

A Study on Evaluation of Knowledge, Attitude and Practice of Pharmacology in Second MBBS Students

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ABSTRACT

Introduction: Pharmacology is one of the most clinically applied subjects which is highly volatile. Hence new methodologies have to be introduced in medical curriculum which must be in line with the students' preferences. The study evaluated the medical students' attitude and preferences in teaching, learning methodology, rational drug use and knowledge seeking practice in Pharmacology.

Material and methods: Analytical cohort study. 248 medical students completed Para clinical curriculum with adequate exposure to Pharmacology learning. The response of the students to an exhaustive questionnaire on various aspects of teaching learning methodology in Pharmacology was analysed under various domains using SPSS 17.

Results: Questions which were not answered were taken as invalid response. Results show that majority preferred newer learning methodology, viz, 80.2% case based learning, 93% felt integrated teaching more appealing, and 81% felt peer associated teaching like group discussion is better for applied topics. Attitude of students in learning has shifted from traditional text book to the recent concept of knowledge sharing. Knowledge of rationality in drug use is deficient in 23.2%. Interest to update recent advances in medicine is found in 29.1% only.

Conclusion: The study highlights the need for interactive and modified theory teaching pattern and repeated short tests in tough chapters. Practical sessions can be used to teach basic concepts and rational use of drugs. Knowledge seeking behaviour needs improvisation by teacher.

Keywords: Student centric teaching, learning methods, knowledge seeking.

INTRODUCTION

Knowledge is to acquire, retain and use information for skill. Attitude is to react and interpret events. Good practice is progress of knowledge and technology executed in an ethical manner.¹ During undergraduate course Medical students are trained in Pharmacology in II year of MBBS curriculum. Knowledge of Pharmacology is essential in safe and effective practice of medicine. But most quote Pharmacology as very volatile subject. This study attempts to get a feedback and suggestions to improve the methods in teaching, explore the learning methodology and student's attitude towards the clinical applications of pharmacology. The questions can create space for self-assessment to the students of their approach in learning and updating recent inventions. The questions are structured to be closed ended, there is no grading or scaling. Confidentiality of the participating students and batch is maintained.

This study aims to analyse the student's view in the teaching sessions, knowledge of students in application oriented view of pharmacology, learning methodology, attitude towards learning, practice to gain knowledge in pharmacology.

MATERIAL AND METHODS

This Analytical cohort study was conducted in a south Indian medical college after obtaining institutional ethical clearance. Medical students with adequate exposure to Pharmacology who have completed Para clinical curriculum were recruited after getting informed consent explaining the intention of the study. The study was conducted over a period of 3 months.

Sample size: It consisted of 230 subjects; it was based on previous study conducted by Badyal DK et al.²

Inclusion criteria: Medical students in the second year with willingness to participate.

Exclusion criteria: Fresh medical students.

248 students were enrolled of whom 237 participated. Questions which were not answered were taken as invalid response. 106 girls and 131 boys participated. The results were analysed under four headings that is, feedback for student centric teaching, learning methodology of students, practice of rational use of drugs, and knowledge seeking behaviour.

STATISTICAL ANALYSIS

SPSS version 17 was used to generate tables and graphs. Results of the study are based on descriptive statistics.

RESULTS

1. Feed Back For Student Centric Teaching

A. Case based teaching preference and split of teaching time: Student feedback for the changes in teaching session contents to a case based discussion is 80.2 % and preference to allot 15 minutes of theory time for case discussion in pharmacology teaching is 90.7%. It shows the need to change to student centric teaching.

B. Tough chapter analysis: The result of tough chapter analysis (Figure-1) shows that CNS is difficult for 48.5% while it is ANS for 20.3%. Both chapters top the list for majority of students. This gives information to focus on these chapters in teaching by alternative methods.

C. Solutions for the tough chapters: Studies have demonstrated

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that students were tested had better long-term recall of the materials. The solutions to manage the difficult chapters are repeated test by 57.4 %, while repeated teaching by 40.5%. 85.2 % want to split the difficult chapters into smaller portions for internal assessment tests and this can be adopted.

D. Theory versus practical: 58.2% student prefer practical interesting and 73.8% say practical helps in better understanding of pharmacology, which a teacher can use to teach the tough chapters.

E. Usefulness of mcq in internal assessment test: 83.5 % students choose MCQ to study in depth and to score marks easily. Including MCQ in evaluation can help poor scorers to gain confidence, and a practice to face future competitive exams.

F. Suggestions for successful teaching learning session: For an effective teaching learning session (Figure-2), 59.1% students want to take responsibility by their responsible behaviour, while 38.8% wish to be controlled by teacher. Above outcome points that identification of responsible students making them interactive in a theory session can get the involvement of students who wish to be regulated by the teacher.

2. Learning Methodology

On analysing the individual learning approaches followed

Right Time - Exam preparation	Frequency	Per cent
3 months	115	48.5
6 months	122	51.5
Method used to memorise drug names	Frequency	Per cent
Invalid	1	.4
Mnemonics	124	52.3
Repeat recollection	101	42.6
Both methods	11	4.6
Practicing(Tabulation)Visual learning	Frequency	Per cent
Yes	38	16.0
No	199	84.0
Parallel learning useful, easy.	Frequency	Per cent
True	221	93.2
False	16	6.8

Table-1: Individual learning approaches

Usefulness of student seminar	Frequency	Per cent
Invalid	2	.8
Useful for listener	132	55.7
Useful for presenter	103	43.5
Presenter Benefits	Frequency	Per cent
Invalid	57	24.1
Improves Confidence	74	31.2
Better analysis of topic	95	40.1
Both	11	4.6
Listener usefulness	Frequency	Per cent
Invalid	73	30.8
Involved	102	43.0
Relaxed listening	60	25.3
Both	2	.8
ADR in group discussion interesting	Frequency	Per cent
Invalid	1	.4
Yes	193	81.4
No	43	18.1

Table-2: Peer Associated Learning views

by students (Table-1), regarding the time for preparation for exams 48.5% say 3 months is enough, while 51.5% say at least 6 months are needed. In the methods adopted for memorising drug names, 52.3 % adopt mnemonics 42.6% follow repeated recollection Though Visual reproduction of contents learned is useful to recollect in a short time it is adopted by 16% only, Usefulness of Integrated learning of similar topics in different subjects is recognised by 93.2 % students.

Under Peer based learning attitude, student seminar is viewed beneficial for the listener as 55.7% and 43.5% for presenter (Table-2). The way a seminar by student helps the presenter is better analysis of the topic presented for 40.1%, while for the listener it is better involvement in 43%. Results emphasise Group discussion as the method of choice to teach and learn adverse drug reactions as suggested by 81.4% of students.

3. Attitude To Rational Use Of Drugs

Awareness that learning dose and drug interactions is essential for practicing medicine, the habit to look into the safety information, to refer standard textbooks to know regarding disease, its treatment protocols are taken as measures of overall desirable approach on rational drug use. 76.8% students have desirable attitudes, whereas 23.2% are deficient in knowledge of rationality in drug use.

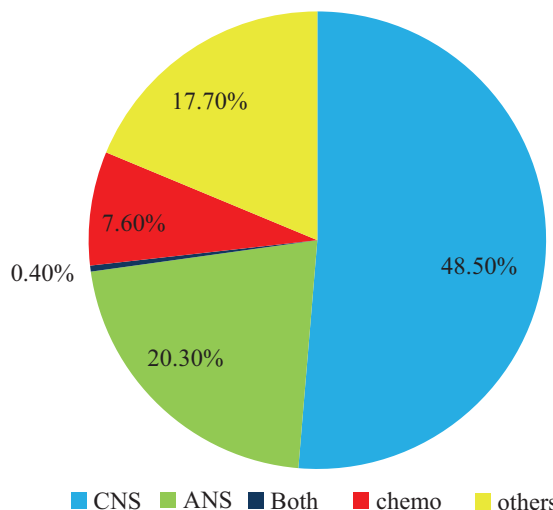


Figure-1: Tough chapter analysis

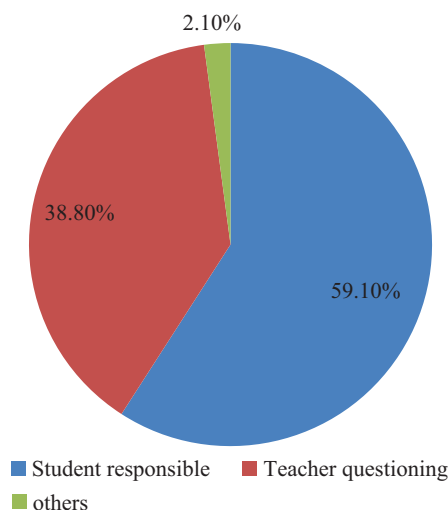


Figure-2: Suggestions for successful teaching learning session

4. Knowledge Seeking Behaviour

The pattern of utilisation of various resources available to students for an application oriented learning of pharmacology shows that 55.3 % are in the habit of reading regarding drugs used in clinical postings, but interest to look into drugs used in prescriptions is 71.3%. Above concludes to need to train students by giving exercises to reproduce regarding the prescriptions in their clinical postings. Updating knowledge out of own interest is 41.4 % through dailies, 16.9% is through medical publications. Teaching faculty intervention at this crucial period of learning can upgrade student's knowledge seeking behaviour. Student's natural drive to learn regarding drugs used in clinical postings and update through reading journals and dailies are considered as desirable and found in 29.1% student only. Knowledge seeking attitude can be improved by encouraging students presentation on new drugs inventions as short topics.

DISCUSSION

Student Centric Teaching: An in depth analysis of our results show us the attitude of students in learning has shifted from the traditional textbook learning to recent concept of knowledge sharing. As expressed in the Willis, J. teaching strategies for improving students' memory, learning, and test-taking success, it is evident by the study result that 80% prefer clinical case based teaching for student centric learning.

Preference of case presentation of respective topic followed by discussion of the drugs used in that disease /clinical condition and suggestions to allot time for the same, suggest to modify teaching sessions in pharmacology to implement student centric teaching methods.³ Central nervous system and Autonomic nervous system quoted as tough by majority of students. Studies have demonstrated that students who had extra time to study but were not tested had significantly lower recall of the materials.⁴ Students option for repeated short tests and split of portions for internal assessment test of tough chapters is suitable. Students view practical to be more motivating and to appreciate basic concepts, hence the theory sessions need to be more interactive and use practical session to teach the tough chapters. As MCQ permits study in depth and score marks easily it can be added to internal assessment evaluation. Student responsibility for a successful teaching learning session is a better approach, while surprise questioning by teacher is also needed. Medical teachers need to update their teaching skill and align it to curricular objective.³

Learning Methodology

a) Individual Learning Methods: Academic resources brain based techniques to retain information by the lomalinda university quotes that newer techniques to be adopted rather than sticking on to the older methods. Our study also confirms the views. Approach to learning method also shows a shift as 73% prefer practical oriented teaching. Recognizing learning habits and styles is a first step to initiate learning the way that best suits an individual and it is served by the questionnaire.⁵ Assessment must be changed to MCQ based, since 83.5% prefer it. The striking finding is the concept of parallel learning of same topic in related subjects; term integrated teaching appeals to 93 %. A teacher must be open minded to adopt, stress better coordination between the pre and para clinical to be executed, so that integrated teaching is feasible. The ultimate goal of pre

and para clinical teaching is to impart the basic knowledge of basic science and create awareness of its clinical application. Analysis shows that students focus in exam preparation only few months ahead of exams, but medical profession is acquiring knowledge, more than facing exam. Memorising the names of drugs is a great challenge in pharmacology, handled by students in preferred methods. Focus to rehearse the information both verbally and visually with cross-referencing of data means learning, rather than just memorizing. Majority of students do not approve any tabulating style, though visual reproduction of information leaned is useful for long term memory. Parallel learning i.e, similar topics in different subjects helps in easy understanding and learning the subjects and is preferred by students.

b) Peer Based Learning Methods: Adolescent care a lot for their peer. Teaching can focus on this attitude by introducing peer associated teaching, such as group discussion - both the presenter (43%) and the listener(55.7 %) are benefited by this method. The best way to learn something is to teach, translating the information into own words. It is a process that helps solidify new knowledge in brain relational learning.⁶ Learning Drug interactions and ADR in a Peer associated learning is preferred.

Attitude To Rational Use Of Drugs

Tripathi CD et al on his education on rational drug use stressed the importance of creating awareness among medicos in this domain, as the pattern of drug use and ADRs in India is different due to socio-economic, ethnic, nutritional and other factors.⁷ Application of pharmacologic information of the drug while using over the counter drugs by medical student is desirable. The interest to study regarding disease and treatment protocols in a standard text book, a must to follow in medical students. 23.2% are deficient in knowledge of rationality in drug use which can be improved further by intensive practice in dosage calculation, problem solving, prescription auditing exercises.

Knowledge Seeking Behaviour

As expressed by Friedman Ben-David M in the role of assessment in expanding professional horizons is by incorporation of varying sources of knowledge gain and reinforcement. The study population referred to prescriptions by 71% but lacked referring journals and publications as only 29% do so. Formative assessment is guiding future learning, providing reassurance, promoting reflection, and shaping values. This can reinforce student's intrinsic motivation to learn and inspire them to set higher standards.⁸

The effectiveness of newer methods of pharmacology teaching and evaluation was evaluated by various educationalists also report periodic testing gives better results.⁹

Badyal DK et al from his study on the rationale in using animal models, documents instead of the traditional animal experiments computer simulated software's can be introduced in pharmacology teaching.¹⁰

Reports concur with our findings that apart from regular classroom teaching innovative practices and methods are preferred by students.^{11,12} Bhosale et al survey conducted among Nigerian students recommends introduction of clinical oriented pharmacology teaching.^{13,14}

Approach to link pharmacology and medicine, habit of reading newspapers, drive to look into journals are desirable knowledge

seeking behaviours. Updating knowledge in the subject and recent inventions is an essential component of a doctor who is committed to lifelong learning, which appears deficient from the results.

CONCLUSION

The study reveals the need to modify teaching pattern, time allotment within a single theory teaching session for case based teaching. The study emphasises to make theory session interesting, interactive and use practical session to teach the tough chapters, and get student's drawn in. Repeated short tests can enable students to recollect the difficult ones with ease. MCQ may be included in evaluation. Individual Learning methodology can be improved further by coaching in visual and integrated learning. Peer based learning can be used to teach adverse drug reactions and rational drug use for future clinical competence and get students involved in this era of active reporting in pharmaco vigilance. Seminars are a healthy way to get student into teaching at their advantage and gain their association into the subject. Research oriented learning has to be inculcated in the student period. Teacher should motivate and engage the students in journal club to share innovations in pharmacology. The limitation of our study is the single time feedback which may not be sufficient to arrive at a concrete conclusion. Heterogeneous group of students and long term acquisition and analysis will provide us with more information.

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