

RESEARCH ARTICLE

Students' feedback of revised pharmacology record book as a teaching–learning method

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ABSTRACT

Background: Pharmacology is taught to medical undergraduates to help them have a firm base in therapeutics, helping them in their future clinical practise. The Medical Council of India curriculum mandates that all students should maintain a record of their practical work. **Aims and Objective:** The objective of this study is to obtain feedback from students regarding the usefulness of the revised practical record in our institution. **Materials and Methods:** This was a structured questionnaire-based cross-sectional study conducted in the Department of Pharmacology, Government Medical College, Thrissur. Institutional Ethics Committee approval was duly obtained. The data were entered in Microsoft Excel and analyzed using SPSS version 16. **Results:** Majority of the students (57.1%) rated the overall quality of the record as good. About 53.2% of students found that the revised practical record is very much helpful in understanding the concepts of Pharmacology and 51.3% of students were of the opinion that the revised record created a knowledge base that would somewhat help them with the choice of drugs during clinical practice. About 98.1% of students found the general pharmacology exercises to be relevant, whereas 92.9% of students found clinical pharmacology exercises to be relevant. Under the various clinical pharmacology exercises, 76.6% of students found the patient-oriented problem-solving exercises to be the most interesting. **Conclusion:** A majority of the students found the revised pharmacology record to be a good teaching–learning method. The greater stress on exercises that will aid in clinical practise has helped to generate a greater interest in the subject among students.

KEY WORDS: Clinical Pharmacology; Practical Record; Feedback


INTRODUCTION

The goal of teaching Pharmacology to undergraduates as per Medical Council of India (MCI) is to inculcate rational and scientific basis of therapeutics.^[1] Practical classes are a part of learning process, which are aimed at improving skill and understanding in the subject. It reinforces the students' basics and fundamental concepts in the subject. Traditional teaching

methods gave very little importance to clinical and applied aspects of the subject.^[2,3]

Dispensing pharmacology and experimental pharmacology remained the main exercises in practical classes. Pharmacy experiments have now been taken away from many institutions.^[4] There is changing trend in teaching methods and practices, and animals are not to be sacrificed for the purpose of acquiring skills and techniques of experimentation. Hence, now the animal experiments are not part of practical exercises. The results of the experiments conducted in the form of charts are discussed in the practical classes.^[3,5]

The undergraduate curriculum in pharmacology was a topic of debate among pharmacologists. It was highlighted that changes must be made in the curriculum, in the light of newer

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techniques and drugs which have flooded medical practice. In many colleges, it is now seen that there is a shift to clinical pharmacology exercises in practical classes. In a curriculum suggested by Directorate of Health Services, Government of India, to impart essential skill to medical students, the importance of clinical pharmacology was demonstrated. It is proposed that it will help students select medicines safely and effectively throughout their professional life. Clinical pharmacology is now a preferred topic worldwide in medical education. It is said to foster therapeutic decision-making.^[3,6]

Students' knowledge in the subject of pharmacology is assessed by his or her performance in theory and practical examination. Practical record is an integral part of practical sessions. Maintenance of a record of all practical work by students for all their preclinical as well as clinical subjects is a requisite as mandated by the MCI.^[1,7] It is intended to make the students keep a log of the different exercises taught in the practical classes and later refer to it during examination preparation. Pharmacology is unique in being both a basic as well as applied science. Based on his knowledge, a graduate MBBS doctor should be able to take decisions in clinical practice. Whether the prevailing curricula are able to meet this requirement is questionable.^[4] Pharmacology exercises as taught traditionally has over the years turned into a monotonous exercise.^[7] Students and subject experts have for long argued in favor of eliminating animal experiments and pharmacy which have been a mainstay of practical exercises till 2007.^[8-10] Students also felt that besides the exercise on prescription writing, most of the other exercises were obsolete, without any use in clinical practice. Most of the faculty also felt that students simply copied from senior students records and that too just because it was mandatory to submit the record before their examinations. Another fact pointed out by some faculty was that different colleges had different records leading to non-uniformity.^[11] With all these facts in mind, in our department, we have updated and revised our pharmacology record, making it less bulky yet with stress toward practical use of theory, incorporating more of clinical pharmacology exercises. To minimize the mistakes during dictation or copying, most of the matter in the record including charts and questions have been printed. Topics in the revised record were broadly divided into general, quantitative, experimental, and clinical pharmacology. In view of the practical difficulties involved in procuring, maintaining and sacrificing animals, computer-assisted learning (CAL) techniques were employed to teach experimental pharmacology.^[9] Hence, this study was planned to get feedback from students, regarding the usefulness of the revised practical record in the assessment conducted for them.

MATERIALS AND METHODS

This was a structured questionnaire-based cross-sectional study conducted in the Department of Pharmacology,

Government Medical College, Thrissur. The Institutional Research and Ethics Committee approval was obtained for the study. The sample population comprises of 2nd year MBBS students attending pharmacology classes of one batch (after the completion of final practical sessionals, $n = 154$) who used the revised pharmacology records. Informed consent was obtained before taking feedback. To enhance free and unbiased responses, the students were told not to reveal their identities. The questionnaire was prepared in a manner that would provide an idea of the usefulness of the new record. The students were asked to select the responses as found appropriate by them. The data were entered in Microsoft Excel and analyzed using SPSS version 16.

RESULTS

All the students ($n = 154$) completed the questionnaire. Of the students, 65 were male and 89 were female.

Majority of the students (57.1%) rated the overall quality of the record as good, whereas 38.3% were of the opinion that it was excellent, and 4.5% thought it was satisfactory. None found it to be of poor quality. A majority of the students (59.7%) did not come prepared for discussions on practical exercises in the record. About 39.6% of students, however, did come prepared for discussions on practical exercises. While writing responses to questions in the pharmacology record, 55.2% students did not refer to textbooks, whereas 44.2% students did refer to textbooks for the same. Regarding the helpfulness of the revised record in

Table 1: Feedback on practical sessions

Session	R (%)	IN (%)	TP (%)
General pharmacology	98.1	57.1	43.5
Quantitative pharmacology	91.6	70.8	59.7
Experimental pharmacology	81.8	65.6	61
Clinical Pharmacology	92.9	75.3	62.3

R: Relevant, IN: Interesting, TP: Thought provoking

Table 2: Feedback scores on clinical pharmacology exercises

Clinical pharmacology exercises	R (%)	IN (%)	TP (%)
Patient-oriented problem-solving exercise	91.6	76.6	68.2
Exercise on adverse drug reaction	92.2	68.2	61.7
Prescription writing	92.2	64.9	50.6
Drug interaction	92.2	66.9	63.6
Interpretation of lab data	85.7	66.2	61.7
Spotters	83.8	57.1	39
Flow charts	79.2	48.7	48.7

R: Relevant, IN: Interesting, TP: Thought provoking

understanding the concepts of pharmacology, 53.2% of students found it very much helpful, whereas 46.1% found it only somewhat helpful. About 51.3% of respondents were of the opinion that the revised record created a knowledge base that would somewhat help them with the choice of drugs during clinical practice, whereas 46.8% were of the opinion that it was very much helpful. However, 1.3% of students thought that the record was not at all helpful for future clinical practice. As far as improvement of academic performance with the new record was concerned, 50.6% of students felt that it somewhat helped in improving performance, whereas 46.8% felt that it was very much helpful in improving academic performance. Again 1.3% felt the record had no effect what so ever in improving academic performance.

Feedback on Different Types of Exercises in the Record

The exercises in the record have been divided into four broad sections, namely general pharmacology, quantitative pharmacology, experimental pharmacology, and clinical pharmacology.

About 98.1%, 57.1%, and 43.5% of students found the general pharmacology exercises to be relevant, interesting, and thought provoking, respectively.

In the case of quantitative pharmacology, 91.6%, 70.8%, and 59.7% of students found it to be relevant, interesting, and thought provoking, respectively.

With regard to experimental pharmacology, 81.8%, 65.6%, and 61% of the respondents found it to be relevant, interesting, and thought provoking, respectively.

Coming to clinical pharmacology, 92.9%, 75.3%, and 62.3% found it to be relevant, interesting, and thought provoking, respectively [Table 1].

Feedback on Clinical Pharmacology Exercises in the Record

The clinical pharmacology exercises in the record include patient-oriented problem-solving exercise (POPSE), exercise on adverse drug reaction, prescription writing, drug interaction, interpretation of laboratory data, spotters, and flow charts. All the clinical pharmacology exercises were scored as relevant by more than 50% of the students with exercise on adverse drug reaction, prescription writing, and drug interaction getting the highest score of 92.2% each.

The various clinical pharmacology exercises were also found to be interesting by more than 50% of the students with the exception of flowcharts. POPSE scored highest in interest factor with 76.6%, whereas only 48.7% of students found flowcharts to be of any interest.

With the exception of spotters and flowcharts, all the other clinical pharmacology exercises were found to be thought provoking by more than 50% of the respondents. POPSE was found to be the most thought-provoking exercise with 68.2% of students finding it so. Spotters and flowcharts were found to be the least thought provoking with only 39% and 48.7% of students thinking so [Table 2].

DISCUSSION

This study was done to get feedback from students, about the usefulness of the revised practical record. Students write responses to questions in their pharmacology record for various reasons, mostly by copying from others. In this study, 44% of the students wrote the response to questions without referring to textbooks and by copying from others. In our study, 57.8% of the students wrote the record for a better understanding of the subject, whereas only 35.7% wrote it for obtaining good internal assessment marks. About 53.2% of the students found the revised record to be helpful in understanding the concepts of pharmacology in a much better way. In our study, 59.7% of the students attended practical sessions without any preparation, the main reasons being lack of interest, lack of compulsion, and not bothering to find out the topic for the next session. The above fact, inspite of detailed schedules being put up for the benefit of the students, is an indicator that more needs to be done to make practical sessions interactive, thereby motivating students to take more active interest.^[12] About 57.1%, of students in our study found the general pharmacology exercises to be interesting. Exercises related to calculation of percentage solutions and dosage requirement of drugs such as dopamine and antibiotics are included in quantitative pharmacology, a must know for doctors in their clinical practice. In our study, 70.8% of students found it to be interesting, whereas 91.6% found it to be relevant. Experimental pharmacology encompasses charts, graphs, tables, and CAL techniques. In our study, 81.8% rated it as relevant, whereas 65.6% of the respondents found it to be interesting. The aim of clinical pharmacology exercises is to familiarize the students toward the application of pharmacological concepts in drug therapy.^[2] A thorough base in clinical pharmacology will ensure correct drug treatment.^[13] Clinical pharmacology exercises in our record were rated highly relevant and thought provoking. Exercise on adverse drug reaction, prescription writing, and drug interaction, each were rated as relevant by 92.2%. Under clinical pharmacology exercises, flowcharts scored the least on all parameters. Most of the students suggested that there was scope for further improvement of the pharmacology record by incorporating more clinically oriented exercises.

In a study to assess the effectiveness of physiology record as a learning tool, conducted by Vyas *et al.*, it was found that 88% of the students just wrote the responses by copying from each other or from some seniors' record, without

referring to textbooks, due to the uninteresting and lack of practical problem-oriented exercises.^[14] Another fact brought forth by the study done by Vyas *et al.* is that most of the students comprising 76% submitted their records solely for the purpose of obtaining grades.^[14] The fact that only 44% of students in our study as against 88% of students in the above study, copying the record uninterestedly, and 57.8% of the students writing the record for a better understanding of the subject, whereas only 35.7% wrote it for obtaining good internal assessment marks is a pointer toward the fact that our new record has more interesting, clinically oriented and useful exercises. Vyas *et al.* in their study have also stated that 76% of the students complete their record just prior to submission time without any reference.^[14] In one study, only 36.85% of the participants found general pharmacology exercises to be interesting, whereas in another study, only 14 out of 100 participants felt it to be interesting.^[7,15] Students will show interest and understand the relevance of general pharmacology once they are able to use theoretical concepts in practicals. The study by Vasundara *et al.* found that most of the students found experimental pharmacology to be irrelevant and uninteresting.^[16] Greater use of CAL will make it more interesting, relevant, and improve knowledge level.^[17,18]

Limitations

The feedback from the faculty involved in handling the practical sessions and evaluation of the records was not taken.

CONCLUSION

Most of the students were of the opinion that the revised pharmacology record was a good teaching–learning method. It is, however, a work in progress and more can be done to improve it thereby making it an actual “practical” record that will help the students in their future clinical practice.

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