

ORIGINAL ARTICLE

A PHARMACOECONOMIC STUDY IN TWO TERTIARY CARE HOSPITALS IN ABBOTTABAD

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**Background:** Pharmacoeconomics has been defined as: the description and analysis of the cost of drug therapy to health care systems and society. Aim was to observe the Medication Therapy on the basis of Pharmacoeconomics Analysis and to save the economic resources. **Methods:** This Descriptive Cross sectional study was conducted at Ayub Teaching Hospital and Combined Military Hospital, Abbottabad, from May–August 2011. The case histories of 100 patients were scrutinized thoroughly specially with reference to socioeconomic history, Clinical laboratory tests, Medication history and treatment at hospital and discharge medications. After their collection, these case histories were analyzed with respect to Pharmacoeconomics and compared with the world literature. **Result:** A total of 100 patients were studied. Pharmacoeconomic analysis shows that in 49 Patients' medications were according to international standards while in 51 patients' medications prescribed were irrational. **Conclusion:** Mutual interaction between physician, surgeon, other healthcare professionals, and clinical pharmacist is necessary to assure rational medication therapy and positive response to therapy of each patient.

**Keywords:** Pharmacoeconomics, Rational Therapy

INTRODUCTION

Pharmacoeconomics has been defined as: The description and analysis of the cost of drug therapy to health care systems and society.<sup>1</sup>

Pharmacoeconomic research identifies, measures, and compares the costs, i.e., resources consumed and consequences, i.e., clinical, economical and humanistic benefits of pharmaceutical products and services.<sup>1,2</sup> Pharmacoeconomic applies economic methods and principles to choice between alternative medications, treatment regimens and health and services.<sup>3</sup> It helps in selection of medicines, treatment, therapies etc which involves less cost and maximum benefit.<sup>2,3</sup> In simple it is the sub-category of Health economics responsible to compare the value of one intervention with another. Intervention must be a type of Services, Surgical procedures, Medicines etc.<sup>3</sup>

Within this framework are included the research methods related to cost-minimization, cost-benefit, cost-effectiveness, cost-utility, cost-of-illness as well as quality-of-life and other humanistic assessments.<sup>1,2,4</sup>

When two or more interventions are evaluated and demonstrated or assumed to be equivalent in terms of a given outcome or consequence, costs associated with each intervention may be evaluated and compared. This typical cost analysis is referred to as cost-minimisation analysis (CMA).<sup>3,4</sup> It is applied when outcomes are the same and variation is in the relative cost.<sup>4</sup>

Cost-benefit analysis (CBA) consists of identifying all of the benefit that accrue from the program or intervention and converting them into

currency in the year in which they will occur.<sup>4,5</sup> This stream of benefit currency is then discounted to its equivalent present value at the selected interest rate. On the other side of the equation, all program cost are identified and allocated through a specific year and, again, the costs are discounted to their present value. Then, if all relevant factors remain constant, the program with the largest present value of benefits, less cost is best in terms of its economic value.<sup>4-6</sup> It is used to determine priority for the resource allocation.<sup>2,3,6,7</sup>

Cost-effectiveness analysis (CEA) is defined as a series of analytical and mathematical procedures that aid in the selection of a course of action from various alternative approaches.<sup>7</sup> It is applied when cost and outcomes can vary, e.g., In Cancer's therapy Surgery and Chemotherapy are the two interventions. In this technique we compare Surgery and Chemotherapy with respect to Cost and Effectiveness and select the best option.<sup>7,8</sup>

Cost-utility analysis (CUA) is an economics tool in which the intervention consequence is measured in terms of quantity and quality of life.<sup>8</sup> It is much the same as cost-effectiveness analysis, with the added dimension of a particular point of view, most often that of the patient.<sup>1-3,8</sup>

Cost-of-illness analysis is the evaluation of assessment of resources used in treating an illness. This technique is used to obtain the baseline cost information prior to introduction of a new intervention.<sup>8,9</sup>

PATIENTS AND METHODS

This was a descriptive cross-sectional study. It was carried out at Combined Military Hospital Abbottabad and Ayub Teaching Hospital Abbottabad. It included 65

male and 35 female patients. Ages of patients varied between 40-75 years. 50 patients from Medical ward and 50 patients from surgical ward was selected for the study. The study period was from 18 May 2011 to 18 Aug 2011.

This study was restricted to patients of Diabetes Mellitus, Cardio Vascular Accident, Ischemic Heart Disease, Hypertension and Tuberculosis in Medical ward and Diabetic foot, Carbuncles, Abscesses and Laparotomies in surgical ward. All other patients were excluded from the study and total of 100 patients were enrolled in the study.

The Pharmacological data of patients was collected from ward history sheets. A particular emphasis was laid on socioeconomic history, Clinical laboratory tests, Medication history and treatment at hospital

and discharge medications.

After their collection, these case histories were analyzed with respect to Pharmacoeconomics and compared with the world literature by the help of standard books, i.e., these case histories were analyzed with respect to Pharmacoeconomics British National Formulary 56 (BNF 56), and standard given in books.<sup>2,11-13</sup>

## RESULTS

During study of 90 days at Combined Military Hospital Abbottabad and Ayub Teaching Hospital Abbottabad lasting from 18<sup>th</sup> May 2012 to 18<sup>th</sup> Aug 2012. A total of 100 prescriptions from Medical ward and surgical ward were analysed and following results were obtained (Table-1).

**Table-1: Percentage of Rational and Irrational Medication Charts with respect to Pharmacoeconomics**

Institute	Patients	Patient Distribution		Ward Distribution		Percentage of Rational Medication Charts	Percentage of Irrational Medication Charts
		Male	Female	Med	Surg		
Ayub Teaching Hospital Abbottabad	50	30	20	25	25	44.89%	54.90%
Combined Military Hospital Abbottabad	50	35	15	25	25	55.10%	45.09%
<b>Total</b>	100	65	35	50	50	49%	51%

## DISCUSSION

The main purpose of applying Pharmacoeconomics in a hospital is the correct and complete use of cost for acquiring drug therapy, spent by the patient or the Hospital. Different methods of Pharmacoeconomics, i.e., CMA, CBA, CEA and CUA are used for the application of Pharmacoeconomics in any Health care institution.<sup>1,2</sup> The application of these methods varies from Hospital to Hospital (i.e. Governmental Hospitals and Non-Governmental Hospitals) and on the Economic class of the patient.<sup>16</sup>

In our study all the four methods were used for the study of Pharmacoeconomics in Combined Military Hospital Abbottabad and Ayub Teaching Hospital Abbottabad.

The prescription of multiple drugs makes an economic burden on the budget of patient and hospital resources as well. A proper diagnosis of the patient and prescription of pertinent and appropriate medications helps in minimizing the number of medicines prescribed.<sup>3</sup>

Medical personnel came across Diabetes Mellitus, Cardio Vascular Accident, Ischemic Heart Disease, Hypertension and Tuberculosis very frequently in the setup of our country. Diseases like Diabetic foot, Carbuncles, Abscesses and Laparotomy cases are commonly seen in the surgical arena.<sup>10,12,13</sup> Drugs for these common Medical and Surgical conditions are enormous in number and are manufactured by varied number of national and international pharmaceutical companies. Ethical and unethical promotion of these

drugs and pharmaceutical products leads to irrational prescribing practice in outdoor and indoor patients at times. Another reason for irrational pharmacological practice is symptomatic therapy and not reaching on definitive diagnosis.

In Governmental hospitals the prescription of broad spectrum Antibiotics for Nosocomial infections and Anti-Allergic medications is a common practice.

Nosocomial infections are more likely to be caused by antibiotic-resistant organisms. Antibiotic-resistant organisms are common in the hospital setting because widespread antibiotic use in hospital selects for these organisms. Furthermore, hospital strains are often resistant to multiple antibiotics. This is especially true for Staphylococcus aureus and enteric gram-negative rods such as Escherichia coli and pseudomonas aeruginosa.<sup>14</sup>

Unhygienic condition of the wards in Governmental hospitals causes different kinds of Allergic reactions in patients. To treat this hospital acquired Allergies Physician has no option other than to prescribe Anti-Allergic medicines.

In our country a lot of pharmaceutical industries manufacture different brands of one drug.

These brands (Pharmaceutical Equivalents) differ from each other with respect to potency and efficacy. A proper Economic History of each and every patient helps the Physician to prescribe safe, appropriate and cost effective brand of a medicine.<sup>15,16</sup>

In hospitals Pharmacoeconomic's methods can be applied for individual patient treatment, effective

formulary management and resource allocation. By understanding the principles, methods and application of Pharmacoeconomics health care Professionals will be prepared to make better, more informed decisions regarding the use of pharmaceutical products and service.<sup>17,18</sup>

A brief explanation of Pharmacoeconomics in the Curriculum of Health care Professionals i.e. MBBS, Pharm-D and Nursing will prove fruitful in future for increasing Coordination between Health Care Professionals and ultimately for rational therapy of medications with respect to Pharmacoeconomics.

## CONCLUSION

The mutual interaction between Physician, Surgeon, other Health Care Professionals and Clinical Pharmacist is necessary which will assure Rational Medication Therapy and the desired outcomes, i.e., positive response to therapy of each and every patient. The maintenance of an ideal hygienic condition of hospital's wards help in minimizing the number of medications which are prescribed for management of Signs and Symptoms associated with unhygienic condition. To create posts for Clinical Pharmacists in Hospitals is an important way to minimize the Drug Related Problems associated with Pharmacoeconomics. There must be accurate supervision and management of Cost effective Therapy by the pharmacist.

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