

Pharmacoeconomic exercise for undergraduate medical students

Sir,

Pharmacoeconomics is defined as a description and analysis of the cost and consequences of drug therapy to healthcare systems and society. It is concerned with identifying healthcare therapies that represent an efficient use of scarce resources.¹ Patients are affected by the high prices of medicines. In the era of therapeutic jungle, the prescriber can help the society by using generic names while prescribing. The doctors must be trained in the initial years of learning to develop a habit of prescribing drugs based on safety and efficacy. When the safety and efficacy are comparable, it is furthermore important to consider the cost of drug, and not get allured by the marketing gimmicks of the pharmaceutical companies.² Understanding of pharmacoeconomic principles and evaluation methods will help the health care decision makers in reducing the economic burden on patients and society in India where the health care costs are mainly met out of pocket by the patients.

Cost is defined as the value of the resources consumed by a program or drug therapy of interest. Consequence/outcome are defined as the effects, outputs, or outcomes of the program of drug therapy of interest. Resource is time, money, infrastructure and skills exhibited by the individuals.³ The various pharmacoeconomic evaluation methods are cost-benefit analysis¹ where both costs and consequences are measured in monetary terms, cost-effectiveness analysis¹ is an examination of the costs of two or more programs which have the same clinical outcome as measured in physical units. e.g. lives saved or reduced morbidity, it is the most commonly applied form of economic analysis in the health care and is often used in drug therapy. Incremental cost-effectiveness ratio is defined as the ratio of the change in costs of a therapeutic intervention (compared to the alternative, such as doing nothing or using the best available alternative treatment) to the change in effects of the intervention. Cost-utility analysis³ the outcome is a unit of utility (e.g. quality-adjusted life-year). It is concerned with comparisons between programs, and cost minimization analysis³ is based on the assumption that the outcomes of two or more therapeutically equivalent agents or alternate dosing regimens of the same agent are being compared. It identifies the least costly alternative. It helps in critically evaluating me-too drugs and generics for prescribing.

It has been pointed out by a study done by Edlin et al.,⁴ that the clinical pharmacologists can play a significant role

in delivering an efficient health care system by ensuring a meaningful allocation of budget using cost-effective analysis. A recent study done among undergraduate medical students in India have concluded that students sensitized with principles of pharmacoeconomics have better understanding of the cost and consequences of drug therapy and hence can contribute positively in reducing the economic burden on patient and society. Hence, we felt it is better to sensitize our undergraduate pharmacology students about pharmacoeconomics, who will be the future users of the available resources.⁵ Hence, keeping these things in mind we framed these exercises to be included in the pharmacology practical record of undergraduate students.

1. Bipin aged 45 years visited a government hospital outpatient department, was prescribed generic tablet paracetamol 500 mg TDS for 3 days, for the treatment of flu. His friend Gopal also had similar symptoms of flu, for which he was prescribed tablet ABC (paracetamol) 500 mg TDS for 3 days by a private practitioner. Fever subsided after 1 hr of tablet intake in both cases. (Generic paracetamol 500 mg - Rs. 5.40/10 tab, tablet ABC 500 mg - Rs. 9.50/10 tablet).
2. According to a survey done by the gastroenterology department of a tertiary care hospital on eradication of *Helicobacter pylori* revealed that around 124 patients (Group 1) were administered XYZ Kit (lansoprazole 30 mg two capsules + amoxicillin 750 mg two tablets + clarithromycin 250 mg two tablets) twice daily for 2 weeks. Another Group 2 of 124 patients were administered ABC kit (omeprazole 20 mg two capsules + amoxicillin 750 mg two tablets + tinidazole 500 mg two tablets) twice a day for 2 weeks. After 1 month, in Group 1 gastric mucosal biopsy showed absence of *H. pylori* in 117 patients, whereas Group 2 showed the absence of *H. pylori* in 95 patients (XYZ Kit - Rs. 89.70, ABC Kit - Rs. 33).

In the first exercise, the students were asked to calculate the cost of drugs prescribed at the government hospital as compared to a private clinic and also to identify to which pharmacoeconomic evaluation method applied to the problem with an explanation. This helped them to compare the total cost of drugs prescribed by the private clinics and government hospital and how it benefits the patient. In the second exercise, they were asked to find out the percentage of eradication of *H. pylori* in Group 1 and 2 and to calculate the incremental cost effective ratio. This helped them to

analyze which drug kit was effective in a major percentage of eradication of *H. pylori* and how change in cost of therapy changes the effectiveness.

Pharmacoeconomics and outcomes research has altered the culture of clinical practice and healthcare research by changing how we assess the end results of health care services. The application of pharmacoeconomic principles would serve as a major tool that aims to decrease healthcare expenditures and optimize health care results.⁶ Hoping those pharmacoeconomics will become an important factor in driving the health policy in the near future.

**Lalit Mohan^{1*}, Meena Kumari K²,
Harihar Dikshit¹, Nihar Ranjan Biswas³**

¹Department of Pharmacology, Indira Gandhi Institute of Medical Sciences, Patna, Bihar, India, ²Department of Pharmacology, Kasturba Medical College, Manipal, Karnataka, India, ³Director, Indira Gandhi Institute of Medical Sciences, Patna, Bihar, India

***Correspondence to:**

Dr. Lalit Mohan,
Email: drlalitjee@rediffmail.com

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