drugs used in special conditions like kidney dysfunction, sexual dysfunction and emergency drugs were preferred (38.3%) by students to be included and discussed during lecture or practical classes in Pharmacology. Around 22.7% of students also requested to include recent advances in Pharmacology.

In the methods adopted for memorising drug names, 61.3% adopt mnemonics 45.2% follow repeated recollection, and only 16% uses both methods to memorise drugs name. And 63.4% of students gave the opinion that one and half year is adequate for second professional MBBS teaching, while few 8.1% felt 2 years is required for the same.

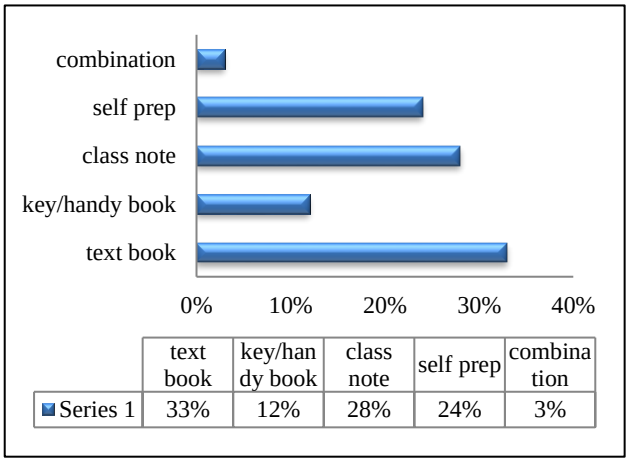

Figure 3: Preferred study material.

DISCUSSION

Undergraduate pharmacology in the MBBS curriculum is incorporated with the prime intention of sensitizing the students to the wide world of drugs and to equip them to

utilize this knowledge in a rational way during their clinical practice. The concepts of teaching methodologies and evaluation methods need to be kept under continuous review.[12] It is accepted that the feedback from the students serves as an effective tool in developing teaching methodology and evaluation methodology.[13,14]

In this study some student mentioned about not having any knowledge of pharmacology before entering 2nd year. An overview of different subjects at the start of 1st year of MBBS may be helpful. In our study we found that Gastro intestinal system was the most interesting and useful topic among the various other topics in Pharmacology. Autonomic nervous system was favoured by 12.5% of students and we found that special emphasis on the ANS topics has to be given to the students during theory classes and practical hours as most of the majority of our practical experiments like frog experiments and are related to ANS. Least interested topics like Autocoids and General Pharmacology can be made more interesting and understandable by taking special efforts.

It was observed that clinical patient related teaching method was more popular amongst the student as compare to whole class lecture and MCQ based study. Majority of students favours incorporation of more case study, audio visual classes, demonstration and interactive classes in regular teaching. A study conducted in New Delhi, India showed that 80.46% students and 87.50% teachers were in favour of bedside teaching of clinical pharmacology.[15] The authors suggested that bed-side teaching should be started after 6 months of teaching basic pharmacology and should be continued till the completion of the final year. Considering the demand, we also feel that during practical classes, second year students should be taken to wards for discussion of treatment protocols of various admitted cases. An alternative approach could be the use of short therapeutic problems and patient- oriented problem-solving strategies.

It is observed that student likes to study pharmacology by regular MCQ test and terminal examination, may be because it can help poor scorers to gain confidence, and a practice to face future competitive exams. It was also noticed that prescription writing was the most useful practical in Pharmacology. There are some studies that pointed out that teaching and learning to prescribe rationally should be an important part of clinical pharmacology training.[16,17]

Most of students preferred to incorporate recent advances (drugs used in spatial situation and paediatric geriatric pharmacology) as a special topic to discuss in pharmacology teaching. Both mnemonics and repeated recollection method is used to memorise drug name. Demand of relevant modifications in the curriculum of pharmacology is changed time to time. We believe during modification these issues should be discussed.

CONCLUSION

In conclusion, in general student's perceptions regarding learning pharmacology was observed to be positive. We need to identify priority areas, for feedback-oriented improvement in the pharmacology. There is need of more clinical orientation in Pharmacology teaching at undergraduate level. It is necessary to enlighten students about various carrier options in pharmacology like Clinical Research, Pharmacovigilance etc. To impart knowledge of clinical pharmacology, the teachers themselves should be well versed with the current trends in theory and the new drugs in the market.

ACKNOWLEDGEMENTS

The authors express thanks to the Department of Pharmacology and second year MBBS students for their contribution to the study.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Sharma SN, Srinivas M. Student's perception about teaching methodologies used in pharmacology: a questionnaire based cross sectional study. Int J Basic Clin Pharmacol 2018;7:457-64.

APPENDIX

Sign to consent.....

QUESTIONNAIRE

1. Knowledge about pharmacology before 2nd year?

a) Yes, many things

b) Somewhat

c) No

2. What was the opinion of your seniors regarding pharmacology?

a) Useful but boring b) Useful and interesting

c) Interesting and useless d) Boring and useless

e) Very useful, practically important and interesting f) Other (specify)

3. What is your opinion regarding pharmacology now.

a) Useful but boring b) Useful and interesting

c) Interesting and useless d) Boring and useless

e) Very useful, practically important and interesting f) Other (specify)

4. Which topic did you find interesting

a) Autacoid f) GIT

b) Chemotherapy g) CNS

c) Endocrine h) CVS

d) Respiratory system i) ANS

e) General pharmacology

5. Topic useful in internship

a) Autocoid f) GIT

b) Chemotherapy g) CNS

c) Endocrine h) CVS

d) Respiratory system i) ANS

e) General pharmacology

6. Toughest Topic in Pharmacology

a) Autocoid f) GIT

b) Chemotherapy g) CNS

c) Endocrine h) CVS

d) Respiratory system i) ANS

e) General pharmacology

7. Most interesting teaching method in pharmacology.

a) Audio visual f) Museum

b) Drug dosage form display g) clinical patient related

c) Interactive classes (strictly bilateral) h) MCQ based study

d) Demonstration i) Lecture in whole class

e) Seminar

8. According to you, which is the best evaluation methods in preparing you for your university professional examination.

a) MCQ test d) Viva voce

b) Terminal examination e) Problem based learning

c) Preliminary examination

9. Study material to learn pharmacology

a) Text book only d) other notes

b) Keys/handy books only e) self-prepared notes

c) Teachers class note f) combination

10. Pattern of studying pharmacology

a) Regular because of test/ VIVA and interactive classes b) Regular because of interest

c) Regular for gaining more knowledge d) Only during test and exams

11. Pharmacology learning method

a) Mugging c) Grasping things

b) Understanding d) combination

12. Which part of practical did you find most interesting

a) Prescription writing b) Spotters

c) Criticism and rewriting of prescription d) Comments on Fixed dose combination

e) Pharmacy exercise f) Experimental screening of new drug

g) Human experiment

13. Practical pharmacology useful in future.

a) Prescription writing b) Spotters

c) Criticism and rewriting of prescription d) Comments on Fixed dose combination

e) Pharmacy exercise f) Experimental screening of new drug

g) Human experiment

14. Special topics needed to be discussed in pharmacology teaching(A)

a) Recent advances

b) Drugs used in special situations like… (kidney dysfunction, sexual dysfunction and emergency drugs)

c) Drug administration procedure

d) Rational drug therapy

e) Paediatric and geriatric pharmacology

15. Method used to memorise drug names

a) Mnemonics

b) Repeat recollection

c) Both methods

16. How much time according to you, cloud be adequate for 2nd professional MBBS teaching

a) 1 year c) 1.5 years