

## Assessment of Perception of Undergraduate Medical Students & Teachers about Pharmacy Practical Classes in Pharmacology

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**Abstract :** Background: Pharmacology and pharmacy practice has undergone a sea change over the last century. The most notable change in pharmacy in modern times has been the virtual disappearance of the preparation and compounding of medicines. Pharmacy practical classes still form a part of the MCI curriculum in Pharmacology undergraduate teaching in many states of India including West Bengal. This study was undertaken to assess the attitude of students as well as teachers towards continuation of these practical classes in the curriculum and possible alternatives. Methods: 102 students and 12 teachers participated in the study answering a structured and pre-tested questionnaire anonymously. Results: The results showed that nearly 84% students and 50% teachers wanted these practical classes to continue citing various reasons. The most popular alternative to these classes remain demonstration of clinical effects of drugs which was supported by 88.23% students and 91.66% teachers. Conclusion: Pharmacy practical classes can be continued in pharmacology curriculum. But the better beneficial alternatives can also be considered which may be more beneficial to the students. [Patil P et al NJIRM 2013; 4(5) : 39-42]

**Key Words:** Pharmacy practical, Curriculum, Medical education

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**Introduction:** The History of the Pharmacy and Pharmacology dates back to the medieval times with priests, both men and women, who ministered to the sick with religious rites as well. It gradually spread to Europe as alchemy, eventually evolving into chemistry as physicians began to abandon beliefs that were not demonstrable in the physical world. Physicians often both prepared and prescribed medicines; individual pharmacists not only compounded prescriptions but manufactured medicaments in bulk lots for general sale. Not until well into the 19th century was the distinction between the pharmacist as a compounder of medicines and the physician as a therapist generally accepted. The most notable change in pharmacy in modern times has been the virtual disappearance of the preparation and compounding of medicines. Whereas in the 1920s, 80 percent of the prescriptions filled in American pharmacies required knowledge of compounding, by the 1940s the number of prescriptions requiring compounding had declined to 26 percent. As far back as 1971, only 1 percent, or less, of all prescriptions combined two or more active ingredients.

Pharmacy practical including compounding and dispensing of drugs forms a part of the curriculum of undergraduate medical students in West Bengal.

TS Hariharan wrote in his letter to the editor of Indian Journal of Pharmacology in this context, "...Since time immemorial, experimental pharmacology and dispensing pharmacy have constituted the cornerstones of practical exercises in pharmacology. Every time an expert committee is appointed by the Medical Council of India (MCI) with the idea of revising the curriculum, many welcome and innovative changes are suggested for most of the disciplines; yet nothing has been done so far to revise and update the syllabus for practical exercises in Pharmacology and to make them more need-based and meaningful."<sup>1</sup> Yet another editorial of the Indian Journal of Pharmacology said similar words. Since the final examinations are divided into theory and practical, it is imperative that the students are taught one or other experiment. Pharmacy practical exercises have stood the test of time and according to the author these are continued sadly despite several advances in pharmacology and better alternatives that can serve the student better for life.<sup>2</sup>

We have found that there are many second professional students who do not take pharmacy practical classes seriously. This is reflected in their absenteeism, lack of interest and poor performance in practical exams. The aim of this study was to assess the opinion of the second

professional students and their teachers towards pharmacy practical classes.

**Material & Methods:** The study was conducted in the Department of Pharmacology of the Nilratan Sircar Medical College and hospital after obtaining clearance from the Institutional Ethical Committee. All students to appear for their second professional exam (2010 batch) who were willing to participate in the study anonymously were included. No control was required.

A pre-designed, pre-tested, structured questionnaire was given to all students and their response was recorded. The questionnaire began with question related to preference of or non preference of pharmacy practical classes. A series of options were offered regarding reasons for liking or disliking these classes. Thereafter a section of possible alternatives to these classes was offered. Statistical analysis was done using statistical software GRAPH PAD PRISM version 4.03 for Windows (Graph Pad Software Inc., San Diego, CA, USA). Standard tests for descriptive statistics were applied. To compare the opinions of teachers and students Chi square test was applied and p value of less than 0.05 was considered statistically significant.

**Result:** A total of 102 students volunteered to participate anonymously in the study. The results of the study showed that 84.31% students and 50% teachers liked pharmacy practical classes. The difference between two groups was statistically significant. (Using Chi square test  $p = 0.01$ ). Some plausible reasons were supplied. These included reasons like future applicability of these exercises, easy scoring, "stress relief" from lectures etc. The percentages of students and teachers who voted positive for some of the reasons are cited in Table 1. 18.62% students and 50% teachers did not like pharmacy practical classes. Some common plausible reasons were supplied in the questionnaire. Table 2 shows the percentages of students and teachers who voted positive for some of these reasons.

A large majority and half of the teachers reported that they liked pharmacy practical classes. For students the main reason cited was because of

easy scoring (71.56%) and that these classes could act as a stress relief from didactic lectures (68.62%). In spite of this 45.09 % also felt that this practical will not help them in their future practice and 22.54% felt it has no practical relevance

**Table 1. Reasons for liking pharmacy practical classes**

Reason for liking pharmacy practical classes	Percentage of students who voted affirmative (n= 102)	Percentage of teachers who voted affirmative (n= 12)	P value
It helps remembering composition of the formulation	64.70%	50%	0.15
It will be of help in future while working in hospitals	34.13%	16.66%	0.4
It will be of help while treating patients at home during emergency	39.21%	33.33%	0.8
It reflects the historical aspects of Therapeutics	48.03%	25%	0.2
It is a stress relief from attending only 'didactic lectures'	68.62%	50%	0.9
Only relevant sessions are those that teach ORS (Oral Rehydration Salts), Calamine lotion and Carminative mixtures	30.39%	58.33%	0.03*
The distribution of marks helps in easy scoring	71.56%	50%	0.3
It helps remembering composition of the formulation	64.70%	50%	0.15

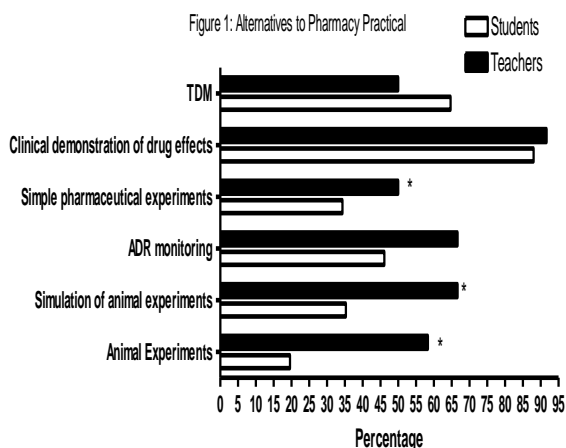
**Table 2: Reasons for not liking pharmacy practical classes**

Reason for not liking pharmacy practical classes	Percentage of students who voted affirmative (n= 102)	Percentage of teachers who voted affirmative (n= 12)	P value
It has no practical relevance	22.54%	58.33%	0.15
There are more interesting and applicable alternatives	15.68%	50%	0.05
Ingredient are not available in adequate amounts in rural hospitals	18.62%	50%	0.12
It will be of no help in future while practicing medicine	21.56%	58.33%	0.17

Among teachers main reasons for approving pharmacy practical classes were importance of

relevant compositions like ORS (Oral rehydration salts), Calamine lotion and carminative mixtures (58.33%). The difference of opinions between teachers and students regarding this reason was statistically significant. Easy scoring, stress relief and practical experience making it easier to remember made the second important reason for approval among teachers. (50% voted affirmative for each reason). 58.33% felt these practical classes have no importance in their students' future careers and clinical practice. Both groups were unanimous with no statistically significant difference regarding reasons for disliking pharmacy practical exercises.

Some alternatives were suggested in the questionnaire and the proportion of students and teachers who voted in favour of each of the alternatives is depicted in the Figure 1.



\*Statistically significant; TDM – Therapeutic drug monitoring; ADR – Adverse Drug Reaction

As an alternative to pharmacy practical classes 88.23% students wanted demonstration of clinical effects of drugs for example effect of Atropine eye drops on the eye. 64.7% percent favor adverse drug reaction monitoring and 63.72% favor therapeutic drug monitoring exercises as an alternative. Among teachers 91.66% teachers (11 out of 12 teachers who responded) feel demonstration of clinical effects of drugs could be the best alternative to pharmacy practical classes. 66.66% of teachers favoured simulated animal experiments and adverse drug reaction (ADR) monitoring exercises as alternatives.

**Discussion:** The study results show that though the students as well as teachers know that the practical pharmacy classes have no relevance in their future practice they want it to remain in the curriculum only to help them score easily and act as a stress reliever. As alternatives a sizable population of both groups favoured demonstration of clinical effects of drugs. ADR monitoring, simulated animal experiments and Therapeutic Drug Monitoring (TDM) exercises were also favoured. Each of these exercises can have relevance in their future practice. In spite of suggestions from various quarters regarding introduction of animal experiments in the undergraduate curriculum 46.07% of our student population did not want such experiments. 16.66 percent teacher also did not want animal experiments to replace pharmacy classes.

Kaushal et al. in their research letter published in 2007 in Indian Journal of Pharmacology had proposed a four step model for undergraduate pharmacology practical curriculum.<sup>3</sup> These segments were, pharmacy practical classes (including intravenous infusions), experimental pharmacology practical, prescription writing exercises and therapeutic follow up cases. They had suggested that since pharmacy practical classes were no relevant, teachers would demonstrate the methods in class to students who need not perform these experiments. This would be preceded by a discussion on the ingredients, their pharmacological effects, and therapeutic uses. Commercial and household alternatives to these preparations would also be discussed e.g. preparations for rehydration during diarrhea when ORS is unavailable etc. Inclusion of injection and infusion techniques in pharmacology practical classes was also suggested in the paper. Discussion of various dosage forms e.g. inhalers, spin halers, dispersible, sustained release formulations were also considered to be relevant for future and suggested as part of the curriculum.

In our department set up the discussion on ingredients and their alternatives precede each pharmacy practical class. Other segments like prescription writing, therapeutic problem discussion, drug interaction problems are also a part of pharmacology practical classes. As an

addition to the suggestions by Kaushal *et al.* in their paper, we found that demonstration of clinical effects of some common drugs, ADR monitoring and TDM exercises were preferred alternatives to these discussions in classes that were perceived as an extension of the lecture classes. Simulated animal experiments and Computer Assisted Learning (CAL) methods were also suggested also alternatives by both teachers and students alike. These methods have been suggested over animal experiments by authors before. Students prefer these methods over sacrificing animals.<sup>4</sup> In our study however we found that 58.33% teachers were in favour of animal experiments although 66.66% of teachers have also favoured simulated animal experiments. The difference in opinion regarding animal experiments as alternatives to pharmacy classes was also statistically significant.

**Conclusion:** To conclude, although a large proportion of students and teachers feel that pharmacy practical classes have lost their relevance, they continue to support them. Better, more feasible and beneficial alternatives, at the same time have been suggested by this same population.

**References:**

1. Hariharan TS. Need for changes in the practical pharmacology curriculum of medical undergraduates. Indian J Pharmacol 2004;36:181.
2. Gitanjali B. New wine in new bottle. Indian J Pharmacol 2004;36:63-4.
3. Kaushal S, Chopra SC, Arora S. Modifications in the undergraduate MBBS pharmacology practical curriculum: The DMCH model. Indian J Pharmacol 2007;39:57-9
4. Gitanjali B. Animal experimentation in teaching: Time to sing a swan song. Indian J Pharmacol 2001;33:71.

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