

Pharmacology exercise for undergraduate: MLNMC model**Rakesh C. Chaurasia***

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ABSTRACT

Pharmacology is the backbone of clinical discipline of medical science. In the computer era of advancement, paraclinical teachings become more technical and clinical oriented. Regarding to undergraduate practical's the animal experimentation and dispensing pharmacy are only exercises. But these are matter of critics due to their non-utility in future. Student's apathy and non-interest are hidden factor to perform such boring experiments. Meanwhile the old-dated exercises have no potential to tone-up adequate clinical skills in future study instead of wastage of time and money. Killing of innocent animals is crucial and should be socially discouraged. Thus Pharmacology practical are matter of debate in current scenario. Being attachment with past sentiment of traditional dispensing pharmacy and animal experimentations, they are difficult to delete completely. The present article highlights some of our efforts in undergraduate exercises.

Keywords: Pharmacovigilance, Clinical trial, Problem based learning

INTRODUCTION

Pharmacology is very essential paraclinical subject of medical education with marked clinical potential. The prescription and therapy of any clinical discipline is nothing but pharmacology. Dispensing pharmacy and animal experimentations are unable to impart clinical skills of students. Meanwhile these are useless and wastage of time as well as money.¹⁻³ In current scenario as per direction of medical council, undergraduate teaching should be clinical oriented.⁴

This is fact that we are always emotional linked with our old tradition. The same version is also true in context to medical teaching. Nevertheless, now time has been changed that needs up-gradation of old presentation.

Inhuman killing of innocent animals is not only cruel but also non-ethical.⁵ Therefore there is urge to develop some model's of practical better to say exercise, for integrated skills. Our department introduced newer concept of UG exercise keeping the aroma of old one.

WHAT WE INITIATE - AN INFANTILE DRIVE

A model curriculum was formulated and proposed by MCI [2007], and later by DGHS [2008] emphasize the clinical aspect of pharmacology both in written as well as in practical exercise.⁴ Department of Pharmacology, MLNMC introduced a model UG exercise with own limited resources on experimental basis. We keep the options of laxity to add or delete something in ongoing years according to feedback, response and utility. These exercises are approved by academic cell of our college and highly appreciated by students and examiners.

We divide the whole exercise into the following five phases and put the closely related exercise in a particular phase. Keeping the past sentiment, the traditional dispensing pharmacy and animals experimentations are modified in the new format. After successful conduction and very good feedback now we are enter in fourth batch.

A brief outline of MLNMC pharmacology exercise model, pertaining to its objective, materials and types of exercise are mention as under:

PHASE- 1

The objective of first phase is to generate knowledge about some terminology as well as basic concept of pharmacology. This phase is assisted with pharmacopoeia, WHO essential medicine list and drug ready reckoners. Following exercises are grouped under introductory manner:

- Sources of drug information
- Pharmacopoeia
- Essential medicine list [EML]
- P- Drugs
- Drug schedules
- Pharmaco-epidemiology
- Pharmaco-vigilance
- Pharmaco-economics
- Therapeutic drug monitoring [TDM]
- Basic statistical principles

PHASE- 2

This is pharmacy-oriented phase without dispensing tools. Here the students get familiar with commonly used formulations required in day-to-day clinical practices. Apart from demonstration, this phase is associated with a project work, where students search and collect specific formulation from teaching hospital. Following demonstration are conducted due to limited resources:

- Demonstration of solid dosage formulations
- Demonstration of liquid dosage formulations
- Demonstration of injectable dosage formulations
- Demonstration of topical dosage formulations
- Preparation of ORS

PHASE- 3

This is phase of animal experimentation without using animals. An aim of this phase is to continue the traditional knowledge as before. We introduce here computer assisted learning [CAL] to avoid wastage and sacrifice of innocent animals. This phase is accompanied with computer, CDs (for CAL), instruments & drugs (for demonstration only) and chart etc. It includes:

Part- A

- Good laboratory practice [GLP]
- Laboratory equipments
- Laboratory animals

Part- B

- Demonstration of drug effect on frog heart (stimulant)
- Demonstration of drug effect on frog heart (depressant)

- Demonstration of topical drug effect on rabbit eye

PHASE- 4

This is interesting phase pertaining to clinically oriented exercise. Here students can understand some basics of clinical pharmacology and will communicate with patients regarding to dosage and devices. For conveniences, this phase is divided into two parts A & B, and contain following exercises:

Part- A

- Clinical trials
- Informed consent
- Communication skills
- Compliance

Part- B

- Dose calculation in pediatrics practice
- Setting an infusion assembly
- Drip/drop rate calculation
- Dose calculation for infusion
- Method to evaluate hypersensitivity
- Demonstration of insulin delivery devices
- Demonstration of inhalational devices

PHASE- 5

This is last step of journey concerned with applied and pharmaco-therapeutic exercises. Its aim to understand the principle of drug action in special group or situation. At the end student shall be able to write a correct and legible prescription.

Part- A

- Fixed dose combinations [FDCs]
- Clinical implication of dose response curve [DRC]
- Clinical implication of drug interactions
- Drug prescribing in pediatric age group
- Drug prescribing during pregnancy & lactation
- Drug prescription in hepatic & renal diseases

Part- B

- Prescription writing
- Problem based learning [PBL]
- Pharmaco-therapeutics exercise [special clinical conditions]

PROJECT'S ACTIVITIES

The second phase is associated with a project work, where students search and collect specific formulation from teaching hospital. New addition from this year is

rational pharmacotherapeutic analysis of common clinical cases of teaching hospital. One long case such as tuberculosis, CHF, diabetes mellitus, epilepsy etc and two short cases like pyrexia, diarrhea, anemia, scabies, worm infestation, etc are allotted in collaboration with concerned disciplines. Students are instructed to compile presentation in a file pertaining to their clinical record history, examination, investigations and treatment etc. At last we analyse their comments regarding to rationality, EML, FDC, poly pharmacy and economic consideration.

EVALUATION SYSTEM

There is provision of test and viva-voce after the completion of particular phase, their marks will be included in annual assessment. Rehearsals exercise, and grand viva will be conducted before final university exam.

The professional practical examination has following three sections:

Section 1: This include spotting on various aspects like instruments, formulations etc.

Section 2: This includes experiments from pharmacy in the form of description on provided formulation and graph construction/ explanation in animal experimentation.

Section 3: This section is devoted to clinical oriented exercises in which one exercise is based on device demonstration. Other one is to plot a dose response curve. Consequences of given drug interaction is another exercise and the last exercise is PBL or prescription writing on specific clinical situation.

Apart from these exercises, provision of simultaneously viva voce carried on usual stream.

OUTCOME

After smooth running of such exercises from three consecutive years, we conduct questionnaire-based surveys to know about outcome. Almost all the students appreciated our model and comments that most of exercises are very helpful in last professional year. When we asked questions about traditional dispensing

pharmacy and animal experimentation, they were against the inhuman killing of innocent animals and continuation of such exercise having negligible scope in routine clinical science.

Our model is appreciated by numbers of examiners from different medical institutions and some of them have started few exercises in their department.

CONCLUSION

Pharmacology is indiscriminate part of M.B.B.S., second professional. Teaching on old dated pattern and continuation of traditional practical's not only reduces the interest of students but unable to impart proper clinical skills in future. Our model is just an initiative.

Message: A mouth-watering diet is tasteless without salt. Similarly medical science is just like a dish containing various clinical disciplines as attractive food items but tasteless without Pharmacology i.e. Salt. We cannot imagine stability of clinical subjects without hidden existence of pharmacology. It is better to change our concept and attitude toward this important subject and see with due respect.

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