Pharmaco-economics: Essential but merely practiced in Bangladesh

Accepted 21st November, 2018

ABSTRACT

Pharmaco-economics has been defined as the description and analysis of the cost of drug therapy to healthcare systems and society. More specifically, pharmaco-economic research is the process of identifying, measuring and comparing the costs, risks and benefits of programs, services, or therapies and determining which alternative produces the best health outcome for the resource invested. This information can assist clinical decision makers in choosing the most cost-effective treatment options. Pharmaco-economics is a division of outcomes research that can be used to quantify the value of pharmaceutical care products and services. Pharmaceutical care has been defined as the responsible provision of drug therapy for the purposes of achieving definite outcomes. The purpose of the research is to discuss the projection of drug use, cost control and monitoring status in Bangladesh. Bangladesh is a highly populated country. Economic development and academic flourishing do not represent development in health sector. Out of the pocket treatment cost raised nearly 70% in the last decade. There is a poor vigilance on drug purchase or treatment cost along with a lot many cases of irrational drug use and poor access to healthcare facilities for the individuals. A comprehensive year-round literature search, which included books, technical newsletters, newspapers, journals and many other sources was conducted in this research. Medicine and technical experts, pharma company executives and representatives were interviewed. Projections were based on estimates such as drug end users, providers or prescribers, irrational drug use and its implication along with poor vigilance by regulatory authorities. Very few articles found in matters regarding along with a very less interest paid by general people to talk about medicine use and prescription. It was very difficult to bring out facts of cost control of drugs/treatment because business mentality of the providers very little knowledge about drugs crippled the facts. The main aim of this article was to cost control analysis of drugs and therapy in Bangladesh. Along with students, researchers and professionals of different background and disciplines, for example, Pharmacists, marketers, doctors, nurses, hospital authorities, public representatives, policy makers and regulatory authorities have to acquire much from this article. Rational drug use is the essence of healthcare system in a country like Bangladesh as there is a scarcity of resources, fewer access to the people for adequate and better treatment. The article should contribute an integrated guideline for patient compliance, demand pharmaco-vigilance and studies on PE and last but not the least a silvery lining to better treatment in the near future.

Key words: National Drug Policy (NDP), Drug Control Ordinance, Essential Medicine, Standard Treatment Guidelines (STG), Health Related Quality of Life (HRQL), Managed-care organizations (MCOs).

INTRODUCTION

Globally, patients are affected by the high price of drugs. In many developing countries, a high percentage of total health expenditure is financed by household out of-pocket expense. Many poor people frequently face bitter decisions between purchasing medication or buying such necessities as grocery and clothing due to limited resources and the high price of the prescription. Therefore, the issue of medication and drug therapy is very vital to the society especially to those in need of medical services with limited financial resources. Health care costs increases on a yearly basis and is more than the average rate of inflation. This continued increase in costs has resulted in a need to
understand how limited resources can be efficiently and effectively used.

The role of pharmaco-economics in many developing countries is in the early stages with a limited knowledge of the subject matter. Therefore, lack of education and understanding of the topic limits the decision making by the health providers and health authorities.

The general necessity of pharmaco-economics

The general necessity of pharmaco-economics includes:

1) Pharmaco-economics is essential in several sectors such as healthcare industry in order to decide amongst precise research and development options;
2) It is needed in government to determine program benefits and its operating expense;
3) The third area of need is in the private sector to facilitate the formulation of insurance benefits coverage. Basically, the PE is needful in the following areas:
    i) In industry, it is useful in deciding among specific research and development alternatives;
    ii) In government, it is used in determining program benefits and prices paid and in the private sector it can be used for designing insurance benefit coverage;
4) Additionally, it describes the economic relationship involving drug research, drug production, distribution, storage, pricing and its use by the society. It runs on the thread of our socio-economic system, which regulates and influences all the sectors involved in pharmaceuticals (Kemal et al., 2015).

PERSPECTIVES OF PHARMACO-ECONOMICS

Patient perspective

Patient perspective is paramount because patients are the ultimate consumers of healthcare services. Costs from the perspective of patients are essentially what patients pay for a product or service—that is, the portion not covered by insurance.

Provider perspective

Costs from the provider’s perspective are the actual expense of providing a product or service, regardless of what the provider charges. Providers can be hospitals, managed-care organizations (MCOs), or private-practice physicians. From this perspective, direct costs such as drugs, hospitalization, laboratory tests, supplies and salaries of healthcare professionals can be identified, measured and compared.

Payer perspective

Payers include insurance companies, employers, or the government. From this perspective, costs represent the charges for healthcare products and services allowed or reimbursed by the payer. The primary cost for a payer is of a direct nature. However, indirect costs, such as lost workdays (absenteeism), being at work but not feeling well and therefore having lower productivity (presenteeism), also can contribute to the total cost of healthcare to the payer.

Societal perspective

Theoretically, all direct and indirect costs are included in an economic evaluation performed from a societal perspective. Costs from this perspective include patient morbidity and mortality and the overall costs of giving and receiving medical care. An evaluation from this perspective also would include all the important consequences an individual could experience. In countries with nationalized medicine, society is the predominant perspective (Lisa, Access Pharmacy).

Pharmaco-economic doctrine

Pharmaco-economic doctrines include the following:

1) Pharmaco-economics search to define and analyze the costs of medication therapy to the healthcare system and society;
2) Principles employed on different ECHO (economic, humanistic and clinical outcomes) using the methodology of PE;
3) Health care costs categorized as direct medical, direct nonmedical, in direct nonmedical, intangible, and opportunity costs;
4) In comparing various health care choices, economic valuation methods used, including cost minimization, cost-benefit, cost-effectiveness, and cost-utility analyzes;
5) Comparisons expressed in monetary units, ratios, or mixed units nine such as dollars per quality - adjusted life-year);
6) The cost of illness assessments classifies and estimates the inclusive cost of a particular illness for a distinct population. Nevertheless, COI is not utilized to relate alternative choices;
7) In pharmacy practice, pharmaco-economic methods employed for effective management of formulary, treatment of individual patient, termination of medication program, and resource distribution;
8) Several factors should be measured when evaluating published pharmaco-economic studies. Such factors include:

i) Research objective,
ii) Education perspective,
iii) Pharmaco-economic method,
iv) Study design,
v) Choice of interventions,
vi) Costs and consequences,
vii) Discounting,
viii) Study results,
ix) Sensitivity analysis,
x) Research conclusions and;
xi) Sponsorship.

Pharmaco-economic challenges

The major challenges for Pharmaco-economics include:

1) Developing guidelines and procedures for standards of practice;
2) Building a framework for well-skilled producers and clients of PE evaluations;
3) Continuing education on the pertinent features of this discipline for practitioners, government officials and private sector executives;
4) Stable funding to support applied pharmaco-economic research;
5) Creating a cadre of trained producers and consumers of pharmaco-economic work;
6) Lack of full appreciation of the potential importance and application of Pharmaco-economics studies;
7) Poor technical skills of healthcare professionals, especially of pharmacists;
8) Lack of appropriate database of the healthcare system in order to bring about research adaptation from another country (Kemal et al, 2015).

SCOPE OF PHARMACOECONOMICS

Pharmaceutical manufacturers

Pharmaco-economics has been a very useful tool long before a drug is approved for use by the FDA. Pharmaceutical manufactures need to spend enormous resources in the drug development process. If proper pharmaco-economic research is conducted the manufactures can avoid spending vast resources on the development of a drug that does not provide competitive advantage. Competitive advantage in the present healthcare environment may be defined as a drug that is cost effective. Cost effective can mean a drug that is 1) less costly and at least as effective as an alternative; 2) more effective and costlier than an alternative, but improved health outcomes justify additional expenditures, or; 3) less effective and less expensive than an existing alternative, but a viable alternative for some patients; 4) cost efficacy and QOL components can be incorporated into appropriate phase III studies to provide additional information regarding drugs impact on patient outcome.

If such parameters are applied systematically to all new treatment candidates, the scientific basis of drug therapy decision making will substantially increase.

Healthcare practitioners

One of the primary uses of PE in clinical practice is to aid clinical and policy decision making. Complete pharmacotherapy decisions should contain three basis of evaluation components: 1) clinical; 2) economic and 3) humanistic outcomes.

Through the appropriate application of Pharmaco-economic principles and methods incorporating these three critical components clinical decision can be accomplished. Pharmaco-economic data can be a powerful tool which supports various clinic decisions, including:

1) Effective formulary management;
2) Individual patient treatment;
3) Medication policy and resource allocation.

Pharmaco-economic data can support the inclusion or exclusion of a drug on or from the formulary and support practice guidelines that promote the most cost-effective or appropriate utilization of pharmaceutical products. Various strategies can be used to incorporate PE into formulary decision making.

In fact, the pharmaco-economic assessment of formulary action is becoming a standardized part of many pharmacy and therapeutic (P and T) committee decision making process; when competing for hospital resources, PE can provide the data necessary for pharmacy service to maximize the resources allocated to it by hospital administration.

To Pharmacists

Drug use evaluation is one of the important services provided by pharmacists. Ideally, that value should be translated into patient and financial outcomes. Apart from concentrating on inappropriately prescribed therapy and overprescription, drug use evaluation focuses on the most cost-effective therapy. A high degree of sophistication is required in order to make such determination fairly, considering patient factors, disease factors and other issues. Drug formulary services, pharmacy and therapeutics committees are viewed as a means of reducing drug
budgets and have some values in encouraging drug therapy cost considerations, but they do not provide incentives to take into account overall medical costs, nor do they necessarily consider consequences such as potential drug interactions, adverse reactions and treatment response rates. Conducting cost-effectiveness studies allows an evaluation of total costs and consequences from various perspectives (Soniya et al., 2015).

APPLICATION OF PHARMACO-ECONOMICS

PE utilizes inform decision-making; moreover, this decision making in pharmacy perspective is divided into two fundamental points:

1) The evaluation of drug therapy;
2) Evaluation of clinical pharmacy.

Traditionally, PE methods were applied in the field of hospital pharmacy activities. The cost-effectiveness data were used to support the addition or deletion of a drug to or from a hospital formulary. However, currently, the pharmaco-economic measurement of formulary procedures has become a standardized part of numerous pharmacies and therapeutic team. In the past, PE was mostly applied to drug therapy evaluations; however, different studies reveal a shift over the years in using PE for the justification of pharmacy services decision-making. Possible barriers to application of PE for drug decision-making include:

1) The inadequacy of PE sophistication by hospital administrators and pharmacy directors;
2) Incompetency of PE sophistication by pharmacy practitioners that create and interpret PE data;
3) Deficiency of organizational resources in the application of PE such as time and financials;
4) Financial plan and budgetary responsibilities (Akram et al., 2013).

Pharmaco-economic studies find value in:

1) Fixing the price of a new drug and re-fixing the price of an existing drug;
2) Finalizing a drug formulary;
3) Creating data for promotional materials of medicines;
4) Compliance of requirement for drug license;
5) Including 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.

GENERAL HEALTH MATTERS OF BANGLADESH

Bangladesh is considered a developing country with more than 75% of the total (142 million) population living in rural areas. Though majority of the population live in rural areas, the government healthcare system remains a very minor source of health care there. About 26% of professional posts in rural areas remain vacant and there is high rate of absenteeism (about 40%). Treatments in the rural areas are mainly (about 45%) provided by unqualified health personnel including medical assistants, mid-wives, village doctors and community health workers in comparison to that by qualified medical graduates (only 10 to 20%). Over-prescription and inappropriate prescription are very common in the country due to unethical practices of both health professionals and manufacturers (Saidul, 2006).

Health expenditure statistics

According to World Data Atlas, out of pocket expenditure as a share of current health expenditure for Bangladesh was 71.8%; this is also supported by health financing profile 2017, Bangladesh. The out of pocket expenditure as a share of the current health expenditure of Bangladesh increased from 65.1 in 2001 to 71.8%, respectively in 2015 growing at an average annual rate of 0.72%. Real expenditure on health was 4,107 million US dollars.

In a developing country like Bangladesh, 85% of total health expenditure is financed by house-hold out of pocket expenditure. Many poor people frequently face a choice between buying medicines or buying food or other necessities due to limited resources and high pricing of drug. Bangladesh Development Studies, 2013 reports that the public health facilities suffer from inadequacies and physical accessibility (distance, travel time and travel costs) is no longer a major barrier, economic feasibility (cost of medicine, cost of consultation, cost of hospitalization and cost incurred with respect to tests/investigations) remains a major hurdle. The poorest are the largest users of public health facilities but they also bear a disproportionate share of the burden of ill health and sufferings (Mannan, 2013).

Prescription patterns of drugs

Despite legal prohibitions, numerous drugs with similar or no significant benefits are available in the market. As a specific example, there are seven members of the Angiotensin-Converting Enzyme (ACE) inhibitors available in the country. The efficacies and chemical structures of these molecules are more or less similar, but their prices vary (Mohammad, 2008). The drug policy clearly prohibits the production of multi-ingredient preparations of vitamins and minerals with the exception of B-complex vitamins, but a mixture of 32 vitamins and minerals including selenium, vanadium, molybdenum, tin and many other unnecessary ingredients has been marketed in the country for a few years, violating the principles of the NDP. The need for
these trace elements in Bangladesh is not established whereas nutritional deficiencies are mainly related to vitamins A and B-complex, iron, calcium, iodine and zinc. Irrational prescription and use of antibiotics are rampant throughout the country, with an estimated half of all antibiotics being sold without prescriptions (Saidul, 2008).

**Inappropriate use of prescription drugs**

The drug use studies involving outcomes, adverse reactions and bioavailability in Bengali population has never been seriously looked into in Bangladesh. Like all other developing countries, irrational and inappropriate use of medicines is very common in Bangladesh. Recent study showed that about half of the antibiotics were sold without any prescriptions, and even ordinary people without any knowledge of medicine asked the drug seller for specific antibiotics. Moreover, self-medication is a common practice among laypeople. In addition, drugs like syntocinon (a hormonal injection which is given to pregnant women to ease labor) is being sold or used indiscriminately in-home deliveries in rural Bangladesh, which is readily available without prescription (Saidul, 2006).

**Misuse of OTC drugs**

In real sense, there is no 'prescription of only drug' in Bangladesh at present. One can get any drug from anywhere. There is no prescription without money. Over the counter (OTC) drugs have emerged recently as drugs of serious misuse across Bangladesh, and other neighboring countries. One report estimates that there are four million drug misusers in the South Asian region, with Bangladesh accounting for nearly 500,000.

Self-medications in a population with low literacy level like Bangladesh are very challenging and this poses risks such as incorrect diagnosis, absence of knowledge of alternative treatments, irrational use of drugs and neglecting side effects and drug interactions. The study showed that about 30 to 40% of disadvantaged population including the women, elderly, ethnic minorities, poor / ultra-poor undertake self-medications for managing illness (Babu, 2007).

**Lack of availability and accessibility of essential drugs**

Though the official documents showed that about 80% of the people of Bangladesh had sustainable access to affordable essential drugs in Bangladesh, there are numerous evidences of frequent and persistent unavailability of essential drugs in the government health facilities. Most of the in-patients (86%) reported paying for medicines from outside. As with rural areas, unavailability of essential drugs in the urban government health facilities is often very common. Theft and illegal sale of essential medicines from the government hospitals are very common. Officials in-charge of hospital drug stores sell these drugs to local pharmacies instead of supplying to the poor patients (Saidul, 2006).

**Lack of control over drug prices**

In Bangladesh, the Maximum Retail Price (MRP) of every essential drug is fixed by the Directorate of Drug Administration (DDA); for all other drugs the DDA endorses the companies’ quoted prices. Drug prices are quite high in Bangladesh in comparison to neighboring countries. The drugs control authority is apparently reluctant in negotiating with the companies to fix prices. The regulatory authorities have virtually no control over drug prices in Bangladesh. Indiscriminate pricing can be observed in all therapeutic classes of drugs. For example, prices of various ciprofloxacin brands range from Taka (Tk) 5 to 14 (US$ 0.07 to 0.20) per unit. The price of Dexamethasone eye drops extends from Tk 24 to 90 (US$ 0.34 to 1.29) per 5 ml, and Didofenac eye drops are available at a price range from Tk 40 to 200 (US$ 0.57 to 2.86) per unit. These are a few of the existing price discrepancies in the country. Easy excessive profits made pharma companies reckless and thus make them to make misleading statements implicating Dollar Taka conversion rate as a reason for increase in price. As a counter misinformation, there is continuous propagation that pharma exports will soon overtake garment export. Present pharma export is not even 1% of total national export (Saidul, 2008).

**CONCLUSION**

PE evaluation has become an important area of interest to find optimal therapy at the lowest price as healthcare resources are not easily accessible and affordable to many patients. Numerous drug alternatives and empowered consumers also increase the need for economic evaluations of pharmaceutical products. In developing countries, PE can help the poor and middle class to obtain good health care services because many households are below poverty line and unaffordable for private health care. Costs of the medicines are constantly growing. In countries with scarce resources and an ever-growing population with diverse health care needs, an innovative method called, pharmaco-economic evaluation plays an essential role in determining the delivery of reasonable and cost-effective health services. Applied PE has been lacking as the most vital practice of pharmacy. Understanding the principles, methods and application of PE enables pharmacists to make healthier and more informed judgments concerning the use of pharmaceutical goods and services. Specifically,
decisions ultimately represent the best welfare of the patient, the healthcare system, and society. PE is applied to any therapeutic area like hospital pharmacy, using a variety of application plans.

RECOMMENDATIONS

Health economists generally advocate the societal perspective. In addition to encouraging appropriate societal health care resource allocation, this promotes standardization of reported results, so that the cost-effectiveness of different treatments can be handily compared across different studies. In any specific context, it certainly may be valuable and useful to also describe the costs and outcomes of a medical intervention from narrower perspectives, but only when the societal reference case perspective is also provided. Convincing all pharmaco-economic guideline developers to adopt such a position would go a long way towards ensuring global guideline consensus.

ACKNOWLEDGEMENT

It’s a great gratitude and honor to be a part of healthcare research and education. Pharmacists of all disciplines that I have conducted was very much helpful in discussing healthcare situations in Bangladesh, necessity of PE, vigilance and rational drug use, providing books, journals, newsletters and precious time. The greatest help was from my students who paid interest in my topic as class lecture and encouraged me to write such article comprising of rational drug use, current situation and management in Bangladesh. Despite a great scarcity of funding this purpose from any authority, the experience was good enough to carry on research.

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Cite this article as:
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