Experiences regarding modification of the teaching and evaluation pattern in practical pharmacology

Sir,

In a previous editorial in the IJP the urgent need for massive and sweeping revision of the medical curriculum related to pharmacology was pointed out. I believe that teachers at various institutions may already be making the efforts, but various factors may prevent them from putting it into actual practice. At many places the revisions made may be very minor but quite meaningful. Modifications made at various places if brought to the notice of other colleagues through a platform like IJP may be useful to many. I am communicating our experiences at the Government Medical College, Surat as I feel that the changes, though small, can be easily adopted by teachers of pharmacology. At our center, we have made gradual changes over the past years in the curriculum. In this letter I will focus only on the changes that we have made in relation to teaching and evaluation of practical sessions.

The following aspects led us to modify the training during practical sessions and the evaluation pattern in practical examination.

1. We realized that formulation-based teaching and the evaluation of dispensing pharmacy is out of context in present-day medical practice. This was hence deleted.

2. Handling of ‘prescription-writing’ exercises in pharmacology-practical-examination looked meaningless for a number of reasons. Students are given one or two problems and asked to write the prescription. Many times the problems were not well defined, creating confusion among the examinees. It was expected that the students remember data-based drug-information like the doses, dosage forms, strength, etc. It is obvious that the students may not remember the doses of all possible drugs likely to be used in a given condition and so may select the drug, of which he/she remembers the dose rather than following the rational steps in selecting a drug. Whether the student has written the prescription taking into consideration all these aspects rationally cannot be judged when an examiner evaluates only the written answer and so we strongly felt the need for viva-based evaluation.

3. We also realized that the students have limited background information when they are exposed to practical training sessions. We felt the need to supplement the same in the training program.

4. The need for emphasis on rational therapeutics, paying attention to adverse drug reactions, drug interactions and analytical thinking about available dosage forms, was acknowledged.

Certain changes in our teaching program have already been reported and subsequently, a few modifications have been done which are outlined below.

Training program

Basically, practical-teaching is covered under the following heads:

(I) Clinical pharmacy and pharmacology

1. Clinical pharmacy, pharmacology and prescription writing

   Initial introduction includes basics of clinical pharmacology, clinical pharmacy, dispensing pharmacology, dosage forms, principles of prescription writing, rational therapeutics, ethics and responsibility of a doctor towards patient-care etc. Clinical problems in various areas like respiratory system, gastrointestinal tract, anemia, diabetes mellitus, pain management, infections and dermatology are covered in subsequent sessions. The students are provided some essential information about dosage forms and doses of the drugs needed to cover the problems in these areas. While writing prescriptions the students are supposed to use this handy informative script.

2. Handling of dosage forms

   Students are taught basics related to injecting drugs. Proper use of syringe, needles, and i.v. infusion-set, observing aseptic precautions and understanding the principles of disposal of biomedical wastes are included as part of the training. At the end of the sessions the students are able to calculate appropriately to set up intravenous infusions of various drugs at the required rates. The ability of students to fill up syringes with drugs like adrenaline, insulin (including combinations of two insulin preparations) and to handle other dosage forms like dry syrup, various varieties of tablets and home made ORS solutions can be tested.

3. Emergency therapeutics

   This is a new aspect introduced recently where the students are taught about 25 emergency conditions and are expected to know and remember the pharmacotherapy of those conditions.

4. Criticism

   In this section students are expected to offer an opinion on various aspects like planning of the treatment, selection of drug/s, route of administration, dose, frequency of administration, rationality of formulations, possibility of adverse effects and drug interactions. Alternative suggestions for treatment are also expected.

(II) Experimental pharmacology

In the experimental pharmacology section demonstrations, discussions, simulation models are used to cover various aspects like new drug development (pre-clinical and clinical), qualitative and quantitative methods (quantal and graded dose responses, assay methods, comparison of agonist and antago-
nist) in experiments involving isolated tissues, conscious ani-
mals and anesthetized animals. Graphic presentations of vari-
ous experiments are included in training sessions. Simulation
model for pharmacokinetic principles, a novel exercise de-
veloped in this department is also included. In the experimental
pharmacology teaching, the emphasis is on understanding the
basic actions of the drugs, mechanism of action and clinical
applications.

(III) A clinical case presentation by each student
Each student under the guidance of the teacher presents a
case which he/she has recorded from a ward. Basically, the
approach of pharmacotherapy, a brief description of the drugs
used and comparison of treatment in a given case with the
textbook descriptions are presented by the students in front
of a small group of students. A discussion is conducted with
the help of the teacher and important practical points are
emphasized. This exercise is meant to create general aware-
ness regarding the actual practice of medicine.

Examination

Practical examination consists of 25 marks. The following
five exercises (5 marks each) are included in the examination:
1. Writing prescriptions accurately with the help of in-
formative script,
2. Exercises based on (a) handling of injectable drugs and
(b) emergency therapeutics
3. Conducting the examination related to the exercises of
prescription-writing and handling of dosage in an ‘open
book’ fashion.
4. Changing the emphasis on experimental pharmacology
towards analytical thinking and practical applications

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A comparative study of two evaluation
techniques in pharmacology practicals:
Conventional practical examination
versus objective structured practical examination

Sir,

Evaluation is a systematic process that consists of finding
out the extent to which educational objectives have been
achieved by the students.1,2 Any evaluation process must thus
be directly related to the educational objectives. The present
system of assessing the students’ performance in pharmacol-
yogy practicals is not relevant as many of the skills that are
assessed are not required for the making of a basic medical
doctor.

Practical examination is an important component of evalu-
ation in the medical curriculum. However, evaluation of stu-
dents is not easy if the criteria of objectivity, uniformity, valid-
ity, reliability and practicability have to be met.3 At present,
practical exercises in pharmacology in most medical colleges
in India are conducted and evaluated in the conventional way,
i.e., a student is given an experiment to perform, a viva is
conducted after completion of the practical exercise and the
candidate evaluated subsequently.

Objective Structured Practical Examination (OSPE) has