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PHARMACOECONOMICS AND ITS IMPACT ON AYUSHMAN BHARAT PROJECTS IN RURAL INDIA

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INTRODUCTON

What is pharmacoeconomics?

The International Society for Pharmacoeconomics and Outcomes Research (ISPOR) defines pharmacoeconomics as "the field of study that evaluates the behaviour of individuals, firms, and markets relevant to the use of pharmaceutical products, services, and programs, and which frequently focuses on the costs (inputs) and consequences (outcomes) of that use".

In simple words, Pharmacoeconomics (PE) refers to the scientific discipline that compares the value of one pharmaceutical product or treatment mix to another. It is a sub-discipline of health economics. Pharmacoeconomics can also be regarded as a branch of health economics which deals with identifying, measuring, and comparing the costs and consequences of pharmaceutical products and services.

Phrmacoeconomics primarily focus upon the costs and benefits of drug therapy. Pharmacoeconomics plays a major role in decision making and access to rational drug use. It also aids policy makers in evaluating the affordability.

Before prescribing a new drug, two queries are to be answered:

1) Whether the new drug is equally or more efficacious in said disease as compared to standard treatment.
2) Does the new drug have economic advantage over the existing drug?

Major objectives of pharmacoeconomics

1) To find the optimal therapy at lower price, i.e to improve the health cae results by decreasing the expenditure.
2) To fuel the need for economic evaluation to empower the consumers
3) Allocation of health care resources.

Need for Pharmacoeconomics

1) Increased demand of health care cost
2) Increased cost of medicines
3) Patent of drugs

Pharmacoeconomics can be applied to

1. Fix the price of a new drug and re-fixing the price of an existing drug
2. Finalise a drug formulary
3. Create data for promotional materials of medicines.
4. Compliance of requirement for drug license.
5. Include a drug in the medical/insurance reimbursement schemes.
6. Introduction of new schemes and programs in hospital pharmacy and clinical pharmacy.
7. Drug development and clinical trials.

Phrmacoeconomics primarily focus upon the costs and consequences of drug therapy.

Costs

1) Direct
2) Indirect
3) Intangible
4) Opportunistic

1. Direct costs

1) Medical direct cost

a. Fixed: don't vary with number of patients treated, eg: capital or of hospital building.
b. Variable: cost of syringes, nursing services, drugs, medical supplies, diagnostic imaging, rehabilitation and food services.

2) Non-medical direct costs

Transportation costs, IT, human resources, volunteering services, regional services.

2. Indirect costs

Absenteeism, loss of earnings, loss of productivity, loss due to illness.

3. Intangible costs

Cost due to pain, worry or other emotional suffering.

4. Opportunistic cost

Cost of not using economic resources in its best (labour, capital etc.)

Consequences

Can be either positive or negative.

1) Positive Consequences: Measure of drug efficacy.

2) Negative Consequences: side effects, treatment failures, development of drug resistance etc.

Perspectives To Be Considerd In Pharmacoeconomics

1. Patient perspective

Al the relevant cost and consequences experienced by the patient.

- **Costs**

Direct

Indirect

Intangible

- **Consequences**

Clinical cure

Quality of life

2. Provider perspective

Concerned with the expenses of providing products or services

- **Costs**

Direct

- Consequences

Clinical cure

Consumer perspective value

3. Payer perspective

Social security/ government, insurance companies

- **Costs**

Direct

Indirect

- **Consequences**

Clinical cure

Consumer perspective value

Pharmacoeconomics In Indian Health Care Scenario

In India, allopathic and alternative medicine healthcare practices (Ayurveda, Unani, Siddha, and Homeopathy) operate side by side. Many patients switch from one practice to another when relief is not adequate. The quality of healthcare services is much better in the urban areas compared with rural areas. Some rural areas might have very minimalistic healthcare. The practice of procuring private healthcare for many people is on the rise.

Poor and middle class people do not have the same level of access to high quality health care.

India spends 5% GDP o health care. Of this, most of the expenditure is private out of pocket. The proportion of insurance in health care financing in India is very low. 10% of population is covered through health financing schemes.

In rural areas comprised of villages and small towns, primary health-centres and community health-centres are put into service by the state government. On the breadline, the rural population heavily depend on the government funded hospitals for procuring healthcare.

The challenge that the Indian government faces is to make healthcare affordable for the majority of people in the country who cannot afford healthcare.

In the Indian health insurance system, mostly inpatient services are covered, so it is necessary to stay for a day in the hospital to claim the insurance. This, instead of saving costs leads to cost inflation. It is necessary to have some mechanism in place, whereby the insurers can strike a contract with healthcare providers and healthcare systems that can help in cost containment.

Formulary system and pharmacoeconomics

Formulary creation involves preparing, updating, and using a list of essential medications with their detailed information (formulary manual) and standard treatment guidelines (STGs). A formulary list is an indicator of good pharmaceutical practice and rational drug usage. The formulary consists of appropriate therapies and cost-effective medications which are of a good quality.

Pharmacoeconomics aid in a better formulary decision management

1. **Availability of cost contained quality drugs:** When medications are purchased in bulk, there is more price competition and "economies of scale" for procuring, storing, and distributing the quality drugs. This makes it possible to provide drugs at subsidized rates to people who require them the most.
2. **Provision of quality care:** Healthcare personnel can be better trained to provide cost effective medications. Usage of cost-effective drugs will also make the practitioners prescribe fewer drugs whose drug interactions and adverse reactions they are aware of. This in turn will improve the provision of quality care as the selection of medication is evidence based.

PHARMACOECONOMIC EVALUATION

Pharmacoeconomic analyses are increasingly used to help decision-makers assess the value of health interventions. This value assessment promotes the effective and affordable use of healthcare resources. Different frameworks used in pharmacoeconomic analyses, with a focus on common modeling methods, are discussed. The following pharmacoeconomic analyses are compared and contrasted: cost-of-illness analysis (COI), budget-impact analysis (BIA), cost-comparison analysis, cost-minimization analysis (CMA), cost-effectiveness analysis (CEA), cost-utility analysis (CUA), cost-consequence analysis (CCA), and cost-benefit analysis (CBA). The commonly used modeling methods, including decision trees and Markov models, are compared.

Pharmacoeconomic evaluation explicit the measurement of cost (inputs) and measurable outcomes.

Aim

To identify the extent to which a particular decision or set of decision meets the the goals of promoting efficiency.

Pharmacoeconomic evaluation is mainly concerned with two aspects: Cost and Outcome. Outcome can be either positive or negative.

1) Positive outcome: Measure of drug efficacy.

2) Negative outcomes: side effects, treatment failures, development of drug resistance etc.

Steps in Pharmacoeconomic Evaluation

1) Defining the problem
2) Determining the study perspective
3) Determining the alternatives and outcomes
4) Selecting the appropriate pharmacoeconomic method
5) Placing monetary values on the outcomes
6) Identify study resources
7) Establishing the probabilities of the outcomes
8) Applying decision analysis
9) Discounting costs or performing a sensitivity or incremental cost analysis
10) Presenting the results with limitation

Methods of Pharmacoeconomic Evaluation

Pharmacoeconomic evaluation can be executed by major four methods:

1) Cost effective analysis
2) Cost benefit analysis
3) Cost minimisation analysis
4) Cost utility analysis

1. COST EFFECTIVE ANALYSIS

It compares two or more treatment options for a specific condition. I.e. multiple drug treatment for same condition.

Goal

To identify, examine and compare the relevant costs and consequences of competing drug regimens and interventions.

- Costs are measured in monetary units and it can be the acquisition cost, physician involvement or the nursing costs.
- The consequences in natural units such as: cases cued, lives saved, hospitalisation prevented.

Result is expressed as cost effectiveness ratio (CER)

CER= cost/effectiveness.

The lower ratio is the choice.

2. Cost Benefit Analysis

It compares the costs and consequences of alternatives expressed in monetary units.

Allows the identification, measurement and comparison of benefits and costs of a program or alternative.

CBA allows uniform comparison of programs or interventions with entirely different outcomes.

CBA has two purposes

1) To determine if it's a sound decision
2) Comparison of the total expected costs of each option against the total expected benefits, to see whether the benefits outweighs the costs and by how much

Useful when resources are limited and only one program can be implemented.

CBA should be employed when comparing treatment alternatives in which the costs and benefits do not occur simultaneously.

The costs and benefits are measured and converted into equivalent to dollars in the year in which they will occur.

Result is expressed as benefit to cost ratio

B: C ratio

If the B: C ratio equals 1, the benefits equals he cost

If the B: C ratio is less than 1, the program or treatment is not economically beneficial.

3. Cost Utility Analysis

Method to compare treatment alternatives or programs where

Costs are measured in monetary terms and outcomes expressed in terms of patient preferences or quality of life.

He, the intervention consequence is measured in terms of quantity and quality of life.

Outcome = intervention costs/QALY gained where QALY = yeas of life X utility value

4. Cost Minimisation Analysis

It compares the costs of two or more alternatives that have a demonstrated equivalence in therapeutic outcome.

i.e. Comparing multiple drugs of equal efficacy and equal tolerability. It is normally employed to compare two or more therapeutically equivalent agents or alternative dosing regimens of the same agent.

In this, only the input is considered and the least cost alternative is chosen.

It cannot be used to evaluate programmes or therapies that lead to different outcomes.

Types of Pharmacoeconomic Studies

1. Prospective studies: experimental studies that can be an additional part of a RCT/ cohort study.
2. Retrospective studies: data analysis of clinical trials / cohort studies that where conducted previously.
3. Model studies: performed as a method of displaying data obtained from a variety of resources if previously studied data are unavailable.

Indication of Pharmacoeconomics In Ayushman Bharath Projects In Rural India

On February 1, 2018, the Government of India launched Ayushman Bharat programme, which is a major step towards ensuring healthcare access to 100 million families or around 500 million individuals (around 40% of India's population).

The first initiative under Ayushman Bharat envisages the setting up of around 1.5 lakh health and wellness centres that will provide comprehensive healthcare, including non-communicable diseases, maternal and child health services as well as provision of free essential drugs and diagnostic services. While the Government has made an allocation of Rs 1,200 crore, it also envisages contribution of private sector via CSR as well as from philanthropic institutions.

India in the late 2000s moved towards a model where the state finances healthcare for the below poverty line citizens with minimum co-payment while wealthier citizens pay for tertiary healthcare services out-of-pocket. The primary programme in India, the Rashtriya Swasth Bima Yojana (RSBY, or the national health insurance programme) treated 11.84 million below poverty line patients from 2007 to 2016. Yet, low health expenditure coverage

and other barriers such as smart-card enrolment, have limited the adoption and use of insurance.

- Government expenditures.

The central and state governments must decide the level of reimbursement.

- Setting the level too low implies that not enough hospitals will participate, and the programme will have capacity shortfalls and potentially lower quality.
- Setting the level too high implies that the fiscal burden will be high, which might be unsustainable in the future.

- **Hospital participation**

Hospitals have to decide whether to participate in the programme, the specialties to offer, and how many beds to make available.

They also have to make micro-decisions on personnel and infrastructure that influence the type and quality of care received by patients.

Price (reimbursement) changes by the Medicare system in the US led to more "upcoding", or switch patients from lower-paying to higher-paying diagnosis.

Based on the management type, different types of hospitals and the people who work there, might care more or less for the service mission compared to profits.

But generally, greater quality costs more, and the treatment reimbursement rates will constrain participation and quality even for not-for-profit institutions.

Moreover, too many hospitals participating in the programme will increase competition and squeeze margins, which could lead to compromises on quality or other manipulations by hospitals. Conversely, lower hospital participation might reduce competitive pressures, which could potentially allow hospitals to increase expenditures on patients and increase quality.

More widespread provision of tertiary care will create a publicly financed private option for a large number of patients in many places around the country, constraining the rates charged even by non-participating hospitals. By lowering prices paid by patients across the sector, Ayushman Bharat could improve welfare far beyond direct beneficiaries.

- **Patient participation**

While the Ayushman Bharat reduces out-of-pocket payment, it is difficult for patients to ascertain the quality of care they receive, both before seeking treatment and once a procedure has been completed.

Measuring quality of healthcare is a challenge in itself and requires patient specific data on healthcare delivery. Apart from quality, several factors such as distance to empaneled health facilities and long-term care costs might impact patient participation.

The short-term projections are for the years 2019-2023. The objective is to arrive at the possible total costs of PMJAY for hospitalisation of beneficiaries for 2019-2023. For this, there are three important variables that would impact on the total costs (TC) incurred.

These are

- Target number of beneficiaries (B)
- Rate of hospitalisation (H)
- Average medical expenditure (E)

Essentially, in any year, the total costs of hospitalisation would be estimated as: $TC = B * H * E$ Currently, each of these three variables are not readily available for the current year. Moreover, to estimate the costs incurred for the next 5 years, one will have to make assumptions about the rate of change in B, H and E.

Pharmacoeconomics emphasise on the costs and benefits of treatment and pharmacoeconomic analysis deliver a foundation for resource allocation and employment. It is progressively getting vital for health policy decision-making. A pharmacoeconomic evaluation may be steered as an economic assessment incorporated into clinical trials. Such trials should compare the new drug/procedure with an older drug or existing intervention. Four techniques are used for economic evaluation, namely, cost-minimization analysis, cost-effectiveness analysis, cost-utility analysis and cost-benefit analysis. The choice of the evaluation method depends on the nature of outcomes and the context in which the choices need to be made. Pharmacoeconomics is a young science that will improve with application. Its need is undeniable, especially in developing countries.

REFERENCES

1. Jefford M, Stockler MR, Tattersall MHN. Outcomes research: what is it and why does it matter? Intern Med J., 2003; 33: 110–118.
2. Ahmad, A., Patel, I., Parimilakrishnan, S., Mohanta, G. P., Chung, H., & Chang, J. The role of pharmacoeconomics in current Indian healthcare system. *Journal of research in pharmacy practice*, 2013; *2*(1): 3–9. https://doi.org/10.4103/2279-042X.114081
3. Frean, M, J Gruber and B Sommers, "Premium subsidies, the mandate, and Medicaid expansion: Coverage effects of the Affordable Care Act", *Journal of Health Economics*, 2017; 53: 72-86.
4. The Ayushman Bharat Pradhan Mantri Jan Arogya Yojana and the path to universal health coverage in India: Overcoming the challenges of stewardship and governance Blake J. Angell, Shankar Prinja, Anadi Gupt, Vivekanand Jha, Stephen Jan Published: March 7, 2019. https://doi.org/10.1371/journal.pmed.1002759
5. Abarca J. Assessing Principles of Principles of Pharmacoeconomics. Int. J Pharm. Tech., 2005; 23(3): 76-89.
6. Dixon Thomas, Jennifer Marriott, Lucinda L. Maine,Chapter 1 - Introduction to Clinical Practice, Research, and Pharmacy Education, Clinical Pharmacy Education, Practice and Research, 2019; 1-9**.**
7. Ahuja J, Gupta M, Gupta AK, Kohli K. Pharmacoeconomics. Natl Med J India, Mar-Apr, 2004; 17(2): 80-3. PMID: 15141600.
8. Liu GG, Eggleston K, Hu T. Emerging health economics and outcomes research in the Asia-Pacific region. Value Health, 2008; 11: S1–S2.
9. Kozma CM, Reeder CE, Schulz RM. Economic, clinical, and humanistic outcomes: a planning model for pharmacoeconomic research. ClinTher., 1993; 15: 1121–32. discussion 1120.
10. Shah J, Pawaskar A, Kumar S, Kshirsagar N. Outcome's research resources in India: current status, need and way forward. SpringerPlus, 2013; 2: 518.