HEALTH ECONOMICS

MASTER OF BUSINESS ADMINISTRATION
(HOSPITAL ADMINISTRATION)

FIRST YEAR,

SEMESTER-I, PAPER-III

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FOREWORD

Since its establishment in 1976, Acharya Nagarjuna University has been forging ahead in the path of progress and dynamism, offering a variety of courses and research contributions. I am extremely happy that by gaining 'A+' grade from the NAAC in the year 2024, Acharya Nagarjuna University is offering educational opportunities at the UG, PG levels apart from research degrees to students from over 221 affiliated colleges spread over the two districts of Guntur and Prakasam.

The University has also started the Centre for Distance Education in 2003-04 with the aim of taking higher education to the door step of all the sectors of the society. The centre will be a great help to those who cannot join in colleges, those who cannot afford the exorbitant fees as regular students, and even to housewives desirous of pursuing higher studies. Acharya Nagarjuna University has started offering B.Sc., B.A., B.B.A., and B.Com courses at the Degree level and M.A., M.Com., M.Sc., M.B.A., and L.L.M., courses at the PG level from the academic year 2003-2004 onwards.

To facilitate easier understanding by students studying through the distance mode, these self-instruction materials have been prepared by eminent and experienced teachers. The lessons have been drafted with great care and expertise in the stipulated time by these teachers. Constructive ideas and scholarly suggestions are welcome from students and teachers involved respectively. Such ideas will be incorporated for the greater efficacy of this distance mode of education. For clarification of doubts and feedback, weekly classes and contact classes will be arranged at the UG and PG levels respectively.

It is my aim that students getting higher education through the Centre for Distance Education should improve their qualification, have better employment opportunities and in turn be part of country's progress. It is my fond desire that in the years to come, the Centre for Distance Education will go from strength to strength in the form of new courses and by catering to larger number of people. My congratulations to all the Directors, Academic Coordinators, Editors and Lesson-writers of the Centre who have helped in these endeavors.

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MASTER OF BUSINESS ADMINISTRATION
(HOSPITAL ADMINISTRATION)
Programme Code: 197

PROGRAMME SYLLABUS

1st YEAR – 1st SEMESTER SYLLABUS

103HA26: HEALTH ECONOMICS

Unit – I: Health Economics: Need & Scope of Health Economics; Principles of Health Economics; Basic Economic Concepts – Application of Economics to Business Decisions

Unit – II: Demand Analysis: Law of Demand – Elasticity of Demand –Utility and Health; the Demand for and Supply of Medical Care- Demand Forecasting in relation to health services – Techniques of Demand Forecasting;

Unit – III: Market Structures and Price – Output Decisions: Market Structures – Price out Put determination under Perfect Competition; Monopolistic Competition

Unit – IV Healthcare Reforms in India: Healthcare Policy; Experiences of healthcare reform, Impact of reform; Economic Evaluation of National Health Program. The Impact of Economic Evaluation on Decision Making in Healthcare, Government involvement in healthcare market

Unit – V Health Policy: Health Policy Conundrum– Arrow's Impossibility Theorem, Health Policy Trilemma, Working of health insurance markets, regulation of healthcare providers, comparing National Health Policies, Bismark Model.

Reference Books:

1. Thomas and Maurice, “Managerial Economics”, Tata Mc-Graw Hills.
2. Ahuja, H.L., “Managerial Economics”, S-Chand.
3. Charles E. Phelps “Health Economics” Routledge Publications. 6th Edition 2017
4. David Wonderling, Reinhold Gruen, Nick Black “Introduction to Health Economics” Open
5. University Press 2018 revised edition
6. Dutta Shuvendu Bikash “Health Economics for Hospital Management” Jaypee Brothers
7. Medical Publishers.
8. Dr D Amutha “A Text Book of Health Economics” IBP Publisher, 2016
9. By Frank A. Sloan and Chee-Ruey Hsieh “Health Economics” The MIT Press, 2019
10. Battacharya, Jay Hyde Timothy & TU Peter (2014). Health Economics. Palgare Mac
11. Miller Publication.

CONTENTS

UNIT-I

"Health economics" as a course is meant to give medical, health officer and other paramedical students basic principles regarding economics and its application to the health sector. Therefore, this material should be regarded as an introduction to health economics rather than to economics. Concepts and the analyses presented in this document will help to serve as working material so that students and others could understand and apply basic ideas of economics to the health sector. Every health worker needs to acquaint him/her with the basic concepts of economics and its application to the health sector in order to manage health institutions and health delivery system efficiently.

LESSON-1

NEED & SCOPE OF HEALTH ECONOMICS STRUCTURE

OBJECTIVES

After reading this lesson, you should be able to

- ✓ Understand what Health Economics is
- ✓ Understand the concept of Health Economics
- ✓ Understand the Scope and Significance of HE
- ✓ Know how to apply the economic concepts to business decisions.

STRUCTURE

1.1 INTORDUCTION

In India, the need for health care is increasing due to rapid population growth and changes in disease pattern. Related with this, health care costs are expected to be rapidly increasing. Apart from explosion of costs, inequity, misallocation and inefficiency are believed to be serious challenges to the health care system. These problems put a considerable strain on our limited health care resources.

The Indian health care sector is one of the fastest growing industries and is expected to grow at a compound annual growth rate of 17% during the period 2011 to 2022 to touch US $380 billion. It is expected to rank among the top three health care markets in terms of incremental growth by 2025. Spending on health care in India was an estimated 5% of gross domestic product in 2013 and is expected to remain at that level through 2016 and is expected increase 9%.. Total health care spending in local currency terms is projected to rise at an annual rate of more than 12%, from an estimated to $195.7

billion in 2018 to $220 billion in 2024. Although this rapid growth rate will reflect high inflation, it will also be driven by increasing public and private expenditures on health.

However, the proportion of insurance in health care financing in India is very low. The extent of coverage and the type of coverage are key issues related to insurance penetration. Only around 10% of the population is covered through health financing schemes. Selection criteria by suppliers often restrict the poor (and more likely to be ill) from affordable prepayment schemes. Many patients in India have been forced below the poverty line because of health care expenditure. Nearly 40% of Indians who were hospitalized in 1995-1996 fell into debt on account of paying for hospital expenditures, with nearly a quarter falling below the poverty line as a result. The risk of falling into poverty when hospitalized ranged from 17% in Kerala to double that in Uttar Pradesh.

At this juncture, Health economics is becoming a term commonly used in public policy documents, in the medical and scientific literature, and in the lay press. There are also very visible signs of change in the health care market. Attention is shifting from the "passive" funding and administration of systems, in which physicians identify and provide appropriate care, to concerns about the resource costs of care and the health outcomes achieved from providing care.

Health economics is concerned with the alternative uses of resources in the health services sector and with the efficient utilization of economic resources such as Human resource, material and financial resources.

"The study of how men and society end up choosing to employ scarce resources that could have alternative uses" (Samuelson). Economics is the study of how people allocate theirϖ limited resources in an attempt to satisfy their unlimited wants. As such, economic is the study of how people make choices. It is also the study of scarcity and choice finally helps how to use scarce or limited resource.

The subject matter of economics lies on the production, distribution and consumption of economic goods. How much should be spent on education, health, books, travel, food or clothing is of course a matter of political, social or simply personal judgment as well as a question for the economist. However, as soon as people have the necessity to choose between having relatively more in the way of health services at the cost of having relatively less leisure or less to spend on education, they are "economizing". One way in which an economy operates is by permitting the price of services and of goods to reflect the costs of rendering those services and producing the goods. When this happens, we have a private enterprise economy or economic system. An alternative method of determining what shall be produced is for the state to plan or dictate industrial and other management boards the various levels or targets to be aimed at.

The health for all (HFA) policy aims to maximize people's physical, social and emotional health, and their social and economic contributions. The ethical values incorporated in the concept are acknowledged, for example, in the statement that health is a fundamental human right, as is equity in health, opportunities for participation in health policy, and accountability of decision makers. The field of health economics can contribute to the promotion and implementation of HFA policy. It offers a particular framework for thinking, as well as methods of investigation and analysis, and empirical evidence.

Health economics is important in determining how to improve health outcomes and lifestyle patterns through interactions between individuals, healthcare providers and clinical settings. In broad terms, health economists study the functioning of healthcare systems and health-affecting behaviors such as smoking, diabetes, and obesity.

1.2 Concept of Health Economics

1.2.1 Meaning of Health Economics

Health Economics is the combination of two terms – one is Economics and the other is Health. Before defining it let's focus what actually Economics and Health means separately.

Economics: a social science; the study of human behaviour when confronted with scarcity. Hence it is the science of scarcity. It analyses how choices are structured and prioritised to mximise welfare with the constrained resources. So, Economics is the study of distribution of scarce resources coomnlu known as goods and services across a population. In other words, economics is the science that deals with the consequences of resources scarcity. The discipline of economics deals with the use of scarce resources to satisfy human needs and wants how best to use the available resources.

Scarcity, choice and prioritisation Scarcity of resources requires individuals to choose which goods and services they consume. The basis for their choice is the relative value that they place on each good or service. The structure of these relative values is the basis for their system of prioritisation.

"Economics is the science of scarcity. The application of health economics reflects a universal desire to obtain maximum value for money by ensuring not just the clinical effectiveness, but also the cost-effectiveness of healthcare provision".

Achieving 'value for money' implies either a desire to achieve a predetermined objective at least cost or a desire to maximise the benefit to the population of patients served from a limited amount of resources. This requires services to be evaluated for 'cost-effectiveness'.– Alan Hycox

Resources

When we consider the resources available to us, we normally think about financial resources. The economists' definition, however, is far wider and encompasses the time, energy and skills exhibited by the individual, together with the buildings and equipment that he or she may possess. A resource may therefore be consumed (time and effort expended in developing an idea) even if there is no associated financial payment.

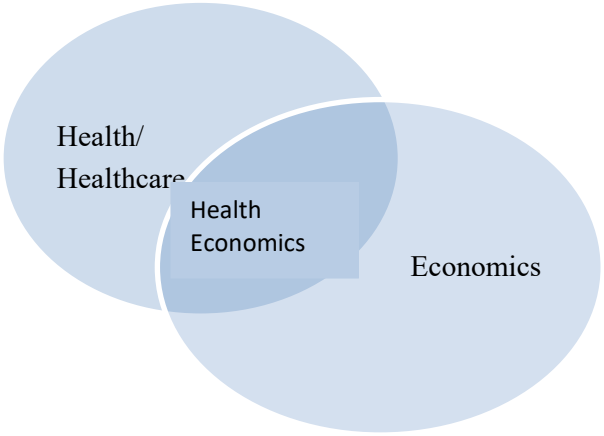
Health

According to World Health Organisation's (WHO) constitution, health is 'a state of complete physical, mental and social wellbeing and merely the absence of disease or infirmity'

Health Economics

• Health Economics is a sub-discipline of economics, and arguably one of the most impactful e.g., in terms of its influence of economics on policy and practice.

Health Economics is the study of distribution of healthcare. It's a branch of economics concerned with issues related to efficiency, effectiveness, value in the production and consumption of health and healthcare.



The application of economic theory, models and empirical techniques to the analysis of decision making by individuals, health care providers and governments with respect to health and health care.

1.2.2 Definition of Health Economics

Health Economics can be defined as the application of Economic theories, tools and concepts as a discipline to the topics of health

and health care. Since health economics is concerned with issues related to the allocation of scarce resources to improve health, this includes both resource allocation within the economy to the health sector and within the health care system to different activities and individuals.

After keen observation of the definition of Health Economics, the following points can be highlighted. They are:

1. Health Economics is a branch of Economics.
2. It is the study of distribution of healthcare services
3. It is an application of economic theories into healthcare decisions.
4. It is related to the efficiency and effectiveness of production. Consumption and distribution of health and healthcare.

1.2.3 Characteristic features of healthcare market

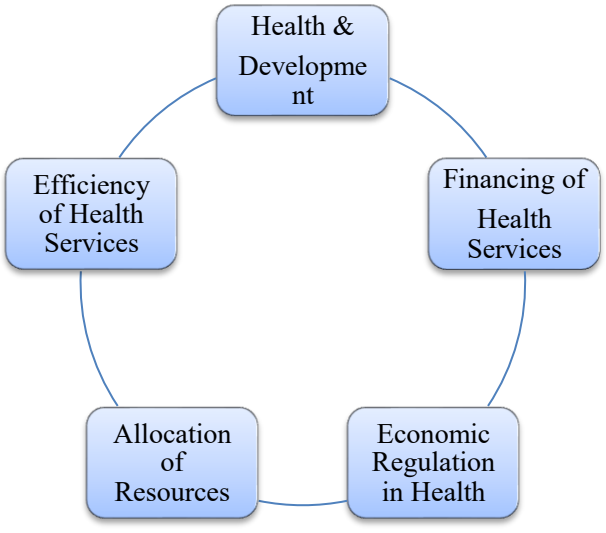
Some of the characteristics of the healthcare system in general and primary care in particular make the free market very difficult to work in these settings. Some of these peculiarities are:

- Uncertainty: Uncertainty about the risk of contracting an illness. Because the unpredictable nature of the illness, the consumer cannot plan for the future consumption of healthcare. In a free market, the market will respond by generating insurance mechanisms with high premiums to cover for this uncertainty. These premiums may not be affordable for some parts of population.
- Externalities: An externality appears when one person's action affects another person. This effect is absolutely free and unwanted. An example of positive externality is the immunity protection that unvaccinated people get from vaccinated people. In a free market for health, the cost and benefits of these externalities cannot be accounted for using the rules of supply and demand.
- Very wide and deepen market: The healthcare markets size is very large. The medical and healthcare facility now-a-days became common as a necessity. Almost every person irrespective of the age, caste and creed whether directly or indirectly connected to the health system.
- Information asymmetry: between providers (health professionals) and consumers (patients). In a free healthcare market, it is very difficult for patients to know which the best product on offer is. Healthcare professionals have a double role as providers and advisers and this can create a conflict of interest.
- Access to Medical Trainings: is restricted. This means that the number of suppliers (doctors and nurses) is regulated and limited, making difficult to increase supply in an ideal free market.

Because the failures of the market in the allocation of healthcare, it is usual in most of the countries that the government intervenes in the regulation of the healthcare market.

1.3 Need & Significance of Health Economics

As per the World Health Organization (WHO), in countries such as India, people who pay for their health care services suffer "catastrophic costs." While millions suffer and die in absence of access or inability to afford medical care, many others suffer because they end up paying through debts, selling assets, and so forth.



Citizens' expectations for health care are becoming high in developing countries such as India, where people are becoming accustomed to better standards. People now demand latest treatments, timely, affordable care, and a range of choices. They are better informed than ever about their health and their treatment options. They are prepared to take some responsibility for their own health, but broadly they do not want to have to pay a lot more than they already are for their health care.

The goal of any health care intervention is to improve health with available preventive measures, treatments, and medical procedures. The variation in health services provision across the country, along with increasing health care expenditure, accentuates the need for effective utilization of health care resources. At this juncture, the importance of Health Economics has been increasing. The need and significance of health economics is growing day by day.

1. To formulate health services
2. To establish the true costs of delivering healthcare or to estimate all real costs like the use of patients' time, loss of output elsewhere in the system etc.
3. To evaluate the relative costs and benefits of particular policy options
4. To estimate the effects of certain economic variables like user charges, time and distance costs of accessibility, etc on the utylisation of health services.

1.4 Scope of Health Economics

The manifold applications of health economics are yet to become popular in India. Recent growth of insurance market in India paved grounds for origin of health economic literature. A brief sketch on Govt. sponsored health insurance in India with detailed description on cost containment is discussed in a World Bank sponsored study. High out of pocket spending is the cause of catastrophic shock which is increasingly being disclosed by the following other studies. Saumya Misra and team describe the burden of Out of pocket expenditure across income quintiles in urban Lucknow. The authors emphasize the need for introduction of insurance, especially for the poorer sections to absorb high indirect health expenditure. The relation of Janani Suraksha Yojana program and out of pocket spending was studied by Hanimi Reddy and team, illustrating the example of birth deliveries in India. Kent Ranson describes an instance of financial protection through a non-governmental organization named SEWA. This is an example of social insurance model to prevent catastrophic shock. The case of cost savings incurred by opting cost-effective treatment regimes in the form of standard treatment guidelines was studied and described by Federation of Indian Chambers of Commerce and Industry (FICCI) study group.

Health economics is not merely an application of the economist's tools to the specific area of health or medical care, but is a distinct intellectual tradition that discusses specific issues (such as the nature of demand for health care or demand for health insurance) and develops specific tools to address these issues.

1.5 Principles of Health Economics

The principles of health economics consider supply and demand issues and how the two might interact given that the standard market solution generally fails due to problems such as:

- Adverse selection,
- Moral hazard,
- Asymmetric information
- Supplier induced demand.

Adverse selections: A situation often resulting from¬ asymmetric information in which individuals are able to purchase insurance at the rates that are below actuarially fair rates plus loading costs. An event in healthcare whereby one party decides not to reveal the full extent of their risk profile to the other party (i.e. insurance model).

Moral hazard: The possibility of consumers or providers exploiting a benefit system unduly to the disadvantages of other consumers, providers or the financing community as a whole.

Asymmetric information: Situations in which the¬ parties on the opposite sides of transaction have differing amounts of relevant information. Doctors have more knowledge and information about medicine than patients /consumers, the individual may not be the best judge of his/her own interests, the doctor acts as an agent of the patient's demand.

Supplier Induced Demand An insurance term that represents the disincentives created by insurance for individual to take measures that would reduce the amount of care demanded. In the health services literature, it is more commonly used to express the additional quantity of health care demanded, resulting from a decrease in the net price of care attributable to insurance. Arises where the attitudes and behaviour of a person or organization change once they are covered for potential costs or losses (e.g. healthcare consumption may be higher when insured.)

1.6 Conclusion

Understanding the state of health within a nation and differences between communities in relation to their health status requires thinking about the determinants of health, which include not only the quality and quantity of health care facilities available but also the level of education, state of the housing stock, nutrition and diet of the population, and economic state of the nation and its citizens.

Since Adam Smith published The Wealth of Nations in 1776, the relationship between economic productivity and the health of society has been recognised. Longitudinal studies, with a range of designs, provide reasonably good evidence that unemployment itself is detrimental to health and has an impact on health outcomes – increasing mortality rates, causing physical and mental ill health and greater use of health services.

The relationship between expenditure on health care services and the health status of a population is not directly proportional. It is far too simplistic to argue that in order to improve the health of the nation and reduce inequalities additional resources need to be channelled into health care services. The USA spends approximately 14% of its gross domestic product (GDP) on health care, over 2.5 times the average health expenditure of the other 29 OECD (Organization for Economic Cooperation and Development) countries, but is one of the least healthy of these nations, being ranked 21st out of 30 in terms of life expectancy. Japan, which spends about 7% of its GDP on health care, is one of the healthiest with a life expectancy of nearly 82 years – 4 years greater than the USA.

1.7 Key Terms

1. Health Sector.

Consists of organized public and private health services, the policies and activities of health departments and ministries, health-related nongovernment organizations and community groups, and professional associations.

2. Health services.

The range of services undertaken primarily for health reasons and that have a direct effect on health, including health care programmes such as health promotion and specific disease prevention and treatment.

3. Resources:
These represent inputs into the process of producing goods. They can be classified into three main elements: labour, capital and land. Different goods would generally require varying combinations of these elements. Resources are generally valued in monetary terms.

4. Welfare (or social welfare):
The economic criterion on which a policy change or intervention is deemed to affect the well-being of a society. In general, this is assumed to be determined by aggregation of the utilities experienced by every individual in a society

1.8 Self-Assessment Questions

1. Define what is Health Economics?
2. Explain the need and scope of Health Economics
3. What are the salient features of Health Economics?
4. Explain the dire need of Health Economics to the present scenario.

1.9 Further Readings:

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LESSON-2

BASIC CONCEPTS OF HEALTH ECONOMICS

2.0 Learning Objectives

This chapter provides an introduction to the discipline of economics and to the sub-discipline of health economics. You will learn about the type of questions that economics is concerned with and some of the key concepts that it uses, particularly as applied to health and health care. The suitable healthcare examples can help him to understand the concepts in a better and deeper way. After working through this chapter, you will be able to:

• explain what economics is and the problems that it seeks to solve
• define and apply a number of fundamental economic concepts
• explain why economics is applicable to health and health care The Fundamental Concepts/Principles of Health Economics

STURUCTURE OF THE LESSON

2.1 INTRODUCTION

From a Public Health point of view, health economics is just one of many disciplines that may be used to analyse issues of health and health care, specifically as one of the set of analytical methods labelled Health Services Research. But from an economics point of

view, health economics is simply one of many topics to which economic principles and methods can be applied. So, in describing the principles of health economics, we are really setting out the principles of economics and how they might be interpreted in the context of health and healthcare. As Morris, Devlin Parkin and Spencer (2012) put it: *Health economics is the application of economic theory, models and empirical techniques to the analysis of decision-making by individuals, health care providers and governments with respect to health and health care.The basic concepts of how society decides what, how and for whom to produce are the fundamental issues of Economics.* In analysing these issues, health economics attempts to apply the same analytical methods that would be applied to any good or service that the economy produces.

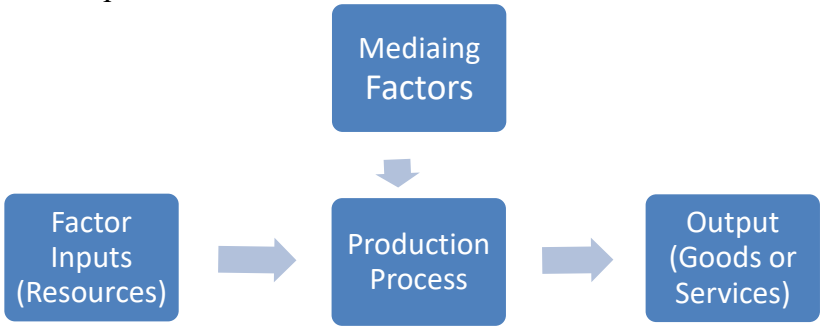
2.2 Basic Concepts or Principles of Health Economics

- Production, resources, scarcity
- Opportunity Cost
- Markets, Demand and Supply
  - Market
  - Demand
  - Supply
- Incremental analysis and the margin
- Efficiency and equity
- Discounting
- Time horizons

2.2.1 Production, resources, scarcity

The definition of economics above includes the term to produce, emphasising that economics deals with both health and healthcare as a good or service that is manufactured, or produced. All production requires the use of resources such as raw materials and labour, and we can regard production as a process by which these resources are transformed into goods:

The inputs to this production process are resources such as:
Personnel (often referred to as labour),
Equipment and buildings (often referred to as capital),
Land and raw materials
The output of a process using healthcare inputs, such as:
Healthcare professionals, Therapeutic materials and Clinical facilities could be an amount of healthcare of a given quality that is provided, for example. How inputs are converted into outputs may be affected by other mediating factors, for example the environment in which production takes place, such as whether the clinic is publicly or privately owned.



A key observation of economics is that resources are known to be limited in quantity at a point in time, but there are no known bounds on the quantity of outputs that is desired. This both acts as the fundamental driving force for economic activity and explains why health and healthcare can and should be considered like other goods. This issue, known as the problem of *scarcity of resources* means that choices must be made about what goods are produced, how they are to be produced and who will consume them. Another way to view this is that we cannot have all of the goods that we want, and in choosing the goods that we will have, we have to trade off one good for another.

The term *economic goods* is sometimes used to describe goods and services for which economic analysis is deemed to be relevant. These are defined as goods or services that are scarce relative to our wants for them. Health care is such an economic good:

first, because the resources used to provide it are finite and we can only use more of these resources to create health care if we divert them from other uses; and
Secondly, because society's wants for health care, that is what society would consume in the absence of constraints on its ability to pay for it, have no known bounds. Nowhere in the world is there a health care system that devotes enough resources to health care to meet all of its citizens' wants.

Of course, in a national health system, it is likely that the aim is to meet *needs* rather than *wants*. But it is also the case that meeting one need may mean that another need is not met and that no-one has discovered a limit to need.

To summarise, in the economy as a whole, there are not enough **scarce resources** to meet all of the **wants** that people have, so we have to choose which wants are met and which are not met; in the health care system there are not enough **health care resources** to meet all of the **health needs** that people have, so we have to choose which needs are met and which are not met

2.2.2 Opportunity Cost

An assertion of economics is that scarcity, and the resulting necessity to choose between different uses for productive resources, applies everywhere in an economy and cannot be avoided. This is the premise underlying a key economics concept called *opportunity cost*. Producing any economic good or service means that the scarce resources that are used to create it cannot be used to produce *other* goods or services. If those other goods or services had been produced, they would have generated benefits to those who consumed them. The true cost of producing a good or service is therefore the benefits that are forgone by *not* producing other goods and services – in other words, it is the loss of the opportunity to create benefits by using resources in a different way. Because there are many possible goods and services that different combinations of resources could produce, the opportunity cost of using resources in a particular way is defined as the benefits that would have resulted from their *best* alternative use.

Costs in economics usually mean opportunity costs. This concept is quite different to the more familiar idea of *financial* costs, which is the cost of goods, services and scarce resources in terms of the money that must be paid to obtain them. In practice, financial costs are very often used to measure opportunity costs, but this is not always the case. It is important to note that opportunity cost and financial costs are different ways of thinking

about costs, not different elements of overall costs. They cannot be calculated separately and added together, for example.

Below table illustrates the relevance of this concept to the health sector by looking at the impact of increasing the number of inpatients on the number of outpatients that can be treated – i.e. the opportunity cost of treating inpatients in terms of outpatients. For example, the opportunity cost of treating 5,000 inpatients is 50,000 outpatients.
Table: Illustration of opportunity cost: options for expenditure in a year

In patients Treated (000's)	Outpatients Treated (000's)	Opportunity Cost in terms of outpatients foregone
0	50	0
1	45	5
2	42	8
3	20	30
4	15	35
5	0	50

It is important to note that opportunity cost may involve something other than goods with money prices. Spending a day in the hospital waiting room may involve forgoing a day at work (measured in wages lost). But it might also involve forgoing a day in the park with your family. Time is scarce and its cost can be measured both in terms of lost income but also lost leisure time, or indeed utility. Just because there is not always a money price involved (as in the case of leisure time) this does not mean time is of zero value or that there is no associated cost.

2.2.3 Markets, Demand and Supply

2.3.1 Markets

Economics is a social science that refers to *how society decides*. Although society does make collective decisions about what, how and for whom to produce, in most modern economies this is largely done through markets, by the interaction of those who wish to buy (buyers, or consumers) and those who wish to sell (sellers, or suppliers).

Economics analyses markets mainly through what is called *price theory*. A market brings together the demand for goods from consumers and the supply of those goods from suppliers. Consumers and suppliers base their buying and selling on the price that they must pay or will receive. Price therefore acts as a signal to both groups as to what they should do in the market. Consumers will want to buy more if the price is lower, but suppliers will want to sell more if the price is higher. If prices are too high, then suppliers will not be able to sell all that they want to and may lower the price. If prices are too low, there will be consumers who cannot buy all that they want. As a result, consumers may bid more, or suppliers may see the possibility that they can raise their price but still be able to sell all that they want. Simple observable indicators like these, the presence of excess demand or supply, determine how much of a good or service is sold and the price that it is sold for.

This simple model of a market for a single good shows one way in which society decides for *whom* to produce. Consumers can obtain goods if they are both willing and able to pay for them; the more willing and the more able that they are, the more that they can potentially consume. Also, a strong willingness and ability to pay is reflected in high demand even at high prices, which signals to suppliers that they should supply more. So, scarce resources are allocated to producing goods for which demand is high rather than other goods for which the willingness and ability of consumers to pay is less. The demand for such goods is lower and their prices are lower. This, therefore, also shows how markets decide *what* to produce as well as for whom.

If we also assume that suppliers aim to make as much income as possible from what they sell, then they will wish to keep down the costs of production by choosing the most efficient production methods. So, markets also help to determine *how* goods are produced as well as what and for whom.
Of course, the real economy is far more complex than this and no economist would pretend that this simple model is a precise description of reality. But the point is that markets do not result in a random allocation of scarce resources, but one that is the result of the incentives provided to economic actors, both consumers and producers, by prices.

2.3.2 Demand for healthcare, demand for health and need

If we are considering the market for health care, we will be interested in the demand for health care. However, in considering this demand, it is important to recognise that health care has special characteristics that may make it different from other goods. One factor is that health care is not usually demanded because it is in itself pleasurable; in fact, it may be unpleasant. Instead, it is demanded mainly to improve health. So, even if health care is in itself unpleasant, it leads to more pleasure than would otherwise have been the case.
If health care is only demanded in order to improve health, is there then a demand for health improvements? Health can indeed be regarded as a good, in fact a fundamental commodity that is essential to people's well-being, leading to a demand for improvements in it. Health does have characteristics that more conventional goods have; it can be manufactured; it is wanted and people are willing to pay for improvements in it; and it is scarce relative to people's wants for it. However, its relationship with the demand for health care is not one-to-one, because although health is affected by health care, it is also affected by many other things and it also affects other aspects of welfare, not just health care. As a good, health is even more peculiar than health care, because of its characteristics. It is less tangible than most other goods, cannot be traded and cannot be passed from one person to another, although obviously some diseases can.

In the context of ordinary goods and services, economics distinguishes between a *want,* which is the desire to consume something, and *effective demand*, which is a want backed up by the willingness and ability to pay for it. It is effective demand that is the determinant of resource allocation in a market, rather than wants. But in the context of health care, the issue is more complicated than this, because many people believe that what matters in health care is neither wants nor demands, but *needs*. Health economists generally interpret a health care need as the *capacity to benefit* from it, thereby relating needs for health care to a need for health improvements. Not all wants are needs and *vice versa*. For example, a person may want nutrition supplements, even though these will not produce any health improvements for them; or they may not want a visit to the dentist even if it would improve their oral health.

The conclusion from this is that the demand for health care can be analysed as if it were any good or service, but it has peculiarities that may mean that the usual assumptions about the resource allocation effects of markets do not hold. Moreover, it may well be that people wish resource allocation to be based on the demand for health or the need for health care, neither of which can be provided in a conventional market.

2.3.3 Supply

The supply side of the market is analysed in economics in two separate but related ways. One is related to the resource input and goods output model outlined above, looking at how resource use, costs and outputs are related to each other within a firm. Some of the issues that this illuminates concern efficiency in production, which will be discussed below. Others include issues such as *economies of scale* - for example, are there any cost savings through having larger general practices?; *productivity* - for example, how many more surgical operations can a hospital provide if it hires an extra nurse?; and *factor substitution* - for example, does allowing dental hygienists to replace dentists in undertaking certain tasks lower the costs of producing dental care?

The other way in which supply is analysed is so called *market structure* - how many firms are there supplying to a market and how do they behave with respect to setting prices and output and making profits? There are two well-known theoretical extremes of market structure. *Perfect competition* has very many firms in the market so that none has any real economic power, none makes any profits, prices are as low as they can be and output is as high as can be. A *monopoly* has only one firm, which has great market power, makes as large profits as can be had and has higher prices and lower output. Other models are somewhere in between. The behaviour of some health care organisations, such as pharmaceutical companies, providers of services like dentistry, ophthalmic services and pharmaceutical dispensing and for-profit insurance companies can relatively easily be analysed using these models. It may be more difficult for other organisations. However, they may provide relevant insights, for example regulation of the UK provider sector is increasingly guided by the use of market forces involving contestability to provide some competitive pressures for efficiency.

2.2.4 Incremental Analysis and the Marginal Analysis

Economics analyses many economic activities by according to *marginal* principles, which is a special case of what is called *incremental* analysis. Incremental analysis means that the effects of changes in the use of resources are examined according to how they differ from current use. Analysis is focussed on, for example, how much costs and benefits are increased or decreased due to a change in resource use, rather than the absolute levels of costs and benefits that exist after the change. The term ‘marginal’ means at the margin of an existing set of circumstances, for example the costs and benefits that will result from changing the allocation of resources to the smallest extent possible. It does *not* mean an unimportant change – the costs and benefits involved even in a small change in resource use could be very large. There are two reasons for analysing incremental and marginal changes. First, looking at incremental values of economic variables often gives a better view of the issues faced in decision making. Secondly, an influential economic theory suggests that people do, at least implicitly, make decisions using marginal principles.

A marginal change is defined as a change in an economic variable that is caused by the smallest possible change in another variable, often expressed as ‘one unit’ of that variable.

For example, the marginal cost of a good or service is defined as the extra cost that is incurred by producing one more unit of it. That cost could be large, even though the change in the amount of the good or service is small. As an extreme example, suppose that the service is a particular surgical operation and the surgical unit performing it has reached full capacity for its operating theatre. Performing one extra operation would require a new theatre to be built, so its marginal cost would be very high.

However, the marginal cost of the last operation performed within the existing capacity may have been quite small, simply the cost of theatre staff, disposables and subsequent care. As this demonstrates, marginal cost may vary considerably with respect to the same size of change in the other variable, in this case one operation, depending on the absolute level of that other variable, in this case the number of operations already being performed.
A well-known example of the importance of looking at incremental costs is in assessing the impact of early discharge schemes that aim to lower hospital inpatient surgical costs by reducing length of stay. Hospitals may be able to calculate an average cost per day based on information on the average cost of an inpatient stay and length of stay. However, the costs of each inpatient day in practice differ over the time spent in hospital. At the beginning of an inpatient stay there are high costs of surgery and perhaps of high dependency care. At the end of the stay there may simply be basic nursing care and 'hotel' costs, which will be much smaller than the costs averaged over the whole length of stay. Reducing the number of low dependency days at the end of the stay will therefore save far fewer costs than might be expected by looking at the average. Incremental costs calculated with respect to an increase or decrease in the number of days would give a correct estimate of the likely savings.

Similarly, a marginal benefit is the extra benefit gained by the consumption of one more unit of a good – again, it is not a small or unimportant benefit. Consider a screening programme which can be carried out with different numbers of sequential tests. The more tests that are carried out, the more cases are detected. A programme that uses one test might yield 10 cases per 1,000 people tested, while a two-test programme might yield 11 cases. Looking at these in terms of their total yield, the two-test programme looks better than the one-test programme. But incremental principles focus on the marginal benefit, which in this case is 10 cases for the one-test programme and only 1 case for the two-test programme, which does not look so good.

2.2.5 Efficiency and Equity

Economic analysis usually judges the way in which resources are used according to two main criteria: *efficiency* and *equity*. Efficiency refers to obtaining the greatest output for a given set of resources. Equity refers to a fair distribution of that output amongst the population. These two concepts have technical definitions, which are described below.

2.5.1 Efficiency

The technical definitions of efficiency described here use the labels given by Morris, Devlin, Parkin and Spencer (2012). Economists are specialists in the analysis of efficiency and largely agree about what it means, and about definitions of different types of efficiency.
A very broad definition of efficiency has been given by Knapp (1984): *the allocation of scarce resources that maximises the achievement of aims*. This is useful, because it suggests that the desire to achieve efficiency arises from the desire to improve the world. Given that resources are scarce and there are competing uses for them, we should aim to

obtain the best set of uses, according to our definition of what 'best' means. **If a country decides that the aim of its health system is to improve its population's health and allocates a fixed budget to health care, it will obtain the biggest health gain if scarce health care resources within its health system are used efficiently.**

It asserts that we would be able to say that one state of the world is better than another if at least one person is better off under the first state compared with the alternative and no-one is worse off. This is called the *Pareto criterion*. If we change from one allocation of resources to another, for example changing the health care system in terms of the kind of care that is made available, and as a result some people get better care and no-one gets worse care, this is described as a *Pareto improvement*. If it is not possible to make any Pareto improvements, then we have achieved a *Pareto optimum*. A Pareto optimum is therefore a position where it is not possible to make anyone better off without making someone else worse off.

If the aim is to make people in general as well off as possible and there is no concern about whether some people are better off than others, then a Pareto optimum is efficient. Given a Pareto optimal allocation of resources, that aim cannot be achieved to a greater extent because even if one person, or even many people, could be made better off, we do not know if this is outweighed by the fact that some people, even if it is only one person, are made worse off. However, there is not one unique Pareto optimum; the existence of a Pareto optimum does not mean that this is the only efficient way in which resources could be allocated. There are many allocations of resources that would be Pareto optimal, some of which would imply great inequalities between different people. If our aims also took account of this, then we might not view all Pareto optimums as efficient.

Pareto efficiency is therefore a contentious idea as a way of thinking about how resources should be allocated at a societal level, but does form the basis of definitions of efficiency in economics more narrowly. Let's examine three types:
Technical efficiency: Where a given output is produced with the least inputs (i.e. minimizing wastage) also known as operational efficiency.
Economic efficiency: Where a given output is produced at least cost. Also known as productive efficiency;
Allocative efficiency: Where the pattern of output matches the pattern of demand;
Pareto efficiency: The point at which no one can gain without someone else being made worse off.
Every level of a health system faces questions about efficiency. For example, there are several ways in which hospitals might seek to improve the efficiency of their operations including:

- Length of stay could be reduced;
- Staff productivity could be increased;
- Equipment could be fully utilized and maintained regularly;
- over-prescribing of drugs could be avoided;
- Drug ordering and storage could be managed properly to avoid wastage and pilfering;
- Nurses could replace doctors when appropriate;
- Low-cost equipment could replace staff when appropriate;
- Day surgery could replace inpatient stays.

The concept of *technical efficiency* is used in analysing the production of health and health care. Production is technically efficient if the most output possible is produced from a

given set of inputs, or the fewest inputs possible are used to produce a given amount of output. For example, the number of patients that can be treated in an out-patient clinic depends on the number of medical and nursing staff that are available and other inputs. If the most that can be provided by one doctor and two nurses is 20 treatments each day, then it is technically *inefficient* to provide 19 treatments using that number of staff or to provide 20 treatments using more staff.

Another way to view this is that an efficient clinic cannot undertake more treatments without employing at least one more member of staff. It is therefore Pareto efficient: production is technically efficient for a given set of inputs if it is only possible to produce more by using more of at least one input.

The concept of *economic efficiency* has several alternative labels. One of these is *cost-effectiveness*. Technical efficiency is only concerned with how many inputs are used in production, while economic efficiency is related to the cost of those inputs. Economic efficiency is achieved if the most output possible is produced for a given cost, or a given amount of output is produced at the lowest possible cost. Using the example above, some aspects of the treatment provided in a clinic could be undertaken either by doctors or nurses. It might be equally technically efficient for 20 treatments to be provided each day by using one doctor and two nurses or two doctors and one nurse. But if we assume that doctors are more expensive to employ than nurses, then it will be economically efficient to use the extra nurse rather than the extra doctor. So, although it is necessary to have technical efficiency to be able to achieve economic efficiency, not all technically efficient ways of producing are economically efficient.

Another way to view this is that, given the costs of employing staff, an efficient clinic cannot undertake more treatments without them costing more to provide. As before, it is Pareto efficient: production is economically efficient for a given set of input prices if it is only possible to produce more by incurring greater costs.

Social efficiency is a much broader concept. Both technical efficiency and economic efficiency concern production, and if the supply side of the market achieves economic efficiency in every market, there is *allocative efficiency in production* for the economy as a whole. An equivalent concept for the demand side of the market is *allocative efficiency in consumption* where, given prices of goods, consumers maximise their utility. Social efficiency is where both of these are achieved.

Social efficiency is not a concept that has practical use in health economics, but it is an important idea for debates about whether markets should be used in health care. It can be shown that if markets work perfectly, then they will produce a socially efficient economy. To some, this gives a presumption in favour of market provision. However, if markets do not work perfectly they will not produce a socially efficient economy. The questions are then *how* imperfect markets are and whether there are alternatives, such as government provision, that are better.

2.5.2Equity

Equity is always an important criterion for allocation of resources. However, it is observable that people attach more importance to equity in health and health care than they do to many other goods and services. Equity is an important policy objective in almost every health care system in the world. Economists have created some very useful ways of measuring equity, but apart from that economic analysis of equity is less clear than the analysis of efficiency and there is lower consensus amongst economists about it.

It is important to distinguish equity from equality. Equity means fairness; in the health care context this means a fair distribution of health and healthcare between people and fairness in the burden of financing health care. Equality means an equal distribution, but it

may not always be fair to be equal. For example, it might be thought to be unfair both healthy and sick people are given equal amounts of health care. However, equity is often defined with respect to equality and inequality. For example, it may be considered equitable that people who have an **equal need** for health care should have **equal access** to it. This is a very common definition of equity. However, there could be others, for example:

- equal **use** of health services for equal **needs** for health care
- equal **use** of health services for equal **willingness to pay** for that use
- equal health **outcomes** for equal **merit**
- equal health care **payments** by people for equal **ability to pay** for that health care
- equal **expenditure** on people for equal **health deficit**

There is a useful distinction when using equity definitions like this, which also has roots in philosophy, between *horizontal* and *vertical* equity. Horizontal equity means the equal treatment of equals; for example, do people who have the same health needs have equal access to health care? Vertical equity means the unequal treatment of unequals; for example, do people who have worse levels of health have greater access to health care?

2.2.6 Discounting Principle

According to this principle, if a decision affects costs and revenues in long-run, all those costs and revenues must be discounted to present values before valid comparison of alternatives is possible. This is essential because a rupee worth of money at a future date is not worth a rupee today. Money actually has time value. Discounting can be defined as a process used to transform future dollars into an equivalent number of present dollars. For instance, $1 invested today at 10% interest is equivalent to $1.10 next year.

$FV = PV*(1+r)^t$

Where, FV is the future value (time at some future time), PV is the present value (value at t0, r is the discount (interest) rate, and t is the time between the future value and present value.

2.2.7Time Perspective Principle

According to this principle, a manger/decision maker should give due emphasis, both to short-term and long-term impact of his decisions, giving apt significance to the different time periods before reaching any decision. Short-run refers to a time period in which some factors are fixed while others are variable. The production can be increased by increasing the quantity of variable factors. While long-run is a time period in which all factors of production can become variable. Entry and exit of seller firms can take place easily. From consumers point of view, short-run refers to a period in which they respond to the changes in price, given the taste and preferences of the consumers, while long-run is a time period in which the consumers have enough time to respond to price changes by varying their tastes and preferences.

2.3 Conclusion

Some of the fundamental concepts of economics, not least of which are scarcity and opportunity cost. The premise of economic analyses is that there are never enough resources to do everything that we might like (scarcity) and thus once we make a choice as to how a resource is to be used, something else must be given up (opportunity cost). Economics provides us with a framework for rationally addressing this problem. You have also gained an understanding of the types of questions economists can help to address in the health sector and the different perspectives they take. For example, economics may

adopt a micro or macro perspective, and be positive or normative. Health economics is a sub-discipline of economics, which applies the theories and methods of economics to all aspects of health and health care.

2.4 Key Terms

1. **Efficiency**: A general term used to describe the relationship between inputs and outputs. It is concerned with maximizing benefits with the resources available, or minimizing costs for a given level of benefit.
2. **Goods:** These are the outputs (such as health care) of a production process that involves the combining of different resources such as labour and equipment. Goods (including services) are valuable in the sense that they provide some utility (see below) to individual consumers. They are termed 'goods' as they are desirable, as distinct from 'bads' which you will read about later!

Marginal analysis: An examination of the additional benefits or costs arising from an extra unit of consumption or production of a 'good'.

Market. A situation where people who have a demand for a good come together with suppliers and agree on a price at which the good will be traded. A necessary condition for properly functioning markets is a system of property rights to ensure that people can participate in good faith.

Opportunity Cost (economic cost): As resources are scarce, an individual, in choosing to consume a good, in principle, chooses the good which gives him or her greatest benefit, and thus forgoes the consumption of a range of alternative goods of lesser value. The opportunity cost is the value of the benefit of the next best alternative.

Utility: The happiness or satisfaction an individual gains from consuming a good. The more utility an individual derives from the consumption of a good, all else being equal, the more they would be willing to spend their income on it.

2.5 SELF ASSESSMENT QUESTIONS

1. Explain in detail about the Basic Health Economics Concepts.
2. What is Opportunity Cost and elucidate with healthcare examples
3. What is Equi-Marginal Concept?
4. Illustrate the concept of Efficiency and Equity with suitable healthcare examples

2.6 FURTHER READINGS

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LESSON-3
APPLICATION OF ECONOMICS TO BUSINESS DECISIONS

3.0 LEARNING OBJECTIVES

The aim of this lesson is to discuss the use of health economic techniques as part of the decision-making process in healthcare services. It includes a discussion of how health economic evaluations are utilised but also adopts a broader perspective and encompasses other approaches and techniques. this examine the extent to which economic evaluations are utilised and how budget impact analysis, programme budgeting and marginal analysis can prove to be very useful techniques for decision-makers and in establishing priorities in health care.

STRUCTURE OF THE LESSON

3.1 INTRODUCTION

The theory of decision making is a relatively new subject that has a significance for managerial economics. In the entire process of management and in each of the management activities such as planning, organising, leading and controlling, decision making is always essential. In fact, decision making is an integral part of today's business management. A manager faces a number of problems connected with his/her business such as production, inventory, cost, marketing, pricing, investment and personnel.

Economist are interested in the efficient use of scarce resources hence they are naturally interested in business decision problems and they apply economics in management of business problems. Hence managerial economics is economics applied in decision making. According to M.H. Spencer and L. Siegelman, "Managerial economics is the integration of economic theory with business practice for the purpose of facilitating decision making up and forward planning by management". Managerial economics is a fundamental academic subject which seeks to understand and to analyse the problems of business decision making.

The theory of decision making recognises the multiplicity of goals and the pervasiveness of uncertainty in the real world of management. The theory of decision making replaces the notion of a single optimum solution with the view that the objective is to find solution that 'satisfies' rather than maximise. It probes into an analysis of motivation of the relation of rewards and aspiration levels, and of pattern of influence and authority.
Economic theory and theory of decision making appear to be in conflict, each based on different set of assumptions. Much of the economic theory is based on the assumption of single goal maximisation of utility for the individual or maximisation of profit for the firm.

3.2 Role of Economics in Decision Making

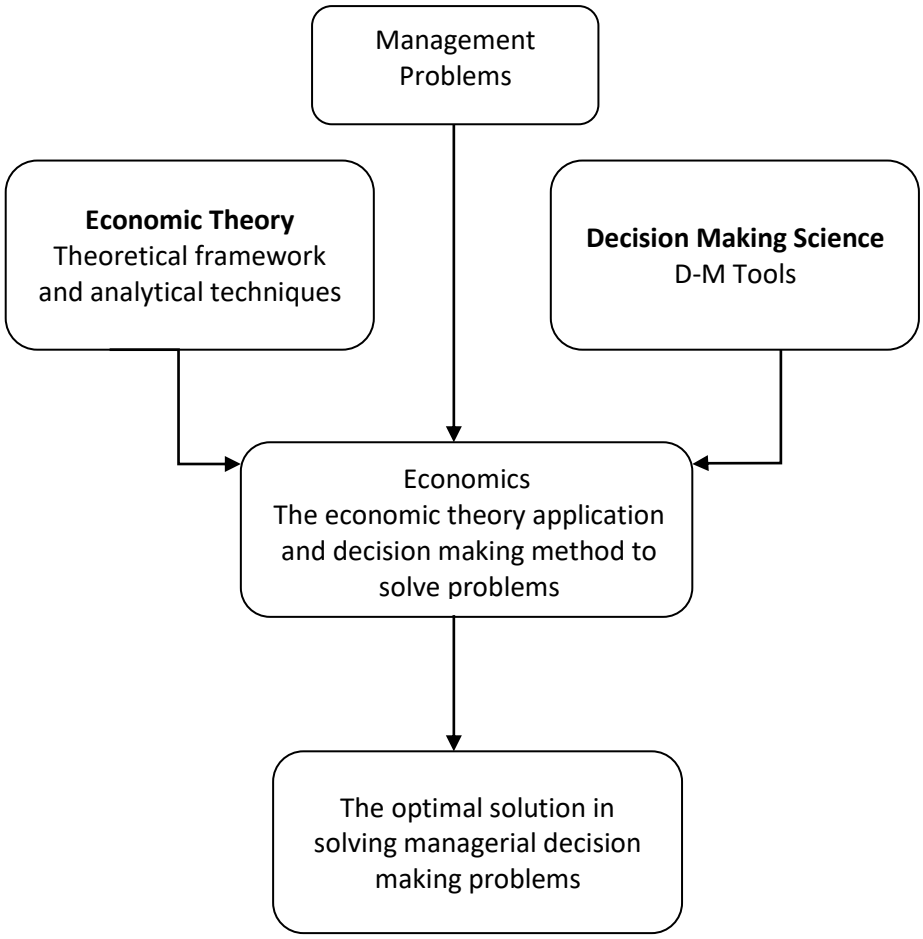

Figure1. The managerial economics role in managerial decision making

In a socio-economic hospital, the VIP ward existence is expected to produce a Dividend (SHU) which can provide additional economic incentives for staff and develop the hospital. Thus, the VIP ward tariff should be set above the production cost (meaning no subsidies). In setting the VIP ward tariff, the managerial economic role is very large because decision makers must pay attention to various aspects such as demand for VIP wards, the competitors, Bed Occupancy Ration (BOR) projection for Break Even Point analysis and the amount of production costs.

By increasing the competition and high investment cost in hospital, the managerial economic role becomes important. Microeconomics (especially) and macroeconomics will be used with the decision making science to solve management problems in hospital.

Below are some cases that require Health Economics to solve management problems in hospital, such as: the medical devices purchases which are relatively expensive, the decision to increase medical services for the doctor; construction of VIP ward; and the kitchen budget leak problem.
The important question in this case is how the management makes the decision in the past? Do they use the model above? Or is it the instinctive decision or to go to a shaman? or with your own beliefs? Instinctively, humans can decide or use other people's approaches to help making a decision in business.

Decision Making
The decision making science role is part of managerial economics. Decision making is defined as determining a series of activities to achieve the desired results.
Types of decision making can be divided into two groups, there are:
(1) Division based on whether the decision was programmed or not and
(2) Based on the condition of the information available when making the decision
Based on the information available when making the decision, there are three types of decisions:

a. Decision Making with certainty
b. Decision Making with risk
c. Decision making with uncertainty

The difference of risk and uncertainty is the presence or absence of probability's information as a guide to estimate the final outcome of decision choices. Decision making with risk means that the results of the decisions taken can be determined and the probability of each event is known. Decision making with uncertainty means that the results of the decisions taken can be determined and the probability of each event is unknown.
In relation to risk, there are three groups of people, namely: (1) risk averse; (2) risk taker; and (3) neutral. Risk-averse is a group of people who do not like the future uncertainty. The risk tends to choose things that are certain. On the other hand, risk lovers are a group of people who prefer uncertainty (even under certain conditions gambling) to certainty.
Gamblers are a group that is classified as risk-lover, or those who enjoy extreme sports such
as skydiving, rafting, or mountain climbing.
In business, there must be an uncertainty. Therefore, one of the entrepreneur's characteristic is the courage to take risks in making management decisions [8]. For example, the management decision to increase the VIP ward tariff in a class C government hospital, the current bed occupancy tariff (BOR) is 75%. In calculating the Break Even Point analysis, the BOR projection is very important. In simple terms, the possibilities are as follows: The first option is to increase the VIP ward tariff and the second option is not to increase the VIP ward tariff.

3.3 MANAGERIAL ECONOMIC APPLICATION PROSPECT IN THE HOSPITAL SECTOR

The decision to change the VIP ward tariff is only one managerial economic application in the hospital management. The managerial economic use is closely related to

the ability and decision-making authority possessed by hospital management, which is led by its director. Without an authority, the decision atmosphere will tend to be bureaucratic.
The managerial economic application in hospital has various basic concepts and issues that influence it. The important key word in the economic application and hospital managerial economy is the "profit" position in the hospital goal. Traditionally, as a social normative organization, profit is not commonly found in hospital management, especially the government hospital.

The question continuously discussed in this book is the changing of socio-economic entity, is profit should stay away from the hospital? In this chapter, it has been emphasized that in the economic characteristic entity, the profit position is very important. Economists generally define profit as the excess revenue over the costs used in the business. In the hospital management context, this excess payment can be used for various things such to develop the hospital and increase the incentive to work. If profit is something that must be avoided, then a large subsidy capacity is needed for the hospital service. In this case, the mixed concept between business and social entity needs to be considered

3.4 ROLE OF ECONOMIST IN BUSINESS:

In a knowledge base economy and business those who contained to be expertise in managerial economics are referred to as managerial economists. Making decisions and processing information are two primary tasks of mangers. In order to make intelligent decisions mangers must be able to obtain process and use information. The purpose of earning economic theory is to help managers know what information should be obtained and how to process and use the information.
The task of organizing and processing information and then making an intelligent decision based upon this information and the basic theory can take two general forms

- Task of making specific decisions by managers ,
- General task of mangers to use readily available information to make a decision or carry out a course of action that furthers the goals of the organization.

3.5 SPECIFICATION DECISIONS:

There are several specific decisions that the mangers might have to take e.g. whether or not to closed down a branch of a firm that has recently been unprofitable , whether or not a store should stay open more hours a day , whether to pay outside computing or copying services rather than install an in house computer or copier. After conducting a survey of British industry, Alexander and Kent came to the conclusion that managerial economist undertakes the following specific functions:

1. Product scheduling,
2. Demand Forecasting,
3. Market Research,
4. Economic Analysis of the industry,
5. Investment Appraisal,
6. Security management Analysis,
7. Advise on foreign Exchange management,
8. Advise on trade,
9. Pricing and the related decisions and
10. Analysing and forecasting environmental factors.

All of these and a myriad of other managerial decisions required the use of basic economics.

3.6 GENERAL TASKS:

Economic theory helps decision makers to know what information is necessary to make an intelligent decision to find the correct solution to a problem and to learn n how to process and use that information. After obtaining the desire information or as much information as is economically feasible to obtain, the manger must analyze this information and use it in correspondence with the theoretical and statistical tools available to make the best decision possible under the circumstances .

We find that business is influenced by two sets of decision factors

- External Factors
- Internal Factors

Business is influenced not only by what decisions are taken within the firm but also by general business environment .While the internal factors are within its control, the external factors lie outside its sphere of control. The firm can make only timely adjustments to their external factors. The role of the managerial economist is to understand there external factors and to suggest policies which the firm should follow to make the best use if the external and internal factors.

(A) External Factors:

1. The most important external factor is *the general economic condition* of the economy, such as the level and rate of growth of national income, regional income distribution, influence of international factors on the domestic economy, the business cycle, etc. The managerial economists must obtain and process information with regard to these changes, advise the management regarding their likely effects on the operations of the firm and suggest possible ways to further the organization's goals.
2. The prospects of *demand for the product*. Is there a change occurring in the purchasing power of the public in general or in some particular regions? Is this change in purchasing power a result of changes in real income of the people as a result of price level changes? Are fashions, tastes and preferences undergoing any change and thus affecting the demand for the product? A managerial economist tries their answers and advises the firm accordingly.
3. The managerial economists also try to find out if there is anything which is influencing the *input cost* of the firm. For example, what about the cost of labour in different regions and for different operations? Is there going to be some change in the government credit policy? And so on.
4. The market conditions of raw material and finished product is also a subject of study by the managerial economist. He has to understand the nature of the markets firm which the firm is buying its raw materials and of the market where it is selling its output. This understanding helps the managerial economist to recommend a pricing policy for successful management of the firm.
5.

Managerial economist can also help in the expansion of the *firm's share in the market*

Managerial economist has also to keep in touch with the governments' *economic policies* and the central bank's monetary policies, annual budgets of the government, etc.

More accurate and quicker a managerial economist is to recognize, understand and analyse these changes in the external factors, more useful would be prove to the management.

(B) Internal Factors:

The role of managerial economist in internal management is as important as his contribution towards the management of external factors. He helps in deciding about the production, sales and inventory schedules of the firm. He not only provides information regarding their present level but also forecasts their future trend.
Managerial economist is used best to provide the pricing and profit policies. As the present day firms are after multi – product firms, a successful managerial economist tries to find for the firms the most profitable output mix and the best prices for its various outputs, given the market conditions.

3.7 SUMMARY

The usefulness of business economics lies in borrowing and adopting the toolkit from economic theory, incorporating relevant ideas from other disciplines to take better business decisions, serving as a catalytic agent in the process of decision making by different functional departments at the firm's level, and finally accomplishing a social purpose by orienting business decisions towards social obligations.

3.8 KEY WORDS

Decision Making: Selecting the best alternative from many. It is the selection process.
Decision Making Tools: The decision making tools help you to map out all the possible alternatives to your decision, its cost, as well as chances of success or failure.
Uncertainty: Uncertainty simply means the lack of certainty or sureness of an event. In accounting, uncertainty refers to the inability to foretell consequences or outcomes because there is a lack of knowledge or bases on which to make any predictions.
Risk: possibility of loss or injury

3.9 SUGGESTED READINGS

1. R.C Thomas "Managerial Economics" by Kalyani Publishers 2014
2. Pindyck, Robert S., and Daniel L. Rubinfeld. *Microeconomics.* 5th ed. Upper Saddle River, NJ: Prentice-Hall, 27 July 2000. ISBN: 0130165832.
3. Culyer, A.J Need and the National Health Service; Economic social choice, Oxford 1976.
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UNIT 2: Demand Analysis

Demand is a vital economic concept that works both at the market level and personal level. It also includes several concepts like law of demand, factors affecting it and eventually the impact of it on the economy at large. Therefore, it is essential for students to get this concept right from the very beginning as it will help to interpret the importance of the law of demand in economics. However, to make things easier, learners need to delve into the core of this topic to understand well.

Lesson 4: Law of Demand and Elasticity of Demand
Lesson 5: Demand for and Supply of Medical Care
Lesson 6: Healthcare demand forecasting and its techniques

LESSON-4

LAW OF DEMAND AND ELASTICITY OF DEMAND

4.0 LEARNING OBJECTIVES

After completing this lesson, you will be able to:

- Explain the meaning of law of demand, its determinants and exceptions;
- Explain the meaning of price elasticity of demand, income elasticity of demand and cross elasticity of demand;
- Explain various degrees (types) of price elasticity of demand;
- Explain uses and determinants of various elasticities of demand;

Structure of the Lesson

4.1INTRODUCTION

Demand analysis seeks to identify and measure the factors that determine sales. Demand analysis has two main meaningful purposes; 1) forecasting sales and 2) manipulating demand. Any decision with regard to production, advertising, cost allocation, pricing, inventory levels etc. necessitates an analysis of demand. Demand determines production. So the business manager gives serious consideration to questions such as 'what to produce' and 'how much to produce'. Demand analysis is essential to find answers to these questions. Demand analysis tries to find out exactly what kind of product people want.

Sales forecast forms the basis for planning all phases of the company's operations. Forecast helps to plan personnel, purchase and production. Sales forecast helps to estimate the external economic factors influencing demand and to predict the resulting sales volume a firm can expect if it continues on its present course. It attempts to establish the future demand of a product. It helps one to know the factors influencing demand, elasticity f demand, possibility of sales promotion through manipulation of price, responsiveness of demand to advertisement etc. This helps the manager to enhance the sales volume by manipulating the factors on which consumers base their demands. Demand analysis helps forecasting and promotion of sales.

4.1.1 Meaning

The demand for a commodity is its quantity which consumers are able and willing to buy at various prices during a given period of time. So, for a commodity to have demand the consumer must possess willingness to buy it, the ability or means to buy it, and it must be related to per unit of time i.e. per day, per week, per month or per year. Demand for a commodity is the desire for it backed by willingness to buy and ability to pay. If a person is willing to buy but has no ability to buy, there is only desire and no demand. Demand for a commodity thus implies three things:

1. Desire to buy a product
2. Willingness to buy it and
3. Ability to buy (Purchasing Power) it.

The term 'demand' becomes meaningful only when it has a reference to 'a price'. 'a period' and 'a place'. Any general statement regarding the demand for a commodity has no practical relevance. For instance, to any 'demand for Toyota Innova Crysta SUV car is 2000' carries no meaning for a businessman or for economic analyst. This becomes a meaningful statement if it is stated: 'the annual demand for Toyota Innova Crysta SUV cars in Mumbai at a price of Rs.22,50,000 is 2000'

4.1.2 Definition of Demand: According to Prof. Bober, "By demand we mean the various quantities of a given commodity or service which consumers would buy in one market in a given period of time at various prices or at various incomes or at various prices of related goods."

4.2 The Law of Demand

4.2.1 Meaning

The law of demand in economics explains that when other factors remain constant, the quantity demand and price of any product or service show an inverse equation. It also

means that whenever the value of a specific product increases, demand for the same declines; the exact opposite can also be observed. From this comes a concept of a demanding schedule.

The law of demand is an economic theory that governs the demand for goods at a given price. The law of demand states that the price of a good and the quantity demanded have an inverse relationship. When the price of a good rises, there will be less demand for that good, and conversely, when the price decreases, there will be more demand for that good. When applying this economic principle in microeconomics and macroeconomics, economists assume that only the price changes and all other variables that can affect demand (such as the consumer's income or preferences) remain constant.

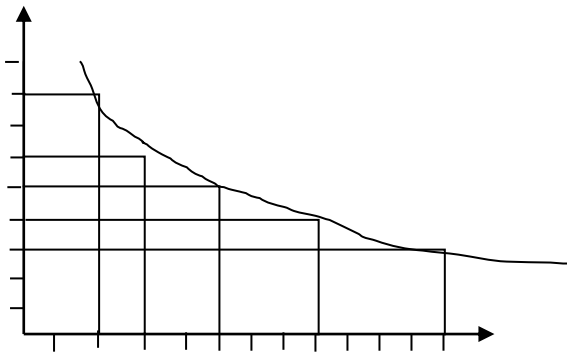
In a nut-shell, the relation of price to demand is known in economics as the *Law of Demand*. *The law of demand states that higher the prices and lower the demand and vice versa, other things remain constant or the same*. There is an inverse relationship between price and quantity demanded. If the price falls demand increases and vice versa. Even when the price is remain unchanged a change in other things like fashions, season, customs, population, consumers' income, etc. may result in a change in demand.

4.2.2 Demand Schedule

A change is price is followed by a change in demand. The Law of Demand establishes a relation between the price and the quantity demand. This price-quantity relation can be arithmetically represented in the form of a table below showing different prices and corresponding quantities demanded. This table is known as 'Demand Schedule'. It shows the different quantities that are demanded at different prices. The schedule considers the influence of price only. Given below is the example of a demand schedule.

Price of Oranges in Rs.	No. of Oranges demanded
80	2
60	3
50	5
40	8
30	12

The law of demand can also be shown by means of a chart known as the 'Demand Curve'. Demand curve is a graphical representation of the demand schedule. The given schedule can be represented by a curve shown as in Fig. below. X axis represents quantity of oranges and Y axis represents the price of oranges. DD is the demand curve. Any point on the demand curve refers both to price and the quantity. Take, for example, point R; if the price of an orange is Rs.80, the number of oranges demanded by the consumers will be 2. The demand curve DD slopes downward from left to right. The downward slope of the demand curve shows that more is demanded at lower prices. The curve shows that if the prices are reduced from 80 to 60 the quantity of oranges demanded will increase from 2 to 3. If the price reduced from Rs.60 to Rs.30, the quantity of oranges demanded will increase from 3 to 12.



4.2.3 Reasons for the Law of Demand

The demand curve slopes downward from left to right showing that more quantities are demanded at lower and lower prices. This is, demand responds to price in the reverse direction. The reason for the inverse relationship between price and demand are the following:

4.2.3.1 Income Effect: A fall in price results in an increase in income of the consumer. As the price falls he can buy the same quantity as before with less amount of money. Thus he gains some money, a part of which can be used for purchasing some more units of the same commodity. This results in an increase in demand for that commodity. When the price rises the consumer income is reduced. This cause a fall in the purchasing power of the consumer. Now he can buy only lesser quantity with the same amount. Hence, we see a decrease in demand of that commodity.

4.2.3.2 Substitution Effect: When the price of a commodity rises the consumer may substitute that relatively costly commodity with less costly one. When tea becomes cheaper some people may shift their consumption from coffee to tea. Similarly if the price rises consumers, to some extent, may substitute the costly goods with comparatively low priced goods of a similar kind.

4.2.3.3 Diminishing Marginal Utility: If a person consumes more units of the same commodity, he will get less and less satisfaction (utility) from the additional (marginal) units i.e. the utility from each additional unit goes on diminishing. The consumer will be ready to buy the additional unit only if it is available at a lower price. That is why consumers buy more at lower prices. He goes on buying till the marginal utility of the product is equal to its price.

4.2.4 Assumptions of the Law of Demand

The Law of Demand is based on the following assumptions. The law of demand holds good when the other things are ceteris paribus (when other things remain the same). The other things are:

1. There is no change in the income of the consumers.
2. There is no change in the tastes, habits and preferences of the consumers
3. There is no change in the fashion
4. The price of the related goods like substitutes and complementary goods remain unchanged
5. There is no expectation of a future change in price
6. A future shortage in supply is not expected
7. No innovations or no new, better substitute products in the market
8. The number of consumers remain the same

4.2.5 Exceptions of the Law of Demand

4.2.5.1 Exceptions regarding price variations: When consumers anticipate a still further increase in price they may buy more of the same now even if the price is going up. This helps them to avoid a still higher increase at a later time. Likewise if the consumers expect a greater decrease in price in future they may not demand more now even if the price is at a decreasing trend. They postpone the purchase hoping to get the same commodity in future at a still lower price.

4.2.5.2 Status symbol goods (Prestigious Goods): Status symbol goods or prestige goods show exceptional demand behaviour. Prestige goods are bought for enhancing

social prestige or for displaying wealth and richness e.g. diamond, jewellery, rare paintings etc. The higher the price, the greater will be the prestige attached to the commodity. These types of goods thus enjoy a higher demand when the prices goes up.

4.2.5.3 Inferior goods or Giffen goods: Another exception to the law is Giffen goods. Sir Robert Giffen observed that if the price of a commodity, consumed mostly by poor households as a necessary item increases, its demand increases instead of decreasing. The phenomenon is known as 'giffen paradox'. Giffen goods are inferior goods. For example, the regular consumption of a poor household is meat and potato. Potato is cheap but meat is costly. When the price of potato rises they reduce the consumption of meat so that they can save money to maintain the quantities of potato consumer. They even increase the consumption of potato so that they can cover up the reduction in consumption of meat. Thus the increase in the price of potato leads to an increase in the demand.

4.2.6 Determinants of Demand

The various factors that determine the demand for a commodity are as follows:

4.2.6.1 Price of the Product: Price is one of the most important determinants of demand. People use price as a parameter to make decisions if all other factors remain constant or equal. According to the law of demand, this implies an increase in demand follows a reduction in price and a decrease in demand follows an increase in the price of similar goods.

The demand curve and the demand schedule help determine the demand quantity at a price level. An elastic demand implies a robust change quantity accompanied by a change in price. Similarly, an inelastic demand implies that volume does not change much even when there is a change in price.

4.2.6.2 Income of the Consumers: Rising incomes lead to a rise in the number of goods demanded by consumers. Similarly, a drop in income is accompanied by reduced consumption levels. This relationship between income and demand is not linear in nature. Marginal utility determines the proportion of change in the demand levels.

4.2.6.3Prices of related goods or services:

Complementary products – An increase in the price of one product will cause a decrease in the quantity demanded of a complementary product. Example: Rise in the price of bread will reduce the demand for butter. This arises because the products are complementary in nature.

Substitute Product – An increase in the price of one product will cause an increase in the demand for a substitute product. Example: Rise in price of tea will increase the demand for coffee and decrease the demand for tea.

4.2.6.4 Consumer Expectations: Expectations of a higher income or expecting an increase in prices of goods will lead to an increase the quantity demanded. Similarly, expectations of a reduced income or a lowering in prices of goods will decrease the quantity demanded.

4.2.6.5 Number of Buyers in the Market: The number of buyers has a major effect on the total or net demand. As the number increases, the demand rises. Furthermore, this is true irrespective of changes in the price of commodities.

4.2.6.6 Consumer credit facility: If the consumer can get credit facility from the seller, banks etc. they will buy more. Credit facility mostly affects the demand of costly durable goods.

4.2.6.7 Advertisement Expenditure: Advertisement promotes sale. Other factors remaining the same, with every increase in the advertisement expense, there will be an increase in sales volume

4.2.7 Importance of Law of Demand

4.2.7.1 Price Determination - The study of law of demand is helpful for a trader to fox up the price of a commodity. He understands how much demand will decline if the price of the commodity rises to a certain level, and how much demand will grow if the price of the commodity falls. The market demand schedule can offer information on overall market demand at various prices. It helps management in determining how much of a price rise or drop in a commodity is beneficial.

4.2.7.2 Importance to the Farmers - Farmers' economic situation is affected by whether they have a good or bad crop. If a good crop fails to generate demand, the crop's price will drop drastically. The farmer will not benefit from a successful harvest, and vice versa.

4.2.7.3 Importance to the Government - Governments evaluate the law of demand when deciding whether or not to impose additional taxes or tariffs on products, particularly when the amount demanded is not strongly influenced by price.

4.3 Elasticity of Demand

The elasticity of demand is an economic term. It refers to demand sensitivity. In other words, it helps to understand how the demand for good changes is when there is a change in other economic variables. These economic variables include factors such as prices and consumer income. It primarily refers to the demand-price relation. Elasticity of demand, in broader terms, speaks of the extent of relationship or the *degree of responsiveness* of demand to the change in its various determinants.

Elasticity is a concept in economics that talks about the effect of change in one economic variable on the other.

Demand elasticity is calculated as the percent change in the quantity demanded divided by a percent change in another economic variable.

4.3.1 Types of Elasticity

On the basis of different factors affecting the quantity demanded for a product, elasticity of demand is categorized into mainly three categories:

- Price Elasticity of Demand (PED),
- Income Elasticity of Demand (YED), and
- Cross Elasticity of Demand (XED)

4.3.1.1 Price Elasticity of Demand (PED)

Price elasticity is generally referred to as elasticity of demand. It is the change in quantity demanded on account of a change in price. The rate at which the demand for a commodity changes in relation to its change in price is known as the elasticity of demand. It may be defined as the responsiveness of demand to a change in the price of the commodity. Price elasticity measures the degree at which demand responds to price.

One point to note is that unless otherwise mentioned, whenever the elasticity of demand is mentioned, it implies price elasticity.

$$ep = \frac{percentage\ change\ in\ quantitiy\ demanded}{percentage\ change\ in\ price}$$

$$\%change\ in\ Demand = \frac{New\ Demand - Old\ Demand}{Old\ Demand} x100$$

It can also be write as: $= \frac{Q2-Q1}{Q1} x100$ i.e. $= \frac{\Delta Q}{Q1} x100$

$$\%\ Change\ in\ Price = \frac{New\ Price - Old\ Price}{Old\ Price} x100$$

It can also be write as: $= \frac{P2-P1}{P1} x100$ i.e. $= \frac{\Delta P}{P1} x100$

Therefore,

$$ep = \frac{\frac{\Delta Q}{Q1}}{\frac{\Delta P}{P1}}$$

$$= \frac{\Delta Q}{Q1} x \frac{P1}{\Delta P}$$

For example, if demand for a commodity rises by 10% due to 5% fall in its price,

$$Ep = \frac{10}{-5} = -2$$

Note that Ep will always be negative due to inverse relationship of price and quantity demanded.

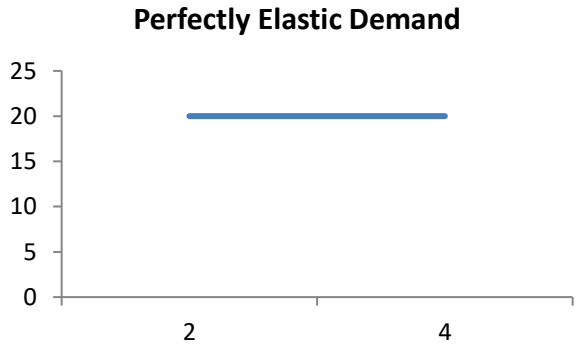
Degrees or types of Price Elasticity of Demand

It must have noticed that when price of salt rises, we go on consuming the same quantity of salt. In other words, quantity demanded of salt does not respond to the change in its price. But what happens when price of apples rises? We start purchasing less quantity of apples at higher price i.e. demand for apples responds when their price changes. So, degree of responsiveness of quantity demanded to a change in price may differ i.e. elasticity of demand could also differ. It means the variation in demand is not uniform when there is a change in price. In this context, the price elasticity of demand is generally classified into following five categories:

1. Perfectly Elastic Demand
2. Perfectly inelastic demand
3. Unit elasticity
4. Relatively elastic demand
5. Relatively inelastic demand

1. Perfectly elastic demand ($e_d = \infty$):

The demand for the commodity is called perfectly elastic when its demand expands



or contracts to any extent withoutor very little change in its price. In other words if a very small fall in price leads to unlimited increase in demand, we say that the demand is perfectly elastic. The elasticity of demand is infinitely and shape of the demand line parallel to the X-axis. Graphically, the demand curve is parallel to X-axis as shown in Fig
In the quantity demanded of the commodity rises by 100% without change in its price

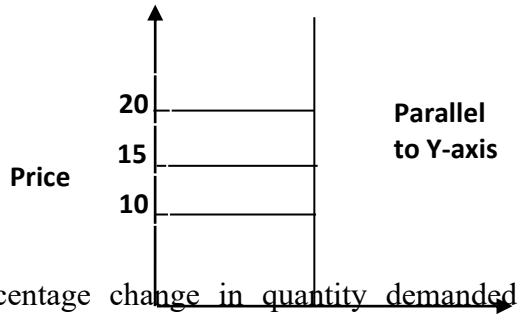
Price in Rs.	Quantity Demand
20	2
20	4

2. Perfectly inelastic demand ($e_d = 0$) :whether the price falls or rises there is no change in demand. In other words, demand is non-responsive to price changes, indicating the demand is perfectly inelastic. The demand for a commodity is called perfectly inelastic when quantity demanded does not change at all in response to change in its prices. Graphically, the demand curve is parallel to y-axis as shown in Fig.

Pr

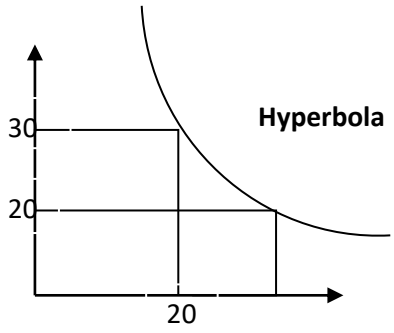
Price in Rs.	Quantity Demanded
10	2
15	2
20	2

2



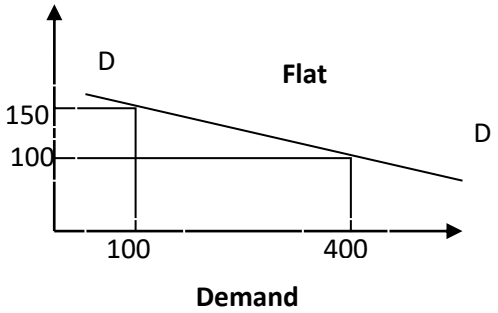
3. Unit elastic demand ($e_d = 1$):When percentage change in quantity demanded of a commodity equals percentage change in its price, the demand for the commodity is called unit elastic (See table). Graphically, demand curve is rectangular hyperbola as shown in fig. (Rectangular hyperbola is a curve on which all the rectangles formed on the curve have same area)

Price in Rs.	Quantity Demand
20	40
30	20



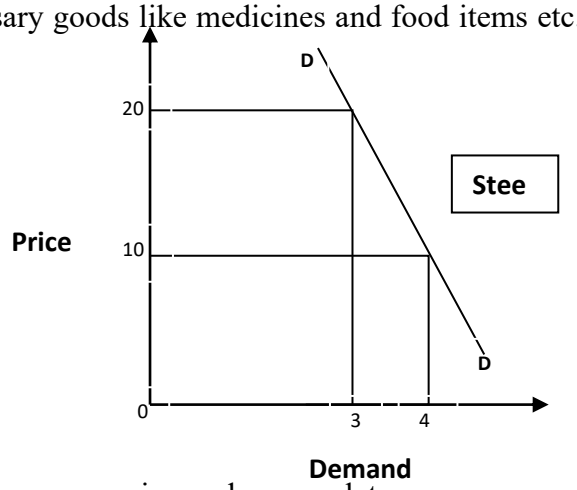
4. More than unit elastic demand ($e_d>1$): When the percentage change in quantity demanded of a commodity is more than the percentage change in its price, the demand for the commodity is called more than unit elastic or highly elastic. Graphically, the demand curve is flatter as shown in fig. The demand for luxury goods is more than unit elastic

Price in Rs.	Quantity Demanded
100	400
150	100



5. Less than unit elastic demand ($e_d < 1$) : The demand for a commodity is called less than unit elastic or relatively inelastic when the percentage change in quantity demanded is less than the percentage change in price of the commodity (See table). Graphically, demand curve is steeper as shown in Fig. The demand for necessary goods like medicines and food items etc. is less than unit elastic.

Price in Rs.	Quantity Demanded
10	4
20	3



The following table represent the elasticity measures, meaning and nomenclature

Numerical Measure of Elasticity	Verbal Description	Terminology
Zero	Quantity demanded does not change as price changes	Perfectly (or completely) inelastic
Greater than zero, but less than one	Quantity demanded changes by a smaller percentage than does price	Inelastic
One	Quantity demanded changes by exactly the same percentage as does price	Unit elasticity
Greater than one, but less than infinity	Quantity demanded changes by a larger percentage than does price	Elastic
Infinity	Purchasers are prepared to buy all they can obtain at some price and none at all an even slightly higher price	Perfectly (or infinitely elastic)

Now that we are able to classify goods according to their price elasticity, let us see whether the goods which we considered in our example...

Sl.No	Name of the Commodity	Calculation of Elasticity $\frac{(q1-q2)}{(q1+q2)} x \frac{(p1+p2)}{(p1-p2)}$	Nature of Elasticity
1	Radios	$\frac{(100-150)}{(100+150)} x \frac{(500+400)}{(500-400)}$ = 1.8 >1	Elastic
2	Wheat	$\frac{(500-520)}{(500+520)} x \frac{(10+9)}{(10-9)}$ = 0.37 <1	Inelastic
3	Common Salt	$\frac{(1000-1005)}{(1000+1005)} x \frac{(3+2.5)}{(3-2.5)}$ = 0.000014 <1	Inelastic

What do we note in above hypothetical example? We note that demand for radios is quite elastic, while demand for wheat is quite inelastic and demand for salt is almost same even after a reduction in price.

Generally, in real world situation also, we find that demand for goods like T.Vs, Radios, refrigerators, fans etc is elastic, demand for goods like wheat and rice is inelastic and demand for salt is highly inelastic or perfectly inelastic. Why do we find such a difference in the behaviour of consumers vis-a-vis different commodities? Let's study those factors which are responsible for the difference in elasticity of demand of various goods.

Factors on which price elasticity of demand depends

1. Nature of the Commodity: The demand for the necessary commodities is inelastic. Their demand doesn't change with a change in price. Ex. Demand for salt or rice. The demand for luxuries is elastic. When the price of the luxuries fall people buys much more of them and when the price rises, demand contrasts. Demand for T.V., Refrigerators etc.

2. Extent of Use: A commodity which is put to several uses has a comparatively elastic demand. For ex. Electricity, steal etc. When cheap, its use for less urgent needs will extend and when the price goes up. It will be put only to more urgent uses and its demand will contract.

3. Range of substitutes: If a commodity has substitutes the demand for the commodity will be elastic. For ex. When price of Tea rises, we may buy less of tea, but more of coffee vis-a-vis. Demand for sugar is inelastic as it does not has a suitable substitute.

4. Income level: Demand is inelastic among people with high income as they are not affected by price changes. They can continue buying the very same quantity even if the price is increased, but in the case of low income people demand is elastic as they are affected very much by a change in price. For ex. if the price of milk increases high income people will keep on consuming. The very same quantity whereas poor people may be compelled to reduce consumption.

5. Proportion of Income spent on the commodity: If an individual spends only a small part of his income on commodity, the price change has no affect on his demand for that commodity, ex. Soap, salt, match box etc. And the demand is inelastic

6. Urgency of demand: Demand for goods, the use of which can be postponed, is elastic. When for ex. the building materials are very costly building activities very much reduced, thereby reducing the demand for building materials. But in the case of essential commodities the demand is inelastic.

7. Durability of a commodity: In case the price of a durable commodity increases considerably, one may use the whole commodity for longer time even after getting it repaired. But the repair change should be considerably less than the price of the new commodity. Thus, the more durable and reparable a commodity is, the higher is its elasticity of demand.

8. Range of prices: Elasticity of demand also depends upon the range of price. At very high and very low range of prices, demand tends to be inelastic. Only rich people will buy goods at a higher range. Any change in price will not affect the rich people. Similarly, commodities with very low prices also enjoy inelastic demand. People will continue buying the very same quantity irrespective of the price changes. Only in the middle range of prices, demand tends to be elastic.

Uses of Price Elasticity Concept

1. Guide to price fixation of a new product
2. Decisions regarding price changes
3. Pricing in economic crisis
4. Price discrimination
5. Pricing of joint products
6. Taxation policy

4.3.1.2 Income Elasticity of Demand (YED)

Income elasticity refers to the changes in demand due to the change in the income of a buyer. It measures the responsiveness of demand for a commodity to a change in consumer's income. Generally we desire to purchase more of the things that we were purchasing previously, unless the commodity is an 'inferior' one. Income elasticity for superior goods is positive ad that for inferior goods is negative. Income elasticity is generally higher for durable goods than for non-durable goods.

Income elasticity demand is the degree of responsiveness of quantity demanded of a goods to a small change in the income of consumers The income elasticity of demand can be state as:

$$Ep = \frac{Percentage\ change\ in\ quantity\ demanded}{Percentage\ change\ in\ income}$$

There is a useful relationship between income elasticity for a goods and proportion of income spend on it. The relationship between the two is described in the following three propositions:

1. If the proportion of income spend on a goods remains the same as income increases, then income elasticity for the goods is equal to one.

2. If the proportion of income spent on a goods increases as income increases then the income elasticity for the goods is greater than one.

3. If the proportion of income spent on a goods decreases as income rises, then income elasticity for the goods is less than one.

Income elasticity of goods reveals a few very important features of demand for the goods in question. If income elasticity is zero it signifies that the quantity demanded of the goods is quite unresponsive to changes in income. When income elasticity is greater than zero or positive then an increase in income leads to an increase in quantity demanded of the

goods. This happens in case of most of the goods and such goods are called **normal goods**. On the other hand, goods having negative income elasticity are known as **inferior goods** and their demand falls as income increases. Another significant value of income elasticity is that of unity. When income elasticity of demand is equal to one, then the proportion of income spent on goods remain the same as consumer's income increases. This represents a useful dividing line. If the income elasticity for a goods is greater than one it shows the goods bulks larger in consumer's expenditure as he becomes richer. Such goods are called **luxury goods**. On the other hand, if the income elasticity is less than one it shows that the goods is relatively less important in consumer's eye and, therefore, is called **necessity.**

The following examples will make the above concepts clear:

a) The income of a household rises by 10%, the demand for wheat rises by 5%
b) The income of a household rises by 10%, the demand for T.V. rises by 20%
c) The income of a household rises by 5%, the demand for bajra falls by 2%
d) The incomes of a household rises by 7%, the demand for commodity X rises by 7%
e) The income of a household rises by 5%, the demand for buttons does not change at all.
Using formula for income elasticityi.e

$$Ei = \frac{Percentage\ change\ in\ quantity\ demanded}{Percentage\ change\ in\ income}$$

We will find income-elasticity for various goods. The results are as follows:

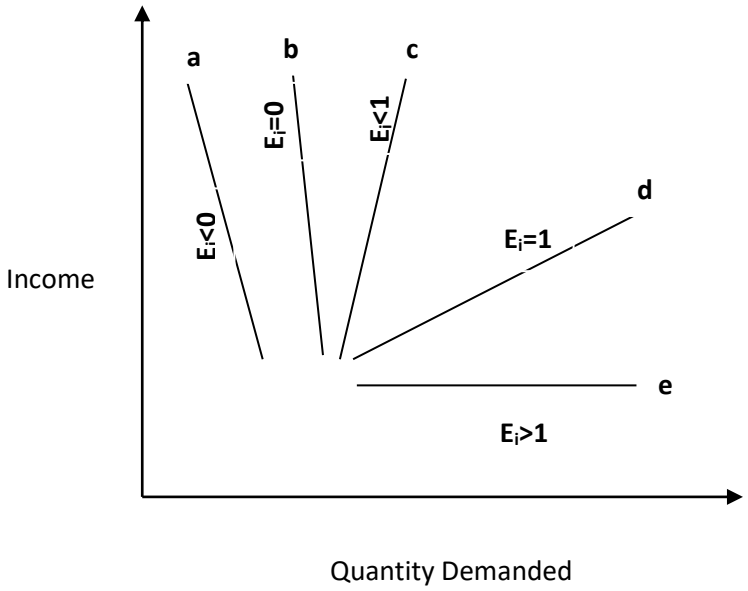
Sl.No	Commodity	Income Elasticity for the Household	Remarks
a)	Wheat	$\frac{5\%}{10\%}$ = 0.5 (E_i<1)	Since 0<0.5<1, wheat is a normal good and fulfils a necessity
b)	T.V.	$\frac{20\%}{10\%}$ = 2 (E_i>1)	Since 2>1, T.V. is a luxurious commodity
c)	Bajra	$\frac{-2\%}{5\%}$ = -0.4 (E<0)	Since -0.4<0, Bajra is an inferior commodity in the eyes of household.
d)	X	$\frac{7\%}{7\%}$ = 1 (E_i =1)	Since income elasticity is 1, X has unitary income elasticity
e)	Buttons	$\frac{0\%}{5\%}$ = 1 (E_i =0)	Buttons have zero income elasticity

Types of Income Elasticity of Demand

1. Zero Income Elasticity: here change in income does not change demand of a product. The change in income does not affect the demand for all

2. Negative Income Elasticity: An increase in the income of a consumer causes decreases in the quantities demanded by him. These types of goods are called inferior goods.

3. Positive Income Elasticity: An increase in income results in an increase in demand. Demand for superior goods increases when income decreases.



Income elasticity of demand will vary widely with different commodities. Generally luxuries like jewellery and fancy articles will have high income elasticity of demand, whereas ordinary household goods will have low income elasticity of demand. It is to be noted that the words luxury, necessity, inferior goods do not signify strict dictionary meanings here. In economic theory we distinguish them in the manner shown above.

Uses of Income Elasticity of Demand:

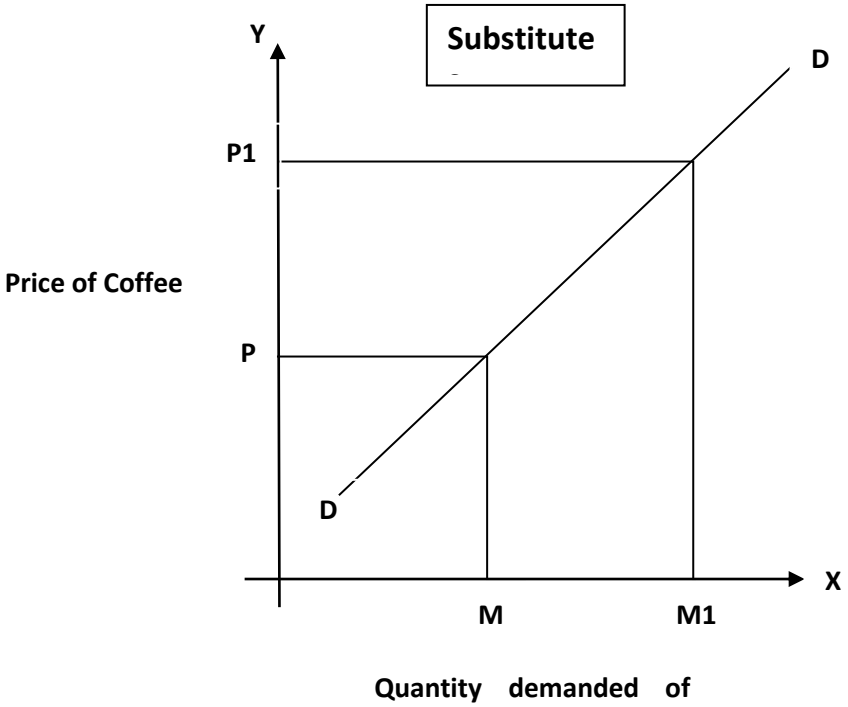
1. Demand forecasting
2. Product-line planning
3. Advertisement planning
4. Planning production according to business cycles

4.3.1.3 Cross Elasticity of Demand (XED)

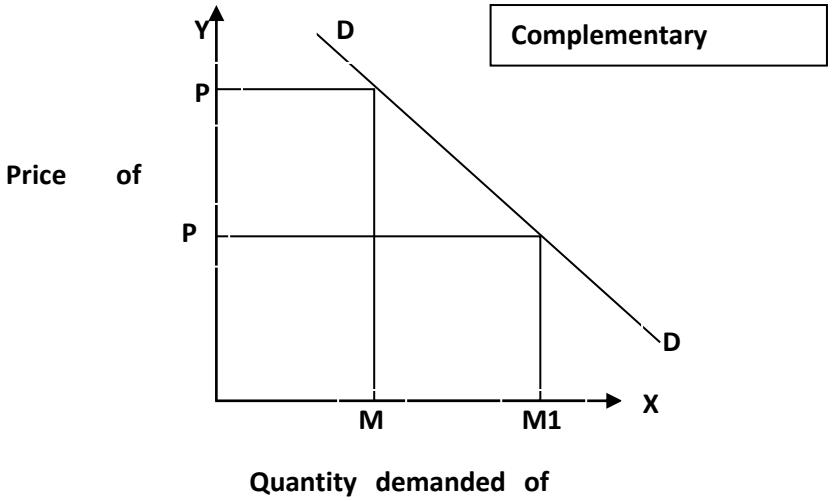
The cross elasticity of is the degree of responsiveness of a commodity to the changes in the price of its substitutes and complimentary goods. The substitute goods have positive cross elasticity because the increase in the price of one product increases the demand for other goods. But the complementary goods have negative cross elasticity because increase in the price of one type of goods decreases the demand for its complementary goods.

Price of Related goods and Demand: The demand for a particular commodity may change due to the changes of prices or related goods. These related goods may be either complementary goods of substitute goods. This type of relationship is studied under 'Cross Demand'. Cross demand refers to the quantities of a commodity or service which will be purchased with reference to changes, not of that particular commodity, but of other inter-related commodities, other things remaining the same. It may be defined as the quantities of a commodity that consumers buy per unit of time at different prices of a 'related article'. 'Other things remaining the same' is the assumption which means that the income of the consumer and also the price of the commodity in question will remain constant.

Substitute Products: In the substitute commodities the cross demand curve slopes upwards (i.e. positive) showing that more quantities of a commodity will be demanded whenever there is a rise in price of substitute commodity. In the figure, quantity demanded of Tea is give on the X axis. Y axis represents the price of coffee which is a substitute for a tea. When the price of coffee increases, the demand for coffee becomes less due to the operation of law of demand. But the consumers will go in for 'tea' to substitute in the place of coffee. The price of tea is assumed to be constant. So whenever there is an increase in price of one commodity, the demand for the substitute commodity will increase.



Complementary Goods: In the case of complementary goods, as shown in the below figure, a change in price of a good will have an opposite reaction on the demand of other commodity which is closely related or complementary. For instance, an increase in demand for pen will necessarily increase the demand for ink; so also bread and butter; horse and carriages, etc. Whenever there is a fall in demand of fountain pens due to the rise in prices of fountain pens, the demand for ink will fall down, not that the price of ink has gone up, but because the price of fountain pen has gone up. So we find that there is an inverse relationship between price of a commodity and demand for its complementary gods (other things remaining the same).



A change in the demand for one goods in response to a change in the price of another goods represents cross elasticity of demand of the former goods for the later goods. Symbolically

$$Ec = \frac{\Delta qx}{\Delta py} x \frac{py}{qx}$$

E_c stands for cross elasticity

q_x stands for original quantity demanded of Z
where Δq_x stands for change in quantity demanded for X
p_y stands for the original price of good Y
Δp_y stands for a small change in the price of Y

If two goods are perfect substitutes for each other cross elasticity is infinite and if two goods are totally unrelated, cross elasticity between them is zero.

If the two goods are substitutes (like tea and coffee) the cross elasticity is positive, that is, in response to a rise in price of one goods the demand for the other goods rises. On the other hand, when two goods are complementary (tea and sugar) to each other, the cross elasticity between them is negative so that rise in the price of one leads to a fall in the quantity demanded of the other. However, one need not base the classification of goods on the above definitions. While the goods between which cross elasticity is positive can be called substitutes, the goods between which cross elasticity is negative are not always complementary. This is because negative cross elasticity is also found when the income effect on the price change is very strong.

4.4 SUMMARY

An individual's demand for a product depends upon the price of the product income of the individual and the price of related goods. but amongst these determinants of demand economists single out price of the goods in question as the most important factor governing the demand for it. Indeed, the function of a theory of demand is to establish a relationship between price and the quantity demanded of a goods and to provide explanation for it. This relationship is illustrated graphically by a demand curve that shows how much will be demanded at each market price.

The demand curve will shift to right by a rise in income (unless the goods is an inferior one), a rise in the price of substitute, a fall in the price of a complement, a rise in population and a change in tastes in favour of this commodity. The opposite changes will shift the demand curve to the left. As against these when the price of the commodity rises, the consumer goes up the demand curve and the price falls, consumer goes down the demand curve.

Price elasticity of demand is measure of the extent to which the quantity demanded of a goods responds to a change in its price. When the numerical measure is less than one, we say that the demand is inelastic when it is greater than one, we say that the demand is elastic and when it is equal to one we say demand is unitary. Two special cases are when elasticity equals zero or infinity. When elasticity is equal to zero, the quantity demanded does not change at all as price changes, and when elasticity equals infinity, a very small reduction in price increases the quantity demanded from zero to an infinitely large number. Price elasticity can be measure at a point or between two points. Here we use the concepts of point elasticityand arc elasticity respectively. The main determinants of elasticity are the availability of substitutes of the commodity, number of uses of the commodity, nature of commodity, etc.

Income elasticity measures the response of quantity demanded to a percentage change in income of the consumer. Cross elasticity is the percentage change in quantity demanded of a product as a result of change in the price of its related product.

4.5 KEY TERMS

Elasticity, Cross Elasticity, Substitute Goods, Complementary Goods, Related Goods, Commodities, Household.

4.6 SELF ASSESSMENT QUESTIONS

1. Draw diagrams for:
   (i) Perfectly elastic demand
   (ii) Perfectly inelastic demand
   (iii) Unit elastic demand
2. Prepare a schedule for:
   (i) More than unit elastic demand
   (ii) Less than unit elastic demand
3. Explain 'percentage change' method of measuring price elasticity of demand.
4. Explain the relationship between total expenditure incurred on a commodity and its price elasticity of demand.
5. How is price elasticity of demand of a commodity affected by availability of its close substitutes? Explain
6. A household purchases 40 units of a good when its price is Re. 1 per unit. At what price he would purchase 36 units of it if coefficient of price elasticity of demand is unitary.
7. What quantity of a commodity would a household purchase at a price of ` 12 per unit, if he purchases 40 units of it at ` 10 per unit? Price elasticity of demand is (-) 1.5.
8. A household spends ` 120 on purchase of a commodity when its price is ` 6 per unit. When price rises to ` 10 per unit, his total expenditure on this commodity becomes ` 180. Calculate price elasticity of demand by percentage change method.
9. When price of a commodity falls from ` 20 per unit to ` 16 per unit, its quantity demanded increases by 20%. Calculate coefficient of price elasticity of demand.
10. A consumer buys 15 units of a good at a price of ` 10 per unit. At price ` 15 per unit he buys 10 units. What is price elasticity of demand? Use expenditure approach. Comment on the likely shape of demand curve on the basis of this measure of elasticity.

4.7 FURTHER READINGS

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2. Arrow, KJ. (1963) Uncertainty and the welfare economics of medical care. *The American Economic Review,* 53:941–973.
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LESSON-5

DEMAND FOR AND SUPPLY OF MEDICAL CARE

5.0 LEANING OBJECTIVES

1. What factors determine the price and quantity of health care?
2. In what sense is spending on health an investment?
3. What factors determine the demand for health-care services?
4. What is the production function for health?

Structure of the Lesson

5.2 DEMAND FOR HEALTHCARE

If we are considering the market for health care, we will be interested in the demand for health care. However, in considering this demand, it is important to recognise that health care has special characteristics that may make it different from other goods. One factor is that health care is not usually demanded because it is in itself pleasurable; in fact, it may be unpleasant. Instead, it is demanded mainly to improve health. So, even if health care is in itself unpleasant, it leads to more pleasure than would otherwise have been the case.

If health care is only demanded in order to improve health, is there then a demand for health improvements? Health can indeed be regarded as a good, in fact a fundamental commodity that is essential to people's well-being, leading to a demand for improvements in it. Health does have characteristics that more conventional goods have; it can be manufactured; it is wanted and people are willing to pay for improvements in it; and it is scarce relative to people's wants for it. However, its relationship with the demand for health care is not one-to-one, because although health is affected by health care, it is also affected by many other things and it also affects other aspects of welfare, not just health care. As a good, health is even more peculiar than healthcare, because of its characteristics. It is less tangible

than most other goods, cannot be traded and cannot be passed from one person to another, although obviously some diseases can.

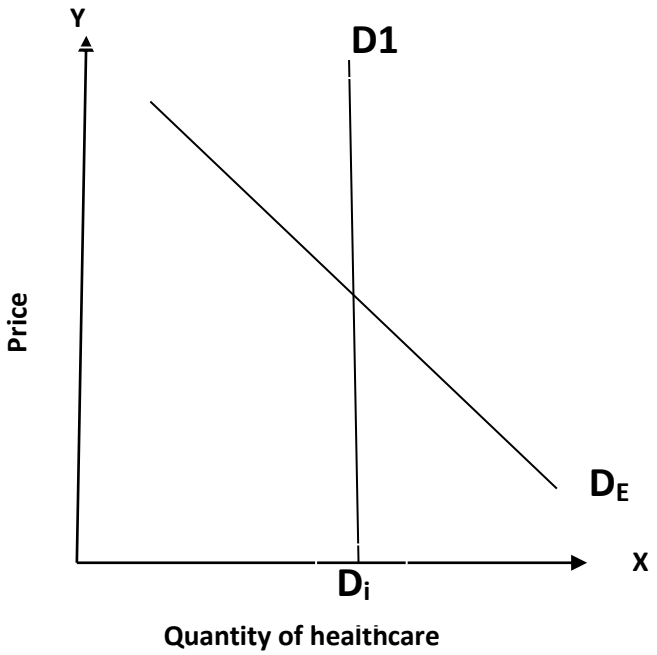
Demand for healthcare: Demand requires people to seek a service they can afford and are willing to pay for it. The need for healthcare is the care that doctors believe is essential for a person to stay healthy or healthy. Sometimes, patients think they need healthcare, but doctors believe they cannot benefit from such care. Sometimes the doctor believes that there is a medical need, but the patient does not consult his doctor because he prefers not to receive treatment or that he has not recognized the need. Even if patients have as much knowledge as doctors, their demands may be different from their needs.
The following factors affect the demand for healthcare:

1. Needs (based on patient perception)
2. Patient preferences
3. Price or cost of use
4. Income
5. transportation cost
6. waiting time
7. Quality of care (based on patient perception)

In the context of ordinary goods and services, economics distinguishes between a *want,* which is the desire to consume something, and *effective demand*, which is a want backed up by the willingness and ability to pay for it. It is effective demand that is the determinant of resource allocation in a market, rather than wants. But in the context of health care, the issue is more complicated than this, because many people believe that what matters in health care is neither wants nor demands, but *needs*. Health economists generally interpret a health care need as the *capacity to benefit* from it, thereby relating needs for health care to a need for health improvements. Not all wants are needs and *vice versa*. For example, a person may want nutrition supplements, even though these will not produce any health improvements for them; or they may not want a visit to the dentist even if it would improve their oral health.

Are people actually price-insensitive when it comes to health care? Or does demand for health care respond to price, even for health care that may be a matter of life and death? Figure 2.1 shows two possible demand curves. *DI* reflects our parents' advice: the individual with this demand curve is insensitive to price. He wants a certain level of care *QI* and is willing to pay any price to get it. *DE*, on the other hand, represents the demand of an individual sensitive to price. She takes price into account when deciding how much care to seek. A non-vertical curve like *DE* is said to be *downward-sloping*. In the side diagram may seem simple, but it lies at the center of health economics. Much of the policy debate about how best to organize the provision of health care is grounded in two questions:

• Is the demand curve for health care downward-sloping? Put another way;



are people sensitive to the price of health care?
• If the answer to the above question is "yes," people who face different prices or have different willingness to pay get different amounts of care. Do they end up with different health outcomes as a result?
If the answer to the first question is "no," and the demand curve for health care resembles *DI*, then the economics of health and medical care is of little interest. The incentives of patients seeking care are inconsequential; instead, there exists a medically optimal level of health (*QI*). Achieving that optimum is a medical problem to be solved by doctors and medical researchers. It is not an economic problem to be solved by utility-maximizing consumers. In this world, health economics is an accounting exercise involving the comparison of different medical treatments and the measurement of different medical outcomes. Health economists studying incentives and markets have little to add.

5.2.1 Is demand for health care downward-sloping?

If we wish to estimate a demand curve for health care, there are two basic questions to answer before we can even start: How do we define quantity, *Q*? And how do we define price, *P*? This may be simple in some cases: in the market for bubblegum, quantity is naturally defined as the number of sticks purchased and price as the cost of a stick.

Matters are more complicated when it comes to healthcare. A quick visit to the doctor's office is not equivalent to an overnight stay at the hospital. Counting both as one unit of health care is not appropriate, nor is it clear if an overnight stay should count as five doctors' visits or one hundred. Researchers handle this difficulty by measuring separate demand curves for different kinds of care.

Measuring price in health care is also not straightforward. Most health care is paid for by third parties such as private health insurers or the government. Unlike bubble gum buyers, patients pay a *premium*, or an upfront cost, to join an insurance plan, and in exchange they pay lower out-of-pocket prices for each medical service they receive.

When calculating demand, the appropriate measure of price is the marginal cost that patients pay when consuming a fixed amount of care. Researchers treat the co payment rate as a measure of price because it is proportional to the marginal cost faced by patients.

The remainder of this section summarizes the experimental evidence on downward sloping demand for different types of health care.

Outpatient care

If you have ever visited the doctor's office, hospital, or emergency room and gone home the same day, you were the recipient of outpatient care. Depending on the severity of your condition, you may not care that your insurance company requires you to pay $20for the visit. If you have a broken leg, you still want a cast set even if you have to pay the fee. On the other hand, if you just have a runny nose, you might choose chicken soup and *Simpsons* reruns instead of a visit to the doctor.

In the health insurance experiments, participants faced different prices for outpatient care. What effect did this have on demand for outpatient services? The effects are large and show that demand curves for these services are downward-sloping.

Inpatient and emergency room care

Imagine that you see your doctor and she tells you that your condition is sufficiently serious that you must stay overnight in the hospital for monitoring. The doctor is admitting you to the hospital for inpatient care.

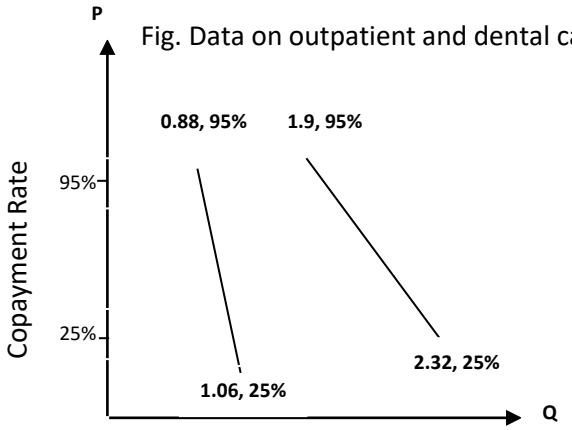
Given the severity of your condition, it seems unlikely in this case that you would be too worried about the 20% copayment that the insurance company will charge for the visit, even though the visit will ultimately be very expensive. In fact, even a 50% copayment rate

would not deter you from heeding the doctor's orders and staying overnight. What this thought experiment suggests is that demand for inpatient care may not be as sensitive to price as outpatient care is. Does the evidence from these health insurance experiments line up with this intuition?

Measuring price sensitivity with Elasticities

Evidence from the randomized experiments establishes that the demand for inpatient and outpatient care slopes downward, but we have not directly examined the demand curve implied by this evidence. The following figure plots data on the use of outpatient care and dental care from Keeler et al. (1988) in the form of a traditional demand curve.

Fig. Data on outpatient and dental care



- Dental Care
- Outpatient care

One simple measure of price sensitivity for each type of care is the slope of the line plotted between the two points of measured demand. The problem is that the units of the quantity demanded are not comparable. A dental visit is not the same as an outpatient visit. Hence, the fact that one slope is greater than the other is not meaningful for comparing price sensitivities between the two goods. Instead, we need a measure of price sensitivity that is not affected by the units in which either price or quantity is measured. The elasticity of demand provides just such a measure.

Let $Q1$ be the original quantity demanded at the price $P1$ and let $Q2$ be the new quantity demanded after the price changes from $P1$ to $P2$. The elasticity between these two points is defined as

$$E = \frac{(Q2 - Q1)/Q1}{(P2 - P1)/P1}$$

For instance, suppose an individual starts with an insurance plan with a 25% co payment rate and switches to a plan with a 95% copayment rate. This represents a 280% increase in the price of care for the individual: (95−25)/25×100%=280%. The above graph shows how her quantity of outpatient care demanded changes with the switch in insurance: it decreases from2.32 episodes per year to 1.9, an 18% decline. The elasticity of demand for this individual is

$$E = \frac{(Q2 - Q1)/Q1}{(P2 - P1)/P1} = \frac{(1.9 - 2.32)/2.32}{(95\% - 25\%)/25} = \frac{-0.18}{-0.742.8} = -0.06$$

A similar calculation shows that the elasticity of demand for dental care is also −0.06, even though the slope of the demand curve for dental care looks steeper; comparing slopes can be deceptive. Elasticity is useful for comparing demand curves for various goods, or the demand curve for the same good in different places or settings, because it is *unitless*. We can use elasticities to compare downward-sloping demand for different types of healthcare or for the same type of care in different studies. While it was already evident that the demand curves for these goods are downward-sloping, these calculations affirm that demand for these goods is relatively inelastic (−1<_<0).

One problem with the definition of elasticity _ we have used so far is it treats pricechanges from $P1$ to $P2$ and $P2$ to $P1$ asymmetrically. For instance, if the individual hadinstead switched from a 95% copayment to a 25% copayment plan, her elasticity of demandfor outpatient care would be

$$E = \frac{(Q2 - Q1)/Q1}{(P2 - P1)/P1} = \frac{(2.32 - 1.9)/1.9}{(25\% - 95\%)/95} = \frac{0.22}{-0.74} = -0.30$$

Analogously, her elasticity of demand for dental care would be −0.28. The choice of a starting point for price makes a big difference in the ultimate calculation of elasticity. We would prefer a measure of elasticity that does not require us to pick a starting point and treats price increases and decreases symmetrically. One way around this problem is to measure elasticity at the midpoint between the two endpoints of the demand curve, rather than at the endpoints themselves. This alternate formulation is called the arc elasticity.

5.2.2 Demand for health: the Grossman model

Is health something that happens to you, or something that you choose? Clearly, it is a little of both. A heart attack is an unpredictable event that can happen at any time, even to the young and fit. Getting hit by a bus is also bad for your health, and may be outside your control as well. But there are many actions you can take that reduce the likelihood of heart attacks or bus accidents. Cutting back on Big Macs, for instance, might reduce your heart attack risk, while cloistering yourself in your home virtually eliminates the prospect of a bus collision.

The situation is even more complicated when we consider that a single, seemingly beneficial action can have a wide variety of costs and consequences. For instance, you can take up jogging to keep in shape and avoid heart attacks, but this may increase your exposure to buses. And even if you manage to steer clear of buses, taking timeout of your day to jog will reduce the time available for other healthy activities like body-building or pilates. As always, every use of time has an opportunity cost and every decision implies a trade-off.

Furthermore, health is not the only important thing in life. You probably value many other things, not all of which will extend your lifespan. Maybe, like the authors, you enjoy the occasional jig saw puzzle or video game. These pursuits, while admirable, reduce the time available for activities that improve health. Maybe you also enjoy snacking on chocolate-chip cookies, which is not very time-consuming but may make you gain weight. Finally, your health decisions need to be considered in the context of your entire lifespan. Health is a form of capital – it is a valuable asset that pays dividends throughout your life but depreciates as you age. So managing your health over your lifetime is an economic problem that is similar, in some ways, to managing a stock portfolio.

We need a framework that captures all of the complex tradeoffs involved in health management. It should model health as a consumption good, an input into the enjoyment of other goods, and a capital good all at the same time. The Grossman model, developed by Michael Grossman in 1972, provides such a framework by treating health as something that people decide in part for themselves, rather than something that happens to them. The model provides a powerful set of explanations for a variety of health phenomena, including the link between socioeconomic status and health (Grossman 1972).

a) A day in the life of the Grossman model

The Grossman model ties together the health decisions that people make on a day to day basis in a framework that encompasses their entire lifespan. We start with the single-period utility function because the function for lifetime utility is built upon that.

Single-period utility

The Grossman model starts with a simplification: in any given period, an individuals' utility is based on her health and the other non-health goods she consumes. So the first role health plays in the model is as consumption *good*. Like the number of chocolate-chip cookies eaten or hours of video games played, one's health contributes directly to utility. An individual's utility for the period *t* is given by

$$U_t = U(H_t, Z_t)$$

Where:

•*Ht* is the level of health, and

•*Zt* is a composite good that represents everything else – video games, opera tickets, paintballing, and company of friends – which a well-adjusted utility function includes. We refer to *Z* as the home good. Note that health *care* does not appear explicitly in this utility function, so in this model the number of vaccines received affects utility only through health *H* (rather than affecting it directly).

While *H* and *Z* are distinct contributors to the utility function, there may be occasions when choices made by the individual simultaneously change *H* and *Z*. These choices may pose interesting tradeoffs for the individual. For instance, eating a double-double cheese burger may contribute positively to *Z* but also clog the individual's arteries and cause are duction in *H*. On the other hand, exercising may increase both the home good *Z* and health *H*.

Time Constraints within a single period

In addition to the possible tradeoffs between *H* and *Z*, there are other constraints that limit the individual's ability to gain utility. Perhaps the most important of these is the time constraint – there are only 24 hours in the day. This leads us to the next important piece of the Grossman model: our individual divides her time between exactly four different activities. She can spend her time working, playing, improving her health, or lying in bedsick. In any given period$_t$, the individual has _ units of time at her disposal, and faces the following time constraint:

$$\Theta = T^W + T^Z + T^H + T^S$$

Where:

- T^W is time spent working,
- T^Z is time spent playing,
- T^H is time spent improving health, and
- T^S is time spent sick.

In this formula, we suppress the *t* subscripts on each term to keep the notation simple, but please remember that there is a new stock of _ units of time to spend in each period and hence a new constraint. We will include *t* subscripts when needed for clarity.

Each of these activities plays a different role in the Grossman model and contributes to the individual's utility in a different way. Each hour spent working (*TW*) produces income, which can then be used to buy medical care (which contributes to *H*) or jigsaw puzzles(which contributes to the home good *Z*). But it is not enough for the individual to simply own a pile of jigsaw puzzles that she never solves. To produce *Z*, she must actually open the box and piece the puzzle together; that is, she must spend time at play (*TZ*). Similarly, she might buy a yoga mat or treadmill with her earned income, but she must spend time using them (*TH*) in order to actually produce *H*.

The time spent sick, *TS*, is a different kind of activity. It does not contribute to *H* or *Z*, and hence does not increase utility. It *does* impose an opportunity cost, because each hour spent sick is an hour not spent at the gym, or at work, or at the opera. Time spent sick is therefore lost time, and there are only _ hours in a day. Why would she choose to spend any time sick? She may not have a choice. In the Grossman model, *TS* is entirely determined by *H* and is not a voluntary activity.

Consider *the Simpson's* character Homer, who works at the Springfield Nuclear Power Plant. On Monday, he goes to work (*TW*), earning enough income to purchase the latest Troy McClure DVD and a box of day-old donuts. On Tuesday, he decides to skip work, forgoing income in order to spend quality time in front of the television with his donuts and new DVD (*TZ*). His activities on Tuesday increase the home good *Z*, because Homer derives enjoyment from Troy McClure's acting and the taste of jelly donuts. Unfortunately, his day is

sedentary – devoid entirely of exercise (*TH*) or any physical movement whatsoever. As a result, his health *H* deteriorates rapidly.

By Wednesday morning, Homer is feeling very sick, so he visits his doctor Dr Nick, taking an hour out of his morning to do so (*TH*).Dr Nick writes him a note excusing him from work for another day – his advice for Homer is to take placebo medication. The visit and the medication, which cost $50, improve Homer's *H* somewhat, but it cannot salvage his Wednesday.

Homer is so miserable he cannot even drag himself out of bed to watch Troy McClure for a fifteenth time or eat any of the remaining stale donuts (*TS*). For Homer, this is just wasted time. In just three days, Homer has illustrated most of the dynamics of the Grossman model.

Three roles of health in the Grossman model

1 Health is a *consumption good*. It contributes directly to the individual's utility function each period. Being healthy is valuable in and of it.

2 Health is an *input into production*. It generates productive time *TP* which is useful for producing more *H* and *Z*.

3 Health is a form of *capital*. Unlike the home good, it endures from period to period.

It can accumulate (or depreciate) over time, so improvements in health today can lead to better health tomorrow.

The market budget constraint In addition to the time constraint, the individual faces a more traditional budget constraint – she cannot spend more than she earns. Suppose that when the individual works, she earns a wage of *w* dollars per unit of time. Recall that her total time working in period *t* is $T^W t$, so her total income *Yt* for the period *t* is

$$Y_t = w \cdot T^W_t$$

The Grossman model does not specify how wages *w* are determined, but presumably the individual's education and other factors determine the wage she faces.

b) An optimal day

In the previous section, we discussed some of the key assumptions underlying the behaviour of an individual in the Grossman model during a single period. There are many moving parts to the model. The subject of this section is how those parts move together, and how they jointly determine the optimal values of *H* and *Z* each period. In the previous section, we maintained a focus on the decisions an individual makes during a single period. Of course, decisions about health in this period have consequences in future periods, because *H* is a stock. As we will see in the next section, the individual makes decisions with this aspect of health in mind. The optimal levels of *H* and *Z* in any given period depend on decisions that are right for a *lifetime*, not just for a single period.

In this section, however, we first suppose that the individual is optimizing utility over just one period in order to demonstrate the major tradeoffs within the model. While this is a simplification, it is one that builds intuition for what follows. In subsequent sections, we relax this simplification and consider optimization over the whole lifespan.

The production possibility frontier for *H* and *Z*

A production possibility set traces out all of the possible combinations of *H* and *Z* that are attainable given an individual's budget and time constraints. The edge or frontier of this set is called the *production possibility frontier* (PPF) and should be familiar to students of economics. It is helpful to think about what the PPF looks like in the Grossman model, as the constraints facing the individual are not the same as those consumers face in a typical decision model.

In a standard model of consumer decision-making, if a consumer decides to devote all his resources to one good, he can attain a maximal level of that good.

For instance, in a model of how consumers split their money between apples and bananas, every apple that the consumer buys results in less money left over to buy bananas.

This results in a PPF that resembles in the following diagram. An individual who devotes all resources to *H* will have no resources left to buy *Z*. Conversely, an individual who devotes all his resources to *Z* will have no *H*. The problem with this typical PPF in the context of the Grossman model is that, as we have seen, an individual with low *H* will have few resources to produce any *Z* at all. In the figure, points such as the one labelled"P" are not attainable and therefore should not be within the boundary of the PPF.

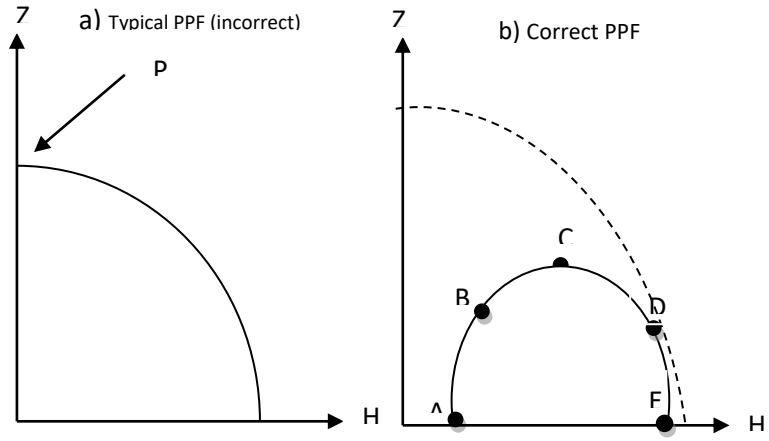


Figure: *Production possibility frontier (PPF) in the Grossman model. The incorrect PPF(a) describes health and the home good as substitutes. The maximum level of the home good is attained when health is* 0*. The problem with this PPF is that an individual with low* H *will have fewresources to produce any* Z*. Points such as the one labeled "P" are not attainable and therefore arenot within the boundary of the true PPF (b).*

Figure b) presents the correct PPF that is consistent with the budget and time constraints of the Grossman model. It is easiest to see why this frontier is shaped the way it is by examining five extreme points labelled in the figure.

• At point *A*, the individual is at H_{min}, and hence has no productive time available to work, play, or improve health. As a consequence, he cannot afford any of the home good *Z*.

• At point *B*, the individual is healthier, and has some time available for productive activities. Since his health is still low, he is on the steep portion of the illness avoidance function (Figure 3.1). Even small improvements in health yield large increases in productive time. We could call this the *free-lunch zone*: an hour spent in creasing health yields more than an hour reduction in sick time. The individual can increase *Z* without giving up *H*.

• At point *C*, the free lunch is over. One extra hour spent on health yields exactly one extra hour of productive time *TP*. The individual is still not as healthy as he could be, because he is not spending all his time jogging or all of his money on medical care. At point *C*, the individual enjoys the maximum amount of *Z* possible. If he tries to increase *Z* by shifting resources from health to the home good, the increase in sick time will outweigh the gain in the resources available for *Z* production. If he tries to increase *Z* by increasing *H* in an attempt to gain more productive time, he will again fail. Increases in health will not produce enough extra productive time to offset the time he must dedicate to improving *H*.

• Point *D* is in the *tradeoff zone*, which consists of all the points between *C* and *E*. Because the individual is on the flat part of the illness-avoidance function(Figure 3.1), increases in *H* yield only small decreases in sick time. In order to financeany increase in *H*, he must shift resources away from *Z*.

• At point *E*, the individual spends all of his time and money on health, totally ignoring the home good. As a result, *Z* is 0 and *H* is at its maximum attainable value.

c) Extending Grossman from cradle to grave(The multi-period utility function)

So far, our examination of the Grossman model focused on the life of an individual in a single period. This allowed for an introduction to the basic mechanics of the model, and demonstrated the important tradeoffs (between health and other goods, between useless sick time and costly health investment, between labor and leisure). But as we also hinted, health is

a stock; decisions made in the past impact today, and decisions today have implications in future periods. In this section, we examine the full multi-period version of the Grossman model and study how the individual navigates the tradeoffs between health, work, and play over an entire lifespan.

We are finally ready to present the full range of our individual's preferences. He values health and home goods in every single period of his life:

$$U = U(H_0, Z_0, H_1, Z_1, \ldots, H_{\Omega-1}, Z_{\Omega-1}, H_\Omega, Z_\Omega)$$

Where:

- Ht is the level of health in period $t = 0 \ldots \Omega$,
- Z_t is the amount of the home good in period t, and
- Ω is the length of the lifespan in periods.

As we shall see later, Ω is actually chosen by the individual.

Health as an investment good

Now that we have introduced the multi-period utility function, we are ready to discuss the third role of health (recall that the first two roles of health were as consumption good and as an input in the production of healthy time). Health is a form of human capital ak into knowledge or education. All capital goods have a few things in common. They store value from investments in previous periods, but they also depreciate in value over time. Health is no exception. The human body, like a car or pizza oven, may last for a long time but suffers the typical wear and tear that comes even with careful use. Let γbe the rate of depreciation; this measures how fast health H dissipates from period to period.

5.3 Supply of health care

The supply side of the market is analysed in economics in two separate but related ways. One is related to the resource input and goods output model outlined above, looking at how resource use, costs and outputs are related to each other within a firm. Some of the issues that this illuminates concern efficiency in production, which will be discussed below. Others include issues such as *economies of scale* - for example, are there any cost savings through having larger general practices?; *productivity* - for example, how many more surgical operations can a hospital provide if it hires an extra nurse?; and *factor substitution* - for example, does allowing dental hygienists to replace dentists in undertaking certain tasks lower the costs of producing dental care?

The other way in which supply is analysed is so called *market structure* - how many firms are there supplying to a market and how do they behave with respect to setting prices and output and making profits? There are two well-known theoretical extremes of market structure. *Perfect competition* has very many firms in the market so that none has any real economic power, none makes any profits, prices are as low as they can be and output is as high as can be. A *monopoly* has only one firm, which has great market power, makes as large profits as can be had and has higher prices and lower output. Other models are somewhere in between. The behaviour of some health care organisations, such as pharmaceutical companies, providers of services like dentistry, ophthalmic services and pharmaceutical dispensing and for-profit insurance companies can relatively easily be analysed using these models. It may be more difficult for other organisations. However, they may provide relevant insights, for example regulation of the UK provider sector is increasingly guided by the use of market forces involving contestability to provide some competitive pressures for efficiency.

We now turn to the supply side of health care. Economists often talk of output being produced using a **production function** that uses labor, capital, and intermediate inputs. What is the production function of a hospital?

- The labor in a hospital includes doctors, surgeons, orderlies, technicians, nurses, administrative staff, janitors, and many others.
- The hospital buildings are part of the hospital's capital stock. In addition, hospitals contain an immense quantity of other capital goods, such as hospital beds and diagnostic tools—everything from stethoscopes to x-ray machines.
- Intermediate inputs in a hospital include dressings for wounds, and pharmaceutical products, such as anesthetics used for operations.

Other sectors of the health-care industry likewise employ labor, capital, and intermediate inputs.

Doctors

If you look at the wall in your doctor's office, you will typically see a large number of framed degrees and other qualifications. To become a doctor, you must first succeed as an undergraduate and then go through multiple years in medical school. After this comes an internship and then you finally graduate and can practice on your own. In most countries, you must have a license to practice medicine. This makes sense: you would not want anyone to advertise as a doctor regardless of their skill level. Most of us would be unable to tell whether a particular individual was a qualified professional or a quack. When buyers cannot easily evaluate the quality of the good or the service they are purchasing, it is useful to have external validations of quality.

Licensing provides more than a guarantee of quality, however. It also limits entry into the profession. Suppose you learned that a small group of lobbyists in your hometown wanted gas station owners to be licensed in the same way as physicians. You would quite rightly suspect that their goal was not to guarantee high-quality gasoline. More likely, they would be trying to limit the number of gas stations to increase their market power. Your suspicions would not be allayed if these lobbyists argued that gas was potentially a very harmful commodity, so by licensing the sellers of gas, they were protecting the community. In the case of doctors, the underlying reason for licensing is not so nefarious. But it still creates a barrier to entry that limits competition and increases market power, just as it would with gas stations.

Doctors differ from gas station owners in many other ways. Typically, we suppose that gas stations and other firms in an economy have profit maximization as a goal. It is this presumption that allows us to develop our theory of supply. Doctors not only think about profits but also take an oath of office, called the Hippocratic Oath, which is as follows:

I swear by Apollo, the healer, Asclepius, Hygieia, and Panacea, and I take to witness all the gods, all the goddesses, to keep according to my ability and my judgment, the following Oath and agreement:

Other Health-Care Workers

In addition to doctors and specialists, there are many other kinds of workers in the health care industry, including nurses, dental hygienists, administrative staff, technicians, staff in care facilities such as hospices and nursing homes, and many others.

The scale and key structural drivers of the sector

5.3.1 Indian Demand

Demand in India's healthcare market will keep growing out to 2035, driven by:

1. a large and growing population, accounting for almost one-fifth of the global population
2. the double burden of infectious diseases and rising non-communicable diseases
    - over 250,000 Indians die from tuberculosis each year
    - non-communicable diseases (NCDs) such as heart disease, diabetes and obesity account for 60 per cent of deaths in India currently
    - urbanisation and lifestyle changes will fuel NCDs
    - by 2035, 109 million people in India are expected to suffer from diabetes
3. a growing consumer class, able to spend on healthcare
4. a growing penetration of insurance supporting greater spending
5. the proportion of elderly (over 65), which will rise from the current 6 per cent to 13 per cent by 2050, will increase the number of age-related ailments and demand for aged care
6. under-provision of medical goods (technologies, devices, pharmaceuticals)
    - India's medical device market is growing at 15 per cent annually and stands at $7.5 billion, of which 77 per cent is imported
    - India is likely to be the second largest driver of growth in the global nutraceutical market to the 2030s (after China), driven by rising incomes and consumer awareness.

There is a nexus between health, energy and agribusiness

- air pollution results in more than one million premature deaths in India each year highlighting a need for cleaner energy sources and conservation agriculture
- for example, Delhi's extreme air pollution in its winter months is the result of a combination of weather conditions, vehicular and industrial emissions and the burning of chaff in neighbouring states.

5.3.2 Indian Supply

India's health sector is also growing and modernising but cannot keep pace with rising demand

- the sector is growing at 16 per cent CAGR
- spending on health in India is only 4 per cent of GDP (sum of public and private spending) while the global average is 9.9 per cent
- government spending is 1.4 per cent of GDP (sum of central and state spending) while the global average is 6 per cent
    - this percentage has remained roughly constant for a decade
- weak public healthcare facilities result in reliance on expensive private care
    - low levels of public expenditure shift the burden of financing healthcare to out-of-pocket expenses at the point of care, which accounts for 62 per cent of total health spending and without any widespread financial protection scheme
    - a workable coding framework, under a holistic health financing system, is required for after-fact payment systems
    - the private sector has fostered pockets of efficiency, but is fragmented
    - an inadequate filtering and referral system
- medical infrastructure, while growing, does not cater to the market
    - India has 1 hospital bed per 1,000 people against the world median of 2.9
    - India has 0.7 physicians per 1,000 people against the world median of 2.5.

5.4 CONCLUSION

If it is accepted that health is a fundamental commodity, we can analyze the demand for improvements in health in very similar ways to the analysis of demand for other goods and services. A key difference is that because health is not tradable, it is not possible for it to be analyzed in the market framework (i.e., improvements in health cannot be purchased directly).Instead, we focus on the production of health as the key means in which people express their demand for it, which may involve the purchase of goods and services, thereby indirectly purchasing health improvements. Health care is therefore derived from the demand for health. Such analysis can be used for almost any goods or services, but it is of particular importance in health because the consumption of health care is usually not pleasurable, but is undertaken simply to improve health.

Economists see the demand for health as an investment decision. Using this model, health care is not a consumer good, but an input into the production of the capital good—the stock of health. This chapter presented the widely-used model of the demand for health developed by Michael Grossman.

5.5 KEY TERMS

Human capital; Indifference curve; Marginal efficiency of capital; Diminishing marginal utility; Diminishing marginal returns; Time preference

5.6 SELF ASSESSMENT QUESTIONS

1. How would you expect the price elasticity of demand for health care to vary with health status?
2. Would the demand for health care increase or decrease with an improvement in educational attainment in the community? Explain.
3. Compare the time-price elasticity of demand if people reduce their physician visits by 20 percent when the travel time to get the nearest physician is from15–45 minutes

5.7 FURTHER READING

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LESSON-6

HEALTHCARE DEMAND FORECASTING AND ITS TECHNIQUES

6.0 OBJECTIVES OF LEANING

After completing this lesson, you will be able to:

- Know what is demand forecasting
- Know about demand forecasting in healthcare sector
- Know about the various techniques used for demand forecasting

Structure of the Lesson

6.1 INTRODUCTION

Health forecasting is a novel area of forecasting, and a valuable tool for predicting future health events or situations such as demands for health services and healthcare needs. It facilitates preventive medicine and health care intervention strategies, by pre-informing health service providers to take appropriate mitigating actions to minimize risks and manage demand. Health forecasting requires reliable data, information and appropriate analytical tools for the prediction of specific health conditions or situations. There is no single approach to health forecasting, and so various methods have often been adopted to forecast aggregate or specific health conditions. Meanwhile, there are no defined health forecasting horizons (time frames) to match the choices of health forecasting methods/approaches that are often applied. The key principles of health forecasting have not also been adequately described to guide the process.

Forecasting is about predicting future events based on a foreknowledge acquired through a systematic process or intuition. Some of the earliest forms of health forecasting date back to the period of Hippocrates of Cos (460 BC–370 BC). Hippocrates studied the natural history of diseases and their major environmental sources (including food and water), and believed that *prognosis* was an important part of medical treatment, because by forecasting disease outcome, the physician established his expertise for treating the patient. He was able to develop and to forecast the occurrence of many diseases and conditions. One of the classical terms in medicine, '*Hippocratic facies*', describes the procedure for forecasting impending death based on the observation of distinctive signs and symptoms that he identified. The birth of forecasting as a science, however, is associated with weather forecasting and, is credited to Francis Beaufort, who developed the popularly known scale for measuring wind force (the Beaufort scale) and Robert Fitzroy, who developed the Fitzroy barometer for measuring atmospheric pressure. Forecasting has advanced over time and has increased in sophistication in many specialised areas, including the fields of health, economics and commerce, sports, environment (including meteorology), technology and politics.

Monitoring population health, which includes demographic and health surveillances and epidemiological studies on disease surveillance, can generate very useful data that can be used in health forecasting. A reliable health forecast is important for health service delivery, because it can: (1) enhance preventive health care/services; (2) create alerts for the management of patient overflows (in situations of peak demand for health care services); and (3) significantly reduce the associated costs in supplies and staff redundancy.

6.2 Meaning and Definition of Forecasting

Demand forecasting is a process of predicting the demand for an organisation's products or services in a specified time period in the future. A forecast is an estimate of a future situation. Forecast of demand is an estimation of the future level of demand. It is necessary to take steps for the acquisition of the various factors of production like raw materials, labour, capital, land, building etc. at the right time. A prior knowledge of the input requirement helps to acquire it at the lowest possible cost.

"Health forecasting is predicting health situations or disease episodes and forewarning future events. It is also a form of preventive medicine or preventive care that engages public health planning and is aimed at facilitating health care service provision in populations." Health forecasting has been commonly applied to emergency department visits, daily hospital attendance and admissions.

Forecasting is a key component in the practice of medicine, with the main purpose of improving both health service provision and individual patient outcome. For example, the United Kingdom Meteorological Office developed a health forecasting service for (Chronic obstructive pulmonary disease) COPD, which provides health alerts to both individuals and health service providers through an automated call system. This forecast combines a rule-based model that predicts risks based on environmental conditions, with an anticipatory care intervention to provide information, which is then communicated. The service enables patients and care providers to take precautionary actions to improve health service delivery and reduce COPD events.

6.3 Principles of health forecasting

There are four main principles of health forecasting:

1. The measure of uncertainty and errors,
2. The focus,
3. The nature of data aggregation and how it affects accuracy, and
4. The horizon of health forecasting.

These properties are not only hypothetically important, but also have applications that are exemplified in the literature, as discussed below.

6.3.1 Uncertainty and error of health forecasting

According to the definition of health forecasting, determining future health events or situations involves a degree of uncertainty, as it is virtually impossible to have a perfect (i.e. 100 % error free) prediction. We therefore describe the measurement of uncertainty and error of health forecasting as a principle in forecasting, because it is a basic requirement, and is also desirable for validation and determining the real value of a forecast. The data used is a major source of uncertainty and error, but this basic problem can partly be addressed methodologically, to obtain health forecasts with the least possible error.

3.6.2 The focus of health forecasting

The focus of a health forecast relates to the central targeted issue that is being forecast. This is with reference to the basic unit of the health outcome measure that is being forecast. One focus of health forecasting is to predict population health outcome in terms of the number of events occurring within a space of time; for example, the forecasting of life expectancy and health expectancies. Another focus is to determine the course of an ailment for a particular individual, which is usually referred to as prognosis. These two categories are related to how the data is aggregated in health forecasting.

6.3.3 Data aggregation and accuracy of health forecasting

Forecasting a health condition or situation for a population aggregate of a particular problem, or for groups of the same *family,* presents a lesser challenge than doing so for an individual case. This is because by pooling the variances of the population-related factors (which are usually broad and well known), the behavior of the aggregated data can have very stable characteristics, even when the individuals within exhibit high degrees of randomness. It is therefore easier to obtain a higher degree of accuracy in forecasting specific health events when using pooled population data versus data for specific individuals.

6.3.4 Horizons of health forecasting

A health forecasting horizon refers to the range of the period the forecast is intended to cover. The demand for a health forecast determines the forecast horizon (range), and this could be in a short, medium or long term. There are no clearly defined boundaries to health forecast horizons in the literature. However, borrowing the common classifications from other disciplines such as finance, business or econometric forecasting, a short-range forecast

horizon refers to a period of 1 day to a quarter of a year; a medium-range forecast horizon refers to a quarter of a year to a year; and long-range forecasts refer to a year to five or more years. These horizons are, however, not fixed for all situations, but rather may be defined in relation to the qualitative indicator being forecast (e.g. life expectancy), as well as its weighting over an extended time period. Major population health issues, such as life expectancy or future health expectancies, or the forecasting of some chronic disease prevalence (i.e. obesity and diabetes) in large populations, are often forecast with a long range. Short-range and medium-range health forecasts are applicable to routine health service uptake (e.g. hospital visits), and some chronic disease exacerbations resulting from environmental exposures. The choice of a long-range, medium-range, or short-range forecast is critical in developing a forecast,as health forecasting horizons also have applications in the planning of health care service deliveries.

6.4 TYPES OF DEMAND FORECASTING

There are several different ways to do demand forecasting. Forecast may differ based on the forecasting model to be used. Best practice is to do multiple demand forecasts which will give you a better-rounded picture of future sales. Using more than one forecasting model can also highlight differences in predictions.

6.4.1. Passive demand forecasting

Passive demand forecasting is the simplest type. In this model, you use sales data from the past to predict the future. One should use data from the same season to project sales in the future, so can be compared apples to apples. This is particularly true if the business has seasonal fluctuations.

The passive forecasting model works well if the business has solid sales data to build on. In addition, this is a good model for businesses that aim for stability rather than growth. It's an approach that assumes that this year's sales will be approximately the same as last year's sales. Passive demand forecasting is easier than other types because it doesn't require firm to use statistical methods or study economic trends.

6.4.2. Active demand forecasting

If the business is in a growth phase or if just starting out, active demand forecasting is a good choice. An active forecasting model takes into consideration of market research, marketing campaigns, and expansion plans.

Active projections will often factor in externals. Considerations can include the economic outlook, growth projections for the market sector, and projected cost savings from supply chain efficiencies. Start-ups that have less historical data to draw on will need to base their assumptions on external data.

6.4.3. Short-term projections

Short-term demand forecasting looks just at the next three to 12 months. This is useful for managing firm's just-in-time supply chain. Looking at short-term demand allows adjusting the projections based on real-time sales data. It helps respond quickly to changes in customer demand.

If you run a product line-up that changes frequently, understanding short-term demand is important. For most businesses, however, a short-term forecast is just one piece of a larger puzzle. You'll probably want to look further out with medium- or long-term demand forecasting.

6.4.4. Long-term projections

The long-term forecast will make projections one to four years into the future. This forecasting model focuses on shaping the business growth trajectory. While the firm's long-term planning will be based partly on sales data and market research, it is also inspirational.

Think of a long-term demand forecast as a roadmap. It can plan out the marketing, capital investments, and supply chain operations. That will help you to prepare for future demand. Being ready for your business growth is crucial to making that growth happen.

6.4.5. External macro forecasting

External macro forecasting incorporates trends in the broader economy. This projection looks at how those trends will affect your goals. An external macro demand forecast can also give you direction for how to meet those goals.

The company may be more invested in stability than expansion. However, a consideration of external market forces is still essential to your sales projections. External macro forecasts can also touch on the availability of raw materials and other factors that will directly affect your supply chain.

6.4.6. Internal business forecasting

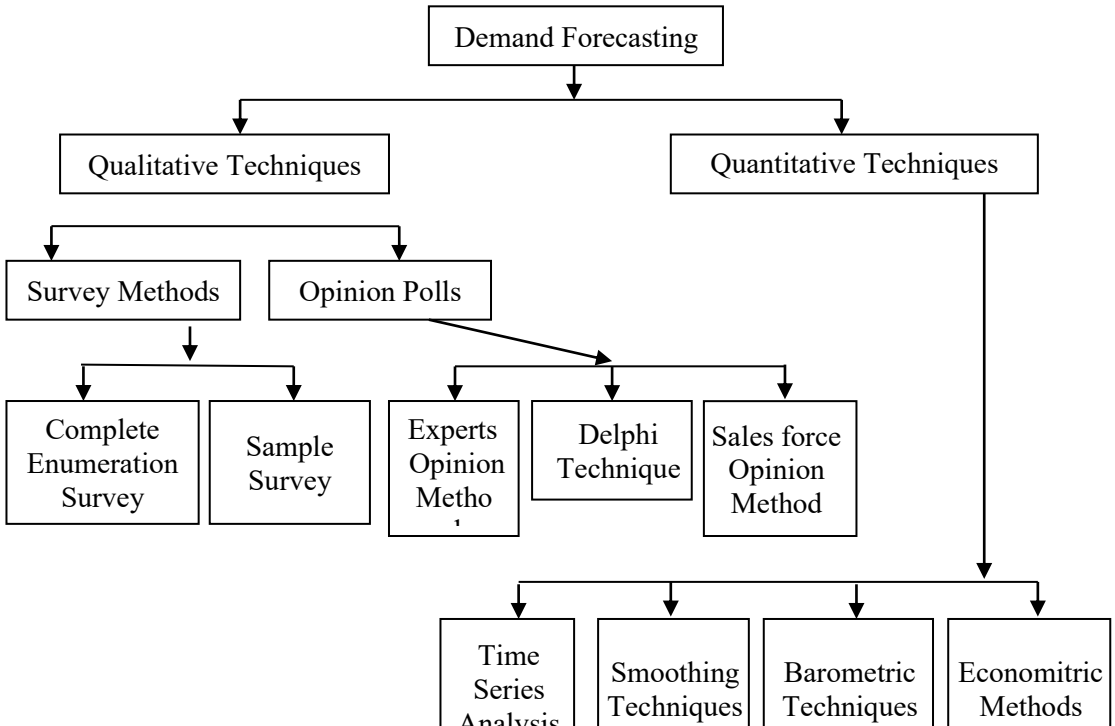
One of the limiting factors for the business growth is internal capacity. If we project that customer demand will double, does the enterprise have the capacity to meet that demand? Internal business demand forecasts review the business operations.

The internal business forecasting type will uncover limitations that might slow the firm's growth. It can also highlight untapped areas of opportunity within the organization. This forecasting model factors in the business financing, cash on hand, profit margins, supply chain operations, and personnel. Internal business demand forecasting is a helpful tool for making realistic projections. It can also point you toward areas where you need to build capacity in order to meet expansion goals.

6.5 DEMAND FORECASTING TECHNIQUES/METHODS

Different organisations rely on different techniques to forecast demand for their products or services for a future time period depending on their requirements and budget.
Methods of demand forecasting are broadly categorised into two types. Let us discuss these techniques & methods of demand forecasting in detail:

1. **Qualitative Techniques**
   - Survey Methods
   - Opinion Polling Method
2. **Quantitative Techniques**
   - Time Series Analysis
   - Smoothing Techniques
   - Barometric Methods
   - Econometric Methods



6.5.1 Qualitative Techniques

Qualitative techniques rely on collecting data on the buying behaviour of consumers from experts or through conducting surveys in order to forecast demand. These techniques are generally used to make short-term forecasts of demand.

Qualitative techniques are especially useful in situations when historical data is not available; for example, introduction of a new product or service. These techniques are based on experience, judgment, intuition, conjecture, etc.

I. Survey Methods

Survey methods are the most commonly used methods of forecasting demand in the short run. This method relies on the future purchase plans of consumers and their intentions to anticipate demand. Thus, in this method, an organization conducts surveys with consumers to determine the demand for their existing products and services and anticipate the future demand accordingly. The two types of survey methods are explained as follows:

- **Complete enumeration survey**: This method is also referred to as the **census method** of demand forecasting. In this method, almost all potential users of the product are contacted and surveyed about their purchasing plans. Based on these surveys, demand forecasts are made. The aggregate demand forecasts are attained by totalling the probable demands of all individual consumers in the market.
- **Sample survey:** In this method, only a few potential consumers (called sample) are selected from the market and surveyed. In this method, the average demand is calculated based on the information gathered from the sample.

II. Opinion poll

Opinion poll methods involve taking the opinion of those who possess knowledge of market trends, such as sales representatives, marketing experts, and consultants. The most commonly used opinion polls methods are explained as follows:

Expert opinion method: In this method, sales representatives of different organisations get in touch with consumers in specific areas. They gather information related to consumers' buying behaviour, their reactions and responses to market changes, their opinion about new products, etc.

Delphi method: In this method, market experts are provided with the estimates and assumptions of forecasts made by other experts in the industry. Experts may reconsider and revise their own estimates and assumptions based on the information provided by other experts.

Market studies and experiments: This method is also referred to as market experiment method. In this method, organisations initially select certain aspects of a market such as population, income levels, cultural and social background, occupational distribution, and consumers' tastes and preferences. Among all these aspects, one aspect is selected and its effect on demand is determined while keeping all other aspects constant.

6.5.2 Quantitative Techniques

Quantitative techniques for demand forecasting usually make use of statistical tools. In these techniques, demand is forecasted based on historical data.

These methods are generally used to make long-term forecasts of demand. Unlike survey methods, statistical methods are cost effective and reliable as the element of subjectivity is minimum in these methods. Let us discuss different types of quantitative methods:

I. Time Series Analysis

Time series analysis or trend projection method is one of the most popular methods used by organisations for the prediction of demand in the long run. The term time series refers to a sequential order of values of a variable (called trend) at equal time intervals.

Using trends, an organisation can predict the demand for its products and services for the projected time. There are four main components of time series analysis that an organisation must take into consideration while forecasting the demand for its products and services. These components are:

- **Trend component:** The trend component in time series analysis accounts for the gradual shift in the time series to a relatively higher or lower value over a long period of time.
- **Cyclical component:** The cyclical component in time series analysis accounts for the regular pattern of sequences of values above and below the trend line lasting more than one year.
- **Seasonal component:** The seasonal component in time series analysis accounts for regular patterns of variability within certain time periods, such as a year.
- **Irregular component:** The irregular component in time series analysis accounts for a short term, unanticipated and non-recurring factors that affect the values of the time series.

II. Smoothing Techniques

In cases where the time series lacks significant trends, smoothing techniques can be used for demand forecasting. Smoothing techniques are used to eliminate a random variation from the historical demand.

This helps in identifying demand patterns and demand levels that can be used to estimate future demand. The most common methods used in smoothing techniques of demand forecasting are simple moving average method and weighted moving average method.

The **simple moving average** method is used to calculate the mean of average prices over a period of time and plot these mean prices on a graph which acts as a scale.For example, a five-day simple moving average is the sum of values of all five days divided by five.

The **weighted moving average** method uses a predefined number of time periods to calculate the average, all of which have the same importance.For example, in a four-month moving average, each month represents 25% of the moving average.

III. Barometric Methods

Barometric methods are used to speculate the future trends based on current developments. These methods are also referred to as the leading indicators approach to demand forecasting.

Many economists use barometric methods to forecast trends in business activities. The basic approach followed in barometric methods of demand analysis is to prepare an index of relevant economic indicators and forecast future trends based on the movements shown in the index.

The barometric methods make use of the following indicators:

- **Leading indicators:** When an event that has already occurred is considered to predict the future event, the past event would act as a leading indicator.
- For example, the data relating to working women would act as a leading indicator for the demand of working women hostels.
- **Coincident indicators:** These indicators move simultaneously with the current event. For example, a number of employees in the non-agricultural sector, rate of unemployment, per capita income, etc., act as indicators for the current state of a nation’s economy.

- **Lagging indicators:** These indicators include events that follow a change. Lagging indicators are critical to interpret how the economy would shape up in the future. These indicators are useful in predicting the future economic events. For example, inflation, unemployment levels, etc. are the indicators of the performance of a country's economy.

IV. Econometric Methods

Econometric methods make use of statistical tools combined with economic theories to assess various economic variables (for example, price change, income level of consumers, changes in economic policies, and so on) for forecasting demand.

The forecasts made using econometric methods are much more reliable than any other demand forecasting method. An econometric model for demand forecasting could be single equation regression analysis or a system of simultaneous equations. A detailed explanation of regression analysis is given in the next section.

- **Regression Analysis:** The regression analysis method for demand forecasting measures the relationship between two variables. Using regression analysis a relationship is established between the dependent (quantity demanded) and independent variable (income of the consumer, price of related goods, advertisements, etc.). **For example**, regression analysis may be used to establish a relationship between the income of consumers and their demand for a luxury product. In other words, regression analysis is a statistical tool to estimate the unknown value of a variable when the value of the other variable is known.

After establishing the relationship, the regression equation is derived assuming the relationship between variables is linear.

The formula for a simple linear regression is as follows:

Y =a + bX

Where Y is the dependent variable for which the demand needs to be forecasted; b is the slope of the regression curve; X is the independent variable; and 'a' is the Y-intercept. The intercept a will be equal to Y if the value of X is zero.

6.6 CONCLUSION

Health forecasting is a dynamic process and requires frequent updates. This can be done with novel techniques and data, taking into consideration the principles of health forecasting. The methodologies currently used involve time series analyses with smoothing or moving average models, and less probabilistic forecasting models like QRM, which offers a useful alternative for predicting and forecasting extreme health events. The patterns of health data can be exploited in health forecasting, using time series analysis or other probabilistic techniques. Health forecasting is a valuable resource for enhancing and promoting health services provision; but it also has a number of drawbacks, which are related either to the data source, methodology or technology.

With an understanding of the basic features and limitations of the techniques, the decision maker can help the forecaster formulate the forecasting problem properly and can therefore have more confidence in the forecasts provided and use them more effectively. The forecaster, in turn, must blend the techniques with the knowledge and experience of the managers.

The need today, we believe, is not for better forecasting methods, but for better application of the techniques at hand.

6.7 KEY TERMS

Health forecasting, Principles, Prediction, Forecasting horizon, Health services

6.8 SELF ASSESSMENT QUESTIONS

1. Purpose of short-term forecasting
2. Explain in detail about the demand forecasting in healthcare
3. Principles of a good forecasting
4. Methods and techniques of Demand Forecasting and its uses

6.9 FURTHER READINGS

1. Managerial Economics and Strategy by Jeffrey M. Perloff Hardback ISBN13: 978-0134167879 2nd Edition
2. Managerial Economics by Samuelson Paperback ISBN13: 978-1118808948 8th Edition
3. Folland, Goodman Stano, the Economic of Health and health Care, third edition, 2020 by
4. Paul G. Farnham **Hardback** ISBN13: 978-0132773706 **3rd Edition**

UNIT 3: HEALTHCARE MARKET ANALYSIS

The market is the structure in which market forces operate; if that structure is operating properly, market forces can do their job to keep prices low and quality high. But if the market structure itself is flawed, market forces may not by themselves produce the desired results—in fact, they may do the opposite.

There are several conditions necessary for markets to function properly. Markets need more than a large number of buyers and sellers; there also must be information available about a product's quality and effectiveness, and a product's benefits and costs should be restricted to the consumer, among other conditions. In health care markets none of those conditions is met. Antitrust policy addresses only the need for a large number of buyers and sellers, and it does so incompletely.

To enable market forces to work properly, we need to address flaws in the structure of the health care markets in which those forces operate. Although it may run counter to the emphasis on deregulation in the current political climate, well-chosen regulation may be necessary to make markets work better, and to avoid the need for more—and more onerous—regulations to counter the adverse results produced by a broken health care market structure.

Lesson 7: Price and output Decisions in various market structures
Lesson 8: Price and output Decisions under Perfect Competition
Lesson 9: Price and output Decisions under Monopolistic Competition

LESSON-7
PRICE AND OUTPUT DECISIONS IN VARIOUS MARKET STRUCTURES

7.0 OBJECTIVES OF LEANING

After studying this unit, you will be able to:

1. Understand what market structure is
2. Explain the characteristics of market structures
3. Understand the different types of markets

Structure of the Lesson

7.1 INTRODUCTION

Market structure, in economics, refers to how different industries are classified and differentiated based on their degree and nature of competition for goods and services. It is based on the characteristics that influence the behavior and outcomes of companies working in a specific market.

Some of the factors that determine a market structure include the number of buyers and sellers, ability to negotiate, degree of concentration, degree of differentiation of products, and the ease or difficulty of entering and exiting the market.

Structure refers to market structure determined by technology and product nature. The variables that are used to describe market structure include seller concentration, degree of product differentiation and barriers of entry.

Conduct refers to a firm's behavior. The variables used to capture firm behavior include pricing strategies, collusion, advertising, research and development and capacity investment. Some have interpreted conduct as whether firms collude or compete.

Performance refers to outcome or equilibrium assessed in terms of allocative efficiency. The variables mostly used to measure performance are profitability and price cost margin.

Market structure means how firms are differentiated and categorized based on the type of goods they sell (homogeneous/heterogeneous) and how their functions and operations are affected by external factors and elements. Market structure makes it easier to understand the different characteristics of diverse markets. In this article, we will discuss the four different types of market structures namely perfect competition, monopolistic competition, monopoly, and oligopoly.

7.2 MEANING AND DEFINITION OF MARKET:

Market generally means a place or a geographical area, where buyers with money and sellers with their goods meet to exchange goods for money. In Economics market refers to a group of buyers and sellers who involve in the transaction of commodities and services.
In economics, market structures can be understood well by closely examining an array of factors or features exhibited by different players. It is common to differentiate these markets across the following seven distinct features.

1. The industry's buyer structure
2. The turnover of customers
3. The extent of product differentiation
4. The nature of costs of inputs
5. The number of players in the market
6. Vertical integration extent in the same industry
7. The largest player's market share

7.3 CHARACTERISTICS OF A MARKET:

1. Existence of buyers and sellers of the commodity.
2. The establishment of contact between the buyers and sellers. Distance is of no consideration if buyers and sellers could contact each other through the available communication system like telephone, agents, letter correspondence and Internet.
3. Buyers and sellers deal with the same commodity or variety. Since the market in economics is identified on the basis of the commodity, similarity of the product is very essential.
4. There should be a price for the commodity bought and sold in the market.

7.4 CLASSIFICATION OF MARKETS

Markets classified into three main categories according to Area, time, and competition. Each category has subdivisions as we will see.

1. Market according to Area
2. Market according to time
3. Market according to competition

7.4.1 Market according to Area

Based on the extent of the market for any product, markets can be classified into local regional, national and international markets.

Local Market: A local market for a product exists when buyers and sellers of commodity carry on business in a particular locality or village or area where the demand and

supply conditions are influenced by local conditions only. E.g. Perishable goods like milk and vegetables and bulky articles like bricks and stones.

National Market: When commodities are demanded and supplied throughout the country, there is national market e.g. wheat, rice or cotton Regional Market Commodities that are demanded and supplied over a region have regional market.

Global Market: When demand and supply conditions are influenced at the global level, we have international market. e.g. gold, silver, cell phone etc. On the basis of demand and supply, this geographical classification is made. With improved transport facilities and communications, even goods of local markets can become international goods.

7.4.2. Market according to time

Marshall classified market based on the time element. In economics "time" does not mean clock time. It means only the division of time based on extent of adjustability of supply of a commodity for a given change in its demand. The major divisions are very short period, short period and long period.

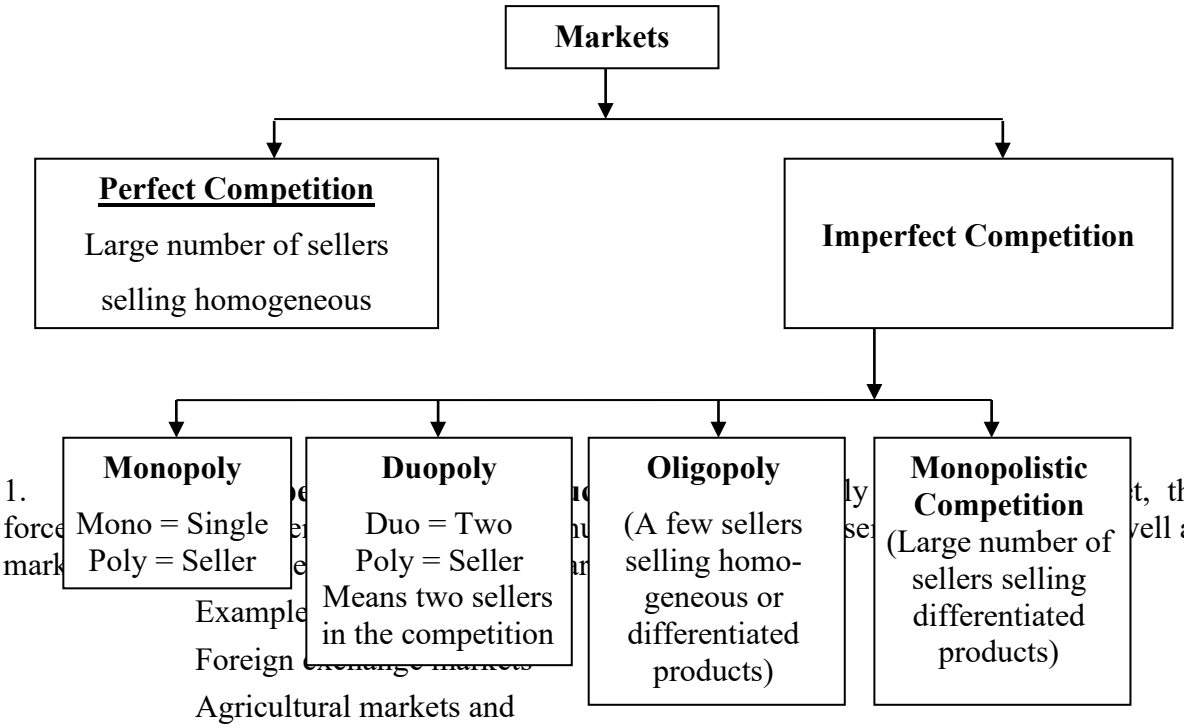
Very Short Period: Very short period refers to the type of competitive market in which the supply of commodities cannot be changed at all. So in a very short period, the market supply is perfectly inelastic. The price of the commodity depends on the demand for the product alone. The perishable commodities like flowers are the best example.

Short-period: Short period refers to that period in which supply can be adjusted to a limited extent by varying the variable factors alone. The short period supply curve is relatively elastic. The short period price is determined by the interaction of the short-run supply and demand curves.

Long Period: Long period is the time period during which the supply conditions are fully able to meet the new demand conditions. In the long run, all (both fixed as well as variable) factors are variable. Thus the supply curve in the long run is perfectly elastic. Therefore, it is the demand that influences price in the long period.

7.4.3. Market according to competition

These markets are classified according to the number of sellers in the market and the nature of the commodity. The classification of market according to competition is as follows



1. t, the
force ell as
mark
Example
Foreign exchange markets
Agricultural markets and

Internet-related industries.

2. **Monopolistic Competition Market Structure:** Unlike perfect competition, monopolistic competition does not assume the lowest possible cost of production. That little difference in the definition leaves room for huge differences in how the companies operate in the market. The companies under a monopolistic competition structure sell very similar products with slight differences they use as the basis of their marketing and advertising.

   Examples – Restaurants;
   Hairdressers
   Clothing
   TV programs

3. **Monopoly Competition Market Structure:** Monopolies and completely competitive markets sit at either end of market structure extremes. However, both minimize cost and maximize profit. Where there are many competitors in perfect competition, in monopolistic markets, there's just one supplier. High barriers to entry into the monopoly market leave a "mono-" or lone company standing so there is no price competition. The supplier is the price-maker, setting a price that increases profits.

   Examples – Microsoft and Windows
   DeBeers and diamonds
   Natural Gas Company.

4. **Oligopoly Competition Market structur**e: Not all companies aim to sit as a single building in a city. Oligopolies have companies that collaborate, or work together, to limit competition and dominate a different market or industry. The companies under oligopoly market structures can be small or large. However, the most powerful firms often have patents, finance, physical resources which control over raw materials that create barriers to entry for new firms.

   Examples - Steel industry; Aluminium; Film; Television; Cell phone; Gas

7.5 Comparison of Types of Market Structures

Points of Comparison	**Perfect Competition**	**Monopolistic Competition**	**Oligopoly**	**Monopoly**
Number of firms in the market	**Many**	**Many, but lesser than perfect competition**	**Few**	**One**
Product Characteristics	**Homogeneous**	**Differentiated**	**Differentiated**	**Single**
Barriers to Entry	**None**	**Slight**	**High**	**Very high**
Examples	**Farm products such as corns and wheat**	**Retail stores specially clothing centers**	**Steel, airlines, automobiles, aircraft manufacturer**	**Utilities such as water, gas, cable, television etc**

7.6 SUMMARY

- Market structure refers to how different industries are classified and differentiated based on their degree and nature of competition for services and goods.
- The four popular types of market structures include perfect competition, oligopoly market, monopoly market, and monopolistic competition.

- Market structures show the relations between sellers and other sellers, sellers to buyers, or more.

7.7 KEY WORDS

Market Structures: Market structure refers to how different industries are classified and differentiated based on their degree and nature of competition for services and goods. The four popular types of market structures include perfect competition, oligopoly market, monopoly market, and monopolistic competition.
Competition: Competition refers to a situation in a market in which firms or sellers independently strive for the patronage of buyers in order to achieve a particular business objective, e.g., profits, sales and/or market share. Context: Competition in this context is often equated with rivalry.
Monopoly: A market structure characterized by a single seller, selling a unique product in the market. In a monopoly market, the seller faces no competition, as he is the sole seller of goods with no close substitute
Oligopoly: A state of limited competition, in which a market is shared by a small number of producers or sellers.
Duopoly: A duopoly is a situation where two companies together own all, or nearly all, of the market for a given product or service. A duopoly is the most basic form of oligopoly, a market dominated by a small number of companies

7.8 SELF ASSESSMENT QUESTIONS AND PROBLEMS

I. Choose the correct answer
1. Perfect competition is a market situation where we have a single seller a) a single seller b) two sellers c) large number of sellers d) few sellers
2. A firm can achieve equilibrium when it,,s
a) MC = MR b) MC = AC c) MR = AR d)MR = AC
3. The firm and industry are one and the same under
a) perfect competition b) duopoly c) oligopoly d) monopoly
4. Under perfect competition, the demand curve is
a) Upward sloping b) horizontal c) downward sloping d) vertical
5. Most important form of selling cost is
a) Advertisement b) Sales c) Homogeneous product d) None

II.Fill in the blanks
6. Under perfect competition, the firms are producing _____ product.
7. When the Average revenue of the firm is greater than its average cost, the firm is earning _____
8. The perfect competitive firms are _____
9. Monopoly power achieved through patent right is called _____
10. Firms realize the importance of _____ under oligopoly.

III. Match the following

11. Global market	a. E.H. Chamberlin
12. Consumer sovereignty	b. Coco Cola
13. South Africa	c. Gold and silver
14. Technical monopoly	d. perfect competition
15. Monopolistic competition	e. diamond

7.9 FURTHER READINGS

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2. Bain, J.S. 1956. *Barriers to new competition*. Cambridge, Mass.: Harvard University Press.
3. Baumol, W.J., J.C. Panzar, and R.D. Willig. 1982. *Contestable markets and the theory of industry structure*. New York: Harcourt, Brace, Jovanovich.
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5. Managerial Economics by P.C Thomas – Kalyani Publishers, 2014 3rd Edition

LESSON-8

PRICE AND OUTPUT DECISIONS UNDER PERFECT COMPETITION

8.0 OBJECTIVES OF LEANING

After studying this unit, you will be able to:
1. State the assumptions of perfect competition
2. Discuss the price and output determination under perfect competition

Structure of the Lesson

8.1 INTRODUCTION

The function of a market is to enable an exchange of goods and services to take place. A market is any organisation whereby buyers and sellers of a good are kept in close touch with each other. It is precisely in this context that a market has four basic components

a. Consumers
b. Sellers
c. A commodity
d. A price.

Price determination is one of the most crucial aspects in microeconomics. Business managers are expected to make perfect decision based on their knowledge and judgment. Since every economic activity in the market is measured as per price, it is important to know the concepts and theories related to pricing under various market forms.

Perfect competition is a market structure characterised by a complete absence of rivalry among the individual firms. Thus, perfect competition in economic theory has a

meaning diametrically opposite to the everyday use of this term. In practice, businessmen use the world competition as synonymous to rivalry. In theory, perfect competition implies no rivalry among firms

8.2 ASSUMPTIONS OF PERFECT COMPETITION

In a perfectly competitive market structure there is a large number of buyers and sellers of the product and each seller and buyer is too small in relation to the market to be able to affect the price of the product by his or her own actions. This means that a change in the output of a single firm will not perceptibly affect the market price of the product. Similarly, each buyer of the product is too small to be able to extract from the seller such things as quantity discounts and special terms.

The model of perfect competition is based on the following assumptions:

1. Large numbers of sellers and buyers: The industry in perfect competition includes a large number of firms (and buyers). Each individual firm, however large, supplies only a small part of the total quantity offered in the market. The buyers are also numerous so that no monopolistic power can affect the working of the market. Under these conditions each firm alone cannot affect the price in the market by changing its output.

2. Product homogeneity: The technical characteristics of the product as well as the services associated with its sale and delivery is identical. There is no way in which a buyer could differentiate among the products of different firms. If the products were differentiated the firm would have some discretion in setting its price. This is ruled out in perfect competition. The assumption of large number of sellers and of product homogeneity implies that the individual firm in pure competition is a price-taker: its demand curve is infinitely elastic, indicating that the firm can sell any amount of output at the prevailing market price.

3. Free entry and exit of firms: There is no barrier to entry or exit from the industry. Entry or exit may take time but firms have freedom of movement in and out of the industry. If barriers exist, the number of firms in the industry may be reduced so that each one of them may acquire power to affect the price in the market.

4. Profit maximisation: The goal of all firms is profit maximisation. No other goals are pursued.

5. No government regulation: There is no government intervention in the market (tariffs, subsidies, rationing of production or demand and so on are ruled out).

The above assumptions are sufficient for the firm to be a price-taker and have an infinitely elastic demand curve. The market structure in which the above assumptions are fulfilled is called pure competition. It is different from perfect competition, which requires the fulfilment of the following **additional assumptions**.

6. Perfect mobility of factors of production: The factors of production are free to move from one firm to another throughout the economy. It is also assumed that workers can move between different jobs. Finally, raw materials and other factors are not monopolised and labour is not organised.

7. Perfect knowledge: It is assumed that all the sellers and buyers have complete knowledge of the conditions of the market. This knowledge refers not only to the prevailing conditions in the current period but in all future periods as well. Information is free and cost less.

Market Condition

The assumptions of perfect competition imply that a particular relationship exists between the firm and its market. Figure 8.2(a) shows the market demand curve for a product. It shows the total amount of this product demanded by consumers at different prices. It is a

normal downward sloping demand curve showing that for the industry as a whole quantity demanded increases as price falls

Figure 8.2(b) shows the seller perceived demand curve which is horizontal, i.e., it is perfectly elastic demand with respect to price. It hits the vertical axis at the current market price, P. Two factors are stopping the producer from charging a price such as P1, which is higher than P-perfect knowledge and homogeneous product. If a higher price is charged, customers would know immediately that a lower price is available elsewhere, and that the product for sale at the lower price is a perfect substitute for the more expensive product. The producer is also not undercutting its rivals and charging a price, P2 which is lower than P. The firm's output is small compared to the industry as a whole and so its entire output can be sold at the current market price of P. At a price lower than P the firm would not maximise its profit. Thus, over any feasible range of output, the demand curve for the product of the individual firm is perceived to be horizontal.

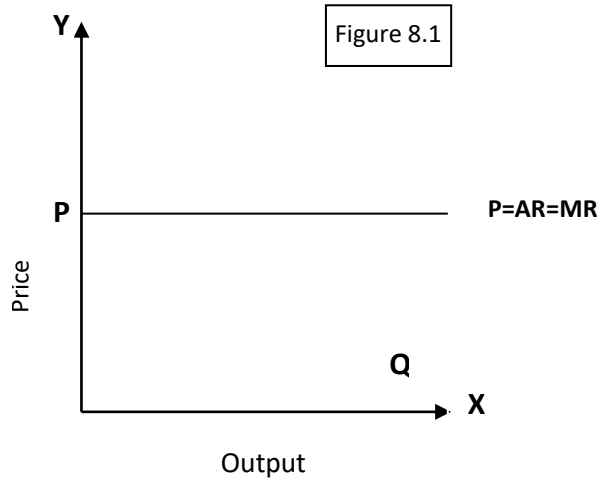
8.3 Equilibrium of the Firm

Firms aim to maximise profit and they can be in equilibrium only when they achieve this. For all firms, profit maximisation is achieved when marginal revenue, (MR), equals marginal cost (MC). If MR>MC, the firm adds more to revenue than it does to costs by increasing output and sales. When this happens profits will rise. On the other hand, if MREquilibrium of the Industry The industry is in long run equilibrium when a price is reached at which all firms are in equilibrium (producing at the minimum point of their LAC curve and making just normal profits). Under these conditions there is no further entry or exit of firms in the industry, given the technology and factor prices. At the market price P, the firms produce at their minimum cost, earning just normal profits. The firm is in equilibrium because at the level of output Q

LMC = SMC= P = MR

This equality ensures that the firm maximises its profit. At the price P, the industry is in equilibrium because profits are normal and all costs are covered so that there are no incentives for entry or exit.

Figure 8.1



8.4 PRICE AND OUTPUT DETERMINATION UNDER PERFECT COMPETITIVE FIRM

8.4.1 Short Run Analysis of a Perfectly Competitive Firm

The aim of a firm is to maximise profits. In the short run some inputs are fixed and these give rise to fixed costs which have to be incurred whether the firm produces or not. Thus, it pays for the firm to stay in business in the short run even if it incurs losses. Thus, the best level of output of the firm in the short run is the one at which the firm maximises profits or minimises losses. This is possible when the marginal revenue (MR) of the firm equals its short run marginal cost (MC). As long as MR exceeds MC, it pays for the firm to expand output because by doing so the firm would add more to its total revenue than to its total costs. On the other hand, as long as MC exceeds MR, it pays for the firm to reduce output because by doing so the firm will reduce its total cost more than its total revenue. Thus, the best level of output of any firm is the one at which MR=MC.

This can be seen in figure diagrammatically and with calculus as follows. A firm usually wants to produce the output that maximises its total profits. Total profits (T) are equal to total revenue (TR) minus total costs (TC). That is,

Π = TR–TC .... (1)

Where TR and TC are all functions of output (Q).

> ***Caution:*** Since, a perfectly competitive firm faces a horizontal or infinitely, elastic demand curve, P=MR, so that the condition for the best level of output can be restated as one of which P=MR =MC.

Taking the first derivative of p with respect to Q and setting it equal to zero gives

$$= \frac{d\pi}{dQ} = \frac{d(TR)}{dQ} - \frac{d(TC)}{dQ} = 0 \quad \text{.....(2)}$$

So that

$$= \frac{d(TR)}{dQ} = \frac{d(TC)}{dQ} \quad \text{..... (3)}$$

Equation (3) indicates that in order to maximise profits, a firm produces where marginal revenue (MR) equals marginal cost (MC). Since for a perfectly competitive firm, P is constant and TR = (P).(Q) so that

$$= \frac{d(TR)}{dQ} = MR = P$$

$$d(TR)\, dQ = MR = P$$

The first order condition for profit maximisation for a perfectly competitive firm becomes P = MR = MC.

The second order condition for profit maximisation requires that the second derivative of p with respect to Q be negative. That is

$$= \frac{d^2\pi}{dQ^2} = \frac{d^2(TR)}{dQ^2} - \frac{d^2(TC)}{dQ^2} < 0 \quad \text{..... (4)}$$

$$= \frac{d^2(TR)}{dQ^2} < d^2(TC)/dQ^2 \quad \text{..... (5)}$$

According to equation (5) the algebraic value of the slope of the MC function must be greater than the algebraic value of the MR function.

Under perfect competition, MR is constant (MR curve is horizontal). So that equation (5) requires that the MC curve be rising at the point where MR=MC for the firm to maximise its total profits.

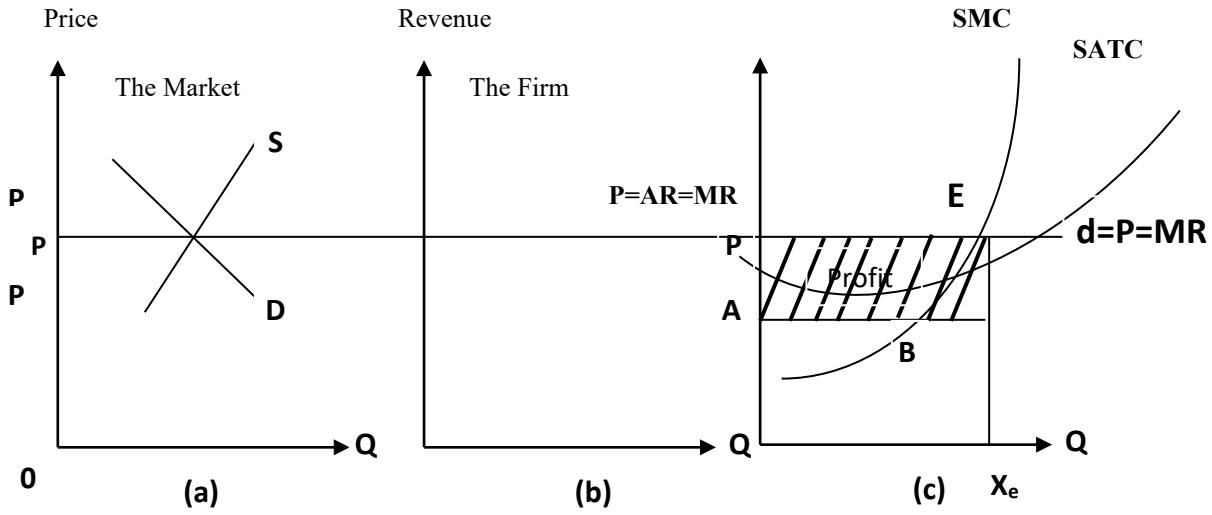


Figure 8.3: Relationship between the Market and the Firm in Perfect Competition

The top panel of Figure 8.3 (c) shows d which is the demand curve for the output of a perfectly competitive firm. The marginal cost cuts the SATC at its minimum point. The firm is in equilibrium (maximises its profits) at the level of output defined by the intersection of the MC and the MR curves (point E in Figure 9.3 (c)). To the left of E profit has not reached its maximum level because each unit of output to the left of Xe brings revenue greater than its marginal cost. To the right of Xe each additional unit of output costs more than the revenue earned by its sale so that a loss is made and total profit is reduced.

The fact that a firm is in short run equilibrium does not necessarily mean that it makes excess profits – whether the firm makes excess profits or losses depends on the level of the ATC at the short run equilibrium. If the ATC is below the price at equilibrium (Figure 8.3 (c)), the firm earns excess (equal to the area PABE). If, however, the ATC is above the price, the firm makes a loss (equal to the area FPeC).

In the latter case the firm will continue to produce only if it covers its variable costs. Otherwise it will close down, since by discontinuing its operations the firm is better off: it minimises its losses. The point at which the firm covers its variable costs is called "the closing down point". In Figure 8.5 the closing down point of the firm is denoted by point W. If price falls below P w the firm does not cover its variable costs and is better off if it closes down.

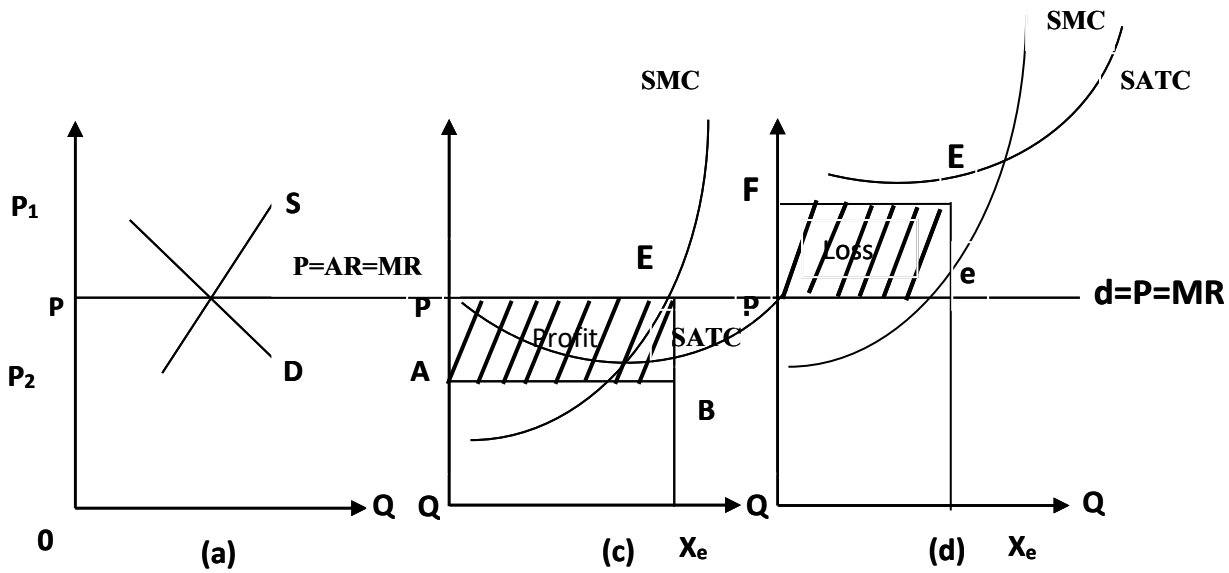
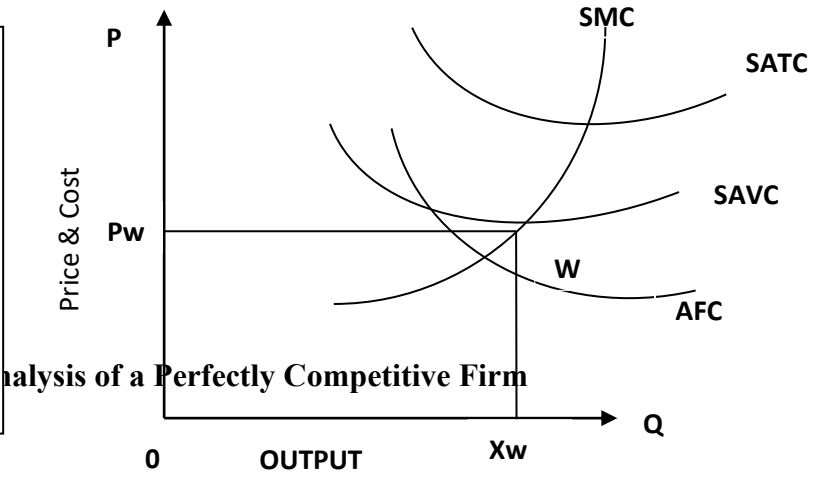


Figure 8.4: Relationship between the Market and the Firm in Perfect Competition

Did u know? All firms in the industry have the same minimum long run average cost.
This, however, does not meant have all firms have the same efficiency

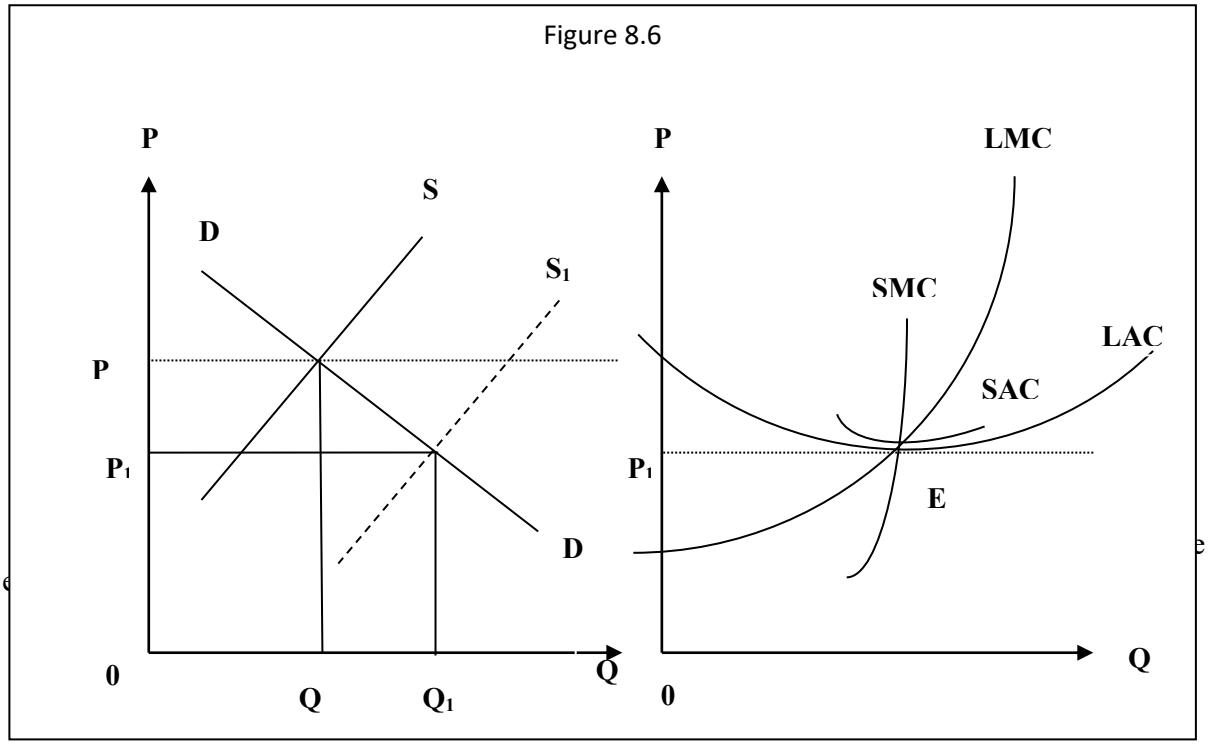


nalysis of a Perfectly Competitive Firm

Figure 8.5

In the long run, all inputs and costs of production are variable and the firm can construct the optimum or most appropriate scale of plant to produce the best level of output. The best level of output is one at which price P=LMC equals the long run marginal cost (LMC) of the firm. The optimum scale of the plant is the one in which short run average total cost (SATC) curve is tangent to the long run average cost of the firm at the best level of output. If existing firms earn profits, however, more firms enter the market in the long run. This increases the market supply of the product and results in a lower product price until all profits are squeezed out. On the other hand, if firms in the market incur losses, some firms will leave the market in the long run. This reduces the market supply of the product until all firms remaining in the market just breakeven. Thus, when a competitive market is in long run equilibrium, all firms produce at the lowest point on their long run average cost (LAC) curve and break-even. This is shown by point E in Figure 8.6.

Figure 8.6



At equilibrium the short run marginal cost is equal to the long run marginal cost and the short run average cost is equal to the long run average cost. Thus, given the above equilibrium condition, we have

SMC = LMC = LAC = SAC P = MR

This implies that at the minimum point of the LAC the corresponding (short run) plant is worked at its optimal capacity so that minimum of LAC and SAC coincide. On the other point, the LMC cuts the LAC at its minimum point and the SMC cuts the SAC at its minimum.

Example: For a firm operating in a perfectly competitive market, the following data are available Price P = AR = MR = 20/- unit

Total cost function is C = 8 + 17Q – 4Q2 + Q3

Let us find out the profit maximising output and the maximum profit.

Marginal cost will be available if the first derivative of the total cost function is obtained. Thus,

$$MC = \frac{d(C)}{dQ} = 17 - 8Q + 3Q^2$$

Maximum profit will be earned when MC and MR are equal:

$$20 = 17 - 8Q + 3Q^2$$

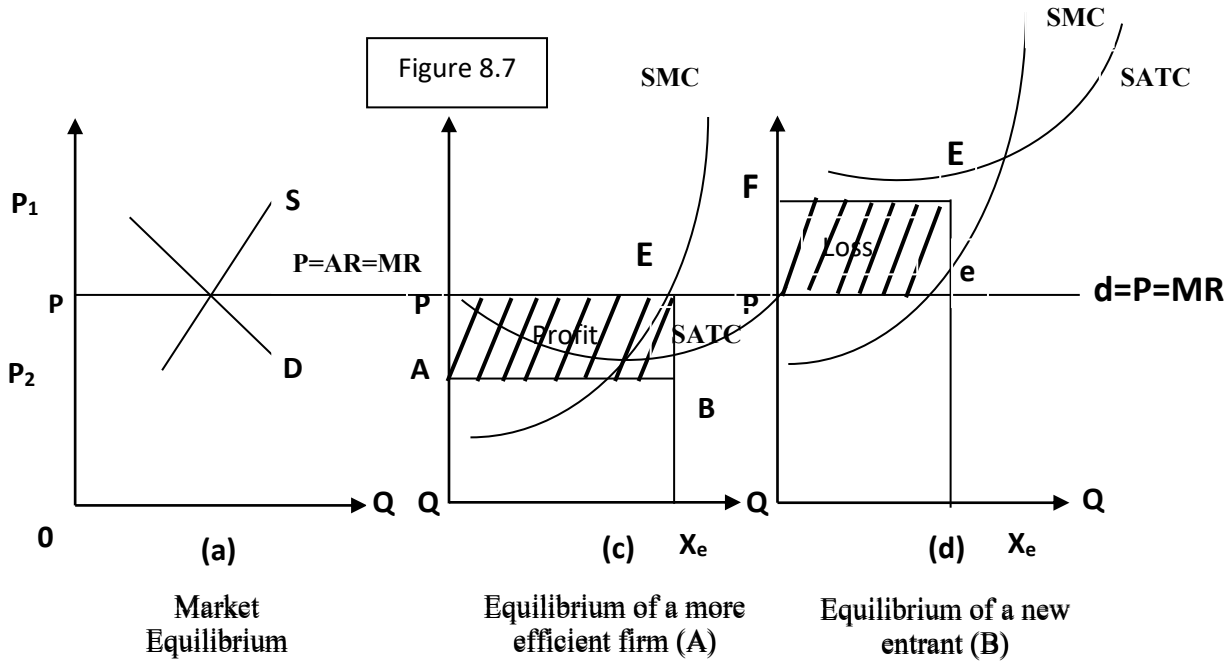
Solving this equation gives two values for Q as –1/3 and 3. Obviously, negative output cannot be produced; hence at Q = 3, the firm will maximise profits. Total revenue will be 60 and total cost 50. The maximum profit at the output of 3 units is 10.

8.4.3 Shut-down Decision

The supply curve of a competitive firm (fig. 8.5 (d)) is its marginal curve. It is that part of the marginal cost curve which is above the average variable cost curve. At a price P, the firm is incurring a loss, but it does not shut down because of fixed costs (Figure 8.5(d)). In the short run, a firm knows it must pay these fixed costs regardless of whether or not it produces. The firm only considers the costs it can save by stopping production and those costs are its variable costs. As long as a firm is covering its variable costs, it pays to keep on producing. It makes a smaller loss by producing. If it stopped producing, its loss would be the entire fixed costs.

8.4.4 Efficiency of a Firm

Since the price in the market is unique, this implies that all firms in the industry have the same minimum long run average cost. This, however, does not mean that all firms are of the same size or have the same efficiency, despite the fact that their LAC is the same in equilibrium. The more efficient firms employ more productive factors of production and/or able managers. These more efficient factors must be remunerated of their higher productivity, otherwise they will be bid off by the raw entrants in the industry. Or, as the price rises in the market the more efficient firms earn a rent which they must pay to their superior resources. Thus rents of more efficient factors become costs for the individual firm, and hence the LAC of the more efficient firm shifts upwards as the market price rises, even if the factor prices for the industry as a whole remain constant as the industry expands. In this situation, the LAC of the old, more efficient firms must be redrawn so as to be tangent at the higher market price. The LMC of the old firms is not affected by the rents occurring to its more productive factors. It will be shifted only if the prices of factors for the industry in general increase. Thus, the more efficient firms will be in equilibrium, producing that output at which the redrawn LAC is at its minimum (at which point the LAC is cut by the initial LMC given that factor prices remain constant). Under these conditions, with the superior, more productive resources properly costed at their opportunity cost, all firms have the same unit cost in their long run equilibrium.



8.5 LONG RUN EQUILIBRIUM, PRICE AND OUTPUT DETERMINATION

In the long run, all factors are variable. The firms can increase their output by increasing the number and plant size of the firms. Moreover, new firms can enter the industry and the existing firms can leave the industry. As a result, all the existing firms will earn only normal profit in the long run. If the existing firms earn supernormal profit, the new firms will enter the industry to compete with the existing firms. As a result, the output produced will increase. When the total output increases, the demand for factors of production will increase leading to increase in prices of the factors. This will result in increase in average cost. On the other side, when the output produced increases, the supply of the product increases. The demand remaining the same, when the supply of the product increases, the price of the product comes down. Hence the average revenue will come down. A fall in average revenue and the rise in average cost will continue till both become equal. (AR = AC). Thus, all the perfectly competitive firms will earn normal profit in the long run. Figure 3 represents long run equilibrium of firm under perfect competition. The firm is in equilibrium at point S where LMC = MR = AR = LAC. The long run equilibrium output is ON. The firm is earning just the normal profit. The equilibrium price is OP. If the price rises above OP, the firm will earn abnormal profit, which will attract new firms into the industry. If the price is less than OP, there will be loss and the tendency will be to exit. So in the long run equilibrium, OP will be the price and marginal cost will be equal to average cost and average revenue. Thus the firm in the long run will earn only normal profit. Competitive firms are in equilibrium at the minimum point of LAC curve. Operating at the minimum point of LAC curve signifies that the firm is of optimum size i.e. producing outputat the lowest possible average cost.

8.6 ADVANTAGES OF PERFECT COMPETITION

1. There is consumer sovereignty in a perfect competitive market. The consumer is rational and he has perfect knowledge about the market conditions. Therefore, he will not purchase the products at a higher price.

2. In the perfectly competitive market, the price is equal to the minimum average cost. It is beneficial to the consumer.

3. The perfectly competitive firms are price-takersand the products are homogeneous. Therefore it is not necessary for the producers to incur expenditure on advertisement to promote sales. This reduces the wastage of resources.

4. In the long run, the perfectly competitive firm is functioning at the optimum level. This means that maximum economic efficiency in production is achieved. As the actual output produced by the firm is equal to the optimum output, thereis no idle or unused or excess capacity.

8.7 SUMMARY

- In theory, perfect competition implies no rivalry among firms.
- In a perfectly competitive market structure there is a large number of buyers and sellers of the product and the product is homogeneous.
- There is free mobility of factors of production and the buyers and sellers have perfect knowledge of the market.
- In the short run the best level of output of the firm is the one at which the firm maximises profits or minimises losses. This is possible at P = MR = MC. The point at which the firm covers its variable costs is called "the closing down point".
- In long run the best level of output is one at which price P=LMC. At equilibrium the short run marginal cost is equal to the long run marginal cost and the short run average cost is equal to the long run average cost. Thus, given the above equilibrium condition, we have SMC = LMC = LAC = SAC P = MR

8.8 KEY WORDS

- **Equilibrium**: Condition when the firm has no tendency either to increase or to contract its output.
- **Minimum price**: Price at which the sellers refuse to supply the goods at all and store it with themselves.
- **Perfect competition**: A market structure characterized by a complete absence of rivalry among the individual firms.
- **Profit**: Difference between total revenue and total cost
- **Market period**: A very short period in which the supply is fixed, that is no adjustment can take place in supply conditions.

8.9 SELF ASSESSMENT QUESTIONS

1. State true or false for the following statements:
(a) In a perfect market there is large number of sellers.
(b) In a perfect market there is products differentiation.
(c) In a perfect market a change in the output of a single firm will affect the market price of the product.
(d) In perfect market, market agents are not fully aware of market.
(e) In a perfect market there is perfect mobility of resources.
(f) Under perfect competition the price curve and the marginal revenue curve are the same.
(g) Industry has no role in the determination of price under perfect competition.
(h) When the supply of a commodity decreases and its demand remains constant then it leads to decrease in price.
(i) For equilibrium MC curve should cut the MR curve from below.

2. Fill in the blanks:
(a) A perfectly competitive firm faces an ..... elastic demand curve.
(b) The closing down point is at which the firm covers its ..... cost.
(c) In the long run all costs are .....
(d) In the long run the best level of output is, where P = ...
(e) The LMC cuts the LAC at its ..... point.
(f) The ..... LRS is generally a feature of rapid growth.
(g) The ..... of an industry might lead to a fall in prices of some of its input.
(h) The factors of production are ..... to move in perfect competition.

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LESSON-9
PRICE AND OUTPUT DECISIONS UNDER MONOPOLISTIC COMPETITION

9.0 Objectives of Leaning

After studying this unit, you will be able to:

1. Understand the monopolistic market conditions
2. Understand how the price and output can be determined under monopolistic competition
3. Understand the assumptions and advantages of monopolistic competition

STRUCTURE OF THE LESSON

9.1 INTRODUCTION

Monopolistic competition, as the name itself implies, is a blending of monopoly and competition. Monopolistic competition refers to the market situation in which a large number of sellers produce goods which are close substitutes of one another. The products are similar but not identical. The particular brand of product will have a group of loyal consumers. In this respect, each firm will have some monopoly and at the same time the firm has to compete in the market with the other firms as they produce a fair substitute. The essential features of

monopolistic competition are product differentiation and existence of many sellers. The following are the examples of monopolistic competition in Indian context.

1. Shampoo Sun Silk, Clinic Plus, Ponds, Chik, Velvette, Kadal, Head and Shoulder, Pantene, Vatika, Garnier, Meera
2. Tooth Paste Binaca, Colgate, Forhans, Close-up, Promise, Pepsodent, Vicco Vajradanti, Ajanta, Anchor, Babool.

In order to understand monopolistic competition, let's look at the market for soaps and detergents in India. There are many well-known brands like Lux, Rexona, Dettol, Dove, Pears, etc. in this segment.

Since all manufacturers produce soaps, it appears to be an example of perfect competition. However, on close scrutiny, we find that each seller varies the product slightly to make it different from its competitors.

Hence, Lux focuses on making beauty soaps, Liril on freshness, Dettol on antiseptic properties, Dove on smooth skin, etc. This allows each seller to attract buyers to itself based on some factor other than price.

This market has a mix of both perfect competition and monopoly and is a classic example of monopolistic competition.

9.2 CHARACTERISTICS OF MONOPOLISTIC COMPETITION

9.2.1 Existence of Large Number of firms: Under monopolistic competition, the number of firms producing a commodity will be very large. The term 'very large,, denotes that contribution of each firm towards the total demand of the product is small. Each firmwill act independently on the basis of product differentiation and each firm determines its price-output policies. Any action of the individual firm in increasing or decreasing the output will have little or no effect on other firms.

9.2.2 Product differentiation: Product differentiation is the essence of monopolistic competition. Product differentiation is the process of altering goods that serve the same purpose so that they differ in minor ways. Product differentiation can be brought about in various ways. Product differentiation is attempted through

(a) Physical difference;
(b) Quality difference;
(c) Imaginary difference and
(d) Purchase benefit difference.

It may be by using different quality of the raw material and different chemicals and mixtures used in the product. Difference in workmanship, durability and strength will also make product differentiation. Product differentiation may also be effected by offering customers some benefits with the sale of the product. Facilities like free servicing, home delivery, acceptance of returned goods, etc. would make the customers demand that particular brand of product when such facilities are available. Product differentiation through effective advertisement is another method. This is known as sales promotion. By frequently advertising the brand of the product through press, film, radio, and TV, the consumers are made to feel that the brand produced by the firm in question is superior to that of other brands sold by other firms.

9.2.3 Selling Costs: From the discussion of 'product differentiation,, we can infer that the producer under monopolistic competition has to incur expenses to popularize his brand. This expenditure involved in selling the product is called selling cost. According to Prof. Chamberlin, selling cost is "the cost incurred in order to alter the position or shape of the demand curve for a product". Most important form of selling cost is advertisement. Sales promotion by advertisement is called non-price competition.

9.2.4Freedom of entry and exit of firms: Another important feature is the freedom of any firm to enter into the field and produce the commodity under its own brand name and any firm can go out of the field if so chosen. There are no barriers as in the case of monopoly Monopolistic competition presupposes that customers have definite preferences for particular varieties or brand of products. Hence pricing is not the problem but product differentiation is the problem and competition is not on prices but on products. Thus in monopolistic competition, the features of monopoly and perfect competition are partially present.

9.2.5 Profit Maximisation: All firms under this market want to maximise their profits. Their main objective is to maximise the profit given the cost conditions i.e. Max=TR-TC

9.2.6 Firm is a Price maker: Despite being in large number of firms set their own price, prices are not determined by the industry as the case for perfect competition. But as stated above they cannot influence the market price.

9.2.7 Non-price competition: In monopolistic market the competition is not of price but of acquiring the market power and they enjoy some degree of market power through product differentiation.

9.3 EQUILIBRIUM OF A FIRM IN SHORT RUN:

9.3.1 Profit making firm in the short run

In the situation of monopolistic competition, if any firm wants to sell maximum quantity of its production then it has to decrease the cost. That's why, in the situation of monopolistic competition, Average Revenue Curve (AR Curve) and Marginal Revenue (MR Curve) fall down in the form of left to right. In monopolistic competition, a firm produce till the point or limit at which

(i) Marginal Revenue is equal to Marginal Cost (MR = MC) and

(ii) Marginal Revenue Curve cuts Marginal Cost Curve from the lower side.

In this situation firm is in the condition of balancing by the production. The study of equilibrium firm in monopolistic competition can be done in two different durations— (1) Short Run and (2) Long Run

The short-run equilibrium of a monopolistic competitive organization is the same as that of an organization under monopoly. In the short run, an organization under monopolistic competition attains its equilibrium where marginal revenue equals marginal cost and sets its price according to its demand curve. This implies that in the short run, profits are maximized when MR=MC.

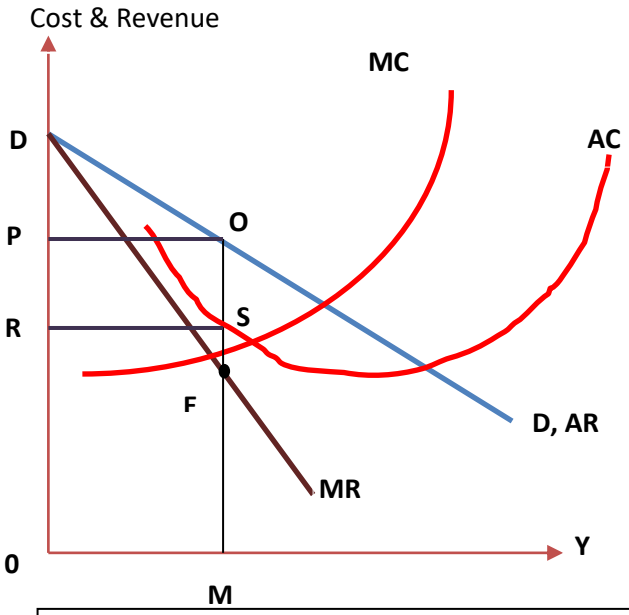

Fig. 9.1 Short Period Equilibrium of a Monopolistic

MC and AC are the short period marginal cost and average cost curves. The sloping down average revenue and marginal revenue curves are shown as AR and MR. The equilibrium point is E where MR = MC. The equilibrium output is OM and the price of the product is fixed at OP.The difference between average cost and average revenue is SQ. The

output is OM. So, the supernormal profit for the firm is shown by the rectangle PQSR. The firm by producing OM units of its commodity and selling it at a price of OP per unit realizes the maximum profit in the short run.

The different firms in monopolistic competition may be making either abnormal profits or losses in the short period depending on their costs and revenue curves. In the long run, if the existing firms earn super normal profit, the entry of new firms will reduce its share in the market. The average revenue of the product will come down. The demand for factors of production will increase the cost of production. Hence, the size of the profit will be reduced. If the existing firms incur losses in the long-run, some of the 0 Cost venue & Re YM MR D AR, P O S MCACR E D firms will leave the industry increasing the share of the existing firms in the market. As the demand for factors becomes less, the price of factors will come down. This will reduce the cost of production, which will increase the profit earned by the existing firm. Thus under monopolistic competition, all the existing firms will earn normal profit in the long run.

9.3.2 Loss making firm in the short run, when marginal cost is greater than marginal revenue, organizations would incur losses

Figure-9.2 shows the condition of losses in the short run under monopolistic competition. Here, OP' is smaller than MT, which implies that average revenue is smaller than average cost. TP is representing the loss that has incurred per unit of output. Therefore total loss is depicted from rectangle T'TPP'.

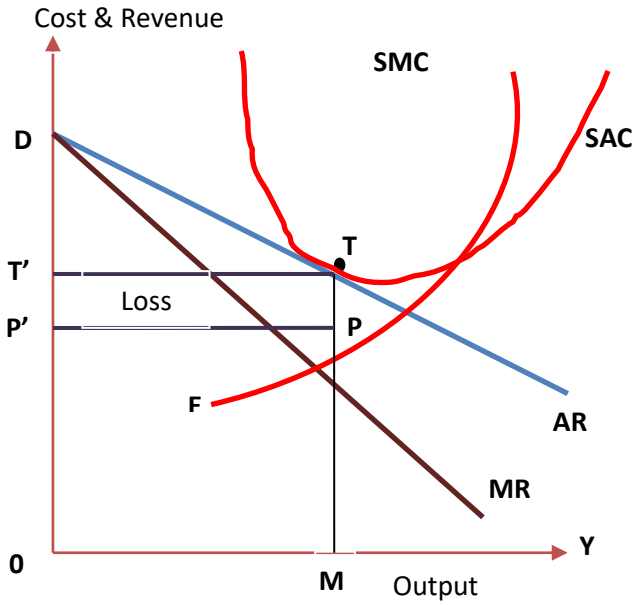

Fig. 9.2 Short-run Equilibrium of a Firm in losses

9.4 Equilibrium of a firm in Long Run:

In the preceding sections, we have discussed that in the short run, organizations can earn supernormal profits. However, in the long run, there is a gradual decrease in the profits of organizations. This is because in the long run, several new organizations enter the market due to freedom of entry and exit under monopolistic competition.

When these new organizations start production the supply would increase and the prices would fall. This would automatically increase the level of competition in the market. Consequently, AR curve shifts from right to left and supernormal profits are replaced with normal profits

In the long run, the AR curve is more elastic than that of in the short run.

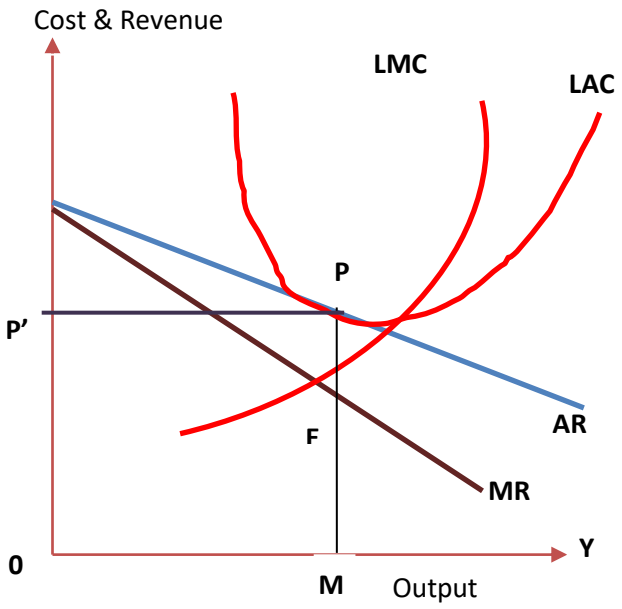

Fig. 9.3 Equilibrium of a Firm in the long-run

This is because of an increase in the number of substitute products in the long- run. The long-run equilibrium of monopolistically competitive organizations is achieved when average revenue is equal to average cost. In such a case, organizations receive normal profits.
In Figure-9.3, P is the point at which AR curve touches the average cost curve (LAC) as a tangent. P is regarded as the equilibrium point at which the price level is MP (which is also equal to OF) and output is OM.

In the present case average cost is equal to average revenue that is MP. Therefore, in long run, the profit is normal. In the short run, equilibrium is attained when marginal revenue is equal to marginal cost. However, in the long run, both the conditions (MR=MC and AR=AC) must hold to attain equilibrium.

9.5 DANGERS OF MONOPOLISTIC COMPETITION

9.5.1. Unemployment: Under monopolistic competition, the firms produce less than optimum output. As a result, the productive capacity is not used to the fullest extent. This will lead to unemployment of resources.

9.5.2. Excess capacity: Excess capacity is the difference between the optimum output that can be produced and the actual output produced by the firm. In the long run, a monopolistic firm produces an output which is less than the optimum output that is the output corresponding to the minimum average cost. This leads to excess capacity which is regarded as waste in monopolistic competition.

9.5.3. Advertisement: There is a lot of waste in competitive advertisements under monopolistic competition. The wasteful and competitive advertisements lead to high cost to consumers.

9.5.4. Too Many Varieties of Goods: Introducing too many varieties of a good is another waste of monopolistic competition. The goods differ in size, shape, style and colour. A reasonable number of varieties would be desirable. Cost per unit can be reduced if only a few are produced.

9.5.5. Inefficient Firms: Under monopolistic competition, inefficient firms charge prices higher than their marginal cost. Such type of inefficient firms should be kept out of the industry. But, the buyers' preference for such products enables the inefficient firms to continue to exist. Efficient firms cannot drive out the inefficient firms because the former may not be able to attract the customers of the latter.

9.6 KEY TERMS

Equilibrium: Economic equilibrium is the combination of economic variables (usually price and quantity) toward which normal economic processes, such as supply and demand, drive the economy. The term economic equilibrium can also be applied to any number of variables such as interest rates or aggregate consumption spending

Monopolistic Competition: Monopolistic competition is a type of market structure where many companies are present in an industry, and they produce similar but differentiated products. None of the companies enjoy a monopoly, and each company operates independently without regard to the actions of other companies.

Marginal Revenue: Marginal revenue (MR) is the increase in revenue that results from the sale of one additional unit of output. While marginal revenue can remain constant over a certain level of output, it follows from the law of diminishing returns and will eventually slow down as the output level increases.

Average Revenue: Average revenue is referred to as the revenue that is earned per unit of output. In other words, it is the revenue that is obtained by the seller on selling each unit of

the commodity. Average revenue of a business is obtained by dividing the total revenue with the total output.

Short-run Average Cost: Short-run average cost (SRATC/SRAC) equals average fixed costs plus average variable costs. Average fixed cost continuously falls as production increases in the short run, because K is fixed in the short run

Marginal Cost: Marginal cost refers to the increase or decrease in the cost of producing one more unit or serving one more customer. It is also known as incremental cost.

9.7 SELF ASSESSMENT QUESTIONS

1. What will be the shape of demand curve faced by a monopolistically competitive firm?
   a) Inelastic; b) Perfectly Elastic c) Elastic d) None of these
2. Which of the following is true for a monopolistic competitive market?
   a) Buyers have perfect knowledge of the market b) No firm can enter into the market
   c) Firms do spend on advertisements d) Firms produce homogeneous products
3. At equilibrium the price charged by a monopolistically competitive firm will be:
   a) P < MC b) P = MC c) P = AR but P > MC d) P < AR
4. Price and out is determined when
   a) MC > MR b) MC < MR c) MC = AR d) MC = MR
5. Which one of the following statements is correct in case of monopolistic competition market?
   a) Firms don't spend any amount on advertisement
   b) In the long-run all firms earn abnormal profits
   c) In the long run all firms can only earn normal profits
   d) No excess capacity exists in this market
6. Which of the following feature is correct for the monopolistic competitive market?
   a) Large number of buyers and sellers B) Free entry and exit
   c) Product differentiation d) All of the above
7. Firms achieve some degree of market power through:
   a) Charging higher price b) Product differentiation c) Under Pricing
   d) Restricting entry of new firms
8. In the long run firms under monopolistic competition produce:
   a) At minimum point of the average cost curve
   b) Beyond the min. Point of the average cost curve
   c) Before they reach to the minimum point of the average cost curve
   d) None of the above
9. The firm and industry are one and the same under
   a) Perfect competition b) duopoly c) oligopoly d) monopoly
10. Most important form of selling cost is
   a) Advertisement b) Sales c) Homogeneous product d) None

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UNIT 4: HEALTHCARE REFORMS – INDIAN PERSPECTIVE

The form of the public health system in India is a three tiered pyramid-like structure consisting primary, secondary, and tertiary healthcare services. The content of India's health system is mono-cultural and based on western bio-medicine. Authors discuss need for health sector reforms in the wake of the fact that despite huge investment, the public health system is not delivering. Today, 70% of the population pays out of pocket for even primary healthcare. Innovation is the need of the hour. The Indian government has recognized eight systems of healthcare viz., Allopathy, Ayurveda, Siddha, Swa-rigpa, Unani, Naturopathy, Homeopathy, and Yoga. Allopathy receives 97% of the national health budget, and 3% is divided amongst the remaining seven systems. At present, skewed funding and poor integration denies the public of advantage of synergy and innovations arising out of the richness of India's Medical Heritage. Health seeking behaviour studies reveal that 40–70% of the population exercise pluralistic choices and seek health services for different needs, from different systems. For emergency and surgery, Allopathy is the first choice but for chronic and common ailments and for prevention and wellness help from the other seven systems is sought. Integrative healthcare appears to be the future framework for healthcare in the 21st century. A long-term strategy involving radical changes in medical education, research, clinical practice, public health and the legal and regulatory framework is needed, to innovate India's public health system and make it both integrative and participatory. India can be a world leader in the new emerging field of “integrative healthcare” because we have over the last century or so assimilated and achieved a reasonable degree of competence in bio-medical and life sciences and we possess an incredibly rich and varied medical heritage of our own.

Lesson 10: Healthcare Policy – Reforms in Healthcare and its impact
Lesson 11: Economic Evaluation of Healthcare and its impact
Lesson 12: Government Involvement in Healthcare market

LESSON-10

HEALTHCARE POLICY – REFORMS IN HEALTHCARE AND ITS IMPACT

LEARNING OBJECTIVES

After studying of this lesson, you will be able to.

1. Understand the Indian Health System
2. Understand the Past, Present and the Future aspects of the Healthcare Sector Reforms (HSR)
3. Explain the principles of HSR and various forms of HSR

Structure of the lesson

10.1 INTRODUCTION OF HEALTH SYSTEM IN INDIA

The public health system in India despite growing investments in every national 5-year plan (1.1% of GDP in 2012) and even after over 65 years of its functioning, has not yet delivered universal primary healthcare to the citizens of India. Around 70% of the Indian population spend money for primary healthcare services from their own pockets. This article argues that it is necessary to urgently reform the content of public health system and make it more pluralistic. Medical pluralism in India is specially relevant because of the richness of India's Medical Heritage which offers a unique opportunity to integrate across 5 traditional systems of healthcare. A new national policy 2015 to replace the last policy formulated in 2002 is on the anvil. This policy can usher in a new regime of integrative healthcare.

The Indian public healthcare system has 3 tiers. The 3 tiers operate through a large number of Government, that is, taxpayer financed, primary secondary and tertiary healthcare institutions and a larger number of private (for-profit) institutions and a much smaller number of private (not for profit) organizations. At the base of the pyramid of the health system, are the primary healthcare institutions in the form of dispensaries and small-sized general

hospitals. A substantial number of them are in the government-sector, but they have a larger presence in the private sector. Higher up the pyramid are the secondary institutions (like district and private hospitals) and at the top are the tertiary services provided by few well-equipped medical college hospitals and mostly by corporate super specialty establishments.

Experts have identified a host of operational issues and gaps that plague the public health system. These relate to inadequate infrastructure, financing, human resources (HRs), drugs, HR policies, health information system, insurance and governance. It is therefore in need of radical reform. The government is aware of the gaps in the functioning of the public health system as is evident from official reviews prepared by the Planning Commission. While the gaps do get addressed from time to time, through various schemes, the reform happens in the typical piece-meal fashion that characterizes government interventions. The officially declared goal of the public healthcare system is free and universal primary healthcare. However, even after 66 years around 70% of the population do not receive satisfactory or free primary healthcare and they are therefore forced to seek help from private providers and thus pay out of their own pocket.

Public health experts in recent times have observed that safe drinking water, sanitation, nutrition, lifestyle, and the environment are key determinants of health and that the health system must address these basic needs. In practice however, the health system does not appear to have any influence, mechanism or programs, to address these key determinants of health because water, sanitation, nutrition, environment are domains managed by ministries other than the health ministry.

10.1 HEALTH SYSTEMS PAST AND PRESENT

The health system we had visualised for independent India and the one we have at present are very different. Currently, in India, much of our curative healthcare happens in the private sector (70-80%), and mostly through out-of-pocket expenditure: we go to a doctor, get services and pay directly for the services rendered. Despite this, our public health sector, financed from general taxation, plays an important role in providing preventive services (vaccinations, community spraying during malaria season and other such activities) and also in providing treatment to populations who don't have access to or can't afford private care.

This role division between public and private health systems was not the original vision we had for India. Indeed, one of the first blueprints of the health system in our country in the year 1946 emphatically defends the building of a universal (for all), comprehensive (covering a wide range of services) healthcare network in India, thinking of health as a right of all people, and of the government as the main player in health. This document emphasises, "No individual should fail to secure adequate medical care due to inability to pay."

This grand vision of the Indian public health system never came into being. Historically, we did not make adequate financial investments in the public health sector to support this vision, despite small bouts of increased budgets during certain pockets in time when healthcare got slightly higher priority than usual. Overall, our public health spending is a little more than 1% of our GDP, and one of the lowest in the world.

The public health system in most states in India, with some exceptions, has largely remained side-lined in political discourse over the years. The evidence of this neglect is visible the form of limitations in basic structural and functional capacities- drugs, human resource vacancies, equipment, demotivated and overburdened staff- in public health systems. So even before COVID-19, the public health system in most states in India struggled to cater to the massive health needs of a growing population.

Weaknesses in our Present Health System

- Inadequate availability of health care services including both public and private:
  - There are 45 doctors/lakh populations while desirable number is 85.
  - There are 75 nurses/lakh populations while desired number is 255.
  - There are geographical variations in availability of health services
- Quality of health care services:
  - The Regulatory standards for public and private are not adequately defined and ineffectively enforced.
- Majority of the population faces problem in affording health care especially in tertiary care.
- Amidst all this, health care costs are expected to rise as:
  - With rising life expectancy, a larger proportion of our population will become vulnerable to chronic Non Communicable Diseases (NCDs).
- Public expenditure on health care in India is very low (1.3% of GDP).•

10.2 Healthcare Sector Reforms

10.2.1 Introduction: Health sector reform is a sustained process of fundamental change in policies and institutional arrangements of the health sector, usually guided by the government. The process lays down a set of policy measures covering the four main core functions of the health system, viz., governance, provision, financing and resource generation. It is aimed at improving the functioning and performance of the health sector and, ultimately, the health status of the population.

Health sector reform deals with equity, efficiency, quality, financing, and sustainability in the provision of health care, and also in defining the priorities, refining the policies and reforming the institutions through which policies are implemented.

10.2.2 Definition of Healthcare Reforms: Reforms are inevitable part of a developing and progressive sector. The same applies to the health sector with the prevailing fiscal crunch forcing the health sector to reform in order to deliver in an effective, efficient and equitable manner.

1. Cassels in 1997 defined reforms as 'Fundamental rather than an incremental change, which is sustained rather than one off and also purposive'. Hence, any change is not reform.

2. It is also defined by Cassels as 'defining priorities, refining policies, reforming institutions through which policies are implemented' (Health Sector Reforms in India).

3. According to Berman, health sector reform is defined as a 'sustained, purposeful change to improve the efficiency, equity and effectiveness of the health sector'.

10.3 Types of Reforms:

The types of reforms can also be divided into those that are based on changes in financing methods, changes in health system organization and management, public sector reform (Health Sector Reforms in India) (Table 10.1). Another way of classifying reforms is: structural, programmatic, organizational and institutional reforms.

Changes in Financing Methods	✓ User Charges ✓ Community financing schemes ✓ Insurance ✓ Stimulating private sector growth ✓ Increased resources to health sector
Changes in health system organisation and management	✓ Decentralisation ✓ Contracting out of services ✓ Reviewing the public-private mix
Public sector reforms	✓ Downsizing the public sector ✓ Productivity improvement ✓ Introduction to competition ✓ Improving geographic coverage ✓ Increasing role of local government ✓ Targeting role of public sector through packages of essential services

Table 10.1 Types of Healthcare Reforms

10.4 THE KEY CONTROL AREAS IN HEALTH REFORMS

In order to achieve the population level performance goals, five control knobs have been identified namely;

- Financing,
- Payment,
- Organization,
- Regulation and
- Behaviour.

Increase in efficiency, quality and access can be achieved by altering these control knobs leading to the ultimate population target of good health status, consumer satisfaction and risk protection. According to Hsiao, changes that affect at least two of these element namely; health financing, expenditure, organization regulation and consumer behavior justify to be called as health sector reforms. Health financing refers to the mechanisms for raising the money that funds the activities in the sector. Payment or Expenditure refers to the methods of transferring this money to the health care providers. This includes budgets, fees and capitations. Organization refers to the mechanisms affecting the mix of health care providers, their roles and how they operate within and among themselves. These mechanisms include measures leading to alteration in competition, decentralization and direct control of providers making up government service delivery. Regulation includes the use of coercive measures affecting the providers, insurance companies and patients. Behavior includes the efforts to influence the individual to act in relation to health and health care, including both patients and providers.

10.5 Implementation of Health Reforms

Reform is a cyclical process. It does not end with itself. The cycle of problem definition, diagnosis, implementation, policy development, political decision, evaluation and problem definition is repetitive in nature. Any reform is not a one-time solution. Problem definition and availability of resources change with time. Yesterdays reform can be today's problem based on current scenario, priorities and resources at hand. One must understand the role of politics in reforms. Politics has to be embraced and reforms have to be decided considering the political situation and the possible repercussions. Hence, the need for the suggested reforms to undergo a 'feasibility and implementation analysis'. These are also called as the 'Screening tests for health sector reforms'.

The components of this analysis are; implementability, political feasibility and political controllability.

Implementability includes the social and institutional prerequisites to support a proposed intervention. Smart reformers will not presume that an idea of a country will work in another country. Often, the most radical reforms are in the least equipped countries. The concept of 'window of opportunity' should be kept in mind by the reformers.

Anticipation of the political decision making and the mood in the ruling party, combined with effective advocacy gives any reform a good chance of being implemented, yet the outcome is not always certain. Reformers, hence, need to embrace politics, not shun it. A final consideration in reforms is political controllability. This includes whether the new arrangement or institutions will be under effective political control. The general argument is that political controllability must be there. The reasons being current efforts into reforms can also become an obstacle sometime later. Consumers through a democratic system should have the right to demand and get better performance form the system. On the other hand, lack of political controllability, in the long run can be undesirable. Lack of political controllability, obviously gives the reformers a chance for reforms to remain sustained; it also decreases the influence of special interest groups. This can be of use in short run and a risky long term strategy. The decision on political controllability also depends on the local situation.

10.6 Origin of Reforms in India

Health Sector reforms in India were a direct outcome of economic reforms post 1991. Before this, the Indian economy was committed to socialism with slack foreign exchange flow. India followed planned economic development with a strong import substitute orientation. There was no balance of payment crisis till 1980s owing to the gulf boom and large worker remittances. With the oil crisis and an import dependent growth strategy there was a balance of payment crisis post gulf war in 1991. During this period, the social indicators too were poor. India had to go for loan under the Structural Adjustment Programme (SAP) of the World Bank. The period also coincided with many other developing countries going for the World Bank loan. In the mean time there were two significant documents which later became the basis for reforms in many developing countries.

FSHD: One such document was 'Financing Health Services in Developing Countries' in 1987 by the World Bank. This document was a paradigm shift with respect to the role of government in health care provision. It called for introduction of user fee, insurance or other risk coverage, effective use of non government resources and decentralization.

IH: The World Development Report in 1993, 'Investing in Health' advocated the development of ideal environment for health, increased government spending and promoting diversity and promotion (Health Sector Reforms in India). With the fiscal deficit, the centre had to cut its total expenditure which fell more on the capital disbursement and the revenue expenditure remained unaltered. This led to a decrease in the capital expenditure and decrease in the loans given to the States and the Union Territories.

Five Year Plans: In the meantime, there were policy shifts in the five year plans.

The eighth five year plan - proposed revoking of free medical care and encouraged initiatives with private sector.

The ninth five year plan - emphasized the need to increase the involvement of voluntary, private organizations and the self-help groups and ensure intersectoral coordination. It also placed the need to enable Panchayati Raj Institutions (PRI) in planning and monitoring of health programmes.

The tenth plan - in addition to the above points, recognized the need to address the issue of equity and the need to devise a targeting mechanism by which the population below the poverty line will have access to subsidized health care (Health Sector Reforms in India).

Despite the cut in central total expenditure in the form of capital expenditure, health sector remained relatively protected.

- ✓ There was increase in absolute spending on health post economic reforms, though the central health spending as a percent of GDP remained stagnant. The cut fell more on the service sector.
- ✓ As 50 % of the States' debt is to the Centre, total expenditure remained stagnant post 1991. The Interest of payment rose (as a percent of GDP); there was a decrease in discretionary spending.
- ✓ Spending on public health and water, sanitation decreased post economic reforms. Hence, the states had to go for loans form World Bank under the Structural Adjustment Programme.
- ✓ Seven states went for the Health System Development Project (HSDP) as a part of the structural adjustment between1994-97. Though the health system development project recognizes the need to increase the public spending on health, the public spending as a share of total spending decreased.
- ✓ The decline in spending on public health water and sanitation was milder in the reforming states.
- ✓ Fifteen percent of the cost of health system development project had to be borne by the states, which already had scarce resources.
- ✓ The loan came with a pre-condition that 65% of loan had to be used for strengthening of hospitals, institutions and purchasing equipment. Hence, the states couldn't use this money exclusively to improve primary health care.
- ✓ Despite health being a state subject, tax resources are largely controlled by the centre. The planning and finance commission gives money to the states, but there is no mention in the constitution on the fixed proportional spending on health. The states with decreased central grant, submitted the most promising budget with the assurance of increasing health sector spending, privatization, introduction of user fee and decentralization. The HSDP was used by reforming states as a tool for leveraging external financing. Structural adjustment pushed the states to cut health sector investments, opening up of medical care to private sector, introduction of user fee and private investments in public hospitals, therefore revoking free and affordable health care. Health sector spending remained stagnant with increase in health inequity.
- ✓ Economic reforms sought to achieve rapid economic development, overall increase in productivity with free access to market, eliminate poverty and finally leading to improved standard of living (Health Sector Reforms in India). It was thought that this effect would trickle down to health sector, which did not happen. Even though evidence was available that market based health sector reforms were not able to achieve equity, it was pursued. These changes in health financing only or donor driven changes that were non purposive are not health sector reforms in true sense.

12th Plan Strategy for Health

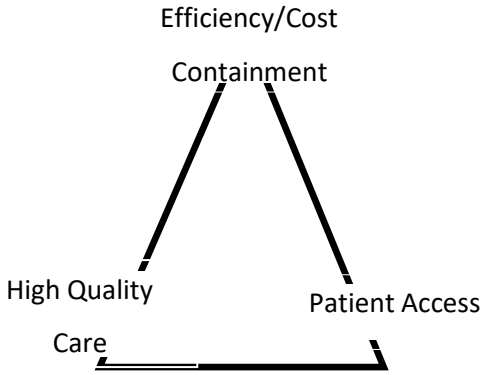
The Twelfth Plan seeks to expand the reach of health care and work towards the long term objective of establishing a system of Universal Health Coverage (UHC) in the country i.e. each individual would have assured access to a defined essential range of medicines and treatment at an affordable price, which should be entirely free for a large percentage of the population. The key elements of the strategy to be followed are:

- ❖ Substantial expansion and strengthening of the public sector health care system should be established in order to meet the health needs of rural and even urban areas. As supply in the public sector increases, it will cause a shift towards public sector providers freeing the vulnerable population from dependence on high cost and often unreachable private sector health care

- The expenditure on health as a percentage of GDP for the health sector related resources needs to be increased to 2.5 per cent by the end of the Twelfth Plan.
- Financial and managerial systems will be redesigned to ensure more efficient utilisation of available resources, and to achieve better health outcomes.
- Efforts would be made to find a workable way of encouraging cooperation between the public and private sector in achieving health goals.
- The present Rashtriya Swasthya Bima Yojana (RSBY) which provides 'cash less' in-patient treatment for eligible beneficiaries through an insurance based system will need to be reformed to enable access to a continuum of comprehensive primary, secondary and tertiary care.
- A large expansion of medical schools, nursing colleges, and so on, is necessary to ensure availability of skilled human resources and public sector medical schools must play a major role in the process.
- A series of prescription drugs reforms, promotion of essential, generic medicines, and making these universally available free of cost to all patients in public facilities as a part of the Essential Health Package will be a priority.
- Effective regulation in medical practice, public health, food and drugs is essential to safeguard people against risks, and unethical practices.

10.7 PRINCIPLES OF HEALTHCARE REFORMS

10.7.1 Iron Triangle



The logic of this triangle is that there are inevitable societal trade-offs in pursuing any of the goals (vertices) in the triangle.1 If the triangle is an equilateral triangle, and thus each angle is 60°, policy initiatives that expand one angle beyond 60° force one or both of the other two angles to contract below 60°. Thus, efforts to promote access to care (e.g., via insurance coverage) will lead to higher demand for care, rising utilization, and higher costs. Similarly, efforts to promote quality by virtue of enabling access to modern technologies (drugs, medical devices and equipment) will also likely raise costs. Determining the right thrust and mix among the three angles constitutes the balancing act in resource allocation faced by most countries.

Perhaps no country allocates equal attention to all three goals in the manner of an equilateral triangle. Indeed, healthcare policy in India has alternated its focus and attention across these three angles since the late 1980s. In the 1990s, policy-makers focused on expanding access to healthcare services via broader insurance coverage by enacting the Medicare and Mediclaim programs (to cover the elderly and poor, respectively). In subsequent decades, the policy focus shifted to cost containment to deal with the rising utilization and cost of services that naturally followed from expanding access to insurance for population segments with greater need for healthcare services. During the past decade, policy-makers have devoted more attention to quality via such initiatives as pay for performance (P4P), value-based purchasing (VBP), accountable care organizations (ACOs), and "never events" (reimbursement withheld for controllable adverse events in hospital episodes).

India faces challenges in pursuing each of these three goals. With regard to *cost*, nearly 70 percent or more of all healthcare is financed out of pocket by the population. There is little health insurance or other forms of risk pooling, little regulation and accountability of providers, and a predominance of fee-for-service payment, all of which are associated with high costs.

With regard to *quality*, there is little regulation of providers, treatments, and medical products (often from spurious sources), considerable variation in the training and education of providers, and little enforcement of laws and regulations at the state level. There is also evidence of poor health outcomes among the Indian population. Compared to the rest of the world, India ranks low on such indicators as infant mortality and life expectancy at birth; while much progress has been made since independence in 1947, the nation still lags behind other developing countries.

With regard to *access*, a substantial majority of the population dwells outside of the cities where most healthcare facilities exist. Access is also particularly problematic for the poor, the low-income population, women, and marginalized groups. Inadequate roads and transportation systems limit proximity to healthcare facilities, further compromising access. An estimated 10 percent of hospitalization costs go toward lodging of the patient and his/her escort, transportation, and personal medical supplies; data from 2018-17 suggest that such costs comprise as much as 25 percent of private out-of-pocket spending (see Chapter 3).4 The provision of health insurance thus requires adequate supply of delivery sites near insured patients (to offset lost wages and the large travel and lodging costs incurred). Huge variations also exist in the population's access to healthcare across India's states.

10.7.2 Market failure

Other principles observed in the Indian healthcare system is market failures that is, the features of markets described in economic textbooks are not found in the healthcare industry and thus inhibit efficient operation of supply and demand. These features include lack of price information and pricing transparency; lack of data on product quality; the resulting inability to assess the comparative value (defined as quality divided by cost) of products and services; asymmetric information between providers and consumers; imperfect agency relationships between physicians and their patients; the heavy role of government as both a buyer and regulator; and moral hazard flowing from insurance coverage leading to distortions in market efficiency.

10.7.3 Other Principles:

Principles inherent in healthcare reform Several principles emanating from healthcare reform efforts around the world may comprise an additional set of invariant principles. These include

- ❖ The reality of ever-rising healthcare costs (driven by population demographics and technological improvements, among other factors),
- ❖ Rising public expectations from healthcare (driven by economic growth and rising national incomes, as well as increased global travel and immigration),
- ❖ The limited capacity of nations to afford the growing demand of their populace for increasingly expensive healthcare, and
- ❖ Increased skepticism regarding traditional methods of organizing and managing healthcare finance and delivery (e.g., the breakdown of centrally planned systems, as well as the recognition of market failures).

Dynamics of HSR

• Shift in international thinking – public to private provision

• Explore possibility of private sector Explore possibility of private sector participation

• Reduction in Government expenditure Reduction in Government expenditure

- User charges
- Contracting out services
- Tax reforms

10.8 MODES OF HSR

10.8.1 Inclusive Agenda for Health Reforms

In order to ensure health services with special attention to the needs of marginalised sections of the population the following will be emphasised in the Twelfth Plan:

Access to services: Barriers to access would be recognised and overcome especially for the disadvantaged and people located far from facilities. Medical and public health facilities would be accessible to the differently-abled. They would be gender sensitive and child friendly.

Special services: Special services should be made available for the vulnerable and disadvantaged groups. For example, counselling of victims of mental trauma in areas of conflict.

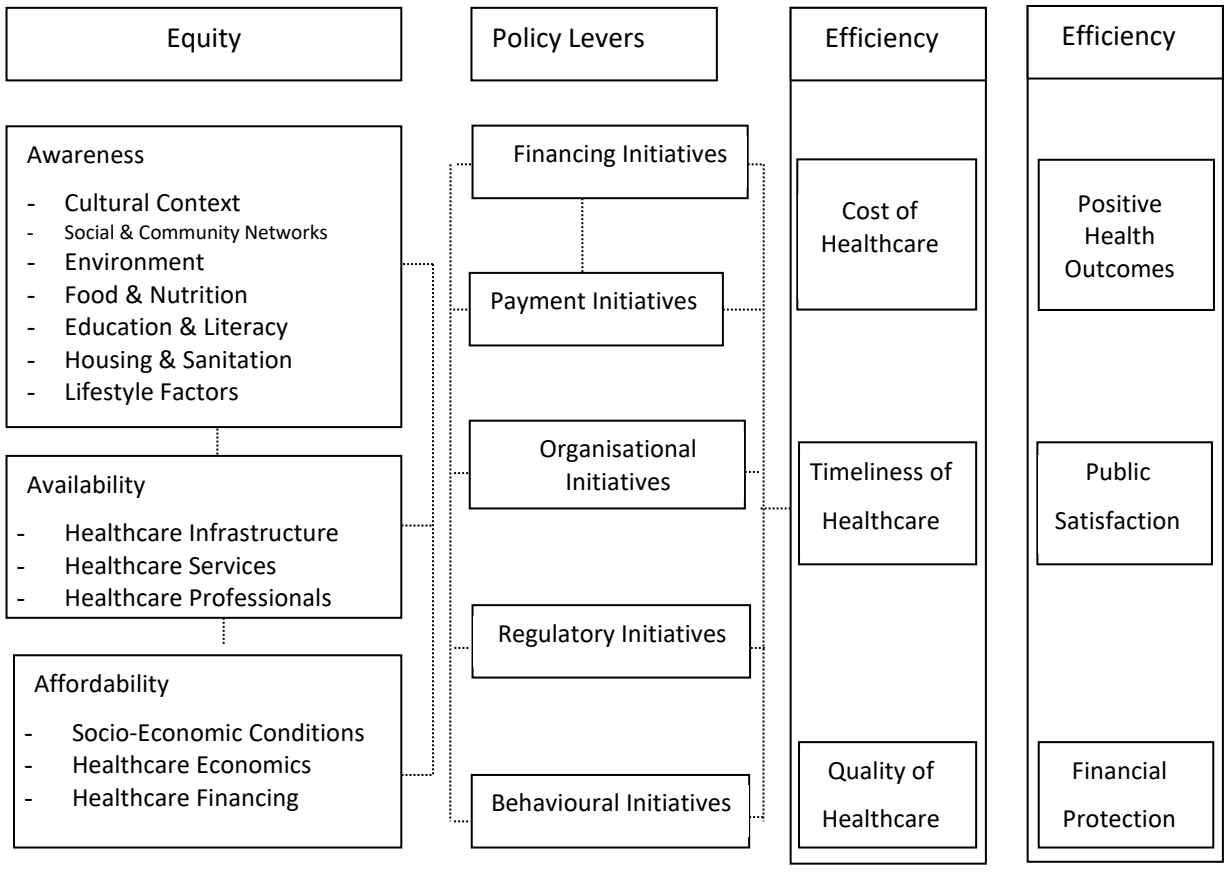
Monitoring and evaluation systems: Routine monitoring and concurrent impact evaluations should collect disaggregated information on disadvantaged segments of the population.

Representation in community fora: Wherever community-level fora exist or are being planned for, such as Rogi Kalyan Samitis, VHSNC, representation of the marginalised should be mandatory. Also, every Village Health Sanitation and Nutrition Committee would strive to have 50 per cent representation of women.

Training: Training of health and rehabilitation professionals should incorporate knowledge of disability rights, as also the skills to deal with differences in perspectives and expectations between members of disadvantaged segments and the general population that may arise out of different experiences.

10.8.2 Developing a suitable model

There are multiple frameworks one can use to analyze a country's healthcare system.



An early framework is the "Actors" framework, which classifies four major actors in a health system: providers, payers, regulators, and the population served. Another is the "Funds Flow and Payment" framework, which identifies seven major subsystems of financing (e.g., out of pocket, private reimbursement and public reimbursement). One widely used framework is the analysis of a country's "national health accounts" (NHA). Such a framework is helpful for understanding the broader societal and regulatory constraints within which a healthcare system operates.

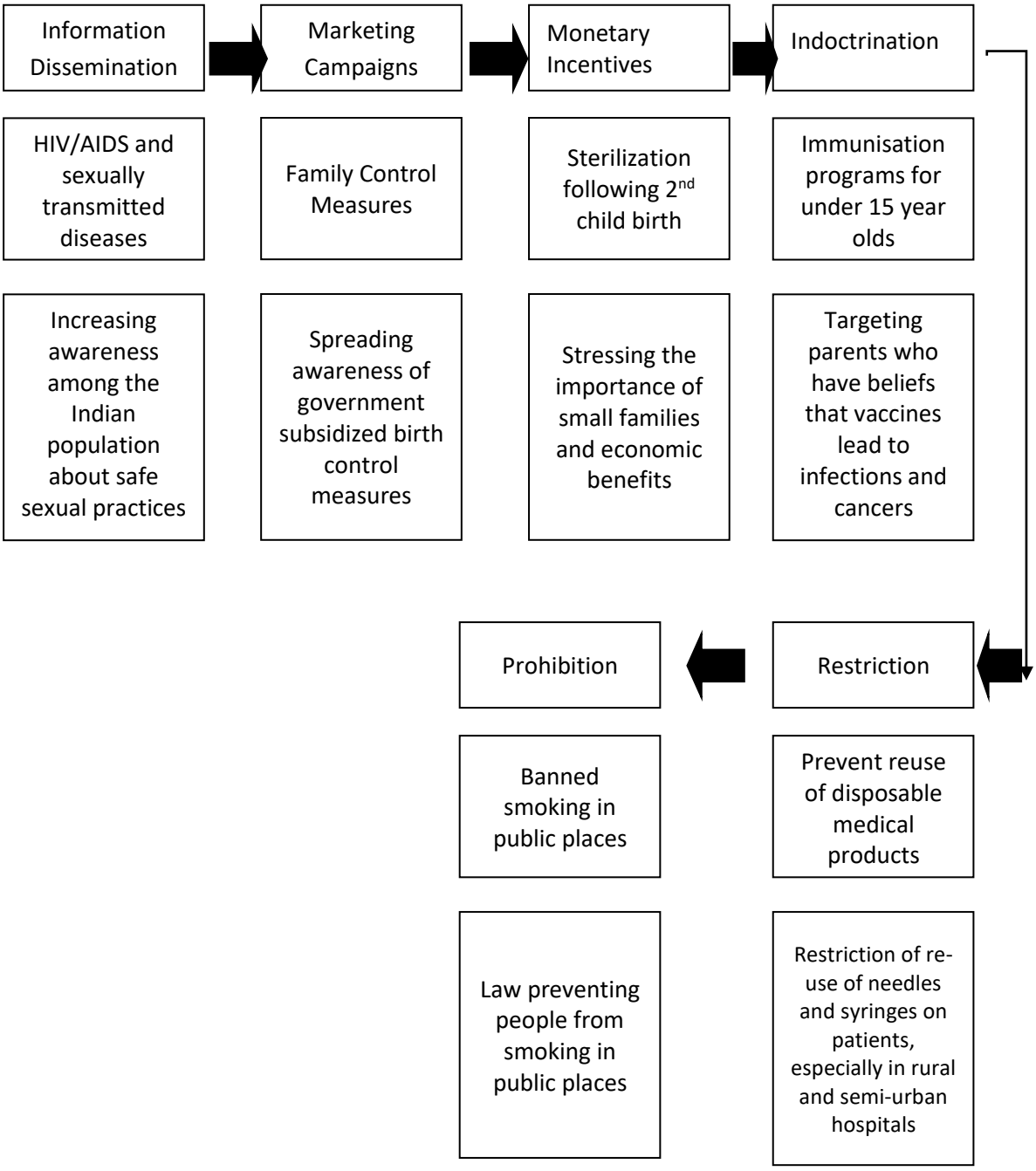


Fig. Government Initiatives to Drive Behavioral Change, from Disseminating Information to Prohibiting Behavior

10.8.3 Healthcare Value Chain:

Another complementary framework is the healthcare value chain outlined in the Preface. According to this framework, a healthcare system can be studied in terms of the buyers and suppliers of products and services that make up this chain, who engage in the important market exchanges that comprise this system, and whose activities add value to system outputs as they move along the chain. The value chain of the US healthcare system is presented in Figure 1.9. This framework highlights the upstream (supplier) and downstream (buyer) trading partners of any firm operating in a healthcare industry, the parties that may mediate these transactions, and the possible competitors and substitutes for the firm's product/service. India has not yet developed all of the value chain players depicted in Figure 1.9, but the nation's trajectory suggests

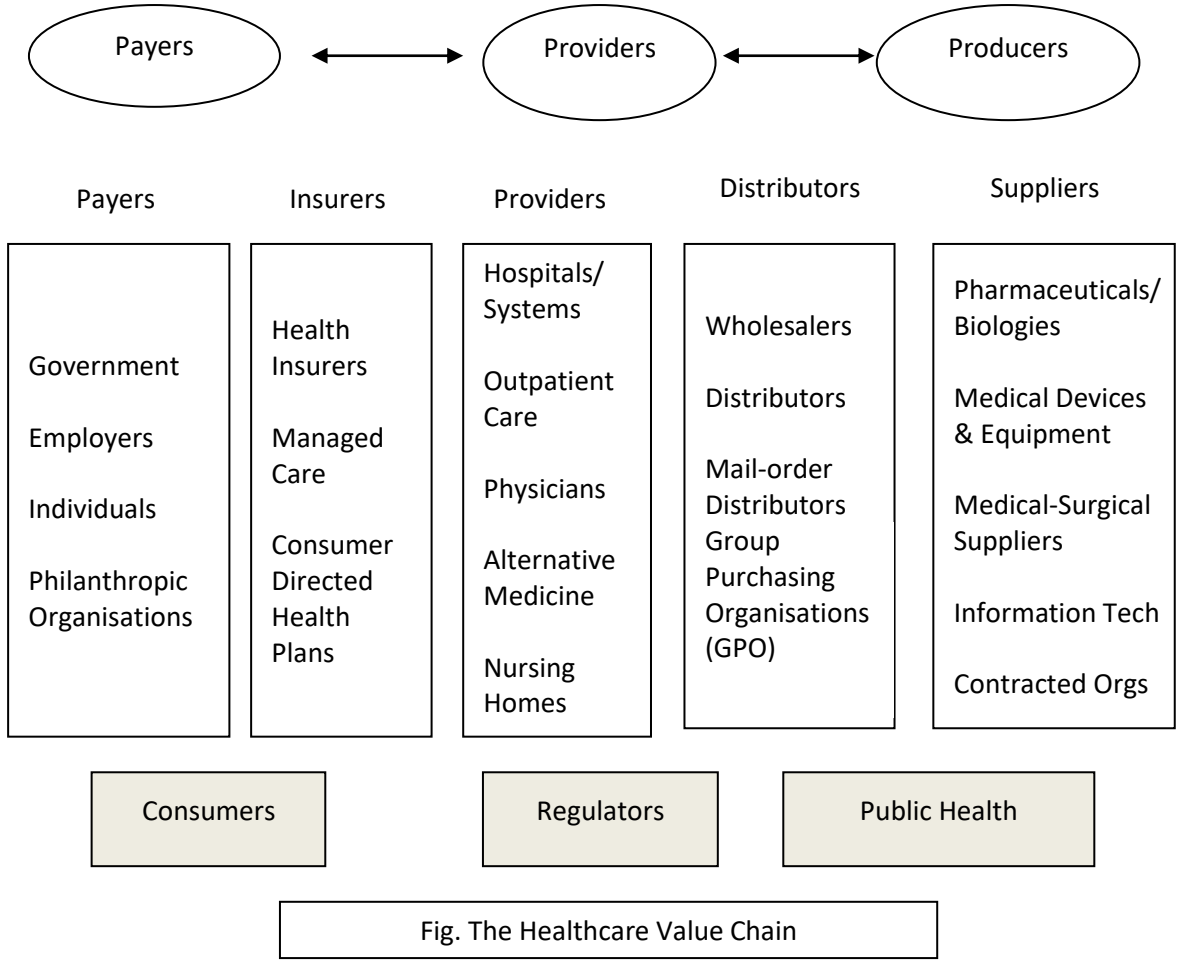


Fig. The Healthcare Value Chain

10.9 SUMMARY

The overview of the plans and policy reports not only throws light on the gap between the rhetoric and reality but also the framework within which the policies have been formulated. There has been an excessive preoccupation with single purpose driven programs. Above all, the spirit of primary health care has been reduced to just primary level care. The health reports and plans mostly concentrated on building the health services infrastructure and even this lacked a sense of integration. Most of the policy reports miss out on the importance of a strong referral system. Instead, there has been more emphasis on building the primary level

care and even that has lacked proper implementation. The Bhore committee report and later, the Primary Health Care Declaration discussed the operational aspects of integrating the other sectors of development related to health. The multi-sectoral approach that is much needed and the inter-sectoral linkages that are essential for a vibrant health system have not been well thought out, and there has been no plan drawn out for it later. The outline of plan documents and their implementation have been incremental rather than being holistic. It is important to question whether it is only the low investment in health that is the main reason for the present status of the health system or is it also to do with the framework, design and approach within which the policies have been planned.

10.10 KEY TERMS

Reforms: to put or change into an improved form or condition. b : to amend or improve by change of form or removal of faults or abuses. 2 : to put an end to (an evil) by enforcing or introducing a better method or course of action. 3 : to induce or cause to abandon evil ways reform a drunkard.

Healthcare: Efforts made to maintain or restore physical, mental, or emotional well-being especially by trained and licensed professionals —usually hyphenated when used attributively health-care providers.

Equity: Equity in economics is defined as the process to be fair in an economy that can range from the concept of taxation to welfare in the economy. It also means how the income and opportunity among people are evenly distributed.

Sustainable Development: Sustainable development is the overarching paradigm of the United Nations. The concept of sustainable development was described by the 1987 Bruntland Commission Report as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

National Health Policy: The National Health Policy, 2017 (NHP, 2017) seeks to reach everyone in a comprehensive integrated way to move towards wellness. It aims at achieving universal health coverage and delivering quality health care services to all at affordable cost.

10.11 SELF-ASSESSMENT QUESTIONS

1. How can you understand the Healthcare reforms from Indian context?
2. Can you identify the ways and means of implementing the Health sector reforms in India?
3. What kind of reforms that you are expecting in India to be implemented
4. List out the factors to be considered for healthcare reforms

10.12 FURTHER READINGS

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LESSON-11

ECONOMIC EVALUATION OF HEALTHCARE AND ITS IMPACT

LEARNING OBJECTIVES

At the end of the chapter, the student will be able to:

- Understand the possibilities of using cost benefit analysis and cost effectiveness analysis in assessing the performance of health care activities.
- Explain the effects of scope and viewpoint of an economic evaluation.
- Outline the methods needed for costing in an economic evaluation and to give examples of costing methods and cost data types.
- Introduce health utilities and contingent valuation, how they are calculated, where they might be used and the potential problems with their use.
- Correctly understand the results of ratios used in economic evaluation.

Structure of the lesson

11.1 INTRODUCTION OF ECONOMIC EVALUATION OF HEALTHCARE

The Indian healthcare sector is one of the fastest growing industries and is expected to grow at a compound annual growth rate of 17% during the period 2011 to 2020 totouch US$ 280

billion. It is expected to rank among the top three healthcare markets in terms of incremental growth by 2025. Spending on healthcare in India was an estimated 5% of gross domestic product in 2013 and is expected to remain at that level through 2016. Total healthcare spending in local currency terms is projected to rise at an annual rate of more than12%, from an estimated $96.3 billion in 2013 to $195.7 billion in 2025. Although this rapid growth rate will reflect high inflation, it will also be driven by increasing public and private expenditures on health.

As per the World Health Organization (WHO), in countries such as India, people who pay for their healthcare services suffer "catastrophic costs." While millions suffer and die in absence of access or in ability to afford medical care, many others suffer because they end up paying through debts, selling assets, and so forth. Citizens' expectations for healthcare are becoming high in developing countries such as India, where people are becoming accustomed to better standards. People now demand latest treatments, timely, affordable care, and arrange of choices. They are better informed than ever about their health and their treatment options. They are prepared to take some responsibility for their own health, but broadly they do not want to have to pay a lot more than they already are for their healthcare.

However, the proportion of insurance in healthcare financing in India is very low. The extent of coverage and the type of coverage are key issues related to insurance penetration. Only around 10% of the population is covered through health financing schemes. Selection criteria by suppliers often restrict the poor (and more likely to be ill) from affordable prepayment schemes. Many patients in India have been forced below the poverty line because of healthcare expenditure. Nearly 40% of Indians who were hospitalized in1995-1996 fell into debt on account of paying for hospital expenditures, with nearly a quarter falling below the poverty line as a result. The risk of falling into poverty when hospitalized ranged from 17% in Kerala to double that in Uttar Pradesh and Bihar. The voluntary health insurance market, which is estimated at Rs.4 billion ($86.3million) currently, is growing fast. Industry estimates put the figure at Rs130billion ($2.8 billion). It is, therefore, a challenge for healthcare providers to promote health using improved and cost-effective modalities for the prevention, diagnosis, and therapy of various diseases and aliments.

11.2 COSTS ASSOCIATED WITH HEALTHCARE

11.2.1 Definition of Costs: Economists define a cost as the value of resources used to produce a good or services. However, the way these resources are measured can differ. There are two main alternatives with respect to measurement of these resources: financial and economic costing.

Financial cost represents actual expenditure on goods and services purchased. Costs are thus described in terms of how much money has been paid for the resources used in the project or services. In order to ascertain the financial costs of a project, we need to know the price and quantity of all the resources used or, alternatively, the level of expenditure on these goods and services.

Economists conceptualize costs in broader way. They define costs in terms of the alternative uses that have been forgone by using resources in a particular way. These economic or opportunity costs recognize the cost of using resources as these resources are then unavailable for productive use elsewhere.

The basic ideas are that is that things have a value that might not be fully captured in their prices. It is not difficult in many health programmes to identify resources inputs for which little or no money is paid: volunteers working without payment; health messages broadcasts without charge; vaccines or other suppliers donated or provided at large discount by

organizations or individuals. Thus, the values of these resources to society, regardless of who pays for them, are measured by opportunity cost.

11.2.2 Types of costs

"What is a cynic? A man who knows the price of everything and the value of nothing' (Oscar Wilde) Costs can be defined in many ways (See figure below), but generally can be considered as direct, indirect and intangible. Direct costs are those immediately associated with an intervention such as staff time, consumables etc. Indirect costs might include a patient's work loss due to treatment. Intangible costs may be things like pain, anxiety, quality etc. Benefits, however, can be analyzed in three different ways reflecting the different types of economic analysis used in evaluation. **First**, benefits can be examined in terms of the immediate (direct) effects on health. These are usually clinically defined units appropriate to the area of study, such as 'lives saved', 'reduction in tumor size', 'change in blood pressure' etc. **Second**, benefits from an intervention can be considered in more generic terms such as the impact on general well-being/ happiness/ satisfaction, these are more generally labeled as 'utilities'. The utility of an intervention to an individual is its benefit. Measures such as the quality adjusted Life year (QALY) are used to quantify this **Third**, benefits might be considered in the same terms as costs, which means that benefits must be valued in monetary terms by some means.

If the evaluation is being made from the widest perspective the viewpoint of society as a whole-then three main categories of costs must be considered:

- Health service costs
- Costs borne by patients and their families.
- External costs borne by the rest of society

1. Health Service Costs: These will include staff time, medical supplies (including drugs), bed and food services in the case of inpatients, use of capital equipment, and overheads such as water, heating and lighting. These items may be divided into variable costs, which vary according to the level of activity (for example, staff time) and fixed costs, which are, incurred whatever the level of activity (for example, heating and lighting). In the long run, practically all costs become variable since those that are fixed in the short run may be varied-for example, by opening and closing wards, and by building new hospitals. In economic evaluation all such health service costs-both fixed and variable-are referred to as direct costs.

2. Costs Borne By Patients and Their Families: These will include out of pocket expenses such as travel, and any cost resulting from caring activities undertaken by the family. These are both direct cost items. In addition, there may also be indirect costs (productivity costs) such as income lost because of absence from work (which is a production loss to society) and any psychological stress experienced by patients, or their families or both.

3. External costs: These occur when people not directly involved in a programme experience increased costs because of it. In most cases these effects are too small and diffuse to merit inclusion in the analysis, but there may be some occasions when they are large enough to require attention. For example, public health legislation enforcing antipollution standards or specifying water purification levels may lead to increase in manufacturing costs and consumer prices (as well as providing health benefits).

4. Average, Marginal, and Joint Costs: Most decisions in health care are not concerned with whether or not a service should be provided, or whether or not a particular procedure should be undertaken, but with how much of the service should be provided. That is, should existing levels of provision be expanded or contracted? For example, what family planning services should be made available? This decision requires that attention should be focused on marginal costs-that is, the change in total costs resulting from a marginal change in activity. In the short run, there is often an important difference between the marginal costs of an

activity and its average cost, where the average cost is defined as the total cost divided by the total number of units of output.

5. Capital Costs: Investments in buildings, plant, and equipment that yield a flow of services over a number of years give rise to capital costs. Generally, investment expenditure will be undertaken at the beginning of a project, but the use of items of capital equipment will generate annual capital costs over the lifetime of the asset. These costs have two elements: - namely, interest and depreciation.

- *Interest costs* should be included even if the asset was not acquired with borrowed money because tying up money in an item of capital equipment involves an opportunity cost-that is, interest foregone.
- *Depreciation costs* arise because of the wear and tear that an asset gets through use and the consequent reduction in the length of its life. (Note, however, that land is a capital asset that is not assumed to incur depreciation costs.)

11.3 ECONOMIC EVALUATION OF HEALTHCARE COSTS

Economic evaluations involve the quantification of changes in health resource utilization due to the introduction of new courses of action. Policy makers are increasingly turning to such analyses to acquire information before making decisions about alternatives in health care. Such analyses are used by insurers to determine which services to pay for, and government policy analysts use technology assessments to shed light on the economics of new interventions and courses of action. Economic evaluations are used to make systematic decisions concerning the allocation of resources in the market. They provide insights into how resources ought to be allocated. In this chapter, we include an overview of the methodology; an introduction to the main components and issues surrounding cost minimization analysis, cost effectiveness analysis, cost-utility analysis and cost-benefit analysis; and guidelines for the use of economic evaluations.

11.4 USES OF ECONOMIC EVALUATION

Economic evaluations answer the following questions in order to provide an objective set of criteria for making choices among alternatives given scarce resources:

1. Working with limited resources: Are health services, etc., worth doing given limited resources? For example, a health department may ask, “Should everyone get a flu shot each year, given that shortages of vaccine can exist?,” or clinicians may ask, “Should the blood pressure be checked for every adult who walks into their offices, given the time constraints of the standard office visit?”
2. Utility of Healthcare resources: Are we satisfied with the way health resources are utilized in the different courses of action chosen? For example, a hospital administrator may ask, “Should each and every new diagnostic instrument really be a good purchase?” or an insurer may ask, “Should people request that they receive annual check-ups?”

11.5 Features of Economic Evaluation of Healthcare

1. Cost and Consequences: It deals with both the inputs and outputs, sometimes called costs and consequences, of activities. It is the linkage of costs and consequences, which allows us to reach our decision.

2. Choice of resources: Economic analysis concerns itself with choices. Resource scarcity, and our consequent inability to produce all desired outputs, necessitates that choices must, and will, be made in all areas of human activity. These choices are made on the basis of many criteria, sometimes explicit, but often implicit. Economic analysis seeks to identify and to

make explicit set of criteria, which may be useful in deciding among different uses of scarce resources.

Economics evaluations:

- Always compares any health care programme with an alternative, for example, no treatment or routine care.
- Always measure the benefits produced by all alternatives compared.
- Always measures the cost of any programme.

The above characteristics of economic evaluation/analysis lead us to define economic evaluation as the comparative analysis of alternative courses of action in terms of both their costs and consequences**.** Therefore, the basic tasks of any economic evaluation are;

- To identify,
- Measure,
- Value,
- Compare the costs and consequences of the alternatives being considered.

"The pursuit of efficient practice is not merely about reducing costs. If it were the most efficient procedure would be to do nothing, as that pushes costs to zero."

11.6 Types of Economic Analysis/Evaluation

The different ways of looking at benefits combined with cost analysis represent the different techniques of economic evaluation:

- Cost Effectiveness Analysis (CEA),
- Cost Minimisation Analysis (CMA)
- Cost Utility (CUA) and
- Cost Benefit Analysis (CBA).

When to see each of the above techniques will depend on the nature of the question to be addressed, which may be a choice between alternative clinical strategies for a condition: timing of an intervention; settings for care; types and skill-mix of personnel proving care; programmes for different conditions; scale or size of a programme; or other ways to improve health.

11.6.1. Cost-Effectiveness Analysis

When different health care interventions are not expected to produce the same outcomes both the costs and consequences of the options need to be assessed. This can be done by cost-effectiveness analysis, whereby the costs are compared with outcomes measured in natural units-for example, per life saved, per life year gained, and pain or symptom free day. Many cost-effective analyses rely on existing published studies for effectiveness data, as it is often too costly or time consuming to collect data on costs and effectiveness during a clinical trial. Where there is uncertainty about the costs and effectiveness of procedures sensitivity analysis can be used, which examines the sensitivity of the results to alternative assumptions about key variables. In what follows these methods of analysis are described and the possibilities how the benefits of alternative interventions should be valued are discussed.

CEA is concerned with technical efficiency issues, such as: what is the best way of achieving a given goal or what is the best way of spending a given budget. Comparisons can be made between different health programmes in terms of their cost effectiveness ratios: cost per unit of effect. Under CEA effects are measured in terms of the most appropriate uni-dimensional natural unit. So, if the question to be addressed was: what is the best way of treating renal failure? Then the most appropriate ratio with which to compare programmes might be 'cost per life saved'. Similarly, if we wanted to compare the cost-effectiveness of programmes of

screening for Down's syndrome the most appropriate ratio might be 'cost per Down's syndrome foetus detected'. In deciding whether long-term care for the elderly should be provided in nursing homes or the community the 'cost per disability day avoided' might be the most appropriate measure.

The advantage of the CEA approach is that it is relatively straightforward to carry out

It is often sufficient for addressing many questions in health care. However, it is not comprehensive. The outcome is uni-dimensional under this analysis, but often health programmes generate multiple outcomes.

For example, in Downs' syndrome screening, foetus detected is one outcome, but miscarriages avoided might be another very relevant outcome measure, especially if, say, blood testing is being compared to amniocentesis. But this cannot be incorporated into this form of analysis. So, CEA not only assumes that the outcome of the health programme is worthwhile per se, but also that it is the most appropriate measure. A further problem with CEA is comparability between very different health programmes. Cost per foetus detected may be a useful way to compare the efficiency of blood testing versus amniocentesis, but how would these be compared to, say, drugs aimed at reducing cholesterol. Health programmes with different aims cannot be compared with one another using CEA: cost per unit reduction in cholesterol cannot meaningfully be compared with foetus detected. Hence, CEA is useful when comparing programmes within like areas, where common 'currencies' can be used.

Measures of Cost Effectiveness: In order to carry out a cost effectiveness analysis it is necessary to have suitable measures of effectiveness. These will depend on the objectives of the particular interventions under review. In all cost effectiveness analysis, however, measures of effectiveness should be defined in appropriate natural units and, ideally, expressed in a single dimension.

Common measures used in several studies have been "lives saved" and "life years gained". Thus, Boyle and colleagues, in their study of neonatal intensive care of very low birth weight babies, measured effectiveness in terms of mortality rates at the time of discharge of newborn infants from hospital. Their study compared two periods-one before the introduction of neonatal intensive care, and another after its introduction-and measured cost effectiveness in terms of additional costs per life saved.

Several other measures of effectiveness have been used by different researchers (see the box below), these have included the number of pain or symptom free days resulting from alternative drug regimens in the treatment of duodenal ulcers; and the number of episodes of fever cured and deaths prevented in the treatment of chloroquine resistant malaria in African children.

Examples of measures of effectiveness
• Cases treated appropriately • Lives saved • Life years gained • Pain or symptom free days • Cases successfully diagnosed • Complications avoided

Sometimes, however, the alternatives under examination have multiple outcomes. Nonetheless, many of these choices can be dealt within the cost-effectiveness analysis framework. Thus, if one procedure emerges as less costly and of equal or greater effectiveness than all the other options on each dimension of effectiveness, it is clearly the most cost effective option.

For example, the comparison of day surgery with overnight inpatient care for cataract surgery, measured outcomes in terms of the number of both operative and postoperative complications, and in terms of visual acuity of patients three to six days and 10 weeks to six months after surgery. Patient satisfaction was also elicited through a questionnaire. As day surgery emerged as the more effective option on practically all of these effectiveness

measures, and was subsequently less costly, the evidence suggests that it is the preferred option.

Advantages

- Relatively simple to carry out.
- Often able to use outcome measures which are meaningful in a particular field.

Disadvantages

 Since outcome is uni-dimensional, cannot incorporate other aspects of outcome into the cost-effectiveness ratio.

 Interventions with different aims/goals cannot be compared with one another in a meaningful way.

 Meanings of outcome measure not always clear, i.e. what is value of a case detected in a screening programme.

 May have situations when the option with the highest cost effectiveness ratio should be chosen.

11.6.2 Costs-Minimisation Analysis

Cost-minimisation analysis is an appropriate evaluation method to use when the case for an intervention has been established and the programmes and procedures under consideration are expected to have the same or similar outcomes. In these circumstances, attention may focus on the cost side of the equation to identify the least costly option.

Cost –Minimisation

Is concerned only with technical efficiency Can be regarded as a narrow form of cost effectiveness analysis. Evidence is given on the equivalence of the outcomes of different interventions As outcomes are considered to be equivalent no different decisions can be made on the basis of costs

Advantages

 Simple to carry out, requires costs to be measured, but only that outcomes can be shown to be equivalent

 Avoids needlessly quantifying data

Disadvantages

 Can only be used in narrow range of situations.

 Requires that outcomes be equivalent

Example 1. Cost-Minimization Analysis

Suppose we are comparing two programmes involving minor surgery for adults. Both accomplish the outcome of interest, and from an examination of effectiveness data differ in no other significant respects except that one requires hospital admission for at least one night, while the other (a day surgery programme) does not. If we identified the common outcome of interest – operations successfully completed – we would find that it could be achieved to the same degree (i.e. identical number of surgeries) in either programme, though presumably at different costs. The economic evaluation is then essentially a search for the least cost alternative. Analysis such as this is often called cost-minimization analysis. We might also be interested in the distribution of costs (e.g. in this case to what extent does the day-surgery programme shift costs to the patient), but our principal efficiency comparison will be made on the basis of cost per surgical procedure**.** CMA is really a special form of cost-effectiveness analysis, where the consequences of the alternative treatments being compared turn out to be equivalent. It can be seen from the box below that there are nine possible outcomes when one therapy is being compared with another. In three of the nine cases the analysis reduces to a CMA.

11.6.3. Cost-Utility Analysis (CUA)

CUA is concerned with technical efficiency and allocative efficiency (within the health care sector). It can be thought of as a sophisticated form of CEA, since it also makes comparisons between health programmes in terms of cost effect ratios. However, CUA differs in the way it considers effects. These are multidimensional under this form of analysis. CUA tends to be used when quality of life is an important factor involved in the health programmes being evaluated. This is because CUA combines life years (quantity of life) gained as a result of a health programme with some judgment on the quality of those life years. It is this judgment element that is labeled utility. Utility is simply a measure of preference, where values can be assigned to different states of health (relevant to the programme) that represent individual preferences. This is normally done by assigning values between 1.0 and 0.0, where 1.0 is the best imaginable state of health (completely healthy) and 0.0 is the worst imaginable (perhaps death). States of health may be described using many different instruments which provide a profile of scores in different health domains. EuroQol EQ-5D for example, simplifies health into just five domains (such as mobility, selfcare, usual activities, pain/discomfort and anxiety/depression).

- Each domain is given a score from 1 to 3,
- So the health profile would read 11111 for the best scores in all domains
- 33333 for the worst.

This approach of using utility is not restricted to similar clinical areas, but can be used to compare very different health programmes in the same terms. As a result, 'cost per Quality Adjusted Life Years (QALY) gained' league tables are often produced to compare the relative efficiency with which different interventions can turn resources invested into QALYs gained. It is possible to compare surgical, medical, pharmaceutical and health promotion interventions with each other. Comparability then is the key advantage of this type of economic evaluation. For a decision-maker faced with allocating scare resources between competing claims, CUA can potentially be very informative. However, the key problem with CUA is the difficulty of deriving health benefits. Can a state of health in fact be collapsed into a single value? If it can then, whose values should be considered in these analyses? For these reasons, CUA remains a relatively little used form of economic evaluation.

Advantages

• Reveals opportunity cost
• Common currency
• Comparison across diseases
• Considers length and quality of life
• Investment type problem- "best returns"
• Underlying principle – buy "cheap" QALYs not "Expensive" QALYs

Disadvantages

• What of equity?
• What of equality of access?
• Only health service costs
• What of other health benefits?
• Patient information/ reassurance
• Comparability of C-U-A studies
• Lack of them!
• Apply locally?

When should CUA be used?

The following are a number of situations where you might wish to use CUA:

1. When health-related quality of life is the important outcome. For example, in comparing alternative programmes for the treatment of arthritis, no programme is expected to have any impact on mortality, and the interest is focused on how well the different programmes will be improving the patient's physical function, social function, and psychological well being;
2. When the programme affects both morbidity and mortality and we wish to have a common unit of outcome that combines both effects. For example, treatments for many cancers improve longevity and improve long-term quality of life, but decrease quality of life during the treatment process itself.
3. When the programmes are being compared have a wide range of different kinds of outcomes and we wish to have a common unit of output for comparison. For example, if you are a health planner who must compare several disparate programmes applying for funding, such as expansion of neonatal intensive care, a programme to locate and treat hypertension, and a programme to expand the rehabilitative services provided to post-myocardial infarction patients;
4. When we wish to compare a programme to others that have already been evaluated using cost-utility analysis.

11.6.3 (a) Quality – Adjusted Life – Years (QALY)

One of the features of conventional CUA is its use of the QALY concept; results are reported in terms of cost per QALY gained

QALYs: - combine life years gained with a measure of the quality of those years.

Quality is measured on a scale of 0 to 1. With 0 equated to being dead and 1 equated to the best imaginable state of health.

Combine all dimensions of health & survival into a single index.

$$CU\ Ratio = \frac{Cost\ A - Cost\ B}{QALY\ A - QALY\ B}$$

What is the QALY concept?

The advantage of the QALY as a measure of health outcome is that it can simultaneously capture gains from reduced morbidity (quality gains) and reduced mortality (quantity gains), and combine these into a single measure. Moreover, the combination is based on the relative desirability of the different outcomes.

The QALY approach, which forms a key part of most cost utility analyses, has been the subject of some criticism. It has been accused of discriminating against elderly people, making illegitimate interpersonal comparisons, disregarding equity considerations, and introducing bias into quality of life scores. Rival measures that are claimed to be sound theoretically, such as "healthy years equivalents" (HYEs), have also been put forward. It has, however, recently been claimed that under most assumptions QALYs and HYEs will lead to identical project rankings.

Amid all this debate it is as well to bear in mind that decisions have to be made about the allocation of resources and cost utility analysis is probably the most sophisticated form of economic evaluation available at present. However, sensible use of the technique and interpretation of research findings based on the approach should recognise that cost utility analysis is still at a fairly early development stage and treat it accordingly. That is, decision makers should exercise appropriate care, caution, and intelligence.

11.6.3 (b) The Disability-Adjusted Life-Years (DALY): The Disability-Adjusted Life Year, a measure akin to the QALY in aggregating survival and quality of life effects, but normally advanced as a method of estimating the burden of illness associated with a disease, rather than the cost effectiveness of health care interventions.

11.6.4. Cost-Benefit Analysis

Cost benefit analysis is the most comprehensive and theoretically sound form of economic evaluation and it has been used as an aid to decision making in many different areas of economic and social policy in the public sector for more than fifty years.

Cost-Benefit analysis (CBA) estimates and totals up the equivalent money value of the benefits and costs to the community of projects to establish whether they are worthwhile. These projects may be dams and highways or can be training programmes and health care systems.

The main difference between cost-benefit analysis and other methods of economic evaluation that were discussed earlier in this series is that it seeks to place monetary values on both the inputs (costs) and outcomes (benefits) of health care. Among other things, this enables the monetary returns on investments in health to be compared with the returns obtainable from investments in other areas of the economy. Within the health sector itself; the attachment of monetary values to outcomes makes it possible to say whether a particular procedure or program offers an overall net gain to society in the sense that its total benefits exceed its total costs. Cost-effectiveness and cost-utility analysis do not do this because they measure costs and benefits in different units. CBA requires programme consequences to be valued in monetary units, thus, enabling the analyst to make a direct comparison of the programmes incremental cost with its incremental consequences in commensurate units of measurement, be they Rupees, dollars, or pounds.

In simple terms, the goal of analysis is to identify whether a programme's benefits exceed its costs, a positive net social benefit indicating that a programme is worthwhile. CBA is a full economic evaluation because programme outputs must be measured and valued. In many respects CBA is broader in scope than CEA/CUA. Because CBA converts all costs and benefits to money, it is not restricted to comparing programmes within health care, but can be used (although not without problems) to inform resource allocation decisions both within and between sectors of the economy.

CBA is broader in scope and able to inform questions of allocative efficiency, because it assigns relative values to health and non-health related goals to determine which goals are worth achieving, given the alternative uses of resources, and thereby determining which programmes are worthwhile.

- Both costs and benefits are assigned a monetary value. The benefits of any intervention can then be compared directly with any costs incurred.
- If the value of benefits exceeds the costs of any intervention, then it is potentially worthwhile to carry that intervention out.
- If society funds projects for a given budget, then it can maximise the benefits generated by social spending.
- It is concerned with allocative efficiency.
- It is concerned with the question, is a particular goal worthwhile. Potentially it can answer questions such as should extra money be used for heart transplants or improving housing.
- Method requires that all resources and benefit generated by an intervention need to be assigned a monetary value. Therefore, needs to cost things which have no market value, i.e, changes in health, quality of life, length of life, pain, etc.
- Methods of valuing
- Willingness to pay (WTP)
- Human Capital Approach

11.7 BRIEF SUMMERY

This chapter attempted to provide the reader with an introduction to the nature of economic evaluation and the main types of economic evaluations, as well as the elements of a sound economic evaluation. The complexity of the analysis must match the breadth of the questions posed in determining the type of economic evaluation techniques. Costminimization analysis and cost-effectiveness analysis assume that the courses of action considered are worth considering, while cost-benefit analysis and cost-utility analysis actually determine the worthwhileness of the alternative through mechanisms for preference revelation. Different approaches can be used together for complicated problems and at times a cost benefit analysis is performed of the economic evaluation itself, because these analyses are costly to perform.

11.8 KEY TERMS

Willingness to pay: Willingness to pay, sometimes abbreviated as WTP, is the maximum price a customer is willing to pay for a product or service. It's typically represented by a dollar figure or, in some cases, a price range

Quality-Adjusted Life (QALY): A measure of the state of health of a person or group in which the benefits, in terms of length of life, are adjusted to reflect the quality of life. One quality-adjusted life year (QALY) is equal to 1 year of life in perfect health

Cost-utility analysis Year: Cost utility analysis (CUA) is one type of economic evaluation that can help you compare the costs and effects of alternative interventions. CUA measures health effects in terms of both quantity (life years) and quality of life. These are combined into a single measure of health: quality-adjusted life years (QALYs)

Economic Evaluation: Economic evaluation is defined as "the systematic appraisal of costs and benefits of projects, normally undertaken to determine the relative economic efficiency of programs." Simply put, economic evaluation is the understanding and use of economic evidence in decision making

Utility: Utility analysis is a quantitative method that estimates the dollar value of benefits generated by an intervention based on the improvement it produces in worker productivity

11.9 SELF-ASSESSMENT QUESTIONS

1. Discuss the difference between opportunity cost and outlay costs and show their practical implication.
2. Costs are incurred in all economic activities – why?
3. Explain the cost implications of ill health.
4. Define cost benefit analysis and explain its difference from cost effectiveness analysis.
5. Define the terms net present value and discount rate

11.10 FURTHER READINGS

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3. Mills,Anne and et.al. (1992), Health Economics for developing countries: A Survival KitLondon.

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Lesson-12:
GOVERNMENT INVOLVEMENT IN HEALTHCARE MARKET

Learning Objectives

At the end of the lesson, the student is able to:

- Understand Economic Rationale for Government Intervention
- Know the various Forms of Government Intervention
- Understand Government Involvement in Health Care Markets
- Know the Health Sector Regulation and the Prospective Payment System
- Perceive failures of Government

Structure of the lesson

12.1 Introduction

Healthcare has become one of India's largest sectors, both in terms of revenue and employment. Healthcare comprises hospitals, medical devices, clinical trials, outsourcing, telemedicine, medical tourism, health insurance and medical equipment. The Indian healthcare sector is growing at a brisk pace due to its strengthening coverage, services and increasing expenditure by public as well private players.

India's healthcare delivery system is categorised into two major components public and private. The government, i.e. public healthcare system, comprises limited secondary and tertiary care institutions in key cities and focuses on providing basic healthcare facilities in the form of primary healthcare centres (PHCs) in rural areas. The private sector provides majority of secondary, tertiary, and quaternary care institutions with major concentration in metros and tier-I and tier-II cities.

India's competitive advantage lies in its large pool of well-trained medical professionals. India is also cost competitive compared to its peers in Asia and Western countries. The cost of surgery in India is about one-tenth of that in the US or Western Europe.

India encapsulates a paradox; its relatively unimpressive performance in healthcare; inability to deliver affordable health services to its over 1.2 billion citizens co-exist alongside biggest generic drugs industry which exports affordable medicine to more than 100 countries and which has earned India the sobriquet of "pharmacy of the world"; also booming healthcare industry and thriving medical tourism. A weak public sector infrastructure includes non-availability of drugs, lack of advanced laboratory facilities and equipment, a severely constrained health workforce, poorly financed public health system (less than 1.04% of the GDP), along with poor delivery mechanism for health care are the bottlenecks of Indian healthcare system which prevent health system to provide appropriate and affordable care.

India's political and public health leadership has led innovative schemes and translated the best of those into policy, and made substantial contributions for advancing population health. Since the launch of the National Rural Health Mission in 2005, over 157 thousands personnel have been employed to health sector. The Infant mortality rate (IMR) has declined from 68 to 42 per 1000 live births between 2000 and 2012. The *Janani Suraksha Yojana* was successful in ensuring delivery of more than 120 to 130 million women in government facilities and more than 600 thousands newborn babies are receiving care in neonatal care nurseries in district hospitals each year. Polio has been eliminated from the face of the country. This is exciting, but not enough. Each year, more than 40 million people, mostly in rural areas, are impoverished and run into massive debts to access healthcare. Non-communicable diseases and injuries account for 52 per cent of deaths in India. Burden of non-communicable diseases and resultant mortality is expected to increase. Therefore, India's healthcare needs radical changes.

12.2 Economic Rationale for Government Intervention

As we have seen, efficiency is one common standard for evaluating the desirability of economic allocations. Inefficient allocations are associated with various distortions that lead to market failure. Here we review the major contributors to market failure.

12.2.1 Monopoly Power: Monopoly power provides the classic example of market failure. A profit-maximizing monopolist produces to the level at which marginal revenue equals marginal cost. Because the marginal revenue lies below the demand curve, the monopolist will reduce production below competitive levels, and the price charged by the monopolist will exceed the marginal cost of production. The reduced production and the price–marginal cost gap together create the welfare loss.

However, monopoly power need not be associated solely with pure monopoly. The monopoly model is applied commonly to markets in which one or a small number of sellers are dominant. Several health care markets seem to hold a potential for the exercise of monopoly power. Examples include hospital services in markets with few hospitals, pharmaceutical products protected by patents, and some health insurance markets, often dominated by Blue Cross and Red Cross associations.

Several issues arise regarding monopoly power.

First, some ***barriers to entry*** result from government intervention itself. These include licensure and patent laws. Licensure intends to ensure minimal standards of quality; patent laws seek to promote innovative activity.

Second, monopoly power may be inevitable in some situations and does ***not*** necessarily ***lead to economic profits***. In a small market, for example, demand may be sufficient for only one hospital to survive while it just covers costs. If enforcing competition diminishes demand,

even the one existing hospital might not be able to survive unless it either receives subsidies or donations, or cuts its costs.

Third, the proposed cure to ***monopoly inefficiencies may be worse than the problems*** posed by the existence and exercise of monopoly power. Some have argued that direct intervention through public provision or price controls could worsen the situation because of government failure. These critics suggest that countervailing forces and other constraints on the full exercise of monopoly power will tend to arise in private markets, especially where antitrust laws are enforced vigorously. In the simplest case and in the absence of government failure, price controls can theoretically reduce the welfare loss caused by monopoly.

12.2.2 Public Goods: A public good should not be confused with the public provision of a good. The postal service and local garbage collection are examples of public provision of private goods. Government may provide such goods because of natural monopoly, or a desire to subsidize certain users (e.g., rural postal customers who might not otherwise be served by a profit-maximizing postal service). In contrast, a pure public good is one for which consumption is non rival (i.e. consumption by one individual does not reduce someone else's consumption) and non-excludable (i.e., a consumer cannot be excluded from consuming the good either by having to pay or through some other mechanism). Economists often use national defence as an example of a pure public good. Other examples of goods having some degree of "publicness" include highways, bridges, and parks. Market failure arises because an inefficiently small quantity of pure public goods will typically be provided without government intervention.

More realistically, public goods usually involve a large number of individuals. In principle, determining the optimal quantity, using a vertically summed marginal social benefit curve, follows the two-person example. The major difference is that these people are unlikely to cooperate to fund efficient amounts of the public good through voluntary contributions. Instead, more are likely to become free riders (i.e., make no contributions) because they cannot be excluded from consuming the good and because any voluntary contribution one makes to the provision of the good will have a negligible impact on the good's availability.

The predicted undersupply of public goods in private markets has led many to conclude that governments should be responsible for making them available. Are health care services public goods? Health services provided to one person are not consumed by others at the same time. Also, those who do not pay can be excluded from receiving care. Therefore, health care services are private goods even though they may involve public provision (e.g., through the Department of Veterans Affairs) or public financing (e.g. through Medicare and Medicaid). Thus, the public goods rationale for government provision of health care is not immediately apparent.

12.2.3 Externalities: In contrast to pure or nearly pure public goods, externalities refer to those goods that have third-party effects. Recall that externalities arise when a third party is affected by another party's consumption or production of a good. If a neighbours' loud music or smoke from burning leaves bothers you, it constitutes a negative externality.

Moreover, to be considered an externality, the effects must be transmitted outside the price system. An increase in demand for lower-cholesterol meats that raises their prices, adversely affecting consumers of these products, is not an externality. The higher prices ration the supply of low-cholesterol products to those who value them the most.

The major problem is that the prices of the goods and services may not fully reflect many negative or positive externalities. Thus, even when competitive forces drive prices to the marginal private cost of production, social efficiency requires that marginal social benefits equal the marginal social costs. Marginal social benefits sum the marginal private benefits

and any marginal external benefits that might exist, while marginal social costs similarly sum the marginal private costs and any marginal external costs.

When a negative externality, such as pollution, creates a marginal external cost, a competitive market tends to overproduce the polluting good relative to the socially efficient quantity. Consider the case of junk food. If consumers do not bear the full cost of consuming it because the additional cost of treating the adverse health effects are passed on to others, the market price of junk food will not reflect the external cost and consumption of junk food will be too great. Conversely, competitive markets tend to undersupply goods that create beneficial (positive) externalities. Marginal social benefits exceed the price at the competitive output. Positive externalities can be important in health care, as when a charitably minded person derives satisfaction from knowing that the sick, poor, or uninsured consume more health care. More tangible externalities occur when others are inoculated against communicable diseases.

12.2.4 Other Rationales for Government Intervention: Several other arguments favour government intervention. An important responsibility of the federal government is to stabilize the economy through macroeconomic policies. Although macroeconomics does not usually focus on specific sectors of the economy, changes in monetary, fiscal and debt policy can have major effects on federal and state health care programs, as well as on private health care spending through changes in taxes and interest rates.

Another distinct category involves government's role in promoting the consumption of *merit goods*. Merit goods are commodities thought to be good for someone regardless of the person's own preferences. Supporters of the arts, compulsory education, and mandated consumption of other goods argue that individuals do not always know what is in their best interests. Undoubtedly public policy with respect to public health interventions, such as vehicle seat belts and alcohol, tobacco, and drug use, has reflected the merit goods idea.

A final role for government involves incomplete markets which occur when private markets fail to meet an existing demand. Certain insurance markets, such as those for patients with cancer, HIV/AIDS, or other pre-existing conditions who seek new insurance, may represent incomplete markets in the sense that patients may be unable to buy insurance at any price. Government may fill these gaps by providing insurance or requiring insurers to do so.

We must determine, however, whether some of these markets are truly incomplete. Is there sufficient demand by those willing to pay actuarially fair rates so that a market would emerge? Because premiums would, on average, match insurance payments, they would be very high; this happened in the early years of the AIDS epidemic of the 1980s. Are such patients seeking subsidies by having legislation guaranteeing access to insurance at lower than actuarially fair rates?

12.3 Model of Government Intervention in the Healthcare Market

Strong Demand	Attractive Opportunities	Rising Manpower	Policy & Government Support
•healthcare market in India is expected to reach USD 400 billion by 2025, driven by rising income, better health awareness, lifestyle diseases and increasing acces to insurance •as on 2021, the Indian helathcare sector is one of India's largest employers as it employs a total of 4.7 million people	•In the Economic Survey of 2022, India 's public expenditure on healthcare stood at 2.1% of GDP in 2021-22 against 1.8%i in 2020-21 •Two vaccines (Bharat Biotech's Covaxin and Oxford-Astra Zeneca's Covishield manufactured by SII) - were instrumental in medically safeguarding the Indian population against COVID-19	•Availability of a large pool of well-trained medical professionals in the country •The number of allopathic doctors with recognised medical qualifications (under the I.M.C Act) registed with state medical councils/national medical council increased to 1.27 million in July 2021, from 0.83 million in 2010.	•In union Budget 2022-23, Rs.86,200.65 Cr (USD11.28 billion) was allocated to the Ministry of Health and Family Welfare (MoHFW) •The Indian government is planning to introduce a credit incentive program worth Rs.500 billion to boost the country's healthcare infrastructure.

12.4 Forms of Government Intervention

Governments can adopt a variety of policies and instruments to influence the allocation of resources or the distribution of income. The principal categories relevant to health care are selective commodity taxes and subsidies, public provision of health care, transfer programs, and regulation.

12.4.1 Commodity Taxes and Subsidies: We already have established that a competitive market is inefficient when beneficial (positive) externalities result from the consumption of a commodity. Using inoculations against infectious disease as an example, we extend our previous work to show how taxes and subsidies can, in principle, correct for the externality.

By imposing a cost on those who refuse inoculations, the opportunity cost of an inoculation is its price minus the tax. The lower effective price increases quantity. The administrative complexity of monitoring whether people are inoculated argues against this approach.

When consumption of a good, such as smoking, leads to harmful (negative) externalities, the marginal external cost must be added to the marginal private cost to determine the efficient solution. The competitive output will be greater than the optimum. To reduce consumption, price must be raised. A price increase can be achieved either through a corrective tax to shift the supply curve up (Box 19.1) or through a subsidy to non-smokers that raises the effective price of smoking.

12.4.2 Public Provision: Roads, education, water, and police and fire protection are just a few examples of the many goods and services provided by governments. Most of these goods are not pure public goods. Although national defence often serves as an example of a good that is both non-rival (my use does not prevent your use) and non-excludable (I cannot keep you from enjoying the good even if you don't pay for it) we cannot say the same about water, education, and most health care services. Inoculations are rival and excludable even though they may generate substantial positive externalities.

Public provision of health care is a complex process requiring a decision for each of the three basic economic questions (what? how? and for whom?) faced by every society. The "what" question relates to the types of health care to be provided (e.g., limited services, such as inoculations or comprehensive health care) as well as their quantity and quality. Whether governments themselves produce the services and how they do it, or whether they contract with the private sector, is a part of the "how" question. The "who" question deals with the

financing and distribution of the services. Will the program be created as a universal entitlement, as an entitlement for some groups, or as one with other eligibility requirements? Furthermore, should the program be "free" at the point of service and funded mainly by tax revenues, or should the beneficiaries be charged user fees? The funding mechanism could have large impacts on the resources allocated to health and on the possible redistributions as from rich to poor and young to old.

12.4.3 Transfer Programs: Cash transfer programs usually are intended to meet society's equity concerns by redistributing income, with recipients free to spend their incomes in any way they want. Social Security for the elderly and some disabled is the principal example, but income supports also are provided for the poor. Cash transfers to the poor include Temporary Assistance to Needy Families (TANF), funded by the federal government and administered by the states.

In-kind transfers (benefits other than cash) also redistribute income, but their main purpose is to increase a recipient's consumption of specific goods or services. Important in-kind transfers include Medicare for the elderly, food through the SNAP program, housing, and Medicaid for those who pass means tests.

12.4.4 Regulation: Governments influence the allocation of resources by establishing rules and regulations. In the extreme, governments can prohibit certain goods or activities entirely, such as the production and consumption of illicit drugs. More commonly, governments regulate the form or terms under which goods are produced or consumed. Regulation may appeal to legislators because it appears to tackle problems without incurring substantial government spending in the process.

For example, regulating managed care to prevent "drive-through" deliveries appears to respond to a public concern at little direct cost to government.

Regulation in health care markets can take many forms: licensure laws; mandates; and regulation of price, quality, and quantity of services. The following overview of the scope of government involvement in the health care sector contains several examples of regulation, with hospitals as a focal point for regulatory measures. It will be followed by sections describing various forms of hospital regulation, especially the Prospective Payment System (PPS), we will finish with a discussion of models of government failure in regulating.

12.5 Government Involvement in Health Care Markets

Government intervention in the health care markets comes mainly through three activities:

- Provision of goods and services,
- Redistribution, and
- Regulation. Through public or VA hospitals, and other programs, they provide substantial amounts of health care, though this activity is overshadowed by social insurance programs for the elderly and many poor. The provision of health care and of health insurance is also the major means used to redistribute income to lower-income groups from higher-income groups.

Less obvious to many is government's role as a regulator. At the federal level, the Securities and Exchange Commission (SEC), the Environmental Protection Agency (EPA), and the Occupational Safety and Health Administration (OSHA) are regulatory agencies that affect nearly every business and working individual. In addition, states and localities impose various requirements such as those governing building and safety codes.

However, when economists and others speak of regulating or deregulating the healthcare industries, they are not referring to the kinds of social and commercial controls cited earlier but rather to regulations such as HIPAA (Box 19.2) targeted specifically at the health care industries. Government involvement in the health economy takes on many forms, some of which are developed elsewhere in this text. Here we provide examples to highlight the variety and scope of government intervention in health care markets.

12.5.1 Support of Hospitals: The modern hospital did not begin to emerge until the confluence of several developments in the late nineteenth century, such as major improvements in anaesthesia, antisepsis, and in the invention of X-rays. Temin (1988) characterizes hospitals prior to this period as being more like municipal almshouses funded by taxes or voluntary contributions. Hospitals "existed for the care of marginal members of society, whether old, poor, or medically or psychologically deviant".

In retrospect, one can argue that public support for hospitals reflected a redistribution motive and a desire to deal with the negative externalities associated with living with the insane and those harboring communicable diseases, such as tuberculosis. With the improvements in physicians' abilities to diagnose and to treat patients surgically, hospitals grew rapidly in the first decades of the twentieth century. Public hospitals continued to serve the poor but also focused their attention on the growing middle classes. Ultimately, patient payments and insurance became the primary sources of funds for many of these institutions.

12.5.2 Description of PPS: Contrast the current prospective payment to Medicare's previous retrospective reimbursement system. Under retrospective payment, a hospital submitted its bill to Medicare after the care was provided and the costs to the hospital were known. Retrospective payment allowed the hospitals to recover their expenses as allowed by Medicare rules whether these expenses were high or low, excessive or efficient.

Retrospective reimbursement provided only modest incentives for hospitals to control costs. Prospective payment, in contrast, sets payment rates *prior* to the period for which care is given. By setting a *fixed* reimbursement per admission, prospective payment provides economic incentives to conserve on the use of input resources. Hospitals that use more resources than covered by the fl at rate lose the difference. Those with costs below that rate retain the difference.

Payment from the government is complicated. As of 2016, Medicare has 19 different payment systems. We group them as follows:

a. Inpatient acute care in short-term hospitals and psychiatric facilities
b. Ambulatory care furnished by physicians, hospital outpatient departments, ambulatory surgical centers, and clinical laboratories.
c. Post-acute care furnished by skilled nursing facilities, home health agencies, inpatient
d. Rehabilitation facilities, and long-term-care hospitals.
e. Dialysis services furnished in outpatient centers and hospice care.
f. Ambulance services and products furnished by durable medical equipment suppliers.
g. Services furnished by private health plans under the Medicare Advantage program.
h. Services furnished by accountable care organizations (ACOs).
i. Part D voluntary drug benefits.

12.5.3 Investments/ Developments: Between April 2000-December 2021, FDI inflows for drugs and pharmaceuticals sector stood at US$ 19.19 billion, according to the data released by Department for Promotion of Industry and Internal Trade (DPIIT). FDI inflows in sectors such as hospitals and diagnostic centres and medical and surgical appliances stood at US$ 7.73 billion and US$ 2.35 billion, respectively. Some of the recent developments in the Indian healthcare industry are as follows:

- India currently holds the fourth position in attracting VC funding to the health-tech sector, with investments of US$ 4.4 billion between 2016 and 2021, with US$ 1.9 invested in 2021 alone.

- In March 2022, Hyderabad-based pharmaceutical company Biological E applied for emergency use authorisation (EUA) for its Covid-19 vaccine Corbevax for the 5-12 year age group.
- In January 2022, Phase 3 trials commenced of India's first intranasal vaccine against COVID-19, that is being developed by Bharat Biotech in conjunction with Washington University School of Medicine in St Louis, the US.
- Startup HealthifyMe, with a total user base of 30 million people, is adding half a million new users every month and crossed US$ 40 million ARR in January 2022.
- The number of policies issued to women in FY21 stood at 93 lakh, with one out of every three life insurance policies in FY21 sold to a woman.
- In December 2021, Eka Care became the first CoWIN-approved organization in India, through which users could book their vaccination slot, download their certificate and even create their Health IDs.
- As of November 18, 2021, 80,136 Ayushman Bharat-Health and Wellness Centres (AB-HWCs) are operational in India.
- As of November 18, 2021, 638 e-Hospitals are established across India as part of the central government's 'Digital India' initiative.
- In November 2021, Flipkart Group announced its foray into the healthcare sector through the launch of Flipkart Health+. As part of this development, Flipkart has signed definitive agreements to acquire a majority share in Sastasundar Marketplace Limited, which owns and operates SastaSundar.com, an online pharmacy and digital healthcare platform.
- In November 2021, Aster DM Healthcare announced that it is planning Rs. 900 crore (US$ 120.97 million) capital expenditure over the next three years to expand its presence in India, as it looks at increasing the share of revenue from the country to 40% of the total revenue by 2025.
- In September 2021, Russian-made COVID-19 vaccine, Sputnik Light received permission for Phase 3 trials in India.
- In September 2021, Biocon Biologics Limited, a subsidiary of Biocon, announced a strategic alliance with Serum Institute Life Sciences, a subsidiary of Serum Institute of India (SII). The alliance is expected to strengthen India's position as a global vaccine and biologics manufacturing powerhouse.
- In July 2021, India made its Covid-19 vaccination platform, CoWIN, open source for all countries. Almost 76 countries have displayed interest in leveraging the CoWIN platform to manage their national COVID-19 vaccination drives.
- In July 2021, the Indian government granted Sanofi and GSK approvals to conduct late-stage clinical trials of their protein-based vaccines.
- In June 2021, Tata Digital Limited, a 100% subsidiary of Tata Sons Private Limited, announced that it will acquire a majority stake in digital health company 1mg.
- In June 2021, PharmEasy acquired a majority stake in Thyrocare Technologies, a diagnostics chain, to diversify and bolster its testing business.
- In June 2021, AstraZeneca India signed a memorandum of understanding (MoU) with Docon Technologies, a Bengaluru-based health start-up, to digitise 1,000 clinics across India by implementing customised electronic medical record (EMR) systems in clinics to offer doctors access to a patient's complete medical history.
- In March 2021, Union Health Minister Mr. Harsh Vardhan informed the Rajya Sabha that 157 medical colleges are under various stages of implementation across India. Of this, 58 colleges are in the first phase of implementation, 24 in the second phase and 75 are in the third phase.

- In March 2021, Virchow Biotech, a Hyderabad-based firm, and the Russian Direct Investment Fund (RDIF) announced a collaboration to manufacture up to 200 million doses of the Sputnik V vaccine in India.

12.5.4 Government Initiatives: Some of the major initiatives taken by the Government of India to promote Indian healthcare industry are as follows:

- In the Union Budget 2022-23:
  - Rs. 86,200.65 crore (US$ 11.28 billion) was allocated to the Ministry of Health and Family Welfare (MoHFW).
  - Pradhan Mantri Swasthya Suraksha Yojana (PMSSY) was allocated Rs. 10,000 crore (US$ 1.31 billion)
  - Human Resources for Health and Medical Education was allotted Rs. 7,500 crore (US$ 982.91 million).
  - National Health Mission was allotted Rs. 37,000 crore (US$ 4.84 billion).
  - Ayushman Bharat – Pradhan Mantri Jan Arogya Yojana (AB-PMJAY) was allotted Rs. 6,412 crore (US$ 840.32 million).
  - The Government of India approved continuation of 'National Health Mission' with a budget of Rs. 37,000 crore (US$ 4.85 billion).
  - Rs. 5,156 crore (US$ 675.72 million) was allocated to the newly announced PM-ABHIM to strengthen India's health infrastructure and improve the country's primary, secondary and tertiary care services.
- As of April 5, 2022, 117,771 Ayushman Bharat-Health and Wellness Centres (AB-HWCs) are operational in India.
- As of April 5, 2022, 748 e-Hospitals were established across India as part of the central government's 'Digital India' initiative.
- In November 2021, the Government of India, the Government of Meghalaya and the World Bank signed a US$ 40-million health project for the state of Meghalaya. Project will improve the quality of health services and strengthen the state's capacity to handle future health emergencies, including the COVID-19 pandemic.
- By September 21, 2021, the Health Ministry's eSanjeevani telemedicine service crossed 12 million teleconsultations since its launch, enabling patient-to-doctor consultations, from the confines of their homes, and doctor-to-doctor consultations.
- India could restart deliveries of Covid-19 shots to global vaccine-sharing platform COVAX in November-December 2021 for the first time since April 2021. The World Health Organization (WHO), which co-leads COVAX, has been pushing India to resume supplies for the programme, particularly after it sent ~4 million doses to its neighbours and allies in October 2021.
- In September 2021, Prime Minister Mr. Narendra Modi, while speaking at the global COVID-19 summit, said that India had shared its vaccine production with 95 countries and the UN peacekeepers. He also stated that India will supply COVID-19 vaccines to other countries after increased production.
- In September 2021, Prime Minister Mr. Narendra Modi launched the Ayushman Bharat Digital Mission. The mission will connect the digital health solutions of hospitals across the country with each other. Under this, every citizen will now get a digital health ID and their health record will be digitally protected.
- In September 2021, Telangana government in a joint initiative with World Economic Forum, NITI Aayog and HealthNet Global (Apollo Hospitals) launched 'Medicine from the Sky' project. The project will pave the way for drone delivery of life saving medicines and jabs in far-flung regions of the country.
- According to a spokesperson, the Indian government is planning to introduce a credit incentive programme worth Rs. 500 billion (US$ 6.8 billion) to boost the country's

healthcare infrastructure. The programme will allow firms to leverage the fund to expand hospital capacity or medical supplies with the government acting as a guarantor and strengthen COVID-19-related health infrastructure in smaller towns.

- In July 2021, the Ministry of Tourism established the 'National Medical & Wellness Tourism Board' to promote the Medical and Wellness Tourism in India.
- In July 2021, the Union Cabinet approved continuation of the National Ayush Mission, responsible for the development of traditional medicines in India, as a centrally sponsored scheme until 2026.
- In July 2021, the Union Cabinet approved the MoU between India and Denmark on cooperation in health and medicine. The agreement will focus on joint initiatives and technology development in the health sector with the aim of improving public health status of the populations of both countries.
- In June 2021, the Union Ministry of Health and Family Welfare, in partnership with UNICEF, held a capacity building workshop for media professionals and health correspondents in Northeastern states on the current COVID-19 situation in India, the need to bust myths regarding COVID-19 vaccines & vaccination and reinforce the importance of COVID-19 Appropriate Behaviour (CAB).
- In June 2021, Bolo Indya, a domestic social live streaming platform, partnered with the Ministry of AYUSH to improve awareness for traditional Indian methods of medicines and care such as siddha, yoga, unani and ayurveda to boost healthy living among citizens. Through this partnership, >10 million citizens will be covered in the next 12 months.
- In June 2021, West Bengal proposed for six new medical colleges in the state, nine new medical colleges became operational in Uttar Pradesh, Telangana approved six medical colleges in the state and Punjab announced establishment of four new medical colleges in the state.
- In June 2021, the Uttar Pradesh government announced the introduction of automatic medicine dispensing machines to expand the primary healthcare industry and clinical centres in the country. The state health department has been nominated to design an action plan and install 'Health ATMs' walk-in medical kiosks, with combined medical devices for basic laboratory testing, emergency offerings, cardiology, neurology, pulmonary and gynaecology testing services that will be operated by a medical assistant in all 75 districts of Uttar Pradesh.
- In June 2021, the government invited bids for using drones to deliver COVID-19 vaccines and drugs to remote and difficult-to-reach areas to ensure last-mile coverage in select locations of the country.
- As of May 2021, 11.9 lakh Health IDs have been generated and 3,106 doctors and 1,490 facilities have registered on the National Digital Health Mission (NDHM) platform.
- In May 2021, Defense Minister Mr. Rajnath Singh launched 'Services e-Health Assistance & Tele-consultation (SeHAT)' OPD portal to provide telemedicine services to armed forces personnel and veterans.
- On May 17, 2021, the Defence Ministry launched the first batch of anti-COVID drug, 2-deoxy-D-glucose (2-DG) that was developed by the Institute of Nuclear Medicine and Allied Sciences (INMAS), a lab of Defence Research and Development Organisation (DRDO), along with Dr. Reddy's Laboratories (DRL), Hyderabad.
- In May 2021, the government announced its plan to ramp up supply and availability of Amphotericin-B, the anti-fungal drug, for treatment of the 'Black Fungus' disease. It has also given the license to five manufactures to produce the drug within the country.

- In March 2021, various states and UTs started implementation of the 'Intensified Mission Indradhanush 3.0'—a campaign aimed to reach those children and pregnant women who were missed out or have been left out of the routine immunisation programme due to the COVID-19 pandemic. This is aimed to accelerate the full immunisation of children and pregnant women through a mission mode intervention.
- In March 2021, the Parliament passed the National Commission for Allied, Healthcare Professions Bill 2021, which aims to create a body that will regulate and maintain educational and service standards for healthcare professionals.
- The government announced Rs. 64,180 crore (US$ 8.80 billion) outlay for the healthcare sector over six years in the Union Budget 2021-22 to strengthen the existing 'National Health Mission' by developing capacities of primary, secondary and tertiary care, healthcare systems and institutions for detection and cure of new & emerging diseases.

12.6 SUMMARY

India is a land full of opportunities for players in the medical devices industry. The country has also become one of the leading destinations for high-end diagnostic services with tremendous capital investment for advanced diagnostic facilities, thus catering to a greater proportion of population. Besides, Indian medical service consumers have become more conscious towards their healthcare upkeep.

India's healthcare sector is much diversified and is full of opportunities in every segment, which includes providers, payers, and medical technology. With the increase in the competition, businesses are looking to explore the latest dynamics and trends which will have a positive impact on their business. The hospital industry in India is forecast to increase to Rs. 8.6 trillion (US$ 132.84 billion) by FY22 from Rs. 4 trillion (US$ 61.79 billion) in FY17 at a CAGR of 16–17%.

The Government of India is planning to increase public health spending to 2.5% of the country's GDP by 2025.

India's competitive advantage also lies in the increased success rate of Indian companies in getting Abbreviated New Drug Application (ANDA) approvals. India also offers vast opportunities in R&D as well as medical tourism. To sum up, there are vast opportunities for investment in healthcare infrastructure in both urban and rural India.

12.7 KEY TERMS

Government Intervention: The so-called government intervention refers to when a government declaring as a rule maker or market regulator must intervene deeply in transaction disputes between market players, mobilizing public or private resources to resolve the transaction disputes in the process of market governance

Healthcare Reforms: In the U.S., Health Care Reform refers to the overhauling of America's healthcare system. This includes changes that affect the ever increasing costs of national health care by individuals, families, and the government. Also, addressing the benefits people receive and how people obtain health insurance.

Tax Policy: Taxation is the means by which a government or the taxing authority imposes or levies a tax on its citizens and business entities. From income tax to goods and services tax (GST), taxation applies to all levels.

Public Private Partnership: A Public-private partnership (PPP) is often defined as a long-term contract between a private party and a government agency for providing a public asset or service, in which the private party bears significant risk and management responsibility

12.8 SELF-ASSESSMENT QUESTIONS

1. How Govt of India initiates in the healthcare market
2. List out the various schemes implement by the Govt. For the benefit of the people regarding the healthcare
3. The best model for Government intervention

12.9 FURTHER READINGS

1. Adams O and Hicks V. 2001. Pay and non-pay incentives, performance and motivation. Prepared for the World Health Organization, Global Health Workforce Strategy Group.
2. NITI AYOG, Health System for a New India: Building Blocks – Potential Pathways to Reform – Nov.2019
3. Regulation of Health Care Delivery In India - A Landscape Study by Sunil Nandraj, Pallavi Gupta, Sonali Randhawa March 2021(Health Systems Transformation Platform (HSTP))

Unit - 5: Health Policy theorems

Unit – V Health Policy: Health Policy Conundrum– Arrow's impossibility theorem, health policy trilemma, Working of health insurance markets, regulation of healthcare providers, comparing National Health Policies, Bismark Model; social health insurance.

Lesson 13: Theories of Health Policy
Lesson 14: Regulation of Healthcare providers & Working of Health Insurance markets
Lesson 15: National Health Policy - Model

LESSON-13

THEORIES OF HEALTH POLICY

Learning Objectives

After the in-depth study of this lesson, student is able to:

1. Understand how do health issues get lifted on political agendas?
2. How are health problems and intersectoral solutions identified and prioritized?
3. What motivates or incentivizes politicians and policy-makers across sectors to take into account the consequences of their policies for health?
4. How can windows of opportunity for improving health and health equity be seized?
5. What are the key determinants for successful policy-making and implementation of Health Policy?

Structure of the Lesson

13.1 INTRODUCTION:

People put high value on health; it is core to their well-being and happiness. Good health enables a long, fulfilling and productive life in which a person can enjoy life, study, work and care for others. Healthy children learn more effectively. Healthy adults are able to care for others. Health is also likely to be good for business. Thus, health is an important enabler and prerequisite for attaining not only an individual's goals and aspirations but also society's social and economic goals.

The health sector devotes most of its attention to organizing and financing good quality and accessible health services. While this is crucial, health is not created by health

service provision alone but largely also by determinants of health that together affect the health of individuals and communities.

People's health is affected by the social, physical and economic environments, in which they live, as well as individual characteristics and behaviours. Health inequities – defined as avoidable, unfair and unjust differences in health status within and between countries – are also mostly a result of differences in these determinants affecting the circumstances in which people are born, grow, study, live and age, and the systems put in place to deal with illness. Public policies can make a major difference for health and health equity by creating healthy environments which also facilitate healthy choices.

Thus, public policies dealing with (for example) water and sanitation, education, social services, built and natural environments, agricultural and industrial production, trade, regulation, revenue collection and allocation of public resources have important ramifications for population health and health equity. The infrastructure and regulatory context, professional education systems, revenue collection and resource allocation affect particularly the context in which health systems function. The health sector would need to move outside its sectoral activity to work with others in order to achieve better health and health equity.

13.2 Health Policy Conundrum

In most sectors of the economy, the problem of using resources in the most effective way is left for private industry to solve – private firms compete to provide consumers with high-quality food, electronics, and entertainment at the lowest possible prices. But health care markets are different. Because they face so many market imperfections, and because many people feel that health is a special kind of good that should be accessible to all, governments have long been much more involved in health care than in other markets.

In recent years health reform has shot up to the top of political agenda throughout the world. For developed industrial countries and many middle-income developing countries reasons include rapidly rising costs, the large number of people still not covered by health insurance and the fear of AIDS. For developing countries the main reason is a better understanding of the importance of health for improving the productivity of workers and of the potential for enormous gains in health at very low cost.

There is no question that governments all over the world have played a vital role in bringing about the great advances in health over the past many years. Public health measures are responsible for eradicating smallpox and have been central to the reduction in deaths caused by other vaccine-preventable childhood diseases. Expanded and improved clinical care by government doctors and nurses has saved millions of lives from infectious diseases and injuries. Better prenatal and delivery services organized by governments have lowered the rate of serious complications of pregnancy and childbirth for millions of mothers.

Meaning of Conundrum: Despite these remarkable improvements, however, enormous health problems remain. Absolute levels of mortality in developing countries are still unacceptably high; child mortality rates are about ten times higher than those in the established market economies. According to the World Bank Development Report in 1993 if death rates among children in poor countries were reduced to those prevailing in the rich countries, 11 million fewer children would die each year. Almost half of those preventable deaths are a result of diarrheal and respiratory illness exacerbated by malnutrition.

In addition, every year seven million adults die of conditions that could be inexpensively prevented or cured; tuberculosis alone causes two million of these deaths. Over 400,000 women die from the direct complications of pregnancy and childbirth. Maternal mortality ratios are on average 30 times as high in developing countries as in high income countries.

There are several major problems with the way health systems are now run and financed and if solutions are not found, the pace of progress in reducing the burden of premature mortality and disability will be slowed.

13.3 PROBLEMS (CONUNDRUM) OF HEALTH POLICY

The appropriate nature and extent of government involvement will vary from country to country, in large part depending on income levels. Some of the common problems of most countries in their policy are misallocation, inefficiency and cost allocation.

13.3.1 Misallocation: one of the most important aspects of economics in making health policy is the appropriate allocation of material financial and human resources. This implies optimal disruption of economic resources among competing needs. This in turn calls for the proper identification of the need. Sometimes public money is spent on health interventions with low cost effectiveness such as foremost cancers, at the same time that critical and highly cost effective interventions such as treatment of tuberculosis and sexually transmitted diseases remain under funded.

13.3.2 Inequity: The poor lack access to basic health service and receive low quality care. Government spending for health goes disproportionately to the affluent in the form of subsidies to sophisticated public tertiary care hospitals and to private hospitals.

13.3.3. Inefficiency: much of the money spent on health is wasted because brand name pharmaceuticals are purchased instead of generic drugs ,health workers are badly deployed and supervised and Hospital beds are underutilized.

13.3.4 Cost explosion: in some middle income developing countries health care expenditures are growing much faster than income as increasing number of specialists, the availability of new medical technologies and expanding health insurance linked with fee-for-service payments together generate a rapidly growing demand for costly tests, procedures and treatments. As developing and industrial countries alike rethink the best way to provide health care in the century ahead some argue that governments should step up their financing while allowing more participation by non-government organizations and the private sector in supplying services.

13.4 THEORIES OF HEALTH POLICY

The policies which have been implementing run the gamut from private market solutions that prioritize efficiency to public sector initiatives that emphasize equity. There are three main health system models – each of which uses a different combination of these policies – and discuss the virtues and drawbacks of each approach.

13.4.1 Arrow’s impossibility theorem

Meaning: Arrow's impossibility theorem is a social-choice paradox illustrating the flaws of ranked voting systems. It states that a clear order of preferences cannot be determined while adhering to mandatory principles of fair voting procedures. Arrow's impossibility theorem, named after economist **Kenneth J. Arrow**, is also known as the general impossibility theorem.

The task of designing a national health system is at its heart an optimization problem, not dissimilar to the task of an individual in the Grossman model. Societies must decide how much time and money they want to spend on improving their health, and how much time and money they want to spend on other national priorities – like education, the military, and the environment. Once they have made this determination, they must also chart an optimal strategy for achieving that level of health in the cheapest and most efficient manner.

This analogy between an individual and a society is not quite right though. A society composed of many people – is fundamentally different from a single person. Each person is presumed to have consistent and transitive preferences. Suppose an individual prefers eating a cookie to watching TV, and prefers watching TV to exercising. If she has *transitive* preferences, then she also prefers eating a cookie to exercising. If, instead, she prefers exercising to eating a cookie, then she has *circular* preferences and it is unclear which of these three activities is optimal (or even if there is an optimum at all).

Without transitive preferences, welfare economics falls apart. Transitive preferences are a necessary assumption for utility maximization and optimal choice to have meaning. Luckily for economics, transitivity seems like a very natural assumption, and much of the field is built upon it. However, in a shocking 1951 paper, economist Ken Arrow (1921) proved that societies do not necessarily have transitive preferences, even when everyone in them does (Arrow 1951). His finding is known as Arrow's impossibility theorem.

Key Elements

- Arrow's impossibility theorem is a social-choice paradox illustrating the impossibility of having an ideal voting structure.
- It states that a clear order of preferences cannot be determined while adhering to mandatory principles of fair voting procedures.
- Kenneth J. Arrow won a Nobel Memorial Prize in Economic Sciences for his findings.

Understanding Arrow's Impossibility Theorem

Democracy depends on people's voices being heard. For example, when it is time for a new government to be formed, an election is called, and people head to the polls to vote. Millions of voting slips are then counted to determine who is the most popular candidate and the next elected official.

Conditions of Arrow's Impossibility Theorem: According to Arrow's impossibility theorem, in all cases where preferences are ranked, it is impossible to formulate a social ordering without violating one of the following conditions:

- **Non-dictatorship**: The wishes of multiple voters should be taken into consideration.
- **Pareto Efficiency**: Unanimous individual preferences must be respected: If every voter prefers candidate A over candidate B, candidate A should win.
- **Independence of Irrelevant Alternatives**: If a choice is removed, then the others' order should not change: If candidate A ranks ahead of candidate B, candidate A should still be ahead of candidate B, even if a third candidate, candidate C, is removed from participation.
- **Unrestricted Domain**: Voting must account for all individual preferences.
- **Social Ordering:** Each individual should be able to order the choices in any way and indicate ties.

Arrow's impossibility theorem, part of social choice theory, an economic theory that considers whether a society can be ordered in a way that reflects individual preferences, was lauded as a major breakthrough. It went on to be widely used for analyzing problems in welfare economics.

Example of Arrow's Impossibility Theorem

Let's look at an example illustrating the type of problems highlighted by Arrow's impossibility theorem. Consider the following example, where voters are asked to rank their preference of three projects that the country's annual tax dollars could be used for: A; B; and C. This country has 99 voters who are each asked to rank the order, from best to worst, for which of the three projects should receive the annual funding.

- 33 votes A > B > C (1/3 prefer A over B and prefer B over C)
- 33 votes B > C > A (1/3 prefer B over C and prefer C over A)
- 33 votes C > A > B (1/3 prefer C over A and prefer A over B)

Therefore,

- 66 voters prefer A over B
- 66 voters prefer B over C
- 66 voters prefer C over A

So a two-thirds majority of voters prefer A over B and B over C and C over A---a paradoxical result based on the requirement to rank order the preferences of the three alternatives.

Arrow's theorem indicates that if the conditions cited above i.e. Non-dictatorship, Pareto efficiency, independence of irrelevant alternatives, unrestricted domain, and social ordering are to be part of the decision making criteria then it is impossible to formulate a social ordering on a problem such as indicated above without violating one of the following conditions.

The proof of the theorem is involved and technical; let's illustrate the basic idea with an example from the turbulent political culture of our fictional nation of Pcoria. Pcorian political discourse is dominated by three major political parties: the Federal Democrats, the Social Libertarians, and the Enviro-Greens. Pcoria's population is split between three types of voters – students, workers, and retirees – who each make up exactly one third of the electorate. The members of each group share identical political preferences, which happen to differ from the political preferences of the other two groups (see Table 15.1).

Voter Type	1st Choice	2nd Choice	3rd Choice
Students	Fed Dems	Soc Libs	Eniro-Greens
Workers	Enviro-Greens	Fed-Dems	Soc.Lite
Retirees	Soc Libs	Enviro-Greens	Fed Dems

Any single Pcorian voter has a transitive set of preferences over the three political parties. But what is Pcoria's society-wide preference ordering among the three parties? Since Pcoria is a democracy, all of its citizens have an equal say in determining the ordering of the political parties. Two-thirds of the population – the workers and students – prefer the Fed Dems to the Soc Libs. So it is clear that society prefers the Fed Dems to the Soc Libs. Similarly, the workers and the retirees prefer the Enviro-Greens to the Fed Dems. Thus, society prefers Enviro-Greens to the Fed Dems and, by transitivity, prefers the Enviro-Greens to the Soc Libs as well.

But this analysis is flawed. The Enviro-Greens are supposedly Pcoria's single preferred party, but two-thirds of Pcoria – students and retirees – would rather see the Soc Libs in power. Thus, Pcoria prefers Enviro-Greens to the Fed Dems, Fed Dems to the Soc Libs, and Soc Libs to the Enviro-Greens as well. Even though each individual member of society has transitive preferences, the preferences of Pcoria as a whole are circular.

In this sense, it is not always meaningful to speak of what a society "wants" or a society "prefers." If each of the three Pcorian political parties has a starkly different set of health policies, who is to say which option is best for Pcoria?

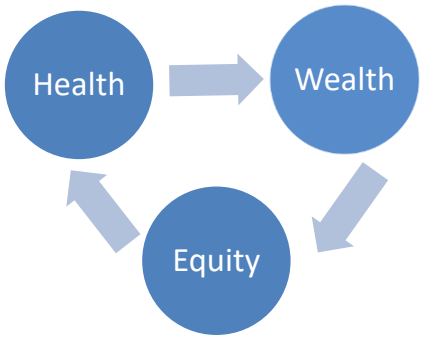
13.5 THE HEALTH POLICY TRILEMMA

Arrow's impossibility theorem says it does not make sense to speak of an "optimal" health policy for a country because societies do not always have a set of preferences that can be optimized in the traditional sense. Nevertheless, political decisions do occur and various

national health policies have emerged. In this book, we assess these policies by analyzing how well they meet three broad goals: health, wealth, and equity. These assessments cannot reveal which nation's health policy, if any, is "optimal," but they allow us to study the tradeoffs inherent in health policy.

The first two goals, health and wealth, are familiar from the Grossman model, where an individual has one fundamental tradeoff to think about: health versus other goods. Societies trying to determine their health policy have to consider not only that tradeoff, but also another set of tradeoffs between different groups within society. Many in society would be willing to sacrifice health or other goods to ensure better outcomes for the worstoff. Achieving fairness or *equity* in health access and outcomes is the third goal of health policy.

Below the figure depicts the three-pronged tradeoff inherent in health policy. In an ideal world, all three goals would be attainable at once: people would live long, healthy lives; pay very little for health care; and this happy state of affairs would be available to everyone in society. In practice, though, it is impossible to have everything. Any attempt by a nation to move closer to one of these three goals necessarily involves a tradeoff that moves that nation further away from some other goal. Any hypothetical policy *X* that effectively combats adverse selection and increases equity, for example, would either increase costs or lower health at least for some. That there are tradeoffs between these three goals should not be surprising. If all three goals could be met simultaneously, health policy would not be a source of endless political acrimony – nor would it be interesting or important to study.



Furthermore, people disagree about how important each item in the above figure is. Some countries may value social equity very highly, and be willing to pay more in taxes to achieve it. Others may place a higher premium on health, and be willing to countenance more moral hazard or monopoly pricing to secure it. The variation we see in health policies across the world is not necessarily an indication that some governments are getting it right and others are getting it wrong. Instead, the variation reflects the fact that different nations have different preferences and face different constraints.

The health policy optimization problem is difficult because health care markets suffer from a number of pathologies that we have studied throughout this book. Below is the Table list (*Pathologies present in health care markets.)* the four main pathologies that make the goals in the above figure harder to achieve.

Adverse selection	***Monopolistic suppliers***
Moral hazard	***Health disparities***

There are ways to combat each pathology, but of course each solution leads to a new set of problems. Often, policy debates come down to the question of which of these pathologies we are more willing to live with.

What follows is an introduction to the most important policy choices that societies must make. Without exception, each policy choice involves a tradeoff between the different items in Figure 15.1 so none is obviously right or obviously wrong. We present these policies as answers to the three broad questions that any national health care system must answer:

- How should insurance markets work?
- How should moral hazard be controlled in public insurance?
- How should health care provider markets (like the markets for hospital services, pharmaceuticals, and physicians) be regulated?

While each country has its own unique system, most developed countries have settled on one of three broad approaches to health policy, which we call the *Beveridge, Bismarck*, and *American models*. In further chapters, we explore each model in detail and see how various countries answer these questions in different ways.

13.6 SUMMERY

While government policy can address some of the problems created by information asymmetries, as we have seen, it is impossible to solve them all simultaneously. As we discuss in the upcoming chapters, countries that have adopted policies that solve the adverse selection problem face a significant challenge in controlling moral hazard. By contrast, in part because its health policy does not adequately solve the adverse selection problem, the US population has a large number of people without health insurance coverage. In the words of Wildavsky (1979), "the rich don't like waiting, the poor don't like high prices, and the middle class complain about both."

This apparent widespread dissatisfaction is not necessarily a sign that policymakers everywhere are doing a bad job. It is maybe a reflection of how entrenched the trilemma is. There are no free lunches in health care – policies that promote equity either cost more or force people to wait longer for care. Policies that improve hospital efficiency result in higher taxes or sacrifice on equity.

It is probably too much to expect everyone to be happy with their health care system people fundamentally disagree about how the tradeoffs implicit in the trilemma should be navigated. Despite this, we will see that health policy in the developed world is, to some extent, converging. The Beveridge countries with a large government role in the provision of care are adopting policies aimed at introducing elements of private competition among their public providers. The Bismarck countries, in which the government mandates and heavily regulates the provision of health insurance but allows private provision, are moving to include ideas used in Beveridge systems to control costs.

13.7 KEY TERMS

Welfare Economics: Welfare economics is **the study of how the allocation of resources and goods affects social welfare**. This relates directly to the study of economic efficiency and income distribution, as well as how these two factors affect the overall well-being of people in the economy

Trilemma: a situation in which a difficult choice has to be made between three alternatives, especially when these are equally undesirable.

Conundrum: The conundrum takes place when the actual question is difficult to answer

Theory of Impossibility: According to the impossibility theory, when there are more than two options, it is impossible for a ranked-voting system to reach a community-wide order of preferences by collecting and converting individuals' preferences orders while meeting a set of conditions

Pathology: the science of the causes and effects of diseases, especially the branch of medicine that deals with the laboratory examination of samples of body tissue for diagnostic or forensic purposes.

Equity: Equity in economics is defined as the process to be fair in an economy that can range from the concept of taxation to welfare in the economy. It also means how the income and opportunity among people are evenly distributed.

Pareto Efficiency: Pareto efficiency, also referred to as allocative efficiency, occurs when resources are so allocated that it is not possible to make anyone better off without making someone else worse off.

13.8 SELF ASSESSMENT QUESTIONS

1. Develop a suitable example on your own parallel to the Arrow's Impossibility Theorem
2. Apply the Arrow's Impossibility Theorem to our Indian Context
3. Define Trilemma on your own words and substantiate to the healthcare sector
4. What is Conundrum? Where it can be applied?

13.9 FURTHER READINGS

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LESSON-14
REGULATION OF HEALTHCARE PROVIDERS & WORKING OF HEALTH INSURANCE MARKETS

LEARNING OBJECTIVES

After studying this lesson on Regulation of Healthcare Providers and working of health insurance markets, you will be able to:

1. Understand the Background of Regulations in Healthcare Market in India
2. Know the various regulations relating to the healthcare sector
3. Understand the health insurance market
4. Know about the functionalities and procedures of healthcare insurance

Structure of the Lesson

14.1 REGULATION OF HEALTHCARE PROVIDERS

14.1.1 Introduction

Legislation is important for the simple reason that they, in a specific manner, operationalise policies of the government. For that matter, the legislation is only one part of the policy literature available for undertaking policy analysis. This does not mean that the legislation always follows the policy. There are instances when the legislation (the law or ordinances) are passed first, giving an indication of the policy being pursued by the state. There are also instances, numerous in the field of health care, when no legislation follow the announced policy and thereby, leaving the implementation of the announced policy at the discretion of the administrators and the political environment prevalent. Thus, the legislation cannot be looked at in vacuum; they must be understood in relation to policies.

The legislation being part of the policy, they also originate as well as take actual course in the concrete reality of politics. The legislation, therefore, show the intention of operationalisation, not always the real operationalisation of policies. For the mere existence of law does not automatically lead to its implementation. For the laws enacted may not be acted upon. Or if acted upon, the same may be done in superficial and improper manner. Not only that, the radical policy could follow by a radical sounding legislation, but the provision of law is kept so vague or the loopholes kept so that the powerful forces effectively thwart the actual implementation.

Human culture is build upon the formulation of values that form the basis of an ethical society, honesty, integrity, respect, pursuit of excellence, civic duty, accountability and loyalty. Since the dawn of civilization, by trial or error, it has become established that a society and more so it's medical profession, a public oriented and noble profession, can survive and thrive only by observance and practice of certain rules of conduct guided by ethical, moral, legal and social values of land.

Healthcare in Indian features a universal healthcare system run by the constituent states and territories. The constitution charges every state with 'raising the level of nutrition and the standard of living of its people and improvement of public health as among its primary duties. Law is an obligation on part of society imposed by the competent authority, and noncompliance may lead to punishment in the form of monetary fine or imprisonment or both.

In a survey conducted at Mumbai, eight out of 10 doctors feel that the laws that govern the practice of healthcare in India are outdated and even higher majority feel that there are too many laws and licences that are required to keep their practice going. A survey among 297 doctors across specialisation says that there are about 50 different laws that govern the practice of healthcare in India.

14.1.2 Meaning of Healthcare Providers

A health system is defined as a set of six inter-connected building blocks that function together effectively, to achieve the overall goal of equitable and sustained health outcomes (World Health Organization, 2007). They are:

- Service Delivery;
- Health Workforce;
- Health Information System;
- Medical Products, Vaccines and Technologies;
- Health Financing and;
- Leadership and Governance.

Leadership and governance together make up a critical building block as they oversee, guide, and regulate health systems to meet public health goals. While governance is a wider set of control activities related to providing, distributing, and regulating, regulation is conceived as a large subset of governance that steers the flow of events and behaviour. It often involves balancing competing interests and requirements with limited resources, with the larger public good being its guiding light. Both governance and regulation have a unified vision in strengthening accountability and increasing transparency, in both public and private health sectors.

Leadership and governance have received the least attention and remain one of the less understood aspects of health systems. Regulations are essential to meet health systems objectives of assuring safe and good quality services, improved financial efficiency, the competence of health workers and availability of health information, rational use of medicines and equitable access to health services among others.

The characteristics of health care provide a strong case for government involvement, and regulation is often seen as a potential response to address the many problems which arise in the production, financing, and delivery of health services. The traditional economic rationale for regulation is attributed to market failure, which leads to inefficient resource allocation. While countries have statutory laws and regulations that define the responsibilities of governments, health organisations and individuals, etc., they still face challenges in health systems development.

14.1.3 Definitions

The literature on the regulation of the health systems worldwide is not abundant and this is true for India too. Most of the literature has relied upon

1. "…sustained and focused control exercised by a public agency over activities that are valued by the community…". Selznick

2. Black's definition "…the sustained and focused attempt to alter the behaviour of others according to defined standards and purposes, with the intention of producing a broadly identified outcome or outcomes, which may involve mechanisms of standard-setting, information-gathering, and behaviour modification…", is considered one of the prominent and widely used definitions of regulation.

3. Minogue and Carino note, that "…regulation has moved from being rules-based, focused on institutions, and principally about compliance and accountability, towards a view that regulation is equally about broader analyses of political institutions and administrative practices, as well as being a distinctive mode of public policymaking…".

In a nutshell, regulation is government control over the activities of individuals or organisations, and more specifically, it can be understood as government action to manipulate target variables such as prices, quantities, distribution, and quality of products. Regulation is a mechanism by which the government limits, steers, or otherwise controls the activities of individuals or organisations. Some regulatory roles can have an economic focus and address

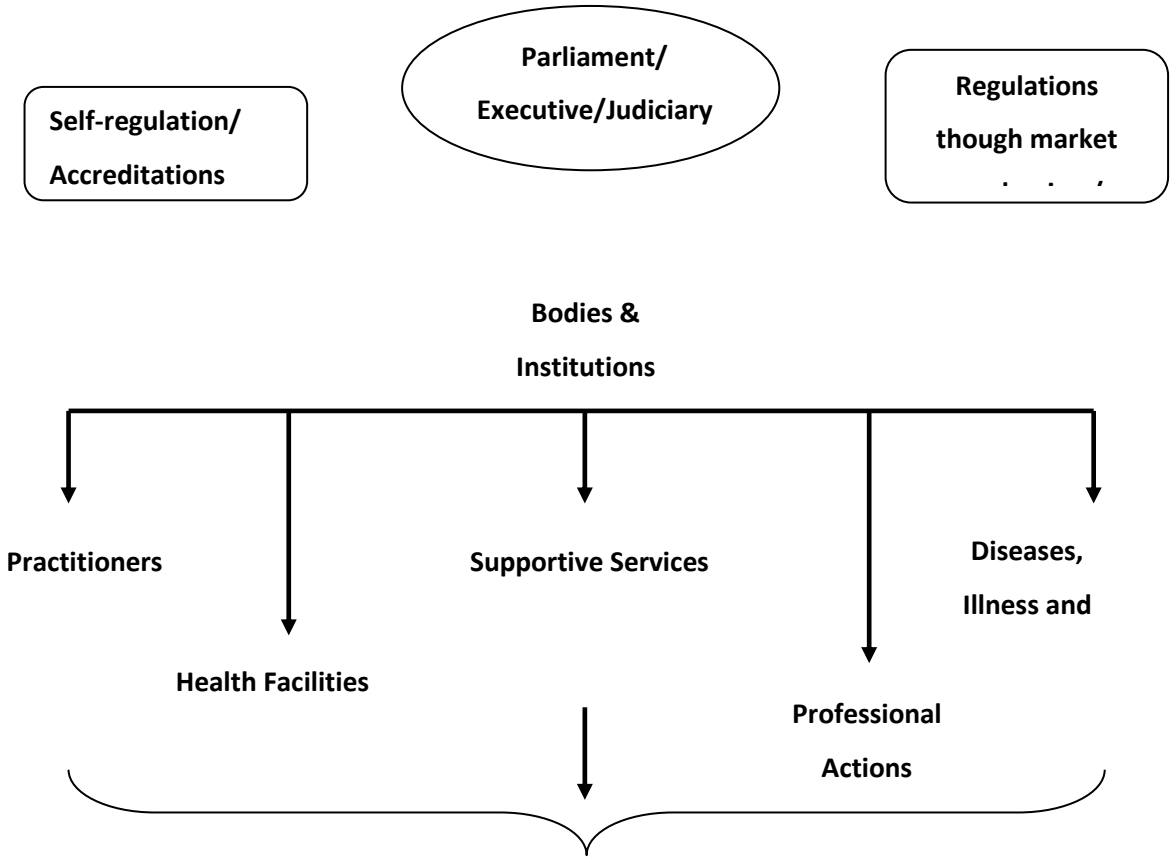
provider monopolies, combat scarcity of certain necessary services or curb wasteful service utilisation.

14.1.4 Objectives of Regulations: The main objectives of the regulation of Indian Healthcare Market are:
1. Regulation is crucial to encourage universal access to coverage and to discourage [perverse] practices that lead to overuse of services and escalation of costs.
Governments regulate to meet desired goals or outcomes, such as:
2. Improved health (coverage and equity),
3. Social and financial risk protection,
4. Assure quality,
5. Protect patients, and
6. Assure good clinical outcomes.
7. Regulation also helps to inform and educate citizens and ensure patients are free to choose providers and in some cases insurers, within the limits of the other objectives

14.1.5 Regulatory System: A regulatory system is made up of the institutions, stakeholders and processes involved in designing, making, implementing, and reviewing the regulation. Good regulations define accountability among the target groups and are consistent in action or penalty, irrespective of the position, power, or authority of the person or organisation violating them.
In theory, regulation works through the fear of detection and penalties, which ensures that the targets of regulation follow the rules. If the violations are not detected and penalties not imposed in practice, then there is no deterrence effect among the targets of regulation. While regulation is an important tool, there are challenges associated with developing suitable regulatory mechanisms and implementing them, as regulation is technically complex, resource-intensive and a continuous process, when in fact it must be clear and transparent in its application and the procedure of applying the regulation must be simple and user friendly. Elements of a regulatory process can operate at individual or macro levels, such as organisations or councils. The establishment and application of rules and detection of violations can be achieved through various approaches, that is, continuous monitoring or periodic inspections and imposition of financial penalties or suspension.

14.1.6 Regulatory Structure: A conventional regulatory structure is set within the confines of the three arms of the government, that is, Parliament/Legislature, Executive and a Judiciary. The structure derives legitimacy from the powers conferred by the constitution of a country. The Parliament/Legislature sets the regulatory framework, enacts, and amends laws and exercises oversight, over a regulatory system at various levels - local, regional, and national. The Executive through its regulatory institutions or bodies undertakes the implementation of the regulatory functions. The Judiciary interprets the laws and passes judgements and judicial orders.

Fig. 14.1 Approach to Regulation



14.1.7 Regulatory Bodies: Government agencies are the prime regulatory bodies in a country. The government plays a key role in setting policy and proposing, designing, and implementing regulation. It also assumes responsibility for enforcing, monitoring and adopting accountability strategies to ensure compliance. Health care regulation has a wide range of supporting instruments, foremost being the laws enacted by the Legislature.

The most common instruments (defined in Annexure I) used in India are

(1) Acts
(2) Laws
(3) Schedules
(4) Notifications
(5) Ordinances
(6) Rules and Regulations
(7) Resolutions
(8) Byelaws
(9) Licensing
(10) Certification
(11) Orders by the Executive
(12) Judicial Orders etc.

The government enacts and enforces the vertical or horizontal legislation at various levels - local, regional and national, under the purview of the health ministry and/or other ministries of the government, depending on the administrative structure. Legislation usually mentions a set of objectives captured in the preamble to the Act, referring to the mandate under the Constitution, to ensure fundamental rights or to attain social objectives. Additionally, there are notifications and orders issued by the Ministry of Health and other concerned ministries and urban local bodies (ULBs), as also judicial orders, standards and guidelines released by the government, and codes of conduct suggested by the self-regulatory professional bodies etc. Regulation can also be formulated and implemented by State governments and local bodies, usually under the Constitution or delegated authority from the national or State level.
Additionally, health care involves the discharge of professional duties by the health care practitioners, which may at times lead to acts of medical negligence. The term 'medical negligence' is not defined or referred to in any of the enacted Indian laws. However, it may be understood as wrongful actions or omissions of professionals in the field of medicine, in pursuit of their profession, while dealing with patients. Cases of medical negligence can be brought before the courts, either for criminal liability or for civil liability. Criminal liability can be fixed under the Indian Penal Code, 1860 (IPC), which are general in nature and do not provide specifically for medical negligence. For example, Section 304 A of the IPC, which deals with the death of a person by any rash or negligent act and leads to imprisonment up to two years, is used to deal with medical negligence leading to the death of a patient. Similarly, other general provisions of IPC, such as Section 337 (causing hurt) and 338 (causing grievous hurt), are also often deployed in relation to medical negligence cases. Civil liability for medical negligence is determined under the law of torts, which is meant to safeguard the civil rights of people in India. Law of torts is an uncodified form of law and is still developing in India. Tort is breach of a duty independent of contract, which has caused damage to the plaintiff giving rise to a civil cause of action and for which remedy is available. If there is no remedy, it cannot be called a tort because the essence of tort is to give remedy to the person who has suffered an injury.
The law of torts consists of rules recognised and acted on by courts of justice. Tort-based cases can be filed in civil courts. Courts usually determine liability, based on the principles of duty, breach and causation, as presented by the facts and circumstances of the case. Establishing a link between the causation of the injury to the plaintiff and the breach of duty by the defendant is the deciding factor. Certain branches of the law of torts have been codified in India, such as the Bhopal Gas Leak Disaster (Processing of Claims) Act 1985, Motor Vehicles Act 1988, Consumer Protection Act 2019 (repealed the Consumer Protection Act 1986). Apart from the Consumer Protection Act 2019, permanent lok - adalats constituted under the Legal Services Authorities (Amendment) Act, 2002, can also be approached to seek relief in relation to services "in a hospital or dispensary", which are considered to be "public utility services" as defined in the Act.
Under civil laws, patients can sue for the tort of negligence, in case of medical negligence that does not fall within the purview of other Acts, such as the Consumer Protection Act 2019, for example in case of services rendered free of cost. In India, regulatory agencies are commonly government bodies established on legislations passed through the Parliament/Assembly and have statutory authority. The courts interpret regulations, deal with appeals against regulatory decisions and impose regulatory sanctions.

14.1.8 Instruments for Regulation: India has strategies and supporting instruments for regulating various entities. Some of these are economic incentives, self-regulation, information provision and dissemination, financing and purchasing arrangements such as purchaser-provider, contract-in, contract-out, or pay-for performance mechanisms. Self-

regulation is also enabled through peers, accreditation bodies and councils etc. that may be voluntary or legally mandated. Licensing, accreditation, and certification are the most practised approaches to regulation.

Licensing: Licensing is the process by which, legal permission is granted by a competent authority, usually public, to an individual or organisation to engage in a practice, occupation. For example, a license to practice medicine and surgery.

Accreditation: Accreditation is the formal process by which an authorised body assesses and recognises an organisation, programme, or group as complying with requirements, such as standards or criteria.

Certification: Certification is the procedure and action by which a duly authorised body evaluates and recognises (certifies) an individual, as meeting predetermined requirements, such as standards. Certification programmes are generally non-governmental and do not exclude the uncertified from practice, as do licensure programmes. Buyers using the power of purchasing and the threat of non-purchasing or issuing collective rejection by groups play a role. The use of regulatory instruments through incentive-based measures is to change behaviours in the delivery, either as monetary rewards or penalties have proved to be an alternative to regulatory measures.

14.1.9 Purpose of Regulation: The primary purpose of regulation in the health sector is to ensure access to health services to the populations, maintaining quality standards and effectiveness, pricing and cost containment, information collection and dissemination, and protecting the rights of patients/consumers. The regulation seeks to ensure accountability of service providers, address information asymmetry between the beneficiary and the provider, maintain the confidentiality of medical information and protect consumers from opportunistic behaviour or malpractice. Further, regulation assists in controlling distortions created by market forces and establish conditions for the markets to function, with fair competition among providers while ensuring the consumer/patients' best interest. Regulation also assists in controlling financial fraud and other abuses, along with ensuring the nonmarket goal of equity of access to vulnerable section of the society. Regulation of health care delivery may focus on the following aspects:

1. Access

- Increase access to patients and consumers for health care services
- Services are not only physically available, but accessible to people who need them when they need them and without barriers of distance and cost
- To ensure those entitled to health services are not denied services, especially the poor and vulnerable
- Health system is equitable and improves technical and allocative efficiency

2. Entry

- Ensure entry of providers who are qualified and adhere to standards of care
- Issuing licences, approvals, banning activities that are contrary to health system goals
- Continued skill enhancement and in-service capacity building Quantity and Coverage
- Regulate the number and geographical distribution of providers and facilities to ensure equitable coverage, and based on services exist proportional to the needs of the people
- Ensure that volume and distribution of health care services are appropriate, such as setting the number by population, geography, need etc.

3. Quality

- Services provided are rational, timely and based on the client's/patient's needs, following standard treatment guidelines provided in a confidential manner, and ensure the safety of patients
- Ensure that standards of quality care in terms of not only physical (for example, facility, medical personnel, equipment and supplies), but also process through which care is provided (for example, organisation of care and clinical performance) and outcome standards are met Setting standards, guidelines, protocols and rules for providing services, for example, waiting time for specified operations and procedures, setting minimum standards for services, staffing ratios or service hours.
- Ensure that the pharmaceuticals and medical devices are appropriate for the need and maintain norms
- Ensure that there is continuing medical education and training of providers, both at the individual and institutional level
- Regulating provider behaviour to discourage perverse practices that lead to irrational, unethical, overuse of services and escalation of costs

4. Pricing and Cost Containment

- Affordable services with no or minimal point-of-care payment/out-of-pocket payment, so that nobody is denied or delayed the required service or provided sub-optimal quality of service for want of money
- To set uniform prices, contain costs and prices so that health care is affordable within financially sustainable boundaries
- Ensure that financial fraud and other abuses do not take place
- Setting profit margins, control monopolies, anti-competitive behaviour and avoid exploitation of monopoly power
- To ensure health services through a financing mechanism of risk protection, that is, social health insurance

5. Protect Patients and Consumers

- Provide information to patients and consumers about the health care services being provided and health behaviour practices
- Ensure appropriate delivery of services and safety of patients and consumers
- Ban facilities and individuals who provide inappropriate and unacceptable health services and products

6. Information Provision and Grievance Redressal

- To address the information asymmetry between the provider and the consumer/patient, provide reports and documents related to the services sought
- Collect information from providers for planning, policymaking, meeting public health goals and taking public health measures
- Set up and implement Grievance Redressal System

7. Others

- Influencing provider behaviour to meet health system goals
- Regulating provider actions in terms of their interactions and referrals, acquisition of technology, use of medicines, irrational and unethical practices
- Setting rules for contracting of services under various aspects, including public-private partnerships

14.1.10 Entities for Regulation

There are various providers involved in delivering health care services. They could be government, for profit or not-for-profit entities, formal or informal health care services.

1. Practitioners

• Doctors comprise medical graduates with bachelor or postgraduate specialist diploma or degree in allopathy/western/modern medicine or other/traditional systems of medicine.

• Dentists have a bachelor's or postgraduate degree in dentistry to provide care related to diseases and conditions of the mouth.

• Nurses (including midwives) are people with formal education and training in the care of the sick or the infirm, promoting and maintaining health, and usually, assist or work under the supervision of medical practitioners.

• Pharmacists are involved in storing, preserving, compounding and dispensing medicinal products. They counsel on the proper use and adverse effects of drugs and medicines following prescriptions issued by medical practitioners.

• Allied health professionals, also known as paramedical professionals, are part of the health care team but distinct from doctors, nurses or pharmacists. Allied health professionals may include psychologists, opticians, physiotherapists, laboratory technicians, radiology technicians, emergency medical technicians, Operation Theatre (OT)/Intensive Care Unit (ICU) technicians/attendants, dental hygienists, audiometry technicians, speech therapists, dieticians/nutritionists, occupational therapists, medical/psychiatric social workers, community health workers among others.

2. Health Facilities

Health facilities are places where health care and related services are provided. They provide outpatient (clinics, polyclinics, health centres, physiotherapy centres, counselling centres etc.) and inpatient services (nursing homes, hospitals, renal dialysis centres, convalesce homes, cardiac cauterisation, Medical Termination of Pregnancy (MTP) centres etc.), and laboratories and imaging centres (pathology laboratories, diagnostic centres, X-ray centres etc.). Additionally, health care services may be offered in a non-facility mode, such as outreach services provided at home or in the community, medical camps, home visits and home-based care, medical mobile units and telemedicine.

3. Pharmaceuticals, Vaccines and Medical Devices

All substances used for the diagnosis, treatment, mitigation or prevention of any disease or disorder are integral components of health care service delivery. Hence, drugs/medicines, vaccines and medical devices are among the entities to be regulated.

4. Supportive Services

These refer to services that support diagnosis and treatment, in the delivery of health care. These may comprise pharmacies (including online pharmacies), blood banks and ambulances among others.

5. Professional Actions

This mainly refers to surgical procedures that are undertaken by providers, such as surgeries, medical intervention, abortions, organ transplants among others.

6. Illnesses, Diseases and Events

These include communicable diseases, for example, Human Immunodeficiency Virus (HIV), non-communicable diseases (NCDs), for example, mental illness, maternal and child health (MCH) services etc.

7. Outbreaks, Epidemics and Pandemics

This includes the prevention and management of epidemics, pandemics and disease outbreaks, so that a coordinated and effective response, including emergency measures, may be implemented when required.

8. Information Systems and Collection

This refers to the collection of health information from individuals, institutions and providers, and analysing and disseminating the same.

14.1.11 Health Regulations in India

The Constitution of India confers upon its citizens, certain fundamental rights that the government is obliged to fulfil. The Directive Principles of State Policy (DPSP) act as guiding principles for the government to enact laws and policies but are not justiciable. Articles 38, 39, 42, 43 and 47 in Part 4 (DPSP) of the Constitution, provide for the promotion of health, nutrition, living standard and health care. Article 47 States, "…The State shall regard the raising of the level of nutrition and the standard of living of its people and the improvement of public health, as among its primary duties…". This indicates that health and health care are not fundamental rights in India's Constitution. It is often Article 21, Right to Life, which is a fundamental right, under which the right to health and health care is subsumed. Further, there are judicial pronouncements based on this principle that provide specific orders and judgements, on matters of right to health and health care.

The Constitution of India lays the foundation of the basic governance structure of the country, delineating specific roles for the Union and State Governments. The Seventh Schedule, Article 246 in part 11 of the Constitution, divides the legislative power into three lists - matters contained in List I or the Union List are those on which the Union Government has the authority to make laws; matters contained in List II, also referred to as the State List are those on which the State Government can legislate; while both Union and State Governments have the power to make laws on matters enlisted in List III or the Concurrent List, with the Union Government enjoying supremacy in case of overlap or conflict. Public health, sanitation, hospitals and dispensaries are part of the State List and therefore health is essentially a State subject. The Concurrent List includes inter alia, matters of population control and family planning, social security and social insurance, medical education, legal and medical professions, prevention of inter-state transmission of communicable diseases, maternity benefits, vital registration of births and deaths.

In addition, there are International Covenants that act as standard setting entities that might set common standards or establish regulatory frameworks for countries. For example, International Health Regulations (2005) (IHR), provide an overarching legal framework that defines the rights and obligations of countries, in handling public health events and emergencies that have the potential to cross borders. They also outline the criteria to determine whether or not a particular event constitutes a "public health emergency of international concern". India's international legal commitments have a bearing since India is a signatory to the various International Covenants.

There are a range of Union and State legislations in India that have a bearing on different spheres of people's personal and professional lives, including their health and health care. A compilation of the existing legislation promulgated by the Union Government identified around 250 such legislations. These legislations have been put into categories, such as those related to the regulation of

(1) Health Facilities,
(2) Medical Services,
(3) Human Resources,
(4) Pharmaceuticals and Vaccines,
(5) Medical Devices,
(6) Environmental Protection,
(7) Social Security,
(8) Health Insurance,
(9) Occupational Health,
(10) Patient Rights and Ethics,
(11) Mental Health,
(12) Narcotic Drugs and Substance Abuse,

(13) Tobacco Control,
(13) Health Information,
(14) Public Health,
(15) Epidemics,
(16) Pandemics and Outbreaks amongst.

14.1.12 Medical Laws in India

The earliest known code of laws of health practices were the laws formulated around 2000BC by Hammurabi, the great king of Babylon. These laws, also called the code of Hammurabi governed the various aspects of health practices, including the fees payable to physician for satisfactory services. The laws were drastic and penalties for harmful therapy stringent. Doctors whose proposed therapy proved wrong ran the risk of being killed. This was the first codification of medical practice in the world.

The first ever code of medical ethics called the Hippocratic oath was laid down 2500 years ago, in the 5th century BC, by Hippocrates – the Greek physician. He is remembered till today as the 'Father of Western Medicine'. Hippocratic oath has been guiding and regulating the conduct of doctors for centuries. The modern version of Hippocratic Oath (called the declaration of Geneva), devised by the WHO after the second world was and accepted by international medical fraternity as the international code of medical ethics, draws heavily upon the ancient oath.

During the Asoka period (270BC), ethics is described in the Charaka-Samhita, in details and Ayurvedic physicians of ancient India has a well-defined medical ethics. In the earlier period of rule, the physicians and surgeons brought by the East India Company and after 1857 by the British Government, needed some discipline and regulations. Lt.Colonel DG. Crawfords 'A history of Indian medical services, 1600-1913' narrates several instances of in-discipline, insubordination, malpractice, etc. by such doctors and the punishments (including deportation) mated out to them. It also narrates the regulation devised by the East India Company for the hospitals established by them.

As a part of criminal procedures and for other purposes, the colonial government had, in 1871, enacted Coroner's act applicable to Bombay and Calcutta. It defined the role of medical professionals in the work of conducting autopsy and inquests. The epidemic disease act was first enacted in 1807 and is still in force with amendments, while the Lepers Act 1898 was repealed and substituted by another law in early 1980s.

Grant Medical College Society in 1880 passed a Bombay Medical Act and established the medical council. The draft rule of this act included the appointment of a registrar, maintenance of name in register and penalty for doing wrong things.

The Medical Council of India, a national level statutory body for the doctors of modern medicine, was constituted after the enactment of Indian Medical Council Act 1933. The first legal recognition and registration for the Indian systems of medicine came when the Bombay Medical Practioner Act was passed in 1938.

1. Prerequisites of Medical Practice: A duly qualified medical professional, i.e. a doctor has a right to seek to practice medicine, surgery and dentistry by registering himself with the medical council of the state of which he is resident, by following the procedure as prescribed under the medical act of the state.

The state medical council has the power to warn, refuse to register/remove from the name of a doctor who has been sentenced by any court for any non-bailable offence or found to be guilty of infamous conduct in any professional respect. The state medical council has also the power to re-enter the name of the doctor in the register.

The provision regarding offences and professional misconduct which may be brought before the appropriate medical council have been stated in the Indian Medical Council (Professional conduct, etiquette and ethics) Regulation 2002. No action against a medical Practioner can be taken unless an opportunity has been given to him to be heard in person or through an advocate.

2. Emergency Healthcare and Laws: The supreme court has been emphatic in declaring that the fundamental right to life covered within its scope the right to emergency healthcare. The landmark judgement that marked this momentous even in that of 'Paramanand Katara V, Union of India (Supreme Court 1989). In this case, a scooterist severely injured in a road accident was refused for admission when taken to nearest hospital on the excuse that hospital was not competent to handle medicolegal cases. The Supreme Court, in its judgement, pronounced that the obligation of medical professional to provide treatment in case of emergencies overrode the professional freedom to refuse patients. According to the right to emergency treatment, the status of a fundamental right under Article 21 (fundamental rights of life), the court categorically stated that 'Article 21 of constitution casts the obligation on the state to preserve life.

In another case (Paschim Banga Khet Majdoor Samity Vs. State of West Bengal, Supreme Court, 1996), a person suffering from head injuries from a train accident was refused treatment at various hospitals on excuse that they lacked the adequate facilities and infrastructure to provide treatment. In this case, supreme court further developed the right to emergency treatment, and went on to state that the failure on the part of government hospital to provide timely medical treatment to a person in need of such treatment results in violation of his/her right to life guaranteed under Article 21.

3. Criminal Liability in Medical Profession: Criminal law tries to mold the individual behaviour in a socially accepted manner. It tries to enforce the rules of social mortality to a great extent. Criminal law defines certain types of human conduct as offences and prescribed the punishment for them. Remission by doctors in their duties and obligations and lapses left by them may give to criminal liabilities, the liabilities of being prosecuted in a criminal court and awarded punishment as per provision of law.

4. Laws governing the Commissioning of Hospitals: these are the laws to ensure that the hospital facilities are created after due process of registration, the facilities created are safe for the public using them, have at least the minimum essential infrastructure for the type and volume of workload anticipated, and are subject to periodic inspections to ensure compliance. These following are the such kind of laws:

1. Atomic Energy Act 1962
2. Delhi Lift Rules 1942, Bombay Lift Act, 1939
3. Draft Delhi Lifts and Escalators Bill 2007
4. Companies Act, 1956
5. Indian Electricity Rules 1956
6. Delhi Electricity Regulatory Commission (Grant of consent for captive power plants) Regulations 202
7. Delhi Fire prevention and Fire Safety Act 1986, and Fire Safety Rule 1987
8. Delhi Nursing Home Registration Act 1953
9. Electricity Act 1998
10. Electricity Rules 1956
11. Indian Telegraph Act 1885
12. National Building Act 2005

13. Radiation Protection Certificate from BARC
14. Urban Land Act 1976
15. Indian Boilers Act 1923
16. Society Registration Act
17. The Clinical Establishment (Registration & Regulation) bill 2007

5. Laws governing to the Qualification/Practice and Conduct of Professionals: These are the regulations to ensure that staff employed in the hospital for delivery of healthcare are qualified and authorised to perform certain specific technical jobs within specified limits of competence and in accordance with standard codes of conduct and ethics, their credential are verifiable from the registering councils and in case of any professional misconduct the council can take appropriate action against them. These laws are listed below:

1. The Indian Medical Council Act 1956
2. Indian Medical Council (Professional Conduct, Etiquette, and Ethics Regulations) 2002
3. Indian Medical Degree Act 1916
4. Indian Nursing Council Act 1947
5. Delhi Nursing Council Act 1997
6. The Dentist's Act 1948
7. AICTE rules for Technicians 1987
8. The Paramedical and Physiotherapy Central Councils Bill 2007
9. The Pharmacy Act 1948
10. The Apprenticeship Act 1961

6. Laws governing to sale, storage or drugs and safe medication: These are laws to control the usage of drugs, chemicals blood, blood products, prevent misuse of dangerous drugs, regulate the sale of drugs through licences, prevent adulteration of drugs and provide for punitive action against the offenders. These are listed in below:

1. Blood Bank Regulation Under Drugs and Cosmetics (2nd Amendment) Rules 1999
2. Drugs and Cosmetics Act 1940 and Amendment Act 1982
3. Excise permit to store the spirit, Central Excise Act 1944
4. IPC Sec.274 (Adulteration of drugs), Sec.275 (Sale of Adulterated drugs). Sec.284 (negligent conduct with regard to poisonous substances)
5. Narcotics and Psychotropic Substances Act
6. Pharmacy Act 1948
7. Sale of Goods Act 1930
8. The Drug and Cosmetics Rule 1945
9. The Drug Control Act 1950
10. VAT Act/Central Sales Tax Act 1956

7. Laws governing Management of Patients: These are the laws for setting standards and norms for conduct of medical professional practice, regulating/ prohibiting performance of certain procedure, prevention o unfair practices and control of public health problems/epidemic disease. They deals with the management of emergencies, medicolegal cases and all aspects related thereto including dying declaration and conduct of autopsy and the types of professional negligence. These laws are listed below:

1. Birth and Deaths and Marriage Registration Act 1886
2. Drugs and Magic Remedies (Objectionable) Advertisement Act
3. Guardians and Wards Act 1890
4. Indian Lunacy Act 1912
5. Law of Contract Section 13(for consent)
6. Lepers' Act
7. PNDT Act 1994 and Preconception and Prenatal Diagnostic Tech (prohibition of sex selection) Rules 1996 (Amendment Act 2002)
8. The Epidemic Disease Act 1897
9. Transplantation of Human Organ Act 1994 Rules 1995
10. Medical Termination of Pregnancy Act 1971
11. The Medical Termination of Pregnancy Rules 2003
12. The Mental Health Act 1987

8. Laws Governing Environmental Safety: These are the laws aimed at protection of environment through prevention of air, water, surface, noise pollution and punishment of offenders. These laws are listed below:

1. Air (prevention and control of pollution) Act 1981
2. Biomedical Waste Management Handling Rules 1998, Amended in 2000
3. Environment Protection Act and Rule 1986, 1996
4. NOC from Pollution Control Board
5. Noise Pollution Control Rules 2000
6. Public Health Bye Laws 1959
7. Water (Prevention and Control of Pollution) Act 1974
8. Delhi Municipal Corporation (Malaria and other Mosquito borne diseases) Bye Law 1975
9. The Cigarettes and Other Tobacco Products (Prohibition of advertisement and regulation of trade and commerce, production, supply and distribution) Bill 2003
10. Prohibition of Smoking in Public Places Rules 2008
11. IPC Sec.278 (making atmosphere noxious to health), Sec.269 (Negligent act like to spread infection or disease dangerous to life, unlawfully or negligently)

9. Laws Governing Employment and Management of Manpower: This group deals with the laws regulating the employment of manpower, their salaries and benefits, service rules and system or Redressal of grievances and disputes. These laws are listed below:

1. Bombay Labour Welfare Fund Act 1953
2. Citizenship Act 1955
3. Delhi Shops and Establishment Act 1954
4. Employee Provident Fund and Miscellaneous Provision Act 1952
5. Employment Exchange (Compulsory notification of vacancies) Act 1959
6. Equal Remuneration Act 1976
7. ESI Act 1948
8. ESI Rules 1950
9. Indian Trades Union Act 1926
10. Industrial Disputes Act 1947
11. Maternity Benefits Act 1961
12. Minimum Wage Act 1948
13. Negotiable Instrument Act 1881
14. Payment of Bonus Act 1956

15. Payment of Gratuity Act1972
16. Payment of Wages Act 1936
17. Persons with Disability Act 1995
18. PPF Act 1968
19. SC and ST Act 1989
20. Shops and Factories Act (for national holidays)
21. TDS Act
22. The Essential Services Maintenance Act 1981
23. Workmen's Compensation Act 1923

10. Laws Governing to Medicolegal Aspects: These are the laws governing the doctor-patient relationship, legal consequences of breach of contract and medicolegal aspects negligence of duty. These laws are listed below:

1. Consumer Protection Act 1986
2. Indian Evidence Act
3. Law of Privileged Communication
4. Law of torts
5. IPC Sec.52 (good faith), Sec.80 (accident in doing lawful act), Sec.92 (good faith/consent), Sec.93 (communication in good faith).

11. Laws Governing the Safety of Patients, Public and Staff within the Hospital Premises: These laws deal with safety of facilities and services against any accidental hazards that amy endanger the lives and the liability of management for any violation. These laws are listed below:

1. The Radiation Surveillance Procedures for the Medical Application of Radiation 1989, Radiation Protection Rules 1971
2. AERB Safety Code no.AERB?SC/Med-2(Rev-1) 2001
3. Arms Act 1950
4. Boilers Act 1923
5. Explosive Act 1884 (for diesel storage)
6. Gas Cylinder Rules 2004
7. Insecticide Act 1968
8. IPC Se.336 (act endangering life or personal safety of others), Sec.337 (causing hurt by act endangering life or personal safety of others), Sec.338 (causing grievous hurt by act endangering the life and personal safety of others).
9. NOC from Chief Fire Officer
10. Periodic fitness Certificate for Operation of Lifts
11. Petroleum Act and Storage Rules 2002
12. Prevention of Food Adulteration Act 1954
13. The Indian Fatal Accidents Act 1955
14. The Tamil Nadu Medicare Service Persons and Medicate Service Institutions (Prevention of violence and damage or loss to property) Act 2008

12. Laws Governing Professional Training and Research: There are the laws meant to regulate the standards of professional education and training of doctors, nurses, technician and controlling research activities. These laws are listed below:

1. Medical Council of India (MCI) now changed as National Medical Commission (NMC) for MBBS, PG and internship training
2. National Board of Examination rules for DNB training
3. ICMR rules governing medical research

4. NCI rules for nursing training
5. Ethical Guidelines for Biomedical Research on Human Subjects 2000

13. AYUSH PRACTITIONERS TO BE FORMALLY TRAINED IN SURGICAL PROCEDURES

The Central Council of Indian Medicine ("CCIM") has issued a notification dated November 19, 2020 amending the Indian Medical Central Council (Post Graduate Ayurveda Education) Regulations, 2016 to include formal training in various types of surgery for post-graduate Ayurveda students ("Notification").[5] The Notification permits post-graduate Ayurveda student to be trained in over 50 different types of surgery ranging from general surgery to eye and ear procedures.

The Notification has been highly controversial with the Indian Medical Association (India's largest voluntary association of allopathic doctors) ("IMA") protesting the Notification by organizing demonstrations. The IMA believes that the performing surgery amounts to practicing modern, allopathic medicine which is outside the domain of Ayurveda practitioners. On the other hand, the CCIM's position is that procedures listed in the Notification are considered to be procedures that are a part of the Ayurvedic system of medicine. As a result, practicing these procedures should not be considered as the practice of modern medicine.

13. Licences/Certifications Required for Hospitals: A hospital administrator should be aware about the licences that are essentially required and to renew them as and when required. These are listed below:

S.No	Licenses/Certifications	Frequency
1	Registration under societies registration Act	Initially
2	Inspection for Electrical Installation/Substation	Initially
3	NOC from local municipal office for any bye law	Initially
4	Licence for storage of petrol/diesel on form XV under the petroleum rules 2002	2 yearly
5	Income Tax exemption Certificate	3 Yearly
6	NOC from Delhi Fire Services	Before implementation
7	Registration for operation of x-ray installation with AERB	Every 2 years
8	Drug Licence for Medical Store, IPD Pharmacy, OPD pharmacy	Every 5 Years
9	Licence to operate blood bank under rule 122G of Drug and Cosmetic Act	Every 5 Years
10	Registration under PNDT Act `1994	Every 5 Years
11	Income Tax Registration/PAN	Once
12	Registration for VAT/Sales Tax	Once
13	Registration for EPF	Once
14	Registration for ESI coverage of employee	Once
15	Registration under Rule 34, Sub.rule(6) of MTP Act 1971	One time registration
16	Registration under Delhi Nursing Home Act 1953	Yearly

17	Indemnity Insurance policy	Yearly
18	Standard fire and special perils policy	Yearly
19	Authorisation for generation of BMW under BMW handling rule 1996	Yearly renewal
20	Licence for operating lift under sec.5 and 6 and Rules 4&% (inspector of lift, state govt.	Yearly renewal

14.2 Working of Health Insurance Markets: Health status of a population is considered as an important economic indicator of development for Indian economy. Health services have a major influence on the social security of individuals and societies, and an important part of a nation's politics and economy. Health Insurance sector has a long way in India since the opening of the market. Earlier only 2 policies were available Mediclaim and Personal Accident. However with arrival of private insurance companies and standalone health insurance companies there has been tremendous innovation in policies offered in the Indian insurance market.

The term health insurance (popularly known as Medical Insurance or Mediclaim) is a type of insurance that covers your medical expenses. The concept of health insurance is new in India but its awareness is growing fast. Health insurance comes in handy in case of severe emergencies. Life is unpredictable, insurance can make it safe and secure from bearing huge financial loss. A health insurance policy is a contract between an insurance company and an individual. Sometimes it is associated with covering disability and custodial needs. The contract is renewable annually.

The access to advanced medical treatments and doctors has become expensive and thus the need for taking insurance is very essential. Health insurance sector in India is still in its nascent stage with lot of scope for development. The overall market for health insurance is still untapped and the emergence of reputed health insurance providers is evidence about the growing potential.

So how exactly does health insurance prove to be a helpful tool to minimize the medical expenses? As in case of regular insurance schemes, health insurance is issued in order to minimize the impact of financial burden when faced with major health complications. The treatment costs and ability to pay for advanced medical facilities are made possible with the use of health insurance. With the cost of treatments heading upwards, the need for a comprehensive insurance plan that covers various expenses is the need of the hour.

Health insurance in India generally falls under the general insurance sector and covers the health risks that fall under the insurance norms. It is important to consider different propositions of health insurance policies in order to get the right kind of benefits. Although, it is essential to get a health cover, it would be sensible to choose the right policy that provides financial support for an individual during health treatment.

14.2.1 Meaning of Insurance: Insurance is a contract between two parties where by one party agrees to undertake the risk of the other in exchange for consideration known as premium and promises to indemnify the party on happening of an uncertain event. The great advantage of insurance is that it spreads the risk of a few people over a large group of people exposed to risk of similar type.

Insurance has been identified as a sunrise sector by the financial planners of India. The insurance industry has lot of potential to grow, penetrate and service the masses of India. Insurance is all about protection. An insured needs two types of protection life and non-life. General insurance industry deals with non-life protection of the insured of which health insurance is a part.

14.2.2 Meaning & Definition of Health Insurance: A health insurance policy extends coverage against medical expenses incurred owing to accidents, illness or injury. An individual can avail such a policy against monthly or annual premium payments, for a specified tenure.

During this period, if an insured meets with an accident or is diagnosed with a severe ailment, the expenses incurred for treatment purposes are borne by the insurance provider.
In simple terms, health insurance can be *defined* as a contract where an individual or group purchases in advance health coverage by paying a fee called "premium". Health insurance refers to a wide variety of policies. These range from policies that cover the cost of doctors and hospitals to those that meet a specific need, such as paying for long term care. Even disability insurance, which replaces lost income if you cannot work because of illness or accident, is considered health insurance, even though it is not specifically for medical expenses.

Health insurance is a part of general insurance which contributes about 29% of premium amongst all other sectors of general insurance. But problems in this sector are many which is the driving force behind this study. This study will help the insurance companies to understand their performance and the quantum of losses that this sector is making over the years.

A plan that covers or shares the expenses associated with health care can be described as health insurance. These plans fall into commercial health insurance, which is provided by government, private and stand-alone health insurance companies.

Health insurance in India typically pays for only inpatient hospitalization and for treatment at hospitals in India. Outpatient services are not payable under health policies in India. The first health policy in India was Mediclaim Policy. In 2000, the Government of India liberalized insurance and allowed private players into the insurance sector. The advent of private insurers in India saw the introduction of many innovative products like family floater plans, critical illness plans, hospital cash and top-up policies.

14.2.3 Background of health insurance sector in India

India's tryst with health insurance programme goes back to the late 1940s and early 1950s when the civil servants (Central Government Health Scheme) and formal sector workers (Employees' State Insurance Scheme) were enrolled into a contributory but heavily subsidized health insurance programmes. As a consequence of liberalization of the economy since the early 1990s, the government opened up private sector (including health insurance) in 1999. This development threw open the possibility for higher income groups to access quality care from private tertiary care facilities. However, India in the past five years (since 2007) has witnessed a plethora of new initiatives, both by the central government and a host of state governments also entering the bandwagon of health insurance. One of the reasons for initiating such programs may be traced to the commitment of the governments in India to scale up public spending in health care.

14.2.4 The need for health insurance in India

1 Lifestyles have changed: Indians today suffer from high levels of stress. Long hours at work, little exercise, disregard for a healthy balanced diet and a consequent dependence on junk food have weakened our immune systems and put us at an increased risk of contracting illnesses.

2 Rare non-communicable diseases are now common: Obesity, high blood pressure, strokes and heart attacks, which were earlier considered rare, now affect an increasing number of urban Indians.

3 Medical care is unbelievably expensive: Medical breakthroughs have resulted in cures for dreaded diseases. These cures however are available only to a select few. This is because of high operating and treatment expenses.

4 Indirect costs add to the financial burden: Indirect sources of expense like travel, boarding and lodging, and even temporary loss of income account for as much as 35% of the overall cost of treatment. These facts are overlooked when planning for medical expenses.

5 Incomplete financial planning: Most of us have insured our home, vehicle, child's education and even our retirement years. Ironically however we have not insured our health. We ignore the fact that illnesses strike without warning and seriously impact our finances and eat into our savings in the absence of a good health insurance or medical insurance plan.

14.2.5 Classification of health insurance plans in India

Health insurance plans in India today can be broadly classified into the following categories:

1. **Hospitalization:** Hospitalization plans are indemnity plans that pay cost of hospitalization and medical costs of the insured subject to the sum insured. There is another type of hospitalization policy called a *top-up policy*. Top-up policies have a high deductible typically set a level of existing cover.
2. **Family Floater health insurance:** Family health insurance plan covers entire family in one health insurance plan. It works under assumption that not all member of a family will suffer from illness in one time.
3. **Pre-existing disease cover plans:** It offers covers against disease that policyholder had before buying health policy. Pre-existing disease cover plans offers cover against pre-existing disease, e.g. diabetes, kidney failure and many more. After waiting for two to four years, it gives covers to the insured.
4. **Senior citizen health insurance:** This type of health insurance plan is for older people in the family. It provides covers and protection from health issues during old age.
5. **Maternity Health insurance:** Maternity health insurance ensures coverage for maternity and other additional expenses.
6. **Hospital daily cash benefit plans:** Daily cash benefits are a defined benefit policy that pays a defined sum of money for every day of hospitalization.
7. **Critical illness plans:** These are benefit-based policies which pay a lump sum amount on certain critical illnesses, e.g. heart attack, cancer and stroke.
8. **Disease-specific special plans:** Some companies offer specially designed disease-specific plans such as Dengue Care and Corona Kavach policy.

14.2.6 Health Insurance Schemes (Products) available in India: The existing health insurance schemes available in India can be broadly categorized as:

I. Voluntary health insurance schemes or private-for-profit schemes
II. Mandatory health insurance schemes or government run schemes (namely ESIS, CGHS)
III. Insurance offered by NGOs/Community based health insurance
IV. Employer based schemes

I. Voluntary health insurance schemes or private-for-profit schemes: In private insurance, buyers are willing to pay premium to an insurance company that pools similar risks and insures them for health related expenses. The main distinction is that the premiums are set at a level, which are based on assessment of risk status of the consumer (or of the group of employees) and the level of benefits provided, rather than as a proportion of consumer's income.

In the public sector, the General Insurance Corporation (GIC) and its four subsidiary companies (National Insurance Corporation, New India Assurance Company, Oriental Insurance Company and United Insurance Company) provide voluntary insurance schemes. The most popular health insurance cover offered by GIC is Mediclaim policy

• Mediclaim policy: - It was introduced in 1986. It reimburses the hospitalization expenses owing to illness or injury suffered by the insured, whether the hospitalization is domiciliary or otherwise. It does not cover outpatient treatments. Government has exempted the premium paid by individuals from their taxable income.

Because of high premiums it has remained limited to middle class, urban tax payer segment of population.

• Some of the various other voluntary health insurance schemes available in the market are:- Asha deep plan II,
Jeevan Asha plan II,
Jan Arogya policy,
Raja Rajeswari policy,
Overseas Mediclaim policy,
Cancer Insurance policy,
Bhavishya Arogya policy,
Dreaded disease policy,
Health Guard,
Critical illness policy,
Group Health insurance policy,
Shakti Shield etc.

• At present Health insurance is provided mainly in the form of riders. There are very few pure health insurance policies under voluntary health insurance schemes.

II. Mandatory health insurance schemes or government run schemes (namely ESIS, CGHS)

A. Employees' State Insurance Scheme: Employees' State Insurance Scheme (ESIS) that came into existence in 1952. The ESI scheme covers all employers with more than 10 employees in 'notified areas'. The employees of covered employers who earn below Rs. 15,000 per month and their dependants are covered by the insurance scheme. ESIS has grown gradually from 1955-56 when it covered only 0.12 million individuals to the current more than 55 million beneficiaries (ESIC, 2010). The growth in numbers can be attributed to higher wage ceilings coming in the purview of ESI and growth in the number of workers employed in the organized sector.

Even though the scheme is formulated well there are problem areas in managing this scheme. Some of the problems are:- *f*

- Large numbers of posts of medical staff remain vacant due to high turnover and low remuneration compared to corporate hospitals. *f*
- Rising costs and technological advancement in super specialty treatment.
- Management information is not satisfactory. *f*
- The patients are not satisfied with the services they get *f*
- Low utilization of the hospitals *f*
- In rural areas, the access to services is also a problem

All these problems indicate an urgent need for reforms in the ESIS Scheme.

B. Central Government Health Scheme (CGHS): The Central Government Health Scheme (CGHS) was established in 1954. The Central Government Health Scheme (CGHS) covers another section of population employed in the formal sector. It is available to all central government employees (both working

and retired), and their families, and other representatives associated with the central government. As of 2009, there were 866,687 CGHS cardholders and around 3 million beneficiaries. Interestingly, 38% of total cardholders are in Delhi and they consume about 57% of CGHS budget, followed by 8% in Kolkata who consume about 4 % of overall CGHS budget.

Health Insurance Schemes offered by the Public Sector General Insurance Companies, popularly known as "Mediclaim" Policies launched through the erstwhile General Insurance Corporation of India (GIC). A host of those available are as under:

- Mediclaim' introduced in 1986 - for individuals and groups
- 'Bhavishya Arogya' introduced in 1990 - a retirement plan with early entry.
- Jan Arogya' introduced in 1996 - a low cost limited benefits plan.
- 'Overseas Mediclaim' Policy introduced in 1984 - for people traveling abroad.
- Some special policies like Cancer Insurance, extended benefits of hospitalization under Personal Accident Policies, extended benefits for people outside the scope of Workmen's Compensation Policy etc.

Some State Governments have taken Health Insurance policies for weaker sections under various names on the pattern of Universal Health Insurance Scheme Launched by the Central Government, with limited liability upon specific critical illnesses. The Government has also launched Rastriya Swastha Bima Plan and Janshree Bima plans (peoples' Health Insurances) to cover BPL families.

C. Rashtriya Swasthya Bima Yojana: RSBY has been launched by Ministry of Labour and Employment, Government of India to provide health insurance coverage for Below Poverty Line (BPL) families. The objective of RSBY is to provide protection to BPL households from financial liabilities arising out of health shocks that involve hospitalization. Beneficiaries under RSBY are entitled to hospitalization coverage up to Rs. 30,000/- for most of the diseases that require hospitalization. Government has even fixed the package rates for the hospitals for a large number of interventions. Pre-existing conditions are covered from day one and there is no age limit. Coverage extends to five members of the family which includes the head of household, spouse and up to three dependents. Beneficiaries need to pay only Rs. 30/- as registration fee while Central and State Government pays the premium to the insurer selected by the State Government on the basis of a competitive bidding

D. Universal Health Insurance Scheme (UHIS):- For providing financial risk protection to the poor, the government announced UHIS in 2003. Under this scheme, for a premium of Rs. 165 per year per person, Rs.248 for a family of five and Rs.330 for a family of seven , health care for sum assured of Rs. 30000/- was provided. This scheme has been made eligible for below poverty line families only. To make the scheme more saleable, the insurance companies provided for a floater clause that made any member of family eligible as against mediclaim policy which is for an individual member. In spite of all these, the scheme was not successful.

The reasons for failing to attract rural poor are many:- *f*

- The public sector companies who where required to implement this scheme find it to be potentially loss making and do not invest in propagating it. To meet the target, it is learnt that several field officers pay the premium under fictitious names. *f*
- Identification of eligible families is a difficult task *f*
- Poor find it difficult to pay the entire premium at one time for future benefit, foregoing current consumption needs. *f*
- Paper work required to settle the claims is cumbersome
- Deficit in availability of service providers *f*

- Set back due to health insurance companies refusing to renew the previous year's policies.
- In 2004, the government also provided an insurance product to the Self Help Group (SHG) for a premium of Rs.120 and sum assured of Rs.10000/-. However, the intake is negligible. The reasons for poor intake are similar to those cited above.

III. Insurance offered by NGOs/Community based health insurance: Community based schemes are typically targeted at poorer population living in communities. Such schemes are generally run by charitable trusts or non-governmental organizations (NGOs). In these schemes the members prepay a set amount each year for specified services. The premia are usually flat rate (not income related) and therefore not progressive. The benefits offered are mainly in terms of preventive care, though ambulatory and inpatient care is also covered. Such schemes tend to be financed through patient collection, government grants and donations. Increasingly in India, CBHI schemes are negotiating with for profit insurers for the purchase of custom designed group insurance policies.

CBHI schemes suffer from poor design and management. Often there is a problem of adverse selection as premiums are not based on assessment of individual risk status. These schemes fail to include the poorest of the poor. They have low membership and require extensive financial support. Other issues relate to sustainability and replication of such schemes.

Some of the popular Community Based Health Insurance schemes are: -
Self-Employed Women's Association (SEWA),
Tribuvandas Foundation (TF),
The Mullur Milk Co-operative,
Sewagram, Action for Community Organization,
Rehabilitation and Development (ACCORD),
Voluntary Health Services (VHS) etc.

IV. Employer based schemes: Employers in both public and private sector offers employer based insurance schemes through their own employer. These facilities are by way of lump sum payments, reimbursement of employees' health expenditure for outpatient care and hospitalization, fixed medical allowance or covering them under the group health insurance schemes. The Railways, Defense and Security forces, Plantation sector and Mining sector run their own health services for employees and their families.

14.2.7 SWOT Analysis of Health Insurance Sector

The strengths, weaknesses, opportunities and threats (SWOT) is a study undertaken to identify internal strengths and weaknesses as well as external opportunities and threats of the health insurance sector.

Strengths: The growth trend of the health insurance sector is likely to be high due to rise in per capita income and emerging middle-income group in India. New products are being launched in this sector by different insurance companies which will help to satisfy customers need. Customers will be hugely benefited when cash less facility will be provided to all across the country by all the insurance companies.

Weaknesses: The financial condition of this sector is weak due to low investment in this sector. The public sector insurance companies are still dominating this industry due to their greater infrastructure facilities. This sector is prone to high claim ratio and many false claims are also made.

Opportunities: The possibility of future growth of this sector is high, as penetration in the rural sector is low. The improvement of technology and the use of internet facility are

helping this sector to grow in magnitude and move towards environment-friendly paperless regime.

Threats: The biggest threat of this sector lies in the change in the government regulations. The profitability of this sector is affected due to increasing expenses and claims. The economic slowdown and recession in the economy can affect growth of this sector adversely. The increasing losses and need for insurance might reach a point of no return where insurance companies may be compelled to decline an insurance policy.

14.2.8 PEST Analysis of Indian Health Insurance Sector

This analysis describes a framework of macro-environmental factors used as strategic tool for understanding business position, growth potential and direction for operations.

Political factors: Service tax on premium on insurance policies is being increased by the government for past few years during budget. Government monopoly in this sector came to an end after insurance companies were opened up for private participation in the year 2000. Foreign players were allowed to enter into joint venture with their Indian counterpart with 26% holding and which was further increased to 49% in the year 2015.

Economic factors: The gross savings of people in India have increased significantly thereby encouraging people to buy insurance policy to cover their risks. Insurance companies are fast becoming prominent players in the security market. As these companies have huge disposable income which they are investing in the security market.

Socio-cultural factors: Increase in insurance knowledge is helping people to increase their awareness about the risk to be covered through insurance. Change in lifestyle is leading to increase in risk thereby giving an opportunity to insurance companies to innovate newer products. Societal benefit is derived by transfer of risk through insurance due to improved socio-cultural environment.

Technological factors: Insurance companies deals in large database and maintaining it by the application of latest technology is huge gain for this sector. Technological advancement has helped insurance companies to sale their products through their electronic portals. This has made their task of providing service to the customers easier and faster.

14.2.9 Key Challenges of Indian Health Insurance Sector

There are four key challenges in increasing the coverage of health insurance through voluntary contributions. The ability to pay for health insurance does not automatically translate into willingness to pay, and the existence of a supply-side – providers and insurers – to match that demand.

I. AWARENESS Low awareness and the difficulty in understanding a complex product like health insurance limit its uptake. There is limited awareness of insurance, including health insurance products, even amongst the middle class which hinder its uptake. Further, those who are aware of health insurance, may not see the need to purchase it. The concept of paying for a product which one does not hope to use is not intuitive. Though catastrophic health expenditure, and its impact on savings and standard of living is experienced by a substantial share of the population, almost 1/4th at the 10% threshold level (Figure 2), connecting it to the purchase of health insurance as an investment for health security is not intuitive ex-ante. In other words, paying for financial protection against some (uncertain) risk of future adverse health events at the cost of present consumption is a complicated decision.

Consumer education of health insurance, especially amongst the missing middle, is important to increase its uptake. A comprehensive awareness campaign which intricately explains the importance and benefits of health insurance can help increase its acceptance and uptake.

II. IDENTIFICATION AND OUTREACH Identification of, and outreach to customers is the primary hurdle on the supply-side. From the standpoint of insurance companies, it is difficult to economically reach out to the missing middle segment to build awareness of health insurance and their products. A large share of the missing middle is employed in the informal sector – constituting 80% to 90% of India's labour force (PLFS 2018-19 and Report on Employment in Informal Sector and Conditions of Informal Employment, MoLE, GoI, 2013-14) – where there is a lack of a robust employee database or other sources for identification and outreach. Consequently, it is difficult for insurance providers to reach out to potential customers. Insurance companies have either failed to, or find it uneconomical, to identify and target this segment of the population. As a result, health insurance coverage remains largely inaccessible to the missing middle.

Targeting the missing middle segment will require a different outreach strategy which distinctly focuses on this population, and their sub-segments. The voluntary contributory health insurance product will only be successful if there is a large and diversified risk pool. Ensuring scale enrolment requires a substantial push on outreach to potential customers – in addition to greater health insurance awareness – for demand-generation. First, insurers and third-party administrators (TPAs) should experiment with incentive structures which can drive enrolment volumes. For example, incentive clauses can be incorporated in contracts which reward reaching a critical mass of customers within a particular period. Second, Government databases such as National Food Security Act (NFSA), Pradhan Mantri Suraksha Bima Yojana, or the Pradhan Mantri Kisan Samman Nidhi (PM-KISAN) for agricultural households can be shared with private insurers after taking consent from these households. Such databases will help ease the identification of, and outreach to potential customers by insurers.

III. ADVERSE SELECTION AND PREFERRED SELECTION Adverse selection is a common market failure in health insurance markets. It arises out of asymmetric information — where one party knows something relevant to the transaction that the other does not. In the context of health insurance, it occurs when the insured does not disclose information about underlying health conditions to the insurer. These conditions make the insured more likely to require frequent and expensive healthcare interventions. For the insurance company, this implies a greater cash outflow and higher frequency of claims from its policyholders than anticipated by the insurer. If the undisclosed health conditions are considered, the premium amount paid by the insured would be inadequate to cover the claims sanctioned against it. Consequently, adverse selection can lead to large financial losses for insurers. As a mitigation measure, the insurer increases its premium to cut loses and cover the costs of increased amount and frequency of claims from adversely selected policyholders. As more and more sick people are adversely selected into the risk pool, healthy people are priced out of the insurance market. This leads to a vicious cycle which results in low-risk pooling, and high premiums.

Implementing measures to avoid adverse selection are likely to lead to preferred selection or cream-skimming. Private insurers may test eligibility of potential insurance buyers through medical history assessment, diagnostic screenings, etc. to avoid adverse selection. Insurers can choose to avoid individuals at a greater risk of developing health problems. However, not all insurers exclude high-risk individuals. Instead of trying to actively avoid adverse selection, they try to minimise the losses incurred from it, and cover the additional costs of having more sick individuals in their risk pool. Those more likely to get sick are charged higher premiums and recommended more expensive packages with generous coverage limits as compared to those who are healthy. Even though high-risk individuals are priced accordingly, the high premium amount can exclude them from accessing affordable healthcare.

The proneness to cream-skimming, resulting from attempts to avoid adverse selection has also been present in government-sponsored health insurance schemes. Insurance companies, hired by the government often carry out cream-skimming in the enrolment process. It is infeasible and undesirable for insurance companies and their TPAs to use cream-skimming measures to actively avoid adverse selection while catering to the missing middle. There are three reasons:

a. It is uneconomical and administratively challenging to run a rigorous screening process on the scale required for the missing middle.

b. The friction created by the screening process can reduce the uptake of the scheme and the overall coverage of the risk pool. Inadequate risk pooling of this sort – induced by preferred selection – can lead to financial losses for insurers.

c. From a broader societal and Governmental perspective, cream skimming is inherently incompatible with India's goal of achieving Universal Health Coverage.

The focus should be minimizing adverse selection through a large and diversified risk pool, instead of cream-skimming. While imposing a limit on claim amounts does help to cut losses from adversely selected cases, increasing the number of participants in the risk pool is a much more effective approach. It reduces adverse selection and provides greater predictability to insurers

IV. AFFORDABILITY The missing middle population is highly price sensitive. Lowering the costs of the product, where feasible, will be important to ensure affordable prices and high demand. The private health insurance market has a low claims ratio – 64% for standalone health insurers and 72.5% for health insurance segment of general private insurers (IRDAI, 2020) – indicating high distribution, and / or administrative costs. There are two focus areas for reducing the cost of the product by reducing the add-on charges i.e., costs above the actuarially fair premium.

a. Distribution Costs: The high sales / distribution cost of health insurance substantially increases the product's price. Industry consultations highlighted that the existing distribution strategies, and the retail nature of the product must be changed to reduce the cost of customer acquisition. IRDAI allows for a commission of up to 15% to agencies and brokers, which increases the premium. Standalone health insurers incur commission expenses of 12.5% while the health insurance segment of private insurers incurs 8.5% commission as percentage of premium collected. Driving down these costs can substantially reduce premiums. First, the distribution strategy of the product should target groups – including organizations, teacher associations, and trade unions – to advocate health products. Group targeting reduces the average distribution cost per policy as compared to individual targeting. Second, greater focus on digital channels for health insurance sales will bring down commission costs. For example, the JAM trinity (Jan Dhan accounts, Aadhar, and mobile) can be leveraged to reduce sales costs. Third, Government assets including post offices, and regional rural banks can be leveraged as distribution channels to increase the reach of insurance without incurring high costs.

b. Operational Costs: The total health insurance costs are further increased from actuarially determined prices (based on estimates claims costs) due to high operational / administrative costs. The operational expenses for standalone health insurers are around 25% of the total premium collected driven by a high claims processing cost. Insurers will have to improve their operational efficiency to drive down premiums. Greater use of analytics, standardized formats for easier data flows, and other digital tool to drive efficiency, and achieving economies of scale through higher volumes can reduce operational costs. The increase in the affordability of health insurance will be driven by higher volumes and greater use of digital technologies. As elaborated in the above sub-section, not only will higher

enrolments mitigate adverse selection through risk-pooling; they will also lower costs by improving operational efficiency of insurance schemes.

14.2.10. The Role of the Government in the Health Insurance Market

The Government has several policy levers, and potential roles in shaping the health insurance ecosystem, and increasing uptake of health insurance amongst the missing middle. The Government will play some, or all these roles depending on the implementation pathway for increasing health insurance coverage. This section first discusses the different roles of the Government and concludes by outlining an implementation pathway.

THE ROLE OF THE GOVERNMENT: The Government has five potential roles in increasing the uptake of health insurance amongst the missing middle. These roles span different functions – regulation, behaviour change, sharing Government infrastructure as a public good, provision and financing.

1. Increasing consumer awareness of health insurance: First, the Government has a key role to play in increasing consumer awareness and building consumer confidence in health insurance through information, education, and communication (IEC) campaigns, especially in hospitals. The Government's promotion of health insurance will establish greater acceptance and faith in the product. It can use several channels to build consumer awareness of health insurance, and of specific products, including in hospitals, health facilities, Anganwadi centers, and through ASHA workers.

2. Developing a modified, standardized health insurance product: Second, the Government has a role to play in ensuring standardization and improving simplicity of the product, to ensure consumer protection through a guaranteed basic minimum package of services. A slightly modified version of the standardized Aarogya Sanjeevani insurance product, as indicated in Table 3 and Table 4, will help increase the update amongst the missing middle. The modified product should have lower waiting periods. It should also include out-patient benefits through a subscription model to increase the value of healthcare provide.

3. Sharing Government data and infrastructure as a public good to reduce operational and distribution costs: Third, the Government can help improve the product's uptake by lowering the distribution and operational costs. The Government can offer its data and infrastructure as public goods to build distribution and operational efficiencies in private health insurers. First, it can offer PMJAY's platform and network, especially its IT capabilities, to private insurance companies for covering the missing middle. Leveraging PMJAY's platform as a public good will reduce operational costs, making it easier to scale, especially in underserved markets. Second, the Government can also share databases such as the NFSA, PM-KISAN, and Pradhan Mantri Suraksha Bima Yojana with private insurers after taking the family's consent. This will reduce the distribution costs by aiding outreach of insurers to potential customers. Finally, Government assets including post offices, and regional rural banks can be leveraged as distribution channels to increase the reach of insurance at low costs.

4. Building consumer confidence by ensuring quality of services: Fourth, the Government should build consumer confidence through swift grievance redressal mechanisms, and robust auditing procedures. Ensuring quality of health services will improve patient satisfaction and build confidence in health insurance as product. Such mechanisms ensure that the intended benefits of health insurance – reduction in catastrophic spending and improved access to quality health – are achieved. They can lead to a virtuous cycle of trust where satisfied health insurance customers recommend it to other, thereby increasing the size of the risk pool.

5. Partial financing or provision of health insurance: Finally, the Government can directly increase enrolment or reduce costs by subsidizing the poorest sections of the missing middle population, and/or using the PMJAY infrastructure to offer a voluntary contributory enrolment. The first option entails expanding PMJAY cover to the poorer segment of the missing middle – who may not be able to afford voluntary health insurance – on a full or partial subsidy basis. However, that should only be considered if there is low uptake among the poorer sections of the missing middle – and after ensuring full coverage of existing eligible beneficiaries under PMJAY – since it has fiscal implications. The second option is to offer the product outlined in this report on a voluntary and contributory basis through the National Health Authority (NHA). The Government can leverage PMJAY's scale including its network, systems, and infrastructure to ensure that premiums remain low.

14.2.11 Implementation Pathway

There are broadly three different models of increasing health insurance coverage. Each of these models will be suitable to certain segment of the missing model and will have a different set of roles for the Government. The three models are outlined below:

1. Expanding private voluntary insurance through commercial insurers: The first model, which has been the focus of this report, is expansion of private insurance financed by private contributions through commercial insurers. Under this model, a modified standardized health insurance product developed for the missing middle (indicatively outlined in this report) will increase uptake of health insurance. Government IEC efforts will increase the awareness of health insurance. The anticipated large and diversified risk-pool through enrolment in groups will minimize adverse selection. It will also keep premiums at affordable levels, in line with the missing middle's ability to pay. The key challenge of this model is the level to which it is can contain adverse selection and enroll the informal sector.

2. Allowing voluntary contribution using NHA-PMJAY infrastructure or ESIC scheme: The second model, leverages NHA's infrastructure for PMJAY, or the ESIC scheme for voluntary contributory insurance to the missing middle. The NHA can offer a PMJAY plus product indicatively outlined in this report, while the ESIC can offer its existing set of benefits to those beyond its current mandate. The scale and network of PMJAY and ESIC can keep premiums lower than commercial health insurers (in model 1). However, there are two potential drawbacks of this model. The first is the same as for model 1 – the level to which a voluntary contributory scheme can manage adverse selection is unclear. The second is the potential overburdening of PMJAY and ESIC infrastructure and schemes through an additional mandate. Both schemes already face significant supply-side challenges leading to low utilization of services. In the short-run, adding a voluntary contributory scheme to PMJAY or ESIC, may detract them from their core mandate or serving existing beneficiaries.

3. Expansion of coverage under the PMJAY scheme: The third model expands government subsidized health insurance through the PMJAY scheme to a wider set of beneficiaries. This model can be utilized for segments of the missing middle which remain uncovered, due to limited ability to pay for the voluntary contributory models outlined above. This is the only model out of three proposed which has fiscal implications for the Government. Though this model assures coverage of the poorer segments on the missing middle population, premature expansion of PMJAY can overburden the scheme (as also outlined above).

A combination of the three models, phased in at different times, can ensure coverage for the missing middle population (Figure 10). In the short-term, the focus should be on expanding private voluntary insurance through commercial insurers. In the medium-term, once the supply-side and utilization of PMJAY and ESIC is strengthened, their infrastructure can be leveraged to allow voluntary contributions to a PMJAY plus product, or to ESIC's

existing medical benefits. In the long-term, once the low-cost voluntary contributory health insurance market is developed, expansion of PMJAY to the uncovered poorer segments of the missing middle should be considered.

14.3 SUMMERY

The government to provide universal access to free / low-cost health care insurance can be an important means of mobilizing resources, providing risk protection and perhaps, improved health outcomes. This scenario, the challenge, then for Indian policy makers to find way to improve upon the existing situation in the health sector and to make equitable, affordable and quality health care accessible to the people, especially the poor and the vulnerable sections of the society. In the way inevitable that the state reforms its public health delivery system and explores other social security option like health insurance.

The success of a private voluntary contributory health insurance product requires the creation of a large and diversified risk pool. The Government can play several different roles – which facilitates and complements the expansion of the private voluntary market – to increase the uptake of health insurance and address some of the outlined challenges. First, and perhaps most importantly, the Government should build consumer awareness of health insurance through IEC campaigns. It should also improve consumer trust and confidence in health insurance through stronger regulatory mechanisms. Second, it can provide Government data and infrastructure as a public good to reduce operational and distribution costs of insurers. For example, it can share Government data (after taking consent) which aids identification and outreach to customers. It can also offer PMJAY's IT platform and network to reduce operational costs. Finally, and most directly, the Government can partially finance or provide health insurance. It can expand PMJAY coverage to the poorest segments of the missing middle population, and/or leverage NHA's PMJAY infrastructure to offer a voluntary contributory enrolment.

A combination of implementation pathways – starting with commercial insurers and progressing to leveraging Government risk-pooling schemes for voluntary insurance – phased in at different times, will ensure coverage for the missing middle population

14.4 KEY WORDS

Grievance Redressal: While the term "Grievance Redressal" primarily covers the receipt and processing of complaints from citizens and consumers, a wider definition includes actions taken on any issue raised by them to avail services more effectively.

Healthcare Providers: Under federal regulations, a "health care provider" is defined as: a doctor of medicine or osteopathy, podiatrist, dentist, chiropractor, clinical psychologist, optometrist, nurse practitioner, nurse-midwife, or a clinical social worker who is authorized to practice by the State and performing within the scope of their practice as defined by State law, or a Christian Science practitioner. A health care provider also is any provider from whom the University or the employee's group health plan will accept medical certification to substantiate a claim for benefits.

Regulatory Structure: Regulatory structure is important because an almost unavoidable feature of our current system of government is that Congress assigns multiple goals, which sometimes have conflicting policy implications, to the regulatory agencies. The structure of the agencies is important to the resolution of these conflicts.

Health Facilities: Health facilities are places that provide health care. They include hospitals, clinics, outpatient care centers, and specialized care centers, such as birthing centers and psychiatric care centers

Directive Principles of State Policy (DPSP): DPSP are ideals which are meant to be kept in mind by the state when it formulates policies and enacts laws. There are various definitions to Directive Principles of State which are given below: They are an 'instrument of instructions' which are enumerated in the Government of India Act, 1935.

Medical Laws: Medical law is the branch of law which concerns the prerogatives and responsibilities of medical professionals and the rights of the patient. It should not be confused with medical jurisprudence, which is a branch of medicine, rather than a branch of law.

Medicolegal: All cases of accidents, burns, assaults, alleged suicide or homicide, poisoning, road traffic accident, rape, drowning, etc shall be registered as medico legal cases (MLC)

AYUSH: AYUSH is an acronym for Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homeopathy and are the six Indian systems of medicine prevalent and practiced in India and some of the neighboring Asian countries with very few exceptions in some of the developed countries

Central Council of Indian Medicine; It is one of the Professional councils under University Grants Commission (UGC) to monitor higher education in Indian systems of medicine, including Ayurveda, Siddha, Unani and Sowa-Rigpa. Central Council of Indian Medicine

Health Insurance Premium: Health insurance premium is the amount that you pay to the insurance provider to get health. If you have bought a one-year health insurance plan, you will have to pay the premium annually.

Claims: An insurance claim is a formal request to your insurance provider for reimbursement against losses covered under your insurance policy. Insurance is a financial agreement between you and your insurer.

Management Expenses: Expenses of management would include all those in the nature of operating expenses — commission, brokerage, remuneration to agents and to intermediaries, charged to the revenue account. No general insurance or health insurance business can exceed the amount stipulated.

Insurance Regulatory and Development Authority: The Insurance Regulatory Development Authority of India (IRDAI) is a regulatory body created with the aim of protecting the policyholder's interest. It also regulates and sees to the development of the insurance industry.

14.5 SELF ASSESSMENT QUESTIONS

1. Elucidate the Indian Healthcare Providers' regulations
2. Study the Various certificates/reports to be submitted at the time of establishment of a hospital facility?
3. Explain the SWOT of Health Insurance sector of India
4. Explain the various schemes/products of Health Insurance Market is offering?
5. Explain the involvement of GOI in regulating the Health Insurance market
6. List out the responsibilities of Indian GOI while offering Health Insurance facilities to its citizens.

14.6 FURTHER READINGS

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2. NITI AYOG, Health System for a New India: Building Blocks – Potential Pathways to Reform – Nov.2019

3. Regulation of Health Care Delivery In India - A Landscape Study by Sunil Nandraj, Pallavi Gupta, Sonali Randhawa March 2021(Health Systems Transformation Platform (HSTP))
4. Healthcare in India: Current State and Key imperatives – Review of National Health Policy, 2015, 2018
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LESSON-15:

NATIONAL HEALTH POLICY - MODEL

Learning Objectives

After the in-depth study of this lesson, student is able to**:**

1. Understand the objectives of Indian National Health Policy in detail
2. Know about the challenges while implementing the NHP
3. Know about the foundation laid for a NHP and various Committees' contributions
4. Understand the four models of Health Policy which has been following the world economics in detail

Structure of the Lesson

15.1 NATIONAL HEALTH POLICY

Structured health policy making and health planning in India is not a post-independence phenomena. In fact, the most comprehensive health policy and plan document ever prepared in India was on the eve of Independence in 1946. This was the `Health Survey and Development Committee Report' popularly referred to as the Bhore Committee. This Committee prepared a detailed plan of a National Health Service for the country, which would provide a universal coverage to the entire population free of charges through a comprehensive state run salaried health service. Such a well-studied and minutely documented plan has not as yet been prepared in Independent India.

The Bhore Committee proposals required implementation of structural changes in the then health care system, and had they been implemented they would have radically altered health care access and health status of the Indian masses, especially the 80% population residing in rural areas. It is only an embarrassment for the Indian nation that more than half a century later there is no evidence of development of health care services to a level that the Bhore Committee regarded as a minimum decent standard. And neither has the health status

of the masses altered very significantly – both in terms of the technology and means available as well as in comparison with developed countries today. The gap then and now has not changed much.

15.2 Evolution of National Health Policy in India

15.2.1 The Bhore Plan: The organizational structure of the National Health Scheme as envisaged by the Bhore Committee is given below in some detail (Bhore, 1946: II.17-34, III.3-4).

Primary Unit: Every 10,000 to 20,000 population (depending on density from one area to another) should have a 75 bedded hospital served by six medical officers including medical, surgical and obstetrical and gynecological specialists. Six public health nurses, 2 sanitary inspectors, 2 health assistants and 6 midwives to provide domiciliary treatment should support this medical staff. At the hospital there should be a complement of 20 nurses, 3 hospital social workers, 8 ward attendants, 3 compounders and other non-medical workers.

Specialisation	No. Of beds
Medical:	150
Surgical	200
Ob. & Gy.	100
Infectious Diseases	20
Malaria	10
Tuberculosis	120
Paediatrics	50
Total	650

Two medical officers along with the public health nurses should engage in providing preventive health services and curative treatment at homes of patients. The sanitary inspectors and health assistants should aid the medical team in preventive and promotive work. Preferably at least 3 of the 6 doctors should be women.

Of the 75 beds, 25 should cater to medical problems, 10 for surgical, 10 for obstetrical and gynaecological, 20 for infectious diseases, 6 for malaria and 4 for tuberculosis. This primary unit should have adequate ambulatory support to link it to the secondary unit when the need arises for secondary level care.

Secondary Unit: About 30 primary units or less should be under a secondary unit. The secondary unit should be a 650 bed hospital having all the major specialties with a staff of 140 doctors, 180 nurses and 178 other staff including 15 hospital social workers, 50 ward attendants and 25 compounders.

The secondary unit besides being a first level referral hospital would supervise both the preventive and curative work of the primary units. The 650 beds of the secondary unit hospital should be distributed as in the side box:

District Hospital: Every district centre should have a 2500 beds hospital providing largely tertiary care with 269 doctors, 625 nurses, 50 hospital social workers and 723 other workers. The hospital should have 300 medical beds, 350 surgical beds, 300 Ob. & Gy. beds, 540 tuberculosis beds, 250 paediatric beds, 300 leprosy beds, 40 infectious diseases beds, 20 malaria beds and 400 beds for mental diseases. This distribution was based on the epidemiological profile the Committee had constructed based on their enquiry. A large number of these district hospitals would have medical colleges attached to them. However, each of the 3 levels should have functions related to medical education, and training including internship and refresher courses.

15.2.2 Health Policy and Plans: It was not until 1983 that India adopted a formal or official National Health Policy. Prior to that health activities of the state were formulated through the Five year Plans and recommendations of various Committees. For the Five Year Plans the health sector constituted schemes that had targets to be fulfilled. Each plan period had a number of schemes and every subsequent plan added more and dropped a few.

In the fifties and sixties the entire focus of the health sector in India was to manage epidemics. Mass campaigns were started to eradicate the various diseases. These separate countrywide campaigns with a technocentric approach were launched against malaria,

smallpox, tuberculosis, leprosy, filaria, trachoma and cholera. Cadres of workers were trained in each of the vertical programmes. The National Malaria Eradication Programme (NMEP) alone required the training of 150,000 workers spread over in 400 units in the prevention and curative aspects of malaria control (Banerji, 1985).

These programmes depended on international agencies like UNICEF, WHO and the Rockefeller Foundation for supplies of necessary chemicals and vaccines. The policy with regard to communicable diseases was dictated by the imperialist powers as in the other sectors of the economy.

15.2.3 Five Year Plans:

During the first two Five Year Plans the basic structural framework of the public health care delivery system remained unchanged. Urban areas continued to get over three-fourth of the medical care resources whereas rural areas received "special attention" under the Community Development Program (CDP). History stands in evidence to what this special attention meant. The CDP was failing even before the Second Five Year Plan began. The governments own evaluation reports confessed this failure.

The Mudaliar Committee: To evaluate the progress made in the first 2 plans and to make recommendation for the future path of development of health services the Mudaliar Committee was set up in 1959. The report of the committee recorded that the disease control programmes had some substantial achievements in controlling certain virulent epidemic diseases. Malaria was considered to be under control. Deaths due to malaria, cholera, smallpox etc. were halved or sharply reduced and the overall morbidity and mortality rates had declined. The death rate had fallen to 21.6% for the period 1956-61. The expectation of life at birth had risen to 42 years. However, the tuberculosis program lagged behind. The report also stated that for a million and half estimated open cases of tuberculosis there were not more than 30,000 beds available.

The Committee recommended that in the immediate future instead of expansion of PHC's consolidation should take place and then a phased upgrading and equipping of the district hospitals with mobile clinics for the treatment of non-PHC population. But the urban health infrastructure continued to increase to meet the growing demands for medical care and this was where the state governments own funds were getting committed.

In 1963 the **Chadha Committee** had recommended the integration of health and family planning services and its delivery through one male and one female multipurpose worker per 10,000 population. India was the first country in the world to adopt a policy of reducing population growth through a government sponsored family planning programme in 1951.

The Special Committee to Review the Staffing Pattern and Financial Provision under Family Planning was appointed **(Mukherjee Committee).** This committee indicated that the camp approach had failed to give the family planning program a mass character and hence the coming in of IUCD (loop) was a great opportunity. This committee also recommended introduction of target fixation, payments for motivation and incentives to acceptors. It suggested reorganization of the FP program into a vertical program like malaria and recommended addition of one more Health visitor per PHC who would specifically supervise the ANMs for the targets of this program. Also the Committee recommended retaining of private practitioners for a fee of Rs. 100 pm for 6 hours work per week plus payment of Rs. 10 per sterilization and Rs. 2 per IUCD insertion.

The Kartar Singh Committee in 1973 recommended the conversion of uni-purpose workers, including ANMs, into multi-purpose male and female workers. It recommended that each pair of such worker should serve a population of 10,000 to 12,000. Hence the multi-purpose worker scheme was launched with the objective to retrain the existing cadre of

vertical programme workers and the various vertical programmes were to be fully integrated into the primary health care package for rural areas.

Another major innovation in the health strategy was launched in 1977 by creating a cadre of village based health auxiliaries called the **Community Health workers**. These were part time workers selected by the village, trained for 3 months in simple promotive and curative skills both in allopathy and indigenous systems of medicine. They were to be supervised by MPWs, and the programme was started in 777 selected PHCs where MPWs were already in place. This scheme was adopted on the recommendations of **the Shrivastava Committee** (Shrivastava, 1975) which was essentially a committee to look into medical education and support manpower.

In 1967 **the Jain Committee** report on Medical Care Services had made an attempt to devolve medical care by recommending strengthening of such care at the PHC and block/taluka level as well as further strengthening district hospital facilities. The Jain Committee also suggested integration of medical and health services at the district level with both responsibilities being vested in the Civil Surgeon/Chief Medical Officer. But recommendations of this Committee, which is the only committee since Independence to look at medical care and also for the first time talked about strengthening curative services in rural areas, were not considered seriously.

The Sixth Plan was to a great extent influenced by the Alma Ata declaration of **Health for All** by 2000 AD (WHO, 1978) and the ICSSR - ICMR report (1980). The plan conceded that "there is a serious dissatisfaction with the existing model of medical and health services with its emphasis on hospitals, specialization and super specialization and highly trained doctors which is availed of mostly by the well to do classes.

The National Health Policy of 1983 was announced during the Sixth plan period. The National Health Policy (NHP) in light of the Directive Principles of the constitution of India recommends "universal, comprehensive primary health care services which are relevant to the actual needs and priorities of the community at a cost which people can afford". Providing universal health care as a goal is a welcome step because this is the first time after the Bhore Committee that the government is talking of universal comprehensive health care.

15.3 The salient features of the 1983 health policy were:

(a) It was critical of the curative-oriented western model of health care,

(b) It emphasised a preventive, promotive and rehabilitative primary health care approach,

(c) It recommended a decentralised system of health care, the key features of which were low cost, deprofessionalisation (use of volunteers and paramedics), and community participation,

(d) It called for an expansion of the private curative sector which would help reduce the government's burden,

(e) It recommended the establishment of a nationwide network of epidemiological stations that would facilitate the integration of various health interventions, and

(f) It set up targets for achievement that were primarily demographic in nature.

I. Health Policy

The National Health Policy of 1983 and the National Health Policy of 2002 have served well in guiding the approach for the health sector in the Five-Year Plans. Now 14 years after the last health policy, the context has changed in four major ways.

First, the health priorities are changing. Although maternal and child mortality have rapidly declined, there is growing burden on account of non-communicable diseases and some infectious diseases.

The second important change is the emergence of a robust health care industry estimated to be growing at double digit.

The third change is the growing incidences of catastrophic expenditure due to health care costs, which are presently estimated to be one of the major contributors to poverty.
Fourth, a rising economic growth enables enhanced fiscal capacity. Therefore, a new health policy responsive to these contextual changes is required.

The primary **aim** of the National Health Policy, 2017, is to inform, clarify, strengthen and prioritize the role of the Government in shaping health systems in all its dimensions- investments in health, organization of healthcare services, prevention of diseases and promotion of good health through cross sectoral actions, access to technologies, developing human resources, encouraging medical pluralism, building knowledge base, developing better financial protection strategies, strengthening regulation and health assurance.

II. Goal, Principles and Objectives

2.1 Goal The policy envisages as its goal the attainment of the highest possible level of health and wellbeing for all at all ages, through a preventive and promotive health care orientation in all developmental policies, and universal access to good quality health care services without anyone having to face financial hardship as a consequence. This would be achieved through increasing access, improving quality and lowering the cost of healthcare delivery.

The policy recognizes the pivotal importance of Sustainable Development Goals (SDGs). An indicative list of time bound quantitative goals aligned to ongoing national efforts as well as the global strategic directions is detailed at the end of this section.

2.2 Key Policy Principles

1. Professionalism, Integrity and Ethics: The health policy commits itself to the highest professional standards, integrity and ethics to be maintained in the entire system of health care delivery in the country, supported by a credible, transparent and responsible regulatory environment.

2. Equity: Reducing inequity would mean affirmative action to reach the poorest. It would mean minimizing disparity on account of gender, poverty, caste, disability, other forms of social exclusion and geographical barriers. It would imply greater investments and financial protection for the poor who suffer the largest burden of disease.

3. Affordability: As costs of care increases, affordability, as distinct from equity, requires emphasis. Catastrophic household health care expenditures defined as health expenditure exceeding 10% of its total monthly consumption expenditure or 40% of its monthly non-food consumption expenditure, are unacceptable.

4. Universality: Prevention of exclusions on social, economic or on grounds of current health status. In this backdrop, systems and services are envisaged to be designed to cater to the entire population- including special groups.

5. Patient Centered & Quality of Care: Gender sensitive, effective, safe, and convenient healthcare services to be provided with dignity and confidentiality. There is need to evolve and disseminate standards and guidelines for all levels of facilities and a system to ensure that the quality of healthcare is not compromised.

6. Accountability: Financial and performance accountability, transparency in decision making, and elimination of corruption in health care systems, both in public and private.

7. Inclusive Partnerships: A multi stakeholder approach with partnership & participation of all non-health ministries and communities. This approach would include partnerships with academic institutions, not for profit agencies, and health care industry as well.

8. Pluralism: Patients who so choose and when appropriate, would have access to AYUSH care providers based on documented and validated local, home and

community based practices. These systems, inter alia, would also have Government support in research and supervision to develop and enrich their contribution to meeting the national health goals and objectives through integrative practices.

9. Decentralization: Decentralisation of decision making to a level as is consistent with practical considerations and institutional capacity. Community participation in health planning processes, to be promoted side by side.

10. Dynamism and Adaptiveness: constantly improving dynamic organization of health care based on new knowledge and evidence with learning from the communities and from national and international knowledge partners is designed.

2.3 OBJECTIVES

Improve health status through concerted policy action in all sectors and expand preventive, promotive, curative, palliative and rehabilitative services provided through the public health sector with focus on quality.

2.3.1 Progressively achieve Universal Health Coverage

A. Assuring availability of free, comprehensive primary health care services, for all aspects of reproductive, maternal, child and adolescent health and for the most prevalent communicable, non-communicable and occupational diseases in the population. The Policy also envisages optimum use of existing manpower and infrastructure as available in the health sector and advocates collaboration with non -government sector on pro-bono basis for delivery of health care services linked to a health card to enable every family to have access to a doctor of their choice from amongst those volunteering their services.

B. Ensuring improved access and affordability, of quality secondary and tertiary care services through a combination of public hospitals and well measured strategic purchasing of services in health care deficit areas, from private care providers, especially the not-for profit providers

C. Achieving a significant reduction in out of pocket expenditure due to health care costs and achieving reduction in proportion of households experiencing catastrophic health expenditures and consequent impoverishment.

2.3.2 Reinforcing trust in Public Health Care System:

Strengthening the trust of the common man in public health care system by making it predictable, efficient, patient centric, affordable and effective, with a comprehensive package of services and products that meet immediate health care needs of most people.

2.3.3 Align the growth of private health care sector with public health goals:

Influence the operation and growth of the private health care sector and medical technologies to ensure alignment with public health goals. Enable private sector contribution to making health care systems more effective, efficient, rational, safe, affordable and ethical. Strategic purchasing by the Government to fill critical gaps in public health facilities would create a demand for private health care sector, in alignment with the public health goals.

2.4 Specific Quantitative Goals and Objectives:

The indicative, quantitative goals and objectives are outlined under three broad components viz.

(a) Health status and programme impact,
(b) Health systems performance and
(c) Health system strengthening.

These goals and objectives are aligned to achieve sustainable development in health sector in keeping with the policy thrust.

2.4.1 Health Status and Programme Impact

2.4.1.1 Life Expectancy and healthy life

a. Increase Life Expectancy at birth from 67.5 to 70 by 2025.

b. Establish regular tracking of Disability Adjusted Life Years (DALY) Index as a measure of burden of disease and its trends by major categories by 2022.

c. Reduction of TFR to 2.1 at national and sub-national level by 2025.

2.4.1.2 Mortality by Age and/ or cause

a. Reduce under Five Mortality to 23 by 2025 and MMR from current levels to 100 by 2020.

b. Reduce infant mortality rate to 28 by 2019.

c. Reduce neo-natal mortality to 16 and still birth rate to "single digit" by 2025. ***2.4.1.3 Reduction of disease prevalence/ incidence***

a. Achieve global target of 2020 which is also termed as target of 90:90:90, for HIV/AIDS i. e,- 90% of all people living with HIV know their HIV status, - 90% of all people diagnosed with HIV infection receive sustained antiretroviral therapy and 90% of all people receiving antiretroviral therapy will have viral suppression.

b. Achieve and maintain elimination status of Leprosy by 2018, Kala-Azar by 2017 and Lymphatic Filariasis in endemic pockets by 2017.

c. To achieve and maintain a cure rate of >85% in new sputum positive patients for TB and reduce incidence of new cases, to reach elimination status by 2025.

d. To reduce the prevalence of blindness to 0.25/ 1000 by 2025 and disease burden by one third from current levels.

e. To reduce premature mortality from cardiovascular diseases, cancer, diabetes or chronic respiratory diseases by 25% by 2025.

2.4.2 Health Systems Performance

2.4.2.1 Coverage of Health Services

a. Increase utilization of public health facilities by 50% from current levels by 2025.

b. Antenatal care coverage to be sustained above 90% and skilled attendance at birth above 90% by 2025.

c. More than 90% of the newborn are fully immunized by one year of age by 2025.

d. Meet need of family planning above 90% at national and sub national level by 2025.

e. 80% of known hypertensive and diabetic individuals at household level maintain „controlled disease status" by 2025.

2.4.2.2 Cross Sectoral goals related to health

a. Relative reduction in prevalence of current tobacco use by 15% by 2020 and 30% by 2025.

b. Reduction of 40% in prevalence of stunting of under-five children by 2025.

c. Access to safe water and sanitation to all by 2020 (Swachh Bharat Mission).

d. Reduction of occupational injury by half from current levels of 334 per lakh agricultural workers by 2020.

e. National/ State level tracking of selected health behaviour.

2.4.3 Health Systems strengthening

2.4.3.1 Health finance

a. Increase health expenditure by Government as a percentage of GDP from the existing 1.15% to 2.5 % by 2025.

b. Increase State sector health spending to > 8% of their budget by 2020.

c. Decrease in proportion of households facing catastrophic health expenditure from the current levels by 25%, by 2025.

2.4.3.2 Health Infrastructure and Human Resource

a. Ensure availability of paramedics and doctors as per Indian Public Health Standard (IPHS) norm in high priority districts by 2020.

b. Increase community health volunteers to population ratio as per IPHS norm, in high priority districts by 2025.
c. Establish primary and secondary care facility as per norms in high priority districts (population as well as time to reach norms) by 2025.

2.4.3.3 Health Management Information

a. Ensure district-level electronic database of information on health system components by 2020.
b. Strengthen the health surveillance system and establish registries for diseases of public health importance by 2020.
c. Establish federated integrated health information architecture, Health Information Exchanges and National Health Information Network by 2025.

III. Policy Thrust

3.1 Ensuring Adequate Investment

The policy proposes a potentially achievable target of raising public health expenditure to 2.5% of the GDP in a time bound manner. It envisages that the resource allocation to States will be linked with State development indicators, absorptive capacity and financial indicators. The States would be incentivised for incremental State resources for public health expenditure. General taxation will remain the predominant means for financing care. The Government could consider imposing taxes on specific commodities- such as the taxes on tobacco, alcohol and foods having negative impact on health, taxes on extractive industries and pollution cess. Funds available under Corporate Social Responsibility would also be leveraged for well-focused programmes aiming to address health goals.

3.2 Preventive and Promotive Health

The policy articulates to institutionalize inter-sectoral coordination at national and sub-national levels to optimize health outcomes, through constitution of bodies that have representation from relevant non-health ministries. This is in line with the emergent international "Health in All" approach as complement to Health for All.
The policy prerequisite is for an empowered public health cadre to address social determinants of health effectively, by enforcing regulatory provisions. The policy identifies coordinated action on seven priority areas for improving the environment for health:

- The Swachh Bharat Abhiyan o Balanced, healthy diets and regular exercises.
- Addressing tobacco, alcohol and substance abuse
- Yatri Suraksha – preventing deaths due to rail and road traffic accidents
- Nirbhaya Nari –action against gender violence
- Reduced stress and improved safety in the work place
- Reducing indoor and outdoor air pollution

The policy also articulates the need for the development of strategies and institutional mechanisms in each of these seven areas, to create Swasth Nagrik Abhiyan –a social movement for health. It recommends setting indicators, their targets as also mechanisms for achievement in each of these areas.
The policy recognizes and builds upon preventive and promotive care as an under-recognized reality that has a two-way continuity with curative care, provided by health agencies at same or at higher levels. The policy recommends an expansion of scope of interventions to include early detection and response to early childhood development delays and disability, adolescent and sexual health education, behavior change with respect to tobacco and alcohol use, screening, counseling for primary prevention and secondary prevention from common chronic illness –both communicable and non-communicable diseases. Additionally, the policy focus is on extending coverage as also quality of the existing package of services. Policy recognizes the need to frame and adhere to health screening guidelines across age

groups. Zoonotic diseases like rabies need to be addressed through concerted and coordinated action, at the national front and through strengthening of the National Rabies Control Programme.

The policy lays greater emphasis on investment and action in school health- by incorporating health education as part of the curriculum, promoting hygiene and safe health practices within the school environs and by acting as a site of primary health care. Promotion of healthy living and prevention strategies from AYUSH systems and Yoga at the work-place, in the schools and in the community would also be an important form of health promotion that has a special appeal and acceptability in the Indian context.

Recognizing the risks arising from physical, chemical, and other workplace hazards, the policy advocates for providing greater focus on occupational health. Work-sites and institutions would be encouraged and monitored to ensure safe health practices and accident prevention, besides providing preventive and promotive healthcare services.

ASHA will also be supported by other frontline workers like health workers (male/female) to undertake primary prevention for non-communicable diseases. They would also provide community or home based palliative care and mental health services through health promotion activities. These workers would get support from local self-government and the Village Health Sanitation and Nutrition Committee (VHSNC).

In order to build community support and offer good healthcare to the vulnerable sections of the society like the marginalised, the socially excluded, the poor, the old and the disabled, the policy recommends strengthening the VHSNCs and its equivalent in the urban areas.

"Health Impact Assessment" of existing and emerging policies, of key non-health departments that directly or indirectly impact health would be taken up.

3.3 Organization of Public Health Care Delivery:

The policy proposes seven key policy shifts in organizing health care services

- *In primary care* – from selective care to assured comprehensive care with linkages to referral hospitals
- *In secondary and tertiary care* – from an input oriented to an output based strategic purchasing
- *In public hospitals* – from user fees & cost recovery to assured free drugs, diagnostic and emergency services to all
- *In infrastructure and human resource development* – from normative approach to targeted approach to reach under-serviced areas
- *In urban health* – from token interventions to on-scale assured interventions, to organize Primary Health Care delivery and referral support for urban poor. Collaboration with other sectors to address wider determinants of urban health is advocated.
- *In National Health Programmes* – integration with health systems for programme effectiveness and in turn contributing to strengthening of health systems for efficiency.
- *In AYUSH services* – from stand-alone to a three dimensional mainstreaming

15.4 MODELS OF NATIONAL HEALTH POLICIES (LEARNING FROM OTHER MAJOR HEALTH CARE SYSTEMS)

There are about 200 countries on our planet, and each country devises its own set of arrangements for meeting the three basic goals of a health care system: keeping people healthy, treating the sick, and protecting families against financial ruin from medical bills.

But we don't have to study 200 different systems to get a picture of how other countries manage health care. For all the local variations, health care systems tend to follow general patterns.

There are four major models for health care systems:

- The Beveridge Model,
- the Bismarck model,
- the National Health Insurance model, and
- The out-of-pocket model.

While in theory these categories have distinct policy separations, in reality most countries have a blend of these approaches, though they generally have a single health care system that is uniform for most citizens. These distinctions are effective at differentiating schools of thought on health care policy, but the policies of each country should be analyzed when determining potential improvements.

15.4.1 The Beveridge Model (Single-Payer National Health Service)

The United Kingdom, Spain, New Zealand, Cuba and USA are some of the world economies have been following this model of health service.

The Beveridge Model was first developed by Sir William Beveridge in 1948. Established in the United Kingdom and spreading throughout many areas of Northern Europe and the world, this system is often centralized through the establishment of a national health service. The government acts as the single-payer, eliminating competition in the market and generally keeping prices low. Funding health care through income taxes allows for health care to be free at the point of service – after an appointment or operation, the patient does not have to pay any out-of-pocket fees because of their contribution through taxes. Under this system, a large majority of health staff is composed of government employees. A central tenant of this model ***is health as a human right***. Thus, universal coverage is guaranteed by the government and anyone who is a citizen has the same access to care.

With the government as the sole payer in this healthcare system, costs can be kept low and benefits are standardized across the country.

However, a common **criticism** of this system is the tendency toward long waiting lists. Because everyone is guaranteed access to health services, over-utilization of the system may lead to increasing costs.

There are **fears** that adoption of a single-payer national health service in the US would lead to an increase in demand for all procedures, even medically unnecessary ones because citizens would not pay upfront costs for these services.

However, other analysts **argue against** this problem, stating that current American practices waste a similar amount of money covering the uninsured.

Another practical concern is the **government response to crisis**. In the case of a precarious national emergency, such as war or a health crisis, funding for health services may decline as public revenue decreases, exacerbating the financial burden inherent in a large influx of patients. Such a situation would require careful allocation of emergency funding before the crisis.

15.4.2. The Bismarck Model (Social Health Insurance Model)

Examples: Germany, Belgium, Japan, Switzerland Relevance to the US: similar to employer-based health care plans and some aspects of Medicaid

A more decentralized form of healthcare, the Bismarck model was created near the end of the 19th century by Otto von Bismarck. Employers and employees fund health insurance in this model – those who are employed have access to "sickness funds" created by compulsory

payroll dedications. In addition, private insurance plans cover every employed person, regardless of pre-existing conditions.

Health providers are generally private institutions, though the Social Health Insurance funds are considered public. In some countries, there is a single insurer (France, Korea); other countries may have multiple, competing insurers (Germany, Czech Republic) or multiple, non-competing insurers (Japan). Regardless of the number of insurers, the government tightly controls prices while insurers do not make a profit. These measures allow for the government to exercise a similar amount of control over prices for health services seen in the Beveridge model.

The requirement of employment for health insurance provides benefits and causes problems. These measures ensure that employed people will have the healthcare needed to continue working and ensure a productive workforce. Because it was not initially established to provide universal health coverage, the Bismarck model focuses resources on those who can contribute financially. With a shift in mindset from health as a privilege for employed citizens to a right for all citizens, the model faces a number of concerns, such as how to care for those unable to work or those who may not be able to afford contributions. More immediate practical concerns include how to contend with aging populations, with an uneven number of retired citizens compared to employed citizens, and how to stay competitive in attracting international companies that may prefer locations without these required payroll dedications.

The primary criticism of the Bismarck model is how to provide care for those who are unable to work or can't afford contributions, including aging populations and the imbalance between retirees and employees.

15.4.3 The National Health Insurance Model: (Single-Payer National Health Insurance)

Examples: Canada, Taiwan, South Korea Relevance to the US: similar to Medicare

The National Health Insurance model incorporates aspects of both the Bismarck and Beveridge models. Like the Beveridge model, the government acts as the single payer for medical procedures, and like the Bismarck model, providers are private. The universal insurance does not make a profit or deny claims. There has been a tendency in recent years for countries with Beveridge-type health care systems to incorporate Bismarck characteristics or vice versa, leading to the health care policies in a number of countries like Hungary and Germany to trend towards the mixed model. In some countries like Canada, private insurance contracting is permitted for those who would prefer them.

The balance between public insurance and private practice allows hospitals to maintain independence while also reducing internal complications with insurance policies. Financial barriers to treatment are generally low, and patients usually are able to choose their healthcare providers.

Like the Beveridge model, this system covers most procedures regardless of income level. The model also may reduce the costs involved with administration of health insurance, as the government processes all claims and reduces the amount of duplication of services. Perhaps the largest complaint is that these systems can suffer from long waiting lists for treatment. Waitlists are not limited to elective surgeries or other non-emergency procedures, as patients waiting to be seen in some fields like neurosurgery often may face long delays until they can see a physician. In a study by Viberg et al. from 2013, a majority of countries, including Australia, Canada, and Italy, consider waiting times a serious health policy issue. Waiting times in Canada for hip replacements can be from 42 to 178 days, depending on the province. Aging population demographics and overutilization of health resources in non-urgent situation are also problems for the long-term stability of this model.

15.4.4 The Out-of-Pocket Model (Market-Driven Health Care)

Examples: rural areas in India, China, Africa, South America Relevance to the US: similar to treatment for uninsured or underinsured

In less developed areas with too few resources to create mass medical care, patients must pay for their procedures out-of-pocket. Without enough money, the poor are unable to afford appropriate health care. Unfortunately, this situation is common in most countries since only the wealthiest countries have robust health care systems. Disparities in wealth lead to disparities in health outcomes in these areas.

In the United States, many aspects of health care are driven by income-level. Adults in the US are less likely to see a regular physician and are more likely to have untreated conditions than adults in Canada, while at the same time rating their care as either extremely high or low in quality more often than Canadians, who are more moderate in their responses. Disparities in care due to socioeconomic status and ethnicity are found in all countries, but tend to be more pronounced in the United States than in areas like Canada. The percent uninsured ranges for different states, from as low as 3.6% in Massachusetts to as high as 20.6% in Texas. As of 2015, the percent of uninsured persons is 13.0% in the United States. The debate over increasing coverage and minimizing costs still rages in Congress – any developments may drastically change these numbers.

15.5 SUMMERY

Each country faces different concerns when attempting to construct a system for health care delivery. No health care system is completely alike, and none are completely free of problems; a method that works for one country is not likely to be completely transferrable to another due to different health concerns, priorities, and mindsets. Though complicated, considering the implications of various models is essential to implementing an American health care system that is fair and just to all citizens, not just the wealthiest. Its construction should emerge from the collaboration between policy experts, health providers, politicians, and other stakeholders to attempt to address the many complicated aspects of the health insurance market.

15.6 KEY WORDS

National Health Policy: The National Health Policy, 2017 (NHP, 2017) seeks to reach everyone in a comprehensive integrated way to move towards wellness. It aims at achieving universal health coverage and delivering quality health care services to all at affordable cost.

Bismark Model: The Bismarck Model (also referred as "Social Health Insurance Model") is a limited health care system, in which people pay a fee to a fund that in turn pays health care activities that can be provided by State-owned institutions, other Government body-owned institutions, or a private institution

Beverdge Model: The Beveridge Model is a health care system in which the government provides health care for all its citizens through income tax payments

Preventive and Promotive Health: Prevention is essentially a medical action that deals with the individual or risk groups as well as the observance of physical health. In contrast with this, health promotion is concerned with the whole population in its daily life and not only selected individuals or groups

Mediclaim Policy: A Mediclaim policy is a sort of health insurance policy in which the insurer reimburses the policyholder for medical expenses incurred in treating their medical condition. If you have a medical insurance policy, you can submit your bills to the insurance company for payment.

Family Floater: A family floater health insurance, as the name suggests is a plan that is tailor made for families. It is similar to individual health plans in principle; the only difference is that it is extended to cover your entire family. This acts as an umbrella of coverage for the entire family and therefore the name.

Five Year Plans: An economic plan allocates the resources of a nation to fulfil the general and specific goals as planned by the government for a specified period. In India, these plans are made for five years and hence are known as five year plans

15.7 SELF ASSESSMENT QUESTIONS

1. Prepare your own notes on National Health Policy of India 1983 and 2017
2. Understand about the four international health policy models and try to connect them to the India context

15.8 FURTHER READINGS

1. The Palgrave Macmillan 'Health Economics' Jay Bhattacharya, Timothy Hyde, Peter Tu, 2014
2. NITI AYOG, Health System for a New India: Building Blocks – Potential Pathways to Reform – Nov.2019
3. Regulation of Health Care Delivery In India - A Landscape Study by Sunil Nandraj, Pallavi Gupta, Sonali Randhawa March 2021(Health Systems Transformation Platform (HSTP))
4. Healthcare in India: Current State and Key imperatives – Review of National Health Policy, 2015, 2018
5. 'Health Insurance for India's Missing Middle' Publishing Agency: NITI Aayog:2021 ISBN : 978-81-949510-2-5.