

## PHARMACOECONOMICS: AN OVERVIEW

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### ABSTRACT

Economic evaluations help to lessen the burden of inadequate resources by improving the the efficiency of health care financing. Pharrmacoeconomics has been considered as a fundamental comparison and option, which is required during the purchasing of medicine according to cost effectiveness and short onset of action. The pharmaco-economic evaluation has been used to regulate health economics and specific index of medicines rates. Various types of pharmaco-economic evaluation has been suggested which include cost-minimization analysis, cost-benefit analysis, cost-effectiveness analysis, and cost-utility analysis. The pharmaco-economic is a part of the tool bag, and clinical pharmacist can use it to improve the efficiency of his profession. Presently, it has been used to make formulary decisions, design disease management programs and measuring the cost-effectiveness of interventions and programs in managed care. This review article emphasize on the evaluation of pharmaco-economic studies and the problems faced by them.

**Keywords:** Pharmaco-economic, Evaluation, Analysis.

### INTRODUCTION

Economic evaluation has been regarded to provide valuable information to healthcare decision-makers that allow optimal allocation of limited resource<sup>1-2</sup>s. In addition, economic studies are considered essential in order to adjust the amount expended for treatment, and hence, the crucial aim of analyzing economies for providing effective use of pharmaceuticals; the economic studies are used to grant highest value to the patient<sup>3</sup>. Pharmaco-economic, the description and analysis of the costs of drug therapy, can be defined as the branch of economics that uses cost-benefit, cost-effectiveness, cost-minimization, cost-of-illness and cost-utility analyses to compare pharmaceutical products and treatment strategies required for the patients<sup>4-6</sup>. The term pharmaco-economic was introduced in 1986, at meeting of pharmacist in Toronto, Canada,

when Ray Townsend from the Upjohn company, used the term in presentation. In addition, Ray and few others performed studies since the early eighties using the term pharmaco-economic within the pharmaceutical industry<sup>7</sup>. The pharmaco-economic has been necessitated in pharmaceutical industry, government, and other private sectors in order to compare various cost consequences<sup>8-9</sup>. The measures of costs and measures of outcomes have been considered as the two fundamental components of pharmaco-economic studies are that are combined into a quantitative measure, which can be done using various methods like cost-minimization analysis (CMA), cost-effectiveness analysis (CEA), cost-utility analysis (CUA), and cost-benefit analysis (CBA)<sup>10-12</sup>. However, pharmaco-economic studies are the keys by which a pharmacist may enhance their competent and profession by applying various methods for

health economics in the field of various pharmaceutical policies<sup>13-14</sup>. Moreover, the pharmacoeconomic analysis provides number of ways in order to increase the health economy and index of medicines adjustment<sup>13-15</sup>. The present review article critically discusses about various pharmacoeconomic concepts and terminology used in a pharmacoeconomic study.

### **NEEDS AND CHALLENGES OF PHARMACOECONOMICS**

Although health economics, a branch of economics is relatively young, but the need of pharmacoeconomics in pharmaceutical industry has been alarmed. The pharmacoeconomics has been noted to be required in industry for deciding amongst the specific research and development alternatives; in Government for determining program benefits and prices paid; and in private sector for designing insurance benefits coverage<sup>16</sup>. Moreover, measures and comparison of cost alongwith consequences of pharmaceutical products and services have been identified by pharmacoeconomics. Further, the economic relationship involving drug research, drug production distribution, storage, pricing and used by the people has been described by the pharmacoeconomics. Additionally, important points which have been observed in any pharmacoeconomics analysis are relative issue; time consuming; price; and results obtained<sup>7</sup>. It has been suggested that four points are achieved in pharmacoeconomics analysis which include lower cost, better outcome; higher cost, better outcome; lower cost, less outcomes; and higher cost, less outcomes<sup>17-18</sup>. Despite of smooth application of pharmacoeconomics in the pharmaceutical industry and other private sectors, various challenges have been faced by pharmacoeconomic studies, which include establishment of guidelines or standards of practice; establishment of a cadre of trained producers and consumers of pharmacoeconomic work;;providing education on the relevant features of this discipline for practitioners, government officials, private sector executives; and stable funding to support applied pharmacoeconomic research<sup>16,19</sup>.

### **METHOD OF PHARMACOECONOMIC EVALUATION**

The evaluation of pharmacoeconomic studies can be done using various methods like cost-minimization analysis (CMA), cost-effectiveness

analysis (CEA), cost-utility analysis (CUA), and cost-benefit analysis (CBA)<sup>20-21</sup>. However, evaluation of pharmacoeconomic studies has been suggested to afford a number of importances (Fig 1). The CMA has been demonstrated to measure the cost and compares the health care services mainly. It has been known to be applied only in those conditions in which the result of therapy is approximately same as that of standard, which can be evidenced from the fact that generic medicines show same efficacy but have a lot and large difference in their price while comparing with branded medicines<sup>22</sup>. The objective of this method is to choose the least costly drug amongst multiple equivalent interventions.

Second method of evaluation of pharmacoeconomic studies is CEA which covers the time of patient saved and time afforded to the suffered people without any disease condition alongwith the money spent in order to achieve this goal and comparison with the quality of results and outcome of therapy. Further, the results are then plotted and the treatments which have the lowest cost and highest effectiveness along the effectiveness frontier will be preferred<sup>23</sup>. However, CEA has not been permitted to make comparison between two or more separated field of medicines with different results.

CUA, the third method of evaluation of pharmacoeconomic studies, matches with CEA in various conducts. In this method, the measurement of money occurs according to the results and outcomes of the therapy<sup>24</sup>. The outcome of the study and cost to reach that outcome is measured in monetary terms. However, the results are somehow more valuable and the finishing of therapy is not related to the diseased condition<sup>25</sup>.

The fourth method of evaluation of pharmacoeconomic studies is CBA in which the benefit is considered as the economic benefit interference between cost and outcomes. In this method, the cost of therapy and consequences, both are measured in monetary terms and involves the evaluation of intangible cost in monetary value attached to different state of health like physical, emotional and psychological distresses associated with being ill versus being healthy<sup>7,26</sup>. In addition, CBA has been suggested to ignore a lot of untouched and very crucial outcomes or benefits net in the form of money.

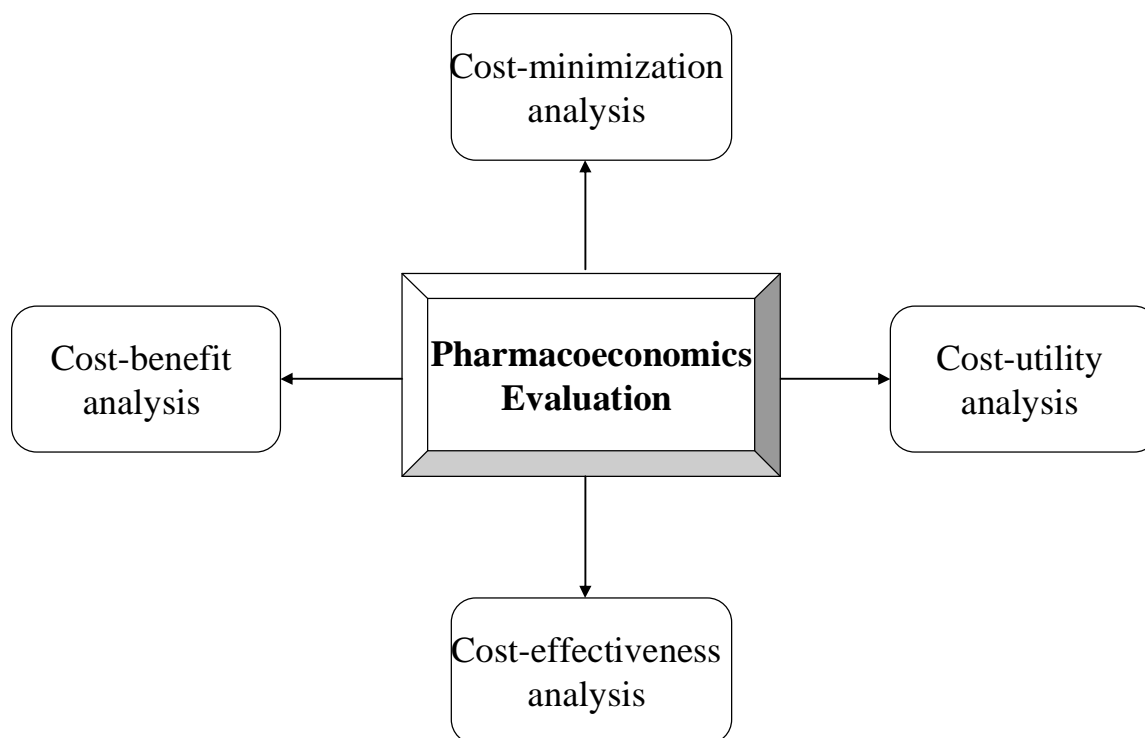


Fig. 1: Importance of Evaluation of Pharmacoeconomic Study

#### PROBLEMS ASSOCIATED WITH PHARMACOECONOMICS

Pharmacoeconomics has been considered as an evolving science whose methodologies are not well established, and thus, various problems have been found to be associated with it. The problem has been suggested to continuously increase and result in difficulties to understand the methodologies for evolution of new drugs and potential therapies<sup>27-28</sup>. The major problem associated with pharmacoeconomic studies include maintaining and creating schemes of perfect trained employers and consumers of pharmacoeconomic evaluations; regulating the analysis on the proper characteristics of the disciplined manner for practioners, Government officials and private field workers; and absence of fixed resources to support applied pharmacoeconomic evaluation<sup>16</sup>. Further, limitations in pharmacoeconomics studies generate lot of problems which reduces the use of health economics in therapy. The health economics has been noted to be misused in the marketed field mainly by the health care payers. Further problems may be attributed to the

improper pharmacoeconomics analysis, which is evident by the fact that selection of improper drug is done by the clinical pharmacist due to the marketed pressure<sup>29-30</sup>. Moreover, the drugs are prescribed by the medicinal practitioner by the motivated pressure activity by marketing executives and medical representatives of pharmaceuticals firms who provide incentive to the medical practitioner for prescribing their branded generics or pseudogenerics<sup>7,16</sup>.

#### CONCLUSION

Pharmacoeconomic studies have been suggested to enhance the medical education which technically tells about the diseases and therapy alongwith the understanding of socioeconomic issues. Over the last decade there has been tremendous interest in economic evaluations of healthcare programmes, especially in the pharmaceutical field. These days, the pharmacoeconomics research is a flourishing industry with many practioners, a large research and application agenda, several journals and flourishing professional societies including the international society for

pharmacoeconomics and outcomes research. However, health economics is an evolving science, but its methodologies are as yet not well established in many areas, and hence, new studies are demanded in order to completely understand and apply the pharmacoeconomics in the present world.

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