

Novel Teaching Approaches in Pharmacology

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With the turn of the century, modern pharmacology has emerged as an increasingly distinct discipline with a recognized career training pathway. In recent years undergraduate training in pharmacology has been revolutionized with adoptions of new methods of teaching that focus on supportive learning through novel teaching approaches like small group discussions, role plays, computer assisted learning, using audio-visual aids, clinical and community pharmacology studies. These are being adopted by more and more medical colleges at both postgraduate and undergraduate levels

“**Small Groups Discussions**”(1) are an important component of teaching. The group enables the students to bring the problems to a platform, where they can be shared with peers and can be solved by trying out different approaches with a special focus on the P-drug concept (P-therapy and P-treatment). Another advantageous approach is “**Use of Structured Role Play**”(1) which involves construction of imaginative scenarios that help students to explore new concepts and practise new skills that can help them to learn creativity about number of areas that might not otherwise seem very interesting. Recently computers have made a great impact in the field of education and are being used to teach difficult concepts through simulated models. Internet is being used extensively by students to do research work. **Computer Assisted Teaching (CAT)** of animal experiments in pharmacology is helpful both for the students and the teachers in understanding the basis of pharmacodynamics and pharmacokinetics (2). CD containing CAL (Computer assisted learning) software for teaching animal practicals can prove to be a revolution in pharmacological teaching. “Pharma tutor” section of the CD containing pharmacokinetic demonstrations (after oral, intravenous

etc. administration of drugs), pharmacodynamic effects of sympathomimetic/ parasympathomimetic drugs on heart and pharmacodynamic effect of cholinergic and neuromuscular blocking drugs on skeletal muscles is really a tutor in itself (2). Simulated dog practical which had been the backbone of postgraduate learning since very long is not feasible because of restrictions on the animal experiments. However, with the use of the CD demonstrating effects of various drugs on dog’s heart and respiration, one can understand the complexity of the autonomic nervous system with clarity. In our Institute with the help of this CD “dog” practical was conducted successfully in the postgraduate examination conducted in Feb 04. The role of computer is not only restricted to the animal experimental teaching but also in the promotion of rational and evidence based medical care and medication use by the development of communication systems by the internet (collaborative online learning-COL) (3). The development of “**Electronic Hospital Libraries**” allows for more sophisticated methods. Databases like Medline allow for personal research profiles to be set up and searched regularly, with the results delivered automatically to a desktop (4).

Teaching of medical students can benefit from a seamless progression from basic principles through clinical pharmacology and then on to applied therapeutics (5). Inclusion of **Critical Evaluation of Community Pharmacological and Clinical Pharmacological** case study in the pharmacology practical teaching curriculum is another milestone in bridging the gap between experimental pharmacologist and clinical pharmacologist or laboratory scientist and prescribing practitioner. Traditionally, medical education at both postgraduate and undergraduate levels has focused on competence – that

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is what the doctor knows or is able to do in terms of knowledge, skills and attitude. Under community pharmacology study students are made familiar with the actual drug utilization pattern by the people i.e. regarding use of OTC (over the counter) drug and prescription drug, under use or over use of drugs; knowledge regarding drug interaction and adverse drug reaction in the community and trend in use of alternative medicines by the community. By evaluating clinical case sheets of patients admitted in the medical college associated hospitals, students can have a good practice of critically analysing the rationality of drug prescription. These can enhance the development of adaptability to change, new knowledge generation and continuing improvement of performance that are requirement of all doctors in today's world.

However, teaching and learning capability can be enhanced through feedback on performance, problem based learning and computer assisted learning. These new approaches have been introduced in undergraduate teaching in our institution like computer assisted learning, small group discussions, learning by role play, teaching with audiovisual aids, problem based learning, community pharmacology and clinical pharmacology case studies. In order to receive feed back to this novel change in pharmacology teaching hundred students of 5th semester who have spent more than one year in pharmacology were interviewed regarding their choice or personal assessment regarding these teaching programmes. Questionnaire containing the options as shown in table 1 was given to each student. Each student was asked to give points out of 10 to each of the above teaching options according to his/her personal assessment. All the points given to each category were added and average points attained by each category were calculated. Maximum points-8, were received by category C, H and I and minimum points were given to category A and E (Table 1). CAL and learning with audio-visual aids were seemed to have great impact on students. However, least scores were allotted to pharmacy practicals and teaching without visual aids. The results of our study can serve as positive feed back to make the teaching programme more interesting. Students seem to be more satisfied with learning in the actual practice environment as in the form

of role play, community and clinical case sheet etc. However, even these may have their own short comings. It is important to teach appropriate information handling skill, especially in relation to the evaluation of sources of information for rational use of drugs. Large scale efforts are required with the continuous interventional feedback studies in the highly revolutionizing field of medical teaching and learning. As pharmacology teachers in medical colleges our aim should be to produce "rational prescribers rather than churn out confused practitioners in the therapeutic jungle". *The old concept of teaching "know all" has to change to "know how and why" with emphasis on active learning.*

Table 1. Personal assessment of students (n=100) regarding new approaches in teaching pharmacology.

Category	Teaching strategy	Average points
A	Pharmacy practical with demonstration of various preparations	4
B	Demonstrations of routes of drug administration using colourful pictures	6
C	Learning by role play in therapeutics	8
D	Therapeutic teaching with visual aids	7
E	Teaching pharmacology theory without visual aids	4
F	Pharmacokinetic learning with the help of CAL software	7
G	Pharmacodynamic learning with the help of CAL software	7
H	Community pharmacological case studies	7.5
I	Clinical pharmacology case studies	8

n=number, CAL=Computer Assisted Learning

References

1. Morgan JHC. New approaches to training general practitioner educating for capability is essential. *Postgrad Med J* 2003; 79:187-88.
2. CAL- CD produced as a part of 2003 human education award, launched by international network for human educational network for humane education (Inter NICHC) with support from Proefdiervrij.
3. Wiecha JM. Collaborative online learning (COL): A new distance education method. *Essential drug monitor* 2003; 33:36. www.bu.edu/familymed/distance.htm.
4. Brewer G, Hiscock D. Medical education and practice in the information age *Postgrad Med J* 2001; 77: 425-27.
5. Routledge PA. The inter-face between clinical and laboratory pharmacology. *Br J Clin Pharmacol* 1999; 47:611-12.