

**ORIGINAL ARTICLE**

## Identification of Practical Pharmacology Skills Useful for Good Clinical Practice

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### Abstract:

*Background:* Awareness about animal ethics is increasing everywhere. This increased awareness coupled with strict regulations discouraging the use of animals for routine experiments have tied the hands of many pharmacologists. They are now forced to develop alternative experiments without using animals. At present, there is acute need to come out with more innovative and useful practical exercises for pharmacology practical sessions. In this background, the present study was undertaken to develop the much-needed alternative experiments. *Aims and Objective:* To identify new pharmacological practical skills useful for good clinical practice. *Material and Methods:* A pre-tested questionnaire was administered to 110 doctors of different categories like house surgeons, post-graduate students, assistant professors and professors who are working in a tertiary care hospital. They were asked to give their suggestions regarding new pharmacology practical skills useful for good clinical practice. *Statistical analysis:* Responses of the participants to the questions asked were tabulated and analyzed. Suggestions given by them were listed out and studied. *Results:* Use of emergency drugs, dosage calculation, drugs used in pregnancy, case discussions and prescription writing exercises received a lot of support from the participants. Research methodology, cost calculation, ani-

mal experiments and interpretation of data of animal experiments did not receive support from the participants. Suggestions given by the participants regarding useful pharmacological skills belonged to the areas like therapeutics, safe use of drugs, recent advances, analysis of information given by the medical representatives and analyzing articles in journals for knowing the efficacy of drugs. *Conclusion:* Exercises relevant to the clinical practice, as identified in this study, can be introduced as practical pharmacology exercises. Steps are to be taken to highlight the importance of research methodology and pharmaco-economics to the undergraduates.

**Key words:** Pharmacology Practical, Medical education, Curriculum reforms, Pharmacology Teaching

### Introduction:

Experiments to reform the medical education are being attempted all over the world [1]. There is a continuous need for improvement of pharmacological practical curriculum for the undergraduates of the medical colleges [2]. This has become very urgent now as pharmacy experiments and animal experiments are slowly finding their way out. Their clinical utility has always been questioned [3]. To replace the above and to make the subject attractive and useful, we need to design new pharmacologi-

cal practical sessions for our undergraduates. These new experiments ought to be of use in good clinical practice [4]. Such changes will bring the interest of the medical students back to our subject [5]. Keeping these in mind, this study was launched to identify areas where useful practical exercises in Pharmacology can be introduced.

### Material and Methods:

Approval was obtained from the Institutional Ethical Committee before starting the study. A pre-tested questionnaire was administered to the doctors in active clinical practice. Doctors of different specialties working in a teaching hospital were included in the study. House surgeons (27), Post-graduate students (28), Assistant Professors (30), and Professors (25) (totaling about 110) were interviewed. Consent for the participation was obtained and convenient time for the interview was fixed. Then, the questionnaire was administered. Participants were also encouraged to offer their suggestions about the necessary pharmacological skills at the end of the questionnaire. All the principles to enhance the rate of response to the questionnaire were adopted [6].

### Statistical Analysis:

Responses from the participants were tabulated and analyzed. Those pharmacology exercises which were widely recommended by the participants were identified. Responses to the open-ended questions to elicit the new types of practical pharmacological exercises were studied.

### Results:

The results of our study show that practical

exercises designed to discuss the use of emergency drugs, calculation of doses, use of drugs during pregnancy and case discussions have high support from the participants. Interpretation of data of animal experiments and doing animal experiments were least favoured (23% and 15% respectively). Every other exercise was favoured by more than 50% of the participants. The support received by various practical exercises is tabulated in the Table (1).

**Table 1: Percentage of participants who supported various pharmacology practical exercises**

Sr. No.	Name of the exercise	Percentage who supported
1	Use of emergency drugs	90
2	Dosage calculation	85
3	Drugs used in pregnancy	85
4	Case discussion	80
5	Prescription writing	76
6	Toxicology problems	70
7	Drip rate calculations	68
8	Treatment of casualty patients	67
9	Cost calculation	55
10	Research methodology	50
11	Interpretation of animal experiment data	23
12	Animal experiments	15

The study also brings out various new practical exercises suggested by the participants. These are tabulated in the Table (2). Management of Emergency Condition was at the top among the suggestions given by the participants. Exercises on the trade names of available drugs were also favoured by the participants. Exercises imparting the knowledge of emerging drugs and exer-

cises enabling a doctor to critically analyze the data given by the medical representatives were other important suggestions given by the participants. These suggestions highlight a doctor's need for the updated therapeutic knowledge. A new study to find out the support for these new areas of practical exercises is also needed.

difficulties.

This study has brought out the practical exercises which have the support of the majority of the participants. Animal experiments are not favoured by the majority. This is already proven by earlier studies. Earlier studies suggest that video clippings of live experiments can be an

**Table 2: New areas of practical exercises suggested by the participants**

1	Trade names of emergency drugs and new drugs	Suggested by two house surgeons	7%
2	Management of emergencies	Suggested by three house surgeons	11%
3	Rationale of selection of drugs	Suggested by one house surgeon, three assistant professors and two professors	4%, 10%, 8% respectively
4	Knowledge of emerging drugs	Suggested by two post graduate students	7%
5	Critical analysis of data given by the medical representatives	Suggested by one post graduate student	3.5%
6	Critical analysis of articles in journals – To analyze the efficacy of drugs	Suggested by an assistant professor	3%
7	Analysis of fixed dose combinations	Suggested by one house surgeon and three assistant professors	4%, 10% respectively
8	IV fluids' selection and precautions	Suggested by two assistant professors	7%
9	Important contraindications	Suggested by a professor	4%
10	ADR Reporting	Suggested by a professor	4%
11	Assessing the organs' status before deciding the dosage of a drug	Suggested by a professor	4%

### Discussion:

Doctors were included in this study because they would be in a better position to identify those pharmacological areas which would help them in their clinical practice. After passing Pharmacology course as students, they would know the pros and cons of different Pharmacological practical exercises. They would also know their current difficulties in clinical practice and hence, can easily identify the pharmacological skills which would remove these dif-

alternative for the animal experiments [7].

Exercises involving the calculation of the cost of drugs and involving research methodology are not favoured by the majority, house surgeons, in particular. This is in line with their current job requirements.

In a previous study, students expressed their opinion favoring case studies and treatment [8]. In this study, practicing doctors too favoured case discussions.

This study has also brought out new areas which

may be taken up for designing new practical exercises. These mainly involve therapeutics, recent advances, analyzing the data given by medical representatives, analyzing the data from the journals and safe use of drugs. This shows that these areas which are of immediate use for the good clinical practice have to be covered by the new practical exercises.

### Conclusions:

This study has achieved its objectives. It has identified the practical pharmacology exercises which are useful for improving one's clinical practice. It has confirmed the declining support for the animal experiments. The need for such exercise should be emphasized especially for toxicological studies and drug development trials and pre-clinical trials during undergraduate period. Algorithms based on evidence based clinical practice should be used. It has brought out various new areas like emergency medicine which should be covered by the new practical exercises.

As the pharmacoeconomics exercises and research methodology exercises are not having adequate support, as found out in this study, steps have to be taken to explain the importance of these to the future undergraduates.

Such studies are needed every now and then to track the changing needs and interests of the undergraduates.

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