
UNIT 17 HEALTH DIMENSIONS OF DEVELOPMENT

Structure

- 17.0 Objectives
- 17.1 Introduction
- 17.2 Health and Economic Development: Linkage and Impact
 - 17.2.1 Linkage of Health with Development
 - 17.2.2 Issues Impacting Health and Development
 - 17.2.3 Individual Incomes and Health Investment
- 17.3 Demand and Supply of Medical Care
 - 17.3.1 Factors Influencing the Supply of Health Care
- 17.4 Health Insurance and its Interaction with Medical Market
 - 17.4.1 Demand for Health Care in the Presence of Health Insurance
- 17.5 Impact of Technological Change on the Cost of Health Services
- 17.6 Public-Private Dichotomy in Providing Health Services
- 17.7 Role of Government in Health Care Provision
- 17.8 Role of Private Sector in Health Care
- 17.9 Change of Health Status Over Time
- 17.10 Let Us Sum Up
- 17.11 Key Words
- 17.12 References
- 17.13 Answers/Hints to Check Your Progress Exercises

17.0 OBJECTIVES

After going through this unit, you will be able to:

- explain the role of health in development;
- identify the factors influencing the demand and supply aspects of health care;
- discuss the concept of health insurance analysing the effects of its interaction with medical market;
- relate the impact of technological change on the cost of health services;
- assess the growing phenomenon of public-private dichotomy in health services; and
- appreciate the enormity of challenges posed by the health sector.

17.1 INTRODUCTION

It is widely recognised that the health status of the people of a country is as important as their economic status. The role of the government in providing adequate health services which are accessible and affordable to all sections of its population is of critical importance. However, the comparative advantages enjoyed by the government in meeting the task entirely on its own is limited as also the resources at its command. This brings into focus the need for an appropriate policy framework within which both sectors of health service providers viz. the public and the private sector, can function efficiently. Further, like in the field of education, the demand for health services is also dual in nature. Vast sections of the population in developing countries, who are poor and live in rural areas with severe infrastructural

inadequacies, require special attention. Many of the diseases they suffer from are related to the lack of provision of safe drinking water. The crucial responsibility of the government is therefore to provide the weaker sections of the population with basic primary health services. While this is a fundamental necessity, facilities for specialised health care also need to be established in easily accessible locations through public funding in which the government has to take the lead. The more well-to-do sections of the population require health services of a different kind. As their affordability is higher, they can plan for even their future health uncertainties. The growth of health insurance market under the market economic systems is related to this aspect of higher affordability by a growing class of high income earners in the cities. The nature of political system, i.e., whether it is state dominated socialistic form or the market oriented capitalistic form will, to a large extent, determine the nature and extent of public-private mix in health services. Technological advances in the field of medical science makes the issue of economics of health services dynamic in nature. When new diagnostic procedures and treatments become available in the market they are usually expensive and beyond the reach of large sections of the society. They remain unaffordable, even for the relatively better off sections of the population, without some form of subsidy/insurance coverage. With time and wider adaptation, their costs will come down although they continue to remain outside the capacity of large sections of the population. Establishing a policy framework by which health infrastructure is so developed that an effective balance is maintained between basic health services and specialised services by an efficient public and private sector coexistence is a major challenge for the governments. Such a policy environment should particularly ensure the concerns of equity so that the facilities of health care do not exclude the weaker sections of the society. The benefits of a healthy population are enjoyed by the society at large just as the ill-effects of diseases left unattended/cured permeate across the affected-unaffected population divide. Issues of health planning, its economic dimensions in terms of demand and supply factors, interaction of the insurance sector with medical market, principles underlying the public-private co-existence, etc., are some of the aspects to which the present unit relates.

17.2 HEALTH AND ECONOMIC DEVELOPMENT: LINKAGE AND IMPACT

It is apparent that the relationship between health and development is a two way process. While healthy people in a country promote the development of the economy by contributing productively, economic development promotes better income earning avenues, which, in turn, generate demand for better services (including health services). The essential linkage between the two sets of processes (and the impact that they make on each other) needs separate assessment. The present section focuses on this important feature of the duality between health and development.

17.2.1 Linkage of Health with Development

Health, in its comprehensive or holistic sense, refers to the state of complete physical, mental, social and spiritual well being of a person. It does not merely relate to the absence of diseases and infirmity. This definition encompasses all components of welfare in terms of physical (i.e. organic and biological), mental and spiritual sides of life. It signifies happiness, satisfaction and social well-being required for harmonious living with the surroundings. Since all these aspects of life are interconnected with each other, even if one component is disturbed, the equilibrium of health is affected. Health can therefore be regarded both as a means and as an end of development.

Like health, development also connotes a wider understanding. It is multi-dimensional encompassing many aspects of human welfare at the centre of which is the health of the people. When people are healthy they are more productive. Higher productivity

ensures two important processes which are fundamental to economic growth: better purchasing power signifying better propensity to consume and save. Savings in turn promote investment and capital formation. In an economy where this chain of consumption and investment is weak, the process of development gets retarded. Such economies tend to be characterised by features of under development like high infant and child mortality rates, lack of infrastructure (e.g. non-availability of safe drinking water, poor sanitation, inadequate transportation facilities, lack of electricity, etc.) and low level of education marked by high proportion of illiterates. For rectifying this situation, the country needs to invest in priority sectors like health and education. The basic assumption is that a healthy and educated workforce is an important and essential input to economic growth with welfare. There was also a widely believed hypothesis that the benefits of growth will percolate to all layers of the economy (trickle-down hypothesis). However, experience and evidence have shown that this does not always happen without the focused attention of planning required for ensuring the welfare of weaker sections of the society. Investment in health services assumes critical importance in this regard.

Till 1970s, development took note of mainly its economic aspect. It was considered synonymous to economic growth and was considered to reflect in the per-capita income of the country. A sharper distinction between growth and development came to be made in 1970s, with growth considered to merely show the performance of the economy and development identified with the end or the outcome of growth. Development in this sense reflected the distribution of benefits of growth across the different sections of the society with concerns of equity duly addressed. A comprehensive indicator of economic growth with development was introduced in the early 1990s in which the larger issue of quality of life was given due weightage. This was articulated in the World Development Report of 1991 which asserted as follows: “the challenge of development is to improve the quality of life which goes beyond mere economic growth....it encompasses better education, higher standard of health and nutrition, less poverty, a cleaner environment, more equality of opportunity, greater individual freedom and a richer cultural life”. The transition from 1970s to 1990s thus saw the replacement of physical quality life index (PQLI, developed in 1979 taking into account the three variables of life expectancy at age 1, infant mortality rate and literacy) by the more comprehensive human development index (HDI). The latter (i.e. HDI) was also based on three related aspects but with wider and extended connotations viz. (i) *longevity* measured by life expectancy at birth, (ii) *knowledge* measured by the weighted average of adult literacy (two-thirds) and combined primary, secondary and tertiary gross enrolment ratio (one-third) and (iii) the *standard of living* measured by per capita real income adjusted for purchasing power parity. Its focus was thus on the ends of development (longevity, knowledge and material choice) rather than on the means of development. HDI is also used to measure the relative position of development (inter-regional or sub-national and international) on a more comparable basis.

Health and development are thus closely interrelated with a potential to influence each other strongly. In recognition of this fact, health has been accorded a distinct status in the measurement of the level of development of an economy. Health contributes to the process of human capital formation making a major contribution to raising the productivity of labour. Due to these strong forward and backward linkages, investment in health increases the returns on other investment in human capital such as in education by contributing to ones' learning abilities. The net result is a positive return in terms of increased productive years of life.

17.2.2 Issues Impacting Health and Development

Poverty and malnutrition are the leading causes of high maternal and child mortality rates in developing countries. Together, they seriously impair the resistance of the body to infections. In children, malnutrition impacts their learning ability besides

leading to high dropouts from schools. This reduces the returns to investment in education. The average real rate of social return on primary schooling in low income countries was estimated at 24 per cent (World Bank, 1981). If improved health status can be ensured through proper nutritional and health care, the rate of return on education can be improved. Better health implies that less resources are required to be devoted for curative health care. Resources thus spared can be spent for other productive purposes. Realising the severity of the problem, the millennium development goals (MDGs) of the UN included three goals to be targeted for achievement by 2015 in the health sector. These are (i) reduction of under five child mortality by two-thirds; (ii) improvement in maternal health by achieving reduction in maternal mortality rate by three-quarters; and (iii) combat diseases like malaria, HIV/AIDS and other diseases by reducing their incidence by one-half reversing the spread of such major diseases.

To achieve the above goals, massive funding and policy initiatives are required. Such initiatives, besides focusing on improvement in consumption/nutritional levels, can be centred around the major diseases. Tuberculosis and Malaria are identified to be among the major diseases contributing to adult mortality. Acute respiratory infections is identified to be a major child killer. These diseases are known to hurt rural people more than city dwellers suggesting that the focus of policy initiatives should centre more on the rural population. Some simple measures/provisions identified to prevent the mortality arising from these diseases are: bed-nets, affordable antibiotics, trained birth attendants and spreading awareness on basic hygiene. However, due to the large magnitude of the problem, the resources required to implement even such simple measures are huge. Along with the issue of *limited resources*, two other issues confronting the task of effective health delivery are *inequity* and *inefficiency*. While the former refers to the problem of the rural health systems not having enough staff and resources dedicated to women and children, the latter refers to the anomaly on account of non-integration of vertical programmes for specific diseases with the general health systems. All these concerns have received wide attention everywhere and specific suggestions have been made to tackle these problems.

Limited resources: One way of meeting the required resources is by tapping on the internal means i.e. by raising the proportion of expenditure on health as a proportion of GDP. While the high-income countries are spending more than 5 per cent of their GDP on health (Table 17.1), some developing countries including India, spend less than 1 per cent. Further, due to higher population in developing countries, this translates to very low per capita spending; in purchasing power parity terms, about \$38 in low HDI countries as against \$194 in medium HDI countries and \$1061 in high HDI countries. The WHO's Commission on Macroeconomics and Health has recommended that donor assistance for health systems in low-income countries should be substantially increased to improve the spending on health. More importantly, the commission notes that if properly invested in high-priority areas like infectious diseases, nutritional deficiencies and maternal complications, significant economic benefits (estimated at \$360 billion a year at global level) can be gained.

Inequity: This refers to the needy sections (i.e. the poorest twenty percent of the population) receiving proportionately low share of public health spending. In most developing countries, it has been observed that the poorest 20 per cent of the population receive less than 20 per cent of the benefits from public spending. A distinction can be made between total health spending and spending on basic health care. The latter refers to spending on primary health services which are mostly needed by the poorest. Thus, if poor people are to benefit, more resources must go to primary health care.

Table 17.1:
Public Health Expenditure as Percentage of GDP (1998-2000)

No.	Country	Per cent	No.	Country	Per cent
	SAARC			Africa	
1	Bangla Desh	1.4	17	Ghana	2.2
2	Bhutan	3.7	18	Kenya	1.8
3	India	0.9	19	South Africa	3.7
4	Maldives	5.1	20	Uganda	1.5
5	Nepal	0.9	21	Zambia	3.5
6	Pakistan	0.9		North America	
7	Sri Lanka	1.8	22	Canada	6.6
	Other Asian and Pacific		23	USA	5.8
8	China	1.9		South America	
9	Indonesia	0.6	24	Argentina	4.7
11	Philippines	1.6	25	Brazil	3.4
12	Rep. of Korea	2.6		Europe	
13	Thailand	2.1	26	France	7.2
14	Australia	6.0	27	Germany	8.0
15	Japan	6.0	28	Russian Federation	3.8
16	New Zealand	6.2	29	U.K.	5.9

Source: IAMR, *Manpower Profile 2004, New Delhi. p-317.*

Ideally, public spending on primary health care should vary inversely with the level of development of an economy. This is to say, as an economy develops it can afford to spend less on primary health services; or, till such time an economy is still developing, a larger share of public spending should go towards primary health services. One of the indicators reflecting on the health status and consequently the development of an economy is child mortality rate (i.e. number of children dying before attaining age-five). In countries where fewer than 70 out of 1000 children die before age five, the poorest 20 per cent receive more than 25 per cent of total spending on primary health care (HDR, 2003). In contrast, in countries where child mortality rates are between 70 and 140, the poorest 20 per cent get less than 15 per cent of public spending on primary health care. In still extreme cases i.e. in countries where the child mortality rates are higher than 140, the poorest 20 per cent account for less than 10 per cent of hospital use while the richest 20 per cent get around 40 per cent of public health care. Egalitarian spending, however, requires that public investment in health should be more on providing the basic health services needed by the poor.

The impact of inequity is more in rural areas where need for publicly funded health services is greater. There is severe shortage of medical personnel in these areas. The para medical personnel (comprising of nurses, trained birth attendants and community health workers) are regarded as the limbs and bones of the health system. Their ratio to doctors is considered to reflect the state of health services of the country. This is much adverse in developing countries as compared to the developed ones. For instance, in case of high achieving countries (with higher life expectancy and lower under-five mortality rate), the ratio of nurses to doctors (around the year 1990) was in the range of 4 to 10 (e.g. Zimbabwe 9.5; Thailand 4). The corresponding ratio for low achieving countries was below 2 (e.g. India 1.5, Bangladesh 1). Efforts to deploy medical personnel in underserved areas are usually unsuccessful. Measures suggested to redress such imbalances include: (i) increasing

the number of nurses, paramedics and community health workers; (ii) using service contracts to require medical personnel to spend a certain number of years in public service; and (iii) having donors fund some recurrent costs in order to have the most essential minimum number of health personnel and other supporting infrastructure of health. Countries in Latin America, Philippines, Tanzania, Malaysia, etc. have successfully implemented some of these measures to achieve better equity standards in matters of health service delivery.

Inefficiency: Many countries, for want of funds, have rationed health care by limiting overall budgets rather than directing resources to specific illnesses or diseases. Unless the performance or the efficiency of the health system improves, even extra funds could be wasted. One possible approach, where funds are inadequate, could be to ration funds based on essential interventions. The smallpox and malaria eradication campaigns of the 1960s started a trend towards donor-driven, disease-specific vertical programmes. Since the 1980s, with the launch of structural adjustment programmes, donor countries have favoured extending assistance to programmes which are focused on disease eradication. It is argued that with such approaches, public health care efforts outside of such vertical structures may suffer. Also, even vertical programmes dependent on external funding would be threatened if donor funds disappear. Vertical programmes may be affordable and prudent only for diseases that offer a reasonable possibility of eradication in a foreseeable period.

A more preferable path is that of disease-specific programmes integrated with overall health structures. Maternal and child health services also need to be suitably integrated. In many countries, primary health care has focused on family planning to the exclusion of maternal and child health services. To avert more maternal deaths, care during pregnancy and especially during childbirth must be linked to reliable systems that ensure the availability of advanced treatment in cases of obstetrical emergencies (HDR, 2003, p-102).

17.2.3 Individual Incomes and Health Investment

The process by which the effect of increasing individual incomes and consequent expenditures on health services leads to economic growth and thereby to development can now be explained in 'economic' terms. With increase in personal incomes, the demand for health services and capacity to self-finance the same will increase. This will reduce the marginal cost of health services contributing to a raise in the equilibrium level of health investment. The distribution of the benefits of economic growth will, however, be varied among the different sections of the society. The poorer members of society would experience smaller raise in their incomes and face greater constraints in their ability to meet the increasing cost of health expenditures. Economic development in the larger sense occurs through the concomitant development of product markets of various types. The development of product market contributes to increasing the expected productivity returns from health investment. This also causes the marginal benefit curve to shift upwards. The net result is an increase in the equilibrium level of health investment. The expansion of labour market remains important as it will generate jobs providing income to the people. For developing economies, a growth strategy that improves rural transportation and communication, and encourages agriculture and labour intensive production, would have the desired effect of deriving the maximum returns from investment in health. The comparative advantage of the government (*vis-à-vis* the private sector) to invest the resources for maximum social benefit, a vision which the government alone can carry, should be directed towards increasing the infrastructural development of the health sector. Such an approach coupled with an efficient marginal cost pricing of both curative and preventive health services will result in the optimum improvement in health for given levels of resources devoted to health.

The commission on macroeconomics and health has dwelt on assessment of the disease burden. It is an established fact that the poor have higher incidence and prevalence of diseases due to poverty and poor knowledge of preventive steps needed for minimising the disease burden. To remedy this situation, investment in health systems ought to be strong enough, with right priorities on delivering essential interventions. There also should be expansion of education and institutional formations such as community involvement so that the poor can not only effectively access but are also motivated to seek out the essential interventions.

In the absence of adequate provision for basic health services, around 85 per cent of the total health expenditure in countries like India and China are estimated to be out-of-pocket. Such huge out-of-pocket expenditure needs to be channelled into 'community financing' to help cover the cost of health delivery. Towards this direction, the commission on macroeconomics and health recommends: (i) increased mobilisation of general tax revenues for health, (ii) increased donor support to finance the provision of public goods and ensured access to essential services by the poor, (iii) conversion of current out of pocket expenditure into prepayment schemes, including community financing programmes, supported by public spending, (iv) initiative in providing debt relief for poor indebted countries, (v) efforts to address existing inefficiencies in the way government resources are presently allocated and used in health sector, (vi) reallocating public outlays by cutting down on unproductive expenditures and targeting subsidies to social sector programmes focussed on the poor.

Check Your Progress 1

- 1) The linkage of health with development is a two-way process. Justify this statement in two to three lines.

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- 2) Which variable taken into consideration for the construction of human development index (HDI) is related to health? What do you think is the main thrust of this index?

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- 3) Mention the three goals set under the UN's millennium development goals related to the health sector. What are the three dominant issues confronting the developing countries in achieving these goals?

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- 4) Mention the important recommendations made by the commission on 'macroeconomics and health' for improving the financial health of the economy?

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17.3 DEMAND AND SUPPLY OF MEDICAL CARE

You have read in your course on microeconomics that demand is governed by the utility derived from the consumption of goods and services. This is true in case of demand for medical care also. Two related questions viz. why medical care is needed and whether the basic factors which go to influence the demand for medical care are relevant in this context. They help us to explain variations in utilisation of health services among population groups and between areas. It also enables forecasting the future health requirements more accurately.

Planning of health facilities is based on estimates of 'need' for medical care in the population. The reason for using 'need' as a basis of public policy for medical care is that it happens to be the principal determinant of hospital and physician use. From this point of view, need is defined as the amount of medical care that experts believe a person/population should receive to remain as healthy as possible. In developing countries like India, for every 5000 population residing in rural areas there is a norm that there should be a primary health centre (PHC). Such a norm is based on factors like existing conditions in the area, current medical knowledge, etc. Evidently, such factors are subject to change depending on developments in the medical field and the local conditions.

Demand for health care can be viewed from two angles viz. (i) the time devoted to preventive and curative measures of health care and (ii) the cost of establishing the health care services which depends upon the infrastructural needs. In the light of this, the demand for health care, like in education, acquires connotation both as a consumption good as well as an investment good. It is a consumption good because its consumption makes the consumer feel more able and better. It is an investment good because it helps in acquiring a state of health decreasing the number of sick days thereby increasing the quality of life.

Given the natural process of ageing, one of the important factors which influences the demand for health care is age. As the stock of health depreciates with age, people spend more on health care to offset the consequences of old age disabilities. However, such expenditures on medical care is strongly related to the income levels of persons. An yet another factor contributing to demand for health care is the educational level of persons. Education has a negative relationship with the demand for health care as knowledge of health care reduces the incidence of disease which in turn leads to lower demand for health care.

17.3.1 Factors Influencing the Supply of Health Care

For determining the behaviour of supply of any service, the production function approach is most commonly used. The production function describes the relationship between the output of a good or service (endogenous or dependent variable) and the resources used to produce it (exogenous or independent variables). Translating the application of this approach to medical field, the implicit argument behind the approach is that given the quality and quantity of inputs, the cost and/or quantity of health care provided (or required) can be determined. An additional factor considered relates to the effect of substitutability of one factor or resource with the other. While perfect substitutability (though rare and hence inconceivable) is assumed in simplified applications, possible variation in such an ideal situation needs to be noted. In the case of health care, for instance, while general practitioners can substitute each other without any major difference in output, specialists cannot be so substituted (e.g. an oncologist can not substitute a cardiologist or vice versa). Technical change is an important factor considered in the production function framework. This is a major factor in bringing about an improvement (i.e. either increased output with same input or same output with lesser inputs) in any production process. In medical care this means that illness that could not be formerly treated

can now be cared/cured with greater success. Like in any other system, in the case of health care also, it is necessary to combine information on the productivity of inputs with information on their relative prices. In the long run, when the inputs in the production function can be varied, the supply schedule will become more elastic i.e., it will require less of an increase in cost to increase the supply.

Though the principles of economics prescribe the theoretical perspective of production function which is applicable universally, it is not easy to apply in case of medical markets. The assumptions of substitutability in the case of inputs to produce a given output does not hold true all the time. In the field of health, a great deal of emphasis is placed on the use of ratios of skilled manpower to the population. If there is substitution between skilled and other type of manpower to provide medical services, the use of such simple ratios is inappropriate. Further, in most cases, economically efficient combinations of inputs are not used as the input combinations used are based on the marginal productivity of inputs without any regard to their relative prices. This amounts to saying that in medical field, it is difficult to provide for the elasticity of substitution in factors of production. This also means that in the health field, policy makers may have goals other than cost minimisation or output maximisation.

The relative prices of inputs used in production may also be distorted. For instance, in the public good sector, government renders the subsidy or concession to production/supply of health care. While in a strict sense it amounts to disturbing the principles of competitive market structures, equity considerations would require the adoption of such policies. Such policies would enable the providing of many health services in government hospitals with far lower cost than charged by private service providers for comparable services. Efficiency is thus a major criteria for evaluating the health care market. If the markets within the health sector are competitive and efficient then, theoretically, the cost of health care stabilises at an optimum level. However, the economic efficiency of supply side of the medical care could be different due to imperfect market features. This, therefore, has important policy implications for the sector. In a longer time frame, when the market features get more established, supply of medical care would tend to become more inelastic. It would then permit the redistribution of programmes more efficiently to cater to the demand.

17.4 HEALTH INSURANCE AND ITS INTERACTION WITH MEDICAL MARKET

Health insurance is important to the demand and supply considerations of health care as well as in determining the government's role in allocating resources. Health insurance is a type of 'cost sharing' whereby the insurer pays the medical costs if the insured becomes sick due to causes covered. The insurer may be a private organization or a government agency. Market-based health care systems such as that in the United States rely on private medical insurance.

The concept of health insurance is more applicable in developed economies. In developed countries majority of the persons do not pay directly for their health care. Rather the insurance companies pay for much of the medical care with the consumer paying a small portion of the total health care expenditure. Insurance coverage is provided through the payment of the premiums (in privately financed systems) or taxes (when the insurance is provided publicly). The premiums are often, although not always, paid through the consumer's participation in the labour force.

The concept of health insurance involves the theory of expected utility with the underlying concepts of marginal benefit and cost. The consumers' demand for health insurance represents the amount of insurance coverage a person is willing to buy at suitable premiums. Additional insurance coverage will be purchased if the

premium (price) declines. Thus, when the marginal benefit of the consumer to the additional coverage equals the cost of buying that insurance, then other things being equal, the optimal amount of insurance will be purchased.

The demand for health insurance is related to the considerations underlying the purchase of insurance. It is assumed that an individual wishes to maximize his or her utility which is the usual assumption made in demand analysis. Since a person does not know how he will be affected by an illness requiring a loss of wealth to pay for it, the individual seeks to maximise his or her expected utility by choosing from the two alternatives: (i) he can purchase insurance and thereby incur a small loss in the form of the insurance premium, or (ii) he can self-insure, which means either facing the small possibility of a large loss in the event of illness, or the large possibility that the medical loss will not occur.

Given the above two choices, one can select one's choice by ranking the choices according to how much of one choice is preferred over the other. Though there is no unique point of origin for measuring the utility function, subject to a certain point of origin being accepted, the utility function of an individual can be described for varying levels of wealth. Such an utility function, following the rule of the diminishing marginal utility, can be graphically shown as in Figure-1. Now, to determine whether or not to purchase health insurance, let us assume that if an illness occurs it will cost Rs. 8000. Consider the individual to be currently at wealth level W_3 signifying a income level of Rs.10000. If the illness occurs, Rs. 8000 will be paid out as a result of which his wealth will shrink to the level W_1 . The corresponding levels of utility for wealth levels W_3 and W_1 are U_3 and U_1 (upper panel in Figure 1). Note that in the lower panel, the graph incorporates the expected utility in addition to the

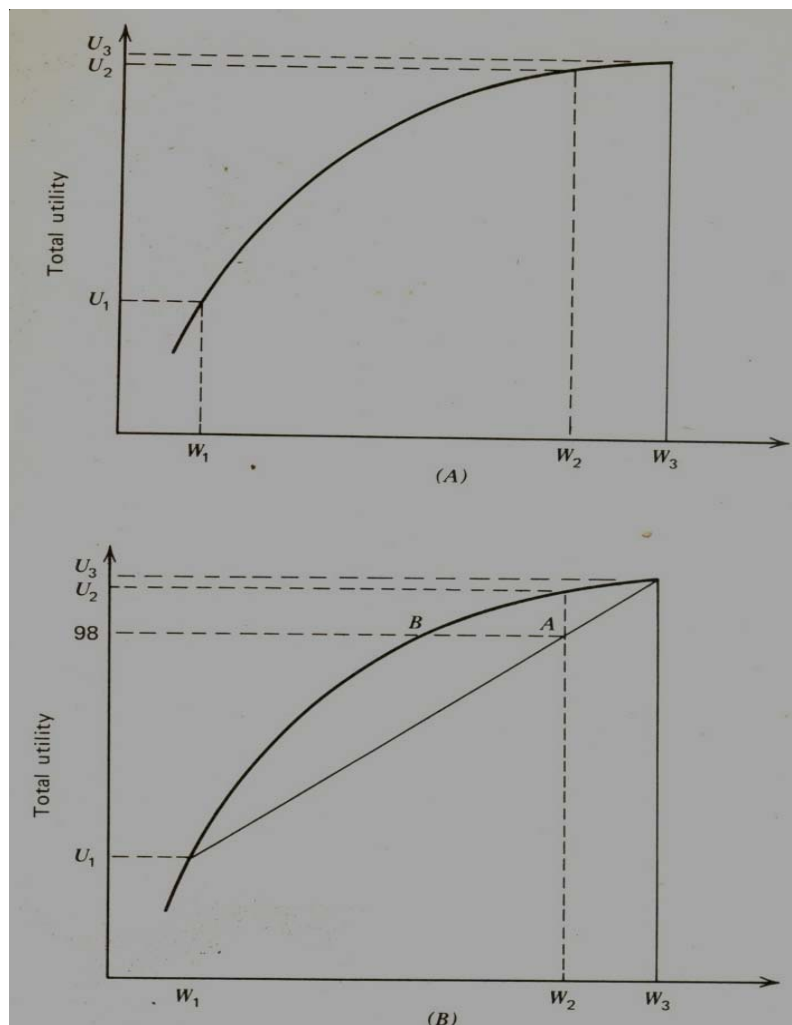


Fig. 17.1: Utility Function at Varying Levels of Income

total utility. Now, assuming that the probability of occurring illness is 0.025 (i.e. 2.5 percent) and the cost of the treatment is Rs. 8000, the premium to cover this risk would be $0.025 \times \text{Rs.}8000 = \text{Rs.} 200$.

Given the above situation, if the person were to buy insurance at the actuarial value of the loss, then he would pay Rs. 200, whereupon his wealth reduces to the level of W_2 (representing Rs. 9800) with a corresponding utility level of U_2 . Thus, the choices facing the individual between purchasing the insurance and taking the risk of self-spending for the illness becomes: (a) purchase insurance for Rs. 200 and move to a marginally lower level of utility (i.e. U_2) or; (b) not purchase insurance and face a 2.5 per cent chance that he will incur Rs. 8000 loss and thereby move to a much lower utility level of U_1 associated with a reduced wealth position of Rs. 2000 or alternatively face a high probability of 97.5 per cent that a loss will not be incurred and thereby remain at a wealth position of Rs. 10000 with an associated utility level of U_3 (say, equal to 100). In order to compare the relative positions of choices at 'a' and 'b', we can calculate the expected utility levels (which is the weighted sum of the utilities of outcomes with weights being the probabilities of each outcome). Thus, the expected utility of choice 'b' is: $P(U_1) + (1-P)(U_3) = 0.025 (20) + 97.5 (100) = 98$.

To determine whether a person should buy health insurance, we compare the utility of choice 'a' which represents purchasing insurance thereby leaving the person at utility level U_2 . Since the utility level of choice 'a' is evidently greater than that of choice 'b', it is more advantageous to purchase the insurance. Note that in panel A of the diagram (i.e. Figure 1), the curve represents the expected utility for different probabilities that the illness will occur. The lower the probability that the event will occur the closer the expected utility will be to the point farthest to the right on the utility curve. Thus, the factors of demand for health insurance can be identified as: (i) how risk averse the individual is; (ii) the probability of occurring the event of illness; (iii) the magnitude of the loss associated with the event of illness for a person; (iv) the price of insurance; and (v) the income of the individual who will take the health insurance (i.e. question of affordability and capability of the cost of health care associated with the level of income). The demand for health insurance is therefore affected by variables like: (i) the cost or price of health care, (ii) income level of the individual, (iii) tastes towards risk aversion and thereby preference for buying insurance and (iv) the size of the probable loss.

17.4.1 Demand for Health Care in the Presence of Health Insurance

The understanding of the demand for health insurance is useful to explain why some people insure against certain types of medical loss while others do not. This means that all persons are not risk averters (i.e. some people are risk takers). It is important to understand the type of the health care costs which creates demand for health insurance. Cost of hospitalisation and surgery are far more likely to qualify as cases of high expected losses although possibly with relatively low probability of occurrence. Costs of medical cares such as physician visits at home or office, optometric service, drug and dental care, etc. are relatively smaller and therefore considered manageable without insurance coverage. The mode of the demand for health insurance suggests that the adequacy of health insurance coverage should be examined separately for each type of medical service. Thus, even if one were a risk averter, we would not expect him to buy health insurance for all of his medical needs. The price of insurance should not be so high as to make people worse off with its cost exceeding the benefits.

The presence of health insurance might lead to indulgence in moral hazard in the health care demand behaviour of a person. In the presence of health insurance, moral hazard leads to higher demand for health care than that is really required.

This can be illustrated with the help of a diagram (graph). If the demand is inelastic (e.g. an insulin dependent person who has to take the insulin no matter the cost), his demand will be D_1 for Q_1 amount of insulin (Figure 2). In the case of moral hazard, the quantity of medical care that would be demanded would depend in part on the price for that care. If insurance covers the entire cost of the illness, then the individual represented by the demand curve D_2 would demand Q_2 units of medical care. The presence of some elasticity in the demand curve indicates that the individual will demand different quantities of medical care depending upon how much must be paid for that care. Since the insurance lowers the price of medical care more medical care would be consumed than when there is no insurance.

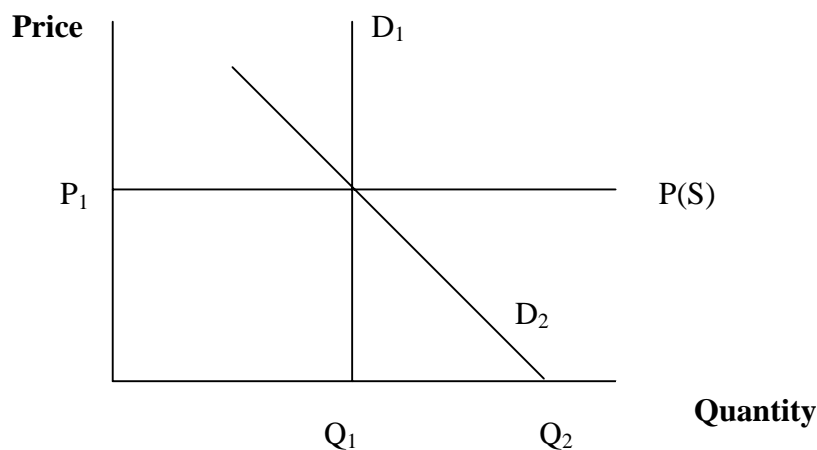


Fig. 17.2: Demand for Health Care Insurance Against Price: Points of Trade-off

A question that arises in this context is whether this increase in the demand for health care, when insurance coverage is available, is irrational on the part of a consumer. The answer is 'no' as it is perfectly normal for a consumer to maximise the benefit of his insurance coverage. In other words, the individual equates the marginal cost of purchasing the health care with the marginal benefit of buying the additional units. However, insurance coverage that reduces the price to zero reflects an inefficient use of medical resources. An implication of the existence of moral hazard is also that although individuals with insurance tend to consume higher units of medical care, they may still be unwilling to purchase an insurance policy that provides such extensive coverage. Instead of paying the high premium that usually goes with such extensive coverage, an individual may well prefer to self insure or to purchase a less comprehensive insurance policy.

With different types of the health insurance schemes and the elasticity of demand for health care, the impact of moral hazard needs to be assessed. Irrespective of whether moral hazard exists or not, and even if all individuals were risk averse, insurance coverage for 100 per cent of their medical expenses would not be preferred by all persons given the additional transaction costs associated with it. With people having different demand for medical care, no single insurance policy would be best for everyone. While some persons would prefer to have only some types of medical expenses covered, in the presence of moral hazard, insurance companies would prefer to have carefully designed cost sharing features.

17.5 IMPACT OF TECHNOLOGICAL CHANGE ON THE COST OF HEALTH SERVICES

Technological developments entail improvement in production/service frontiers either by providing cost benefit advantages with superior outputs (by replacing old products) or by providing new or improved products. However, the mix of products and services available in the market may raise the average cost of treatment with a consequent increase in the per capita health expenditure. This characteristic of

technological development has led to a wide spread belief that technological change has accounted for the bulk of increase in medical cost over time. But such a conclusion does not necessarily follow as they have also resulted in new methods of diagnosis and treatment giving the benefit of increased longevity, improved quality of life, less absenteeism from work, etc. These benefits need to be duly weighed as the social benefits of technological advancements are very high.

Although the average cost of medical service increases with new developments in health services, with time and wider adaptivity of new methods, the cost of services tends to stabilise at an optimal level. In the meantime, however, lack of competition and other market failures inflate the cost of advanced medical facilities paving way for the medical insurance providers to gain ground in the market. Besides the angle of moral hazard associated with insurance coverage from the consumers side, the developments also provide opportunities for many medical malpractices (e.g., costly procedures advocated frequently). Thus, given the potential for misuse and the welfare of so many at stake, protecting the interests of consumers becomes an important responsibility of the governments.

Adoption of Technological Developments

It takes time for a newly innovated product to be widely adopted. The adoption depends on two factors viz. higher profit and flow of information or dissemination of benefits. The former posits that physicians adopt a new technique if it increases their profits. The latter emphasises the role of dissemination through various forums/channels (e.g., journals, conferences, colleagues, friends etc.).

Apart from considerations of profits by the medical professionals, there is also 'information externalities' inherent in adoption of a new technology. An externality is the uncompensated benefits for many persons by the actions of market behaviour. The process works through multiplication of practices. For instance, by choosing the technology, the physician (or the first adopter) communicates to friends and colleagues that the new product will benefit both the patients and the doctors. The process multiplies itself until the maximum potential is reached. Empirically, the adoption of new technological developments, follow the logistic curve which is asymptotic at the base till it reaches the maximum limit.

Check Your Progress 2

- 1) Health services, like education, is both a consumption as well as an investment good. Justify the statement in 50 words.

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- 2) Which is the commonly used method for determining the behaviour of supply in health services? Mention an assumption implicit in this method citing also an example to illustrate its violation.

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3) How does ‘moral hazard’ affect the demand for health service in the presence of health insurance? Explain in 50 words.

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4) What are the two factors on which the adoption of technological developments in health sector are based? Empirically, which trend does this feature expected to follow?

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17.6 PUBLIC-PRIVATE DICHOTOMY IN PROVIDING HEALTH SERVICES

The role of government in establishing and providing the national health system is substantial in all countries. There are several jurisdictional levels of government: from central to provincial to local. While some health services are provided at each level, the distribution of authority and responsibility among the levels differ. They also change over time in tune with developments in socio-economic, political, and technological areas.

Organisationally, Ministry of Health (MoH) functions as the apex policy making body in matters of health in all the countries. While its main responsibility is confined to health, it usually pervades many areas like education, urban development, environment, etc. The essential inter-linkage of all these sectors has broadened the area of operation of the MoH significantly. The public health care services provided by the government are also supplemented by several investment/charitable initiatives of the private sector. Their initiatives/motivations of functioning, however, are determined by the socio-economic status of the population and the political system in existence in a country. For instance, in a purely socialistic type of government, the role of public sector is predominant. Such systems are nowadays very rare. In free market economies, the role of private sector will be predominant. If the health system operates under imperfect market situations in such economies, monopolistic tendencies driven by profit motives create distortions in the system. In such a situation, if the health care services are exclusively left to be provided by the private sector players, the fundamental assertion of health as a basic human right will be violated. As a consequence, the needs of the poor and the deprived sections of the population will be severely compromised. Such a situation warrants a regulatory role to be played by the government to correct the market failures and to ensure inclusion of equity considerations in the provision of health services.

Health is a public/merit good. It cannot be freely driven by profit considerations alone. Thus, it should not be allowed to fall into the domains of ‘rivalry’ and ‘exclusion’. Judged by these two factors, private goods may not have externalities of social values. If they have, the services provided by the private goods meet the efficiency criteria; otherwise not. The latter case is an instance of ‘market failure’. Eradicating communicable diseases through immunisation has positive externality, but acquires negative undertones when the same is not universalised. Smoking

which has a negative externality is another instance where the interests of non-smokers needs to be protected by provisions of public governance or regulation.

Even in market economies where health insurance is very much widespread and almost compulsory, health insurance markets quite often fail. From an economic point of view, such market failures occur because of '*cream skimming*' by private insurers who have incentives to insure mainly healthy people who will not need care, or because of '*adverse selection*' which arises when unhealthy people seek (or continue) insurance coverage more than healthy people. There is also the instance of '*moral hazard*' of patients who do not respond to the true cost of care (because they are insured) claiming quite often additional diagnostic testing and treatment.

17.7 ROLE OF GOVERNMENT IN HEALTH CARE PROVISION

The government intervenes in the health sector with a general view of improving the health status of the people. In general governments have two roles viz. (i) preventing or correcting failures in the health sector markets, and (ii) ensuring equity. Government participation to ensure that the health needs of the poor are met is an intervention in the market for health care. It is warranted as the poor are unable to afford costly health care and the private sector is not motivated as much as the government by social concern.

If the poor were to be given choice about what to purchase, the poor are more likely to spend money on improving their health through non-health purchase such as better sanitation, nutrition, and housing. Where income is still lower, the purchase of health care is diverted in favour of other primary goods such as food. This means relatively rich people spend a far higher amount on health (including health related expenditures like going to health clubs and other forms of sports which are both recreational as also health promoting). A significant percentage of their income on health thus goes towards maintenance of health. But some basic health care is a necessity for all. One way by which the government tries to improve equity is through intervention in the form of government subsidy or provision of low cost health care services.

The twin roles of correcting market failures and ensuring equity often overlap. For example, not only is the treatment of tuberculosis more likely to be a service needed by the poor but successful therapy produces a positive externality benefiting the patient as well as others.

Intervention Strategy

There are five basic ways in which government can correct market failures and ensure equity: inform, regulate, mandate, finance and deliver health care services. Although these approaches are not unique to health care and are typical of government involvement in other sectors also, the involvement in health is typically extensive and employs all five of these approaches. Government *informs* by educating the masses through health promotion campaigns or dissemination of knowledge on health services through programmes like mass immunisation (e.g. campaign of pulse polio, HIV). Government *regulates* by legislation or executive order, as for instance, by restricting availability of antibiotic to correct negative externalities such as microbial drug resistance or by licensing providers and insurers to reduce induced demand by unscrupulous practitioners from doing unnecessary tests. *Mandate* is also specified by law but unlike regulations they involve performance. Epidemiological surveillance reporting by hospitals and employee insurance benefits are examples of mandate designed to promote public interest. *Financing* public health campaigns such as for diagnosing TB and providing treatment for immunisation are examples of correcting externalities. Research and development is another type of public

good that is generally financed with public funding. Once the government decides to finance a health service, the subsequent choice is whether it will also deliver. The delivery can be through a whole range of services from preventive to curative care. If the government is to act as a provider of health services, it should do so only if it can function more effectively than the private sector. Government provision often occurs when there is no alternative source of delivery as, for example, services in remote rural areas where it is unlikely that there will be private capital or demand to support private initiatives.

17.8 ROLE OF PRIVATE SECTOR IN HEALTH CARE

One of the biggest policy challenges for the government is to decide on the appropriate areas and a suitable policy framework for having a shared public-private role in providing health services. Decisions of public finance are distinct from the decisions of organising the actual provision of health care. In principle, while public goods need to be financed by the government, they need not be directly provided by the government.

Experience across the world shows that the decision on delegating/demarcating the functional areas between the public and private service providers cannot be made easily. They cannot be divided on the basis of tasks better suited for one over the other. It requires considering the entire environment in which the tasks are to be undertaken. This needs to be based on the principle of ‘make or buy’ (Musgrove, 1996). The principle requires looking into factors of cost and efficiency. The aim is to answer the crucial question: ‘is it less expensive to buy from outside or to produce the same internally’? In the case of provision of health services, the strategy translates to a question of ‘is it preferable to be kept under the public domain or is it better to either have a mix or leave it entirely to the operation of private sector players’? Although efficiency is usually the relevant criterion for deciding between the public and private mix, sometimes the decision may require a trade-off between efficiency and equity. In such circumstances, the decision would also depend on implementational constraints. Important programmes such as the immunization programme cannot be carried out by the private sector. Such programmes carry enormous social derivatives which can be addressed only by the government. The national AIDS programme, on the other hand, usually involves both public and private players. All education and communication programmes are generally retained with the public sector. Programmes like rehabilitation, family planning, etc. can be undertaken by the private sector with the assistance/support of the government. Some of the other factors that need to be considered while allowing the private sector to function in health care services are identified below.

Competition: When the private sector is driven by competition it tends to be more efficient. With competition, benefits like cost reduction, greater attention to consumer care, improved quality of service, etc. would ensue. Consumer can exercise the choice of selecting that service provider who provides the best quality for the price. ‘Transparency’ in policies of customer care (e.g. adherence to equity norms) and optimum utilisation of resources (e.g. utilisation of subsidy or grant efficiently) are important in ensuring healthy competition among the different private players. For achieving this, one of the recommended methods is to channelise funds through purchase arrangements. The flow of funds are routed in terms of materials minimising scope for mis-direction of funds. With due care taken, healthy competition can be introduced yielding efficient results. When there is no pure competition, there often exists conditions of ‘contestable market’ which motivates the private health care to be inefficient.

Local Needs, Choices and Circumstances: Beyond obvious choice for private sector, the best public-private balance for a country depends on its local culture and circumstances. An appropriate division of the health care system between the

public and the private sector can be determined only after an evaluation of how the economic incentive will operate. For instance, the extent of private sector participation will be influenced by the rewards for community spirited activity. One element of local circumstance is corruption of the functionary which needs to be checked. Although it can be argued that private sector does not ensure equity, with proper incentives they can provide acceptable access to preventive and curative care. In recent times, the private sector care is spreading across the country beyond the urban limits. High operating cost of the public health care system and its failure to achieve efficient delivery are the reasons behind the fast growth of the private sector.

Contracting: The government can transfer some of its work to the private sector by contracting. If the cost of resultant services (including the government's cost in administering and monitoring the contract) are lower than the cost of services extended by the government directly, then contracting can be a viable option. Some funds will then become available for other uses. Contracting can also free up scarce skilled government personnel who can devote their time to other managerial tasks which only the government can do. Such arrangements will also produce additional benefits beyond the considerations of cost and savings. It would promote the establishment of an environment in which there is a separate private market for health care infrastructure including manufacturers and distributors. By having contract clauses that ensure efficient delivery, contracting can influence healthy private market practices and prices.

17.9 CHANGE OF HEALTH STATUS OVER TIME

Health of a nation can be gauged from the available information on death. Disaggregated data by causes of death is more reflective of the status of health of a country. Data on death rates in developing countries show that they had higher death rates in the early part of the twentieth century than in the developed nations. In the later half of the twentieth century, health conditions in these countries improved bringing many of them almost at par with the developed countries. Thus, there has been tremendous progress during the last five to six decades in the health status of these countries. In spite of improvements in some countries, conditions of health continue to be poor in many others with mortality rates remaining high. The main reasons for high mortality rates are: (i) acute food shortage resulting in famines and conditions of malnutrition; (ii) poor sanitation resulting in many endemic diseases, and (iii) prevalence of widespread epidemics like cholera, gastro-intestinal diseases, etc.

In the pre-industrial phase, famines and food shortage were common as man had limited control over his environment. Food supply was severely affected by conditions like droughts, floods, etc. Due to these reasons, agricultural production was limited. In these situations, malnutrition rendered the body's defence mechanism weak resulting in various infections causing death. People also suffered from communicable diseases like typhoid, tuberculosis, pneumonia, yellow fever, plague, cholera, etc. Childhood diseases like measles, whooping cough, scarlet fever, diphtheria, etc. were also common. Poor sanitary conditions contributed to extremely unhealthy environment leading to epidemics and diseases. All these conditions were quite common until fairly recent times taking a heavy toll on human life.

At the same time when conditions of health were poor in many countries (some of which have since attained developed health status), there were breakthroughs in technological advancement in countries of Europe, North America and Oceania. Some of these inventions were in the field of medicine (e.g. invention of antibiotics, elimination of small pox, etc.). Advances in agriculture resulted in increased food production. Industrial revolution led to invention of steam engines, telegraph and telephone, and better transport and communication systems. Such improvements contributed to food surpluses being sent to countries with food deficiency. Improved

sanitary conditions ensured potable water supply, better sewage disposal methods, etc. All these contributed to better personal hygiene practices leading to better health status. Cumulatively, they contributed to overall improvements in the health status of people in all parts of the world.

One of the most important outcomes of improved health status was the priority that could be accorded by people to education. Education, particularly of girls and women, play a major role in improving the health status of the society. In most countries, women are responsible for a broad range of household activities that are important for better health. A number of studies have shown that an educated mother is also more likely to work outside the home, increasing family income and ensuring that her children attended schools. Educated women are also more likely to postpone having children and have fewer children which contribute to better maternal and child health.

Medical technology has helped in improving the health conditions by resulting in a decline in the mortality rates. This is easily evident in cases like smallpox which has since been eradicated through immunisation. Polio is likely to follow this stage soon. Since antibiotics became available in the 1940s, bacterial pathogens have been fought very effectively. Other developments for treating non-communicable diseases have also been remarkable. For instance, developments in anaesthetics have allowed for dramatic surgical interventions. Manipulation of genetic materials has made it possible to produce vast quantities of insulin.

Despite improvements in socio-economic conditions of people and advancement in medical technology, newer threats and challenges impacting on the health statuses of people have emerged. Instances of cancer, HIV/AIDS, cardio-vascular and other degenerative disabilities have posed tremendous challenges in the health sector. The nature of changing health status is thus a continuum of conquests and new challenges. The dynamics of health and its influence on development has thus been a mixed story with the health of people continuing to improve but cures for new diseases eluding us.

Check Your Progress 3

1) What are the two factors that necessitates the government’s regulation of the health services in an economy?

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2) Why does health insurance fail sometimes even in well established market economies? Outline two to three reasons in 50 words.

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3) Mention the five ways by which the government can intervene to correct market failures in the health sector?

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- 4) What are the three factors that should be closely considered/watched to ensure that the involvement of the private sector can prove beneficial in serving the larger interests of the country?

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- 5) Do you agree that the developments in medical technology have helped mankind in improving the overall health conditions? With which feature of health sector do you associate the truth that ‘changing health status is a continuum of conquests and new challenges’? Answer briefly in 50 words.

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17.10 LET US SUM UP

The unit dealt with some of the important health dimensions of development. The relationship between health and development is a two way process with the linkage and impact being influenced both ways. The demand for health care, like in the case of education, is both a consumption as well as an investment good. The government’s role in providing health care services is necessary although the private sector is desired to be accorded a suitable role. Such a stand is warranted both due to scarcity of resources and also due to the concerns of equity. The state of development of an economy determines the extent and the areas in which the private sector can be involved in providing health services. In the initial stages of development more government resources should be spent on primary health needs. As an economy advances, the ensuing higher incomes in the hands of the people enable them with an improved capacity to self-finance many of their basic health needs. At such a stage, the priorities of investments in health can take a different course. The stage at which medical insurance enters the market is also determined by the economic progress achieved by a country. Interaction of the health care sector with the insurance market is associated with both benefits and hazards. Its effective functioning requires developed market structures and institutional mechanisms to achieve the required balance in this regard. While a regulatory role by the government remains a crucial need, the advantages of selectively involving the private sector in providing the health services merits to be given due recognition. This is necessary as the resources of the government would not be adequate to meet the demands of the health sector on its own. In achieving a proper balance in this regard issues like competition, local needs & choices, and contracting are identified as important considerations. The progressive advances made in the health sector, in which the role of the technological developments is immense, has contributed to improving the health status of mankind. However, with each conquest a newer challenge has always emerged keeping the dynamics of health sector continuously challenging in its nature.

17.11 KEY WORDS

Adverse Selection : A situation created in the presence of information asymmetry in the context of health insurance markets. This could damage an insurance market to such a degree that it ceases to exist.

- Contestable Market** : Potential competition of the private players who have similar function and capability
- Moral Hazard** : A phenomenon that suggests that individuals 'shirk' their responsibilities and consume recklessly when they are insured.

17.12 REFERENCES

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Musgrove P (1996), *Public and Private Roles in Health: Theory and Financing Patterns*, Discussion Paper No. 319, World Bank, Washington DC.

17.13 ANSWERS/HINTS TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress 1

- 1) See Sub-section 17.2.1 and answer.
- 2) Longevity measure by life expectancy at birth is indirectly related to health. The thrust of the HDI is on the ends of development rather than on the means of development.
- 3) See Section 17.2.2 and answer. Limited resources, inequity and inefficiency are the three issues confronting the developing countries.
- 4) See Section 17.2.3 and answer.

Check Your Progress 2

- 1) See Section 17.3 and answer.
- 2) See Section 17.3.1 and answer.
- 3) See Section 17.4.1 and answer.
- 4) Higher profits and flow of information. Logistic curve.

Check Your Progress 3

- 1) (i) correcting the market failure and
(ii) ensuring the equity considerations.
- 2) See last para of 17.6 and answer.
- 3) Inform, regulate, mandate, finance and deliver.
- 4) Competition, local needs/choices/circumstances, and contracting are the three factors which needs to be considered to make the private sector's involvement in the health sector beneficial.
- 5) See the last two paras of 17.9 and answer.