ALUMNI SERIES : PHARMACOECONOMICS AND ITS IMPORTANT IN PHARMACY

Pharmacoeconomics refers to the scientific discipline that compares the value of one pharmaceutical drug or drug therapy to another and it is a sub-discipline of health economics. Pharmacoeconomic research assesses the financial value, efficacy, or effects on quality of life of a pharmaceutical medication as well as its costs (represented in monetary terms). Pharmacoeconomic studies help to determine the most efficient and scientifically sound way to allocate healthcare resources.

Pharmaceutical economic evaluation is the focus of pharmacoeconomic, which may employ cost-minimization, cost-benefit, cost-effectiveness, or cost-utility analysis. The primary outcome of interest in pharmacoeconomic analyses is quality-adjusted life years (QALY), and much research uses cost-per-QALY analysis. Randomised controlled trials and decision-analytic modelling techniques are used in economic evaluations.

Pharmacoeconomics is a practical tool for assessing the cost-effectiveness of various treatment choices. It has become essential, especially in the context of developing nations where resources are limited, to apply the principles of pharmacoeconomic for various drugs and treatment options so that the greatest improvement in quality of life can be achieved at the lowest cost. This is because more expensive drugs are being developed and licensed [1].

Impact on pharmaceutical innovations

A comparison of several initiatives or tactics, taking into account both costs and effects, is known as an economic evaluation. Therefore, identifying, measuring, valuing, and comparing the costs and effects of the interventions under discussion are the fundamental tasks in conducting an economic evaluation. The study will be regarded as undertaking a partial economic assessment rather than a full economic evaluation in circumstances where any of the components of the reference case are absent, for instance, in an analysis where there is no comparator being compared against or missing cost/outcome data.

In Table 1 below, examples of both partial and complete economic analyses are provided. The partial economic evaluation may be a crucial transitional phase in comprehending the expense and effects of a treatment. Partial economic evaluations, however, are unable to address problems about efficiency, in contrast to comprehensive economic evaluations [2].

Table 1: Types of economic evaluation (partial and full) and their examples

Partial	Full
Cost minimisation analysis Cost analysis Cost description Cost-outcome description	Cost effectiveness analysis Cost utility analysis Cost benefit analysis

Types of pharmacoeconomic evaluations:

1) Cost-Minimisation Analysis (CMA)

When two interventions have comparable health effects but differing prices, a CMA may be performed. A CMA would analyse all costs among treatments after evidence of the similarity of the health effects had been established in order to choose the option with the lowest cost.

2) Cost-Effectiveness Analysis (CEA)

CEA is a form of economic analysis that compares the relative costs and outcomes (effects) of different courses of action. CEA is distinct from cost–benefit analysis, which assigns a monetary value to the measure of effect [3]. When it comes to health services, where it might not be suitable to monetize health effects, cost-effectiveness analysis is frequently applied. The CEA is typically represented as a ratio, where the numerator represents the cost of the health gain and the denominator represents the gain in health from a measure (years of life, premature births avoided, sight-years gained) [4]. Years of quality-adjusted life (QALY) are the most often utilised outcome measure [3].

3) Cost-Utility Analysis (CUA)

CUA and CEA are extremely similar in concept, with the exception that the outcome is assessed using utility-based measures of health-related quality of life. When various patient-related outcome parameters recorded in various units are present for the treatment being evaluated, it is also employed in those cases. For the purpose of evaluating changes in both quantity and quality of life brought on by interventions, this analytical method is advised. A measure of outcome that incorporates both the quantity and quality of life is called "Quality Adjusted Life Years" (QALYs). As a result of its ability to compare incremental cost and results for various health conditions, CUA has therefore grown to become the norm for economic evaluation in the healthcare industry.

4) Cost-Benefit Analysis (CBA)

When the costs and benefits of a treatment are both expressed in monetary terms, CBA evaluates the two possibilities. CBA presents a number of methodological difficulties, including the ethical and practical difficulties related to putting monetary values on health outcomes.

Table 2: Summary of different types of pharmacoeconomic analysis

Type of analysis	Measurement of costs	Measurement of outcomes	Example of outcomes
CEA	Monetory	Natural/physical units (final,intermediate or surrogate outcomes)	Milimetres mercury to express blood pressure, events free survival or life years gained
CUA	Monetory	Multidimensional	QALYs/DALYs
CBA	Monetory	Monetory	Monetory

Budget Impact Analysis (BIA)

BIA calculates the financial effects of implementing a novel health intervention in a predetermined environment. It aids in educating budget holders about the entire financial implications of a new health intervention. In some ways, it supports pharmacoeconomic analyses by illuminating the viability and affordability of a health intervention in a specific context. The projected size of the eligible population, perspective, time horizon, current and future treatment mix, drug-related and disease-related cost of the treatment mix, and uncertainty analysis are the main components of a BIA [5].

In summary, pharmacoeconomic analysis looks at the efficacy and effectiveness of new health interventions y as well as their costs and advantages in relation to one another. Pharmacoeconomic analysis aids healthcare decision-makers in making the best use of the sector's finite resources.

References:

1. Deepak Bhosle, Asif Sayyed*, Shaikh Huzaif, Alimuddin Shaikh, Vasundhara Bhople, Ayman Ali Khan.PHARMACOECONOMICS IN INDIAN CONTEXT. International journal of current pharmaceutical and clinical research vol 7 issue 1 -2017 11-14.
2. Drummond M, Sculpher M, Claxton K, Stoddart G, Torrance G. Methods for The Economic Evaluation of Health Care Programmes. 4th ed. 2015.
3. Bleichrodt H, Quiggin J (December 1999). "Life-cycle preferences over consumption and health: when is cost-effectiveness analysis equivalent to cost–benefit analysis?" (PDF). J Health Econ. 18 (6): 681–708.
4. Gold MR; et al. Cost-effectiveness in health and medicine. p. xviii.
5. Mauskopf J, Earnshaw S. A Methodological Review of US Budget-Impact Models for New Drugs. PharmacoEconomics. 2016 Nov;34(11):1111-31.

Mr. Hasryn Azzuar Mohd Khairy
RX3 Alumni

LATEST NEWS AND UPDATES FROM THE FACULTY OF PHARMACY

PRESCRIPTION

January 2023

ISSUE 1/2023

NEWSLETTER EDITORIAL TEAM

REACH US

PRESCRIPTION

Faculty of Pharmacy,
Universiti Teknologi MARA,
Kampus Puncak Alam,
42300 Bandar Puncak Alam, Selangor.
+603-3258 4645
korporatff@uitm.edu.my

Universiti Teknologi MARA | Fakulti Farmasi

@pharmacyuitm

@pharmacy_uitm

Faculty of Pharmacy UiTM

https://pharmacy.uitm.edu.my/