Chapter IX

POPULTION GROWTH AND HEALTH DEVELOPMENT

A. Introduction

Population growth and health development are closely interrelated; each is a determinant and consequence of the other. The development and expansion of health services and facilities affect population growth through their influence on mortality, fertility and even migration. To a large extent, the rapid increase in population which most developing countries experienced during the last three decades was an unplanned consequence of the post-war drive to improve health conditions in these countries. However, current as well as anticipated changes in size, growth, composition and distribution of the population determine the requirements and location of health services and facilities.

Although it is generally accepted that good health should be an important objective of development and that disease, inadequate health and insufficient sanitation are obstacles to attaining rapid development, the gap in health services between the developed and developing countries is very wide. The low level of health development in the developing countries is largely due to a shortage of financial resources and trained personnel. In the context where resources for national socio-economic development are limited, and people's needs are great, programmes for health development have to compete with the country's requirements in other fields.

As one of the least developed countries of the world, Nepal joined the development race with extremely low levels of socio-economic development. Planning for national development was initiated in 1956 with the launching of the first five-year plan. Three subsequent plans have since then been formulated and implemented and in all these plans greater emphasis was laid on the development of economic infrastructures like agriculture, transportation and industry, and relatively less attention given to social overheads, including health. The current fifth plan (1975-1980), however, places considerable emphasis on the development of the social service sector. It provides for a substantial increase in the funds allocated to this sector; nearly one quarter of the total public sector outlay in the fifth plan is devoted to social overheads and 6 per cent to health services.

However, during the past 20 years of planned development in Nepal, the progress which has taken place in the health sector, especially in the field of preventive health including has been considerable. Despite these improvements, the present health status of the Nepalese people, as reflected in the infant and general mortality rate, life expectancy, and widespread malnutrition, remains far from satisfactory. Basic health services facilities have not yet reached the majority of the people, especially those in the remote and backward areas. The difficult geographical terrain, inadequate communication and transportation systems, illiteracy, and in general, shortages of financial, material and trained human resources have all contributed to a situation in which the delivery of health services in Nepal is limited and complicated.

The existing health service facilities in Nepal are much too inadequate to meet the health needs of the current population. With the rapid growth in population, it would be difficult to maintain even the present inadequate levels of health care. In a country like Nepal, where resources are limited, the problem is one of providing maximum possible health services to meet the needs of a growing population.

B. Health Status of the Population

1. *Introduction*

The health status of the population is related to the stage of economic development of a country. The general indicators of the health status of the population are the incidence of morbidity and the levels of mortality. In the absence of systematic reporting and recording, adequate and reliable statistical data are not available in Nepal in regard to morbidity and mortality. However, it is apparent that health conditions in Nepal are poor because of poor nutrition, poor sanitation and the prevalence of parasitic infections and communicable diseases.

As one of the least developed countries, Nepal is subject to the same vicious circle of poverty, ignorance and disease, which some of the other developing economies are facing today. Although the *per capita* income is estimated at around $ 100, the majority of the people receive a much smaller share of this national cake. Agriculture, which is the main occupation of nearly 93 per cent of the population, cannot provide even a subsistence level of living to most of them. As poverty leads to malnutrition and disease, the vicious "cycle of ill-health" continues. Ignorance is another factor that has aggravated the problem of poverty and diseases. The literacy rate for the population of 10 years and over in 1971 was as low as 13.9 per cent of the total population (23.9 for males and 3.9 for females). In 1976-1977, it is, however, estimated to have gone up to around 19 percent.

Institutional health facilities are very limited and even these limited families are concentrated in the urban areas. In the rural areas, where 96 per cent of the country's population live, the adequate prevention of diseases and their early treatment through a modern medical system has not yet developed largely because of ignorance and superstition. Since most of the illnesses were attributed to fate or considered an act of an angry deity, the patient is not taken to the hospital or the health care centre until his condition worsens. As was noted by Haris *et al*:

> "Popular medicine derives from a large body of commonly held assumptions and supernatural causes of illness. Sickness and death are thought to be caused by ghosts, demons and evil spirits or to result from the evil eye, planetary influences or the displeasure of ancestors. A variety of precautions against these dangers is taken, including the wearing of charms, the avoidance of certain foods or sights during pregnancy, and the propitiation of ghosts and gods with sacrificial gifts.
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> "When illness strikes or an epidemic threatens, the counsel of one of a variety of types of medical practitioners is sought. Among the Rai of the Eastern Mountain Region, it is the custom, for example, to consult a *bijuwa* (a shaman whose treatment consists mainly of the recitation of sacred literature in the presence of the patient). If planetary influences are suspected, the costly and usually less available *jotishi* (Brahman astrologer) who determines which planet has been offended and as a result is causing the illness, as well as the type and size of offering required to placate the planet and restore the patient to health.
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> "Beliefs of this sort are widespread, especially in rural areas, where they are taken most seriously."[1]

2. *Incidence of Morbidity*

As noted earlier, owing to a lack of adequate statistical data it is difficult to assess the magnitude and distribution of the incidence of morbidity in the country. In Nepal, age and cause-specific morbidity data are not available at the national level. However, with a view to obtaining some information, the Country Health Programme in Nepal analyzed data from 24 out of 58 hospitals according to the diagnosis indicated. Out patients' morbidity patterns from

eight hospitals and some health posts in Bara (integrated health) district were also obtained. The data obtained from this limited inquiry classified according to ten major groups of diseases are shown in table 67. it has, however, to be noted that these data are inadequate for describing the health status of the Nepalese population because of their selectivity, limited coverage and reduced completeness and

Table 67. Inpatient morbidity pattern

	Diseases of groups	Discharge No.(%)[a]
I. Infective and parasitic diseases	6989	36.0
II. Accidents, poisoning and violence	1838	9.5
III. Diseases of the digestive system	1555	8.0
IV. Disease of the genito-urinary system	1423	7.3
V. Complication of pregnancy, childbirth and puerperium	1404	7.2
VI. Diseases of the respiratory system	1322	6.8
VII. Diseases of the nervous system and sense organ	824	4.2
VIII. Diseases of the circulatory system	797	4.1
IX. Neoplasm	467	2.4
X. Diseases of the skin and subcutaneous tissue	437	2.3
Total	17056	87.8

Source: Country Health Programme, Nepal, 1974, vol. II, p. 88.
a Including normal deliveries.

poor diagnosis of the diseases.[2] In the absence of other more reliable data, they do provide some broad indications about the prevalence of diseases that were presented in these health establishments.

It is apparent from table 67 that the most important group of diseases common in developing countries, especially the communicable and parasitic diseases, are widely prevalent in Nepal. Infective and parasitic diseases form the major proportion of the problems presented in the hospitals: 36 per cent of all the discharges were attributed to them. Poverty, poor environmental sanitation and crowded quarters aggravate the problems situation. Accidents come second with 9.5 per cent of the discharges. The rugged terrain and hilly contour account for this high rate. Respiratory diseases are significant among males because of the climatic conditions in the country. Among females, complications of pregnancy and childbirth constitute a major portion of the case bulk followed by infective and parasitic diseases. Accidents among females seemed to be much lower than males due to the domestic nature of their tasks. On the basis of similar data from 22 hospitals, inpatient morbidity by major age groups was also examined. The analysis showed that the majority of the patients belong to the age groups 15-44 and they seek medical attention for neoplasm, diseases of the genito-urinary tract, and the digestive and circulatory system. The higher incidence of neoplasm, in the 15-44 age group as against the other age categories may be due to the higher proportion of the population belonging to this age category.

The pattern of outpatients' morbidity is different from that of the inpatient. Outpatient morbidity by major groups of diseases is shown in table 68. it may be noted that infective and parasitic diseases constituted the major proportion of the clinical cases presented in the outpatient department, followed by diseases of the skin and subcutaneous tissue. Diseases of the respiratory system, which occupy only the sixth portion among hospital inpatients, constitute the third major problem of those seeking outpatient care. This might be due to the fact that respiratory illnesses in the initial stages do not debilitate an individual. Accidents are more predominant among males. In the females, diseases of the respiratory system and genitor-urinary system occupy an important place.

According to the national health survey, 72 per cent of all stools examined showed one or other

types of intestinal parasites. This indicates a high degree of infestation load in the community.

Prior to 1959, malaria was one of the major public health problems in Nepal. The disease was endemic in most parts of the country. The death rte directly due to malaria was estimated to be one per cent. Although in recent years malaria has been controlled to a great extent, there has been some resurgence of this disease in southern Nepal owing to increased resistance by the mosquito to DDT. High morbidity from

Table 68. Outpatient morbidity pattern

	Cases examined	
	Number	**Per cent**
I. Infective and parasitic disease	2030	24.5
II. Diseases of the skin and subcutaneous tissues	1049	12.6
III. Diseases of the respiratory system	1024	12.3
IV. Diseases of the digestive system	831	10.0
V. Diseases of the nervous system	748	9.0
VI. Diseases of the genito-urinary system	583	7.0
VII. Accidents, poisonings and violence	441	5.3
IX. Endocrine, nutritional and metabolic diseases	221	2.7
X. Diseases of the blood and blood - forming diseases	196	2.4
Total	7123	85.8

Source: Country Health Programme, Nepal, 1974.

filariasis is also noted. It is known to be common in the mid-Himalayan valleys and the Terai, although its incidence has not been accurately ascertained.

Amongst the bacterial diseases, tuberculosis and leprosy are the most common. Tuberculosis is a rapidly growing problem, but about 700,000 BCG vaccinations are being given annually. The Nepal Health Survey investigated the TB problem in great detail. On the basis of the "tine-test", it was found that the prevalence of sensitivity to tuberculine was very high in the Kathmandu urban areas, lowest in the mountains and intermediate in the Terai.[3]

Gastro-enteritis caused by bacteria, virus and parasites is very common in rural areas. This is mainly due to the lack of pure water supply and the sanitation level which encourage the spread of the disease indigenous health habits aggravate the situation.

Goitre, which is caused by the deficiency of iodine, is found all over the country. It is more common in the hills where disfigurement results. Although the exact prevalence rate is not known, it is believed to range from 10 to 90 per cent in different geographical areas.

Since April 1975, no case of smallpox has been reported in Nepal. In recent years, epidemics of influenza have become very common in the mountains and have a high fatality rate among the very old and the very young, Rabies is endemic among wild and domestic animals and there are reports of infection in rabbits, dogs, jackals and hyenas. Similarly, polio is believed to be very common in Nepal because of insanitary conditions.

Perhaps the most basic causes of high mortality and debility in Nepal is the very inadequate nutrition level. Widespread malnutrition is a characteristic feature of poor nations and this condition enhances the incidence and severity of health problems. In Nepal, many children are found to be suffering from malnutrition, and protein-energy malnutrition is extensive.

> "The common diet is high in carbohydrates and low in protein and vitamins. Nutritional deficiencies are manifested in all parts of the country in low resistance to disease and in the prevalence of beriberi and goiter. Shortages of food develop in particular sections from time to time because of droughts, floods, or marketing and transport difficulties."[4]

A nutrition survey was conducted at 17 places in Nepal covering 1,044 children by WHO under the guidance of Dr. Pourbaix in 1974. In 1975, a joint Government of Nepal/United States Agency for International Development survey was conducted in 221 places covering 6,562 children. The findings in both the surveys are summarized in table 69. It will be noted from the table that less than one third (29 to 30 per cent) of Nepalese children could be considered nourished. A substantial difference between the two sources, however, is noted in respect of the early malnutrition stage: the WHO survey indicated

Table 69. Nutritional status of children (percent)

	Pourbaix (WHO) 1974	Government USAID 1975
Normal	30.0	29.3
Early stage malnutrition	29.0	41.5
Second stage malnutrition (requires careful watching)	25.4	24.0
Third stage malnutrition (calls for remedy)	15.6	5.1

Source: Project formulation draft report: "Nutrition and goite", Nepal, Kathmandu, September-October 1975, p. 94.

29 per cent and the Government/USAID survey gave a figure of 41.5 per cent. Variations in definitions and concepts used in the survey may be an important factor accounting for this substantial difference. A noteworthy observation is the percentage of the child population classified in the primary and secondary malnourished group – 41 per cent in 1974 and 19.1 per cent in 1975. It seems not to be a real decline but a difference in allocation by specific categories.

In Nepal, the standard of environmental health is very low and inadequate which tends to offset the achievement of various health programmes. The situation with regard to water supply, excreta and waste disposal and housing is extremely unsatisfactory. Only 7 per cent of the total population of Nepal have access to piped drinking water and the rest of the people, especially in rural communities, commonly use wells, rivers and ponds for drinking. These water sources are usually heavily contaminated. Waterborne sewerage facilities are confined only to the capital city of Kathmandu. Indiscriminate defecation continues to be a serious health hazard in the towns and villages as well. The limited existing facilities and services can be considered virtually negligible in comparison with the need for improving these services for raising the general health standard of the population.

C. Development of Health Services

1. *History of Health Services*

Modern medicine in Nepal is recent. In earlier times, medical services consisted mainly of Ayurvedic, to some extent Unani, and other indigenous systems. Prior to 1950, there were few hospitals with few beds. There was no specialty of any kind and the number of Nepalese doctors in the country was less than a dozen. No public health programme of any kind existed. The planned development of health services in Nepal was initiated in 1956 with the incorporation of the health programme of the first five-year plan. At the time of formulation of this plan, there were 34 hospitals with a total number of 625 beds, 24 allopathy dispensaries, and 63 Ayurvedic dispensaries in the whole kingdom. Subsequently, the public health programme, under the name of Bureau of Insect Borne and Disease Control (IBDC) was initiated. Initially, the main concern was malaria control. The name was later changed to Public Health Department to cover other activities such as smallpox eradication, tuberculosis and leprosy control. It was only after 1960 that the Department of Health was organized.

A model hospital was built on the outskirts of Kathmandu and turned over to the Nepalese Government by the Soviet Union in 1963. It is completely modern, is well equipped and has facilities for 30 adults and 20 children. Another Soviet-built hospital in Nepalgunj was opened in

April 1963. The United States has assisted in a complete renovation of Bir Hospital in Kathmandu, which is the country's oldest hospital and its largest.

Between 1965 and 1974, four development plans had been implemented. The major emphasis in these plans was on the improvement and expansion of existing hospitals and the establishment of new ones. Efforts have been directed particularly at remedying the longstanding imbalance in the distribution of medical facilities which has favoured the Kathmandu valley and a few towns. A number of specialized services were introduced. Several health centres have now been opened in outlying areas which previously were without modern medical care.

In addition to the government activities in the field of medicine and public health.

> "Other medical facilities are maintained under private auspices. One such institution is the small hospital in Pokhara, in the Western Mountain Region, maintained by the District Soldiers Board, a charitable committee composed chiefly of Indian army pensioners. Another is a 100 bed Shanta Bhawan Hospital in Kathmandu. Staffed by 6 physicians and 35 graduate nurses, it has a network of affiliated clinics and a nurses' training school. It is the main project of the United Medical Mission, a protestant organization founded in 1954 by several American physicians. It has also established two other hospitals, everal dispensaries and a leprosarium, and extended its activities into the fields of education and village development. Other medical facilities are run by the British-sponsored Nepal Evangelistic Band in Pokhara and American Seventh Day Adventists in Banepa."[6]

The existing health programme in Nepal can be broadly grouped into preventive and curative services. As noted earlier, all development plans have given greater emphasis to the development and expansion of the preventive services. Nevertheless, the health care delivery system being developed has two serious shortcomings. In the first instance, the preventive health programme does not place sufficient emphasis on the importance of proper nutrition, unpolluted water and education in hygiene and sanitation. Secondly, most of the resources allocated to health development are taken by the provision of hospital services that by and large cater only to the urban population. But considering the fact that in 1952 no health service structure existed in Nepal, with the exception of a 25 bed hospital in Kathmandu, very substantial progress has been made in providing health services, despite all existing problems.

2. *Preventive Health Services*

The standard of health in Nepal is poor. Malnutrition is common, water is polluted and infectious diseases are widespread. As such, the solution to the health problems depends more on agriculture, water supply and health education and less on curative medical services. This is why greater attention has all along been placed on the expansion of the preventive health services.

Drinking water facilities are, at present, very inadequate in the country. Drinking water through the pipe system is available only to a very small fraction of the population.

> "The four major rivers and their tributaries drain nearly the entire country, but public water supply systems making use of these resources have yet to be developed. Consequently, there are intermittent or chronic scarcities of water in both urban and rural areas. Low pressure often causes stoppages in piped water systems. Even in places where wells, springs and rivers furnish an adequate supply, the water is generally contaminated and dangerous to drink without boiling. Development and purification of the

> water supply should, in the opinion of many Nepalese, have priority over programs to improve sanitation medical care and agricultural methods."[6]

In addition to the services administered directly by the Department, there are a number of "vertical programmes" of preventive nature run by autonomous agencies under the aegis of the Department of Health. These programmes include the eradication of malaria and smallpox, and the control of tuberculosis, leprosy and goitre. Of these, the malaria eradication programme, launched in 1958, is the largest. It covers a population of about 7 million people in the hill areas below 4,000 feet from the Terai. As a result of the operation of this programme, the incidence of malaria dropped from several hundred thousand cases annually to approximately 2,500 cases in 1970. After 1971, the incidence of malaria almost doubled until 1974 when the total number of malaria cases reached its peak of 14,647. The major reasons for the resurgence were the shortage of necessary insecticides and drugs, population movements, uncontrolled settlements in the Terai, and the resistance of certain malaria vectors and parasites to DDT and anti-malaria drugs. A more vigilant programme was instituted so that by 1975 the incidence of malaria was reduced to 12,000 and went down considerably thereafter.

Since 1975, there have been no cases of smallpox reported in Nepal. After the international assessment of the situation in 1977, Nepal was officially declared a smallpox-free country. The immunization programme is, however, being continued.

It is estimated that nearly one per cent of the total population is affected by tuberculosis in the country. The tuberculosis control programme was started in 1965. the main activity of this project is to give direct BCG vaccination to the population of less than 15 years of age. The tuberculosis control programme has been in operation only in selected districts and the current plan aims at expanding the programme throughout the country and thereby covering all eligible children by 1980. in the private sector, there is a Nepal TB Association which maintains 25 free beds for the treatment of acute cases.

The leprosy control programme was started in 1965. The total number of leprosy cases detected so far has been about 6,000 and they are presently under treatment. At the estimated one per cent incidence rte of leprosy in the country, there would be about 112,000 cases in the kingdom. The main concern of the project is to detect new cases of leprosy and to provide for their treatment. At present, there are two leprosaria with about 550 and 150 patients each. In addition, there are two other leprosy hospitals in the private sector run by the foreign missions. The leprosy control porgramme, which has so far been undertaken in a few selected districts, will be in operation throughout the country by 1980.

In spite of the high incidence of goitre in the country, the problem was not taken up seriously until recently. The goitre control programme was started only in 1973. Its present activities include the importation and distribution of iodized salt. The current plan aims at the expansion of iodized salt distribution to the entire population by 1980.

3. *Curative Health Services*

The most expensive component of a health programme is medical care of curative health services. In Nepal, medical care is provided by two main systems: Western medicine and indigenous systems such as Ayurveda.

(a) *Western medical services*

Institutional health facilities are very limited in Nepal. In 1974-1975 hospital facilities were available only in 31 out of the 75 districts in the

Table 70. Type of medical institutions, 1974-1975

	Number	Number of beds
1. Hospitals		
(a) Government		
(i) 300-bed	1	300
(ii) 100-bed	1	100
(iii) 50-bed	8	400
(iv) 25-bed	9	225
(v) 15-bed	27	405
(vi) 6-bed	1	6
(vii) Mission and other hospitals	15	738
Total	62	2174
(b)Ayurvedic and others		
(i) Ayurvedic hospital	1	25
(ii) Homeopathy hospital	1	6
(iii) Ayurvedic dispensary	82	
(iv) Unani dispensary	1	
2.Health centres	31	
3.Health posts		
(a) I-stage (fully integrated) health posts	65	
(b) E-stage (1st stage of integration)health posts	50	
(c)Non-integrated health posts	288	
Total	403	

Source: Janchbujh Kendra, "Long-term health plan", Royal Palace, 1976, p. 103. Information on health posts from the Ministry of Health, 1976-1977.

country,[7] while even local health centres were not available in 10 districts. There were in all 62 hospitals with a total number of 2,175 beds (table 70). Thus, one hospital bed was available for every 5,700 persons. By 1977/1978, the number of hospitals had increased to 65 and the number of beds to 2,309.

At the lowest level are the district hospitals which provide mainly general medical services. Zonal hospitals provide some specialized services as do a number of single speciality hospitals like the Maternity Hospital, Children's Hospital, Infectious Diseases Hospital, Eye Hospital, Chest Clinic, etc. The central referral hospital located at Kathmandu provides comparatively higher specialized services in various branches of medicine. The existing from zonal hospitals are being developed as regional referral hospitals for each of the four development regions. The district hospitals are designed to function as the referral centres for the health posts (which are located at the village level) and the zonal or the regional hospitals as the referral centres for the district level.

In view of the high incidence of morbidity and lack of adequate facilities for treatment, hospitals are generally overcrowded.

> "Only the largest have X-ray machinery and other modern equipment. Furnishings are minimal. Beds in some institutions are of simple wooden construction, without mattresses or linens. In the leading government hospital in Kathmandu, electric current is undependable, so refrigeration is intermittently lacking. Until a decade age nursing care was provided only by male attendants, called compounders, who acted as orderlies, or by relatives of the patient who often moved into the hospital themselves, further increasing congestion. Hundreds of ailing persons, some coming from distant places, are turned away each month by Kathmandu hospitals because they do not have facilities to care for them."[8]

In view of the growing demand for hospital services, the current plan aims to establish 15-bed hospitals in at least 16 districts which at present are without hospitals and to increase the capacity of a number of existing hospitals by providing additional beds. Thus, by 1980, the total number of hospitals in the country is expected to increase to 79 and the hospital bed will be available for 4,250 people in 1980.

In 1975, there were 31 health centres providing basic medical services in the country. There are usually a doctor and a few beds in each health centre. These health centres are to be gradually converted into 15-bed district hospitals.

Owing to a shortage of financial as well as trained manpower resources, it is not possible to provide hospital-based health programmes throughout the country. However, there is an urgent need to provide at least some minimum health care to as many people as possible. Since nearly 96 per cent of the population of Nepal live in the villages, the expansion of the health service facilities under the current plan has been directed towards the provision of minimal basic health services to the vast majority of the population living in the rural areas.

In Nepal, the principal channel for the delivery of both curative and preventive health services is the rural health post which is staffed by middle-level paramedical personnel such as health assistants, auxiliary health workers and assistant nurse midwives. The health post is not a static delivery system. It is a small health delivery system with a staff of 6 to 17 persons dependent on the stage of development of the health post, the population size and geographic area. The health workers operate using the health post as a base which supports the largely preventive services performed by village health workers and their supervisors. The health post is the primary referral centre for the field personnel and sometimes provides simple living quarters for the supervisory and clinical personnel.

Originally, the health posts provided medical services side by side with separate programmes for tuberculosis, malaria and family planning. But they are all now being reorganized into the Integrated Community Health Service Programme. By the end of the sixth plan, it is expected that the entire vertical programmes in the health sectors (with the exception of malaria) will be carried out by a multidisciplinary staff in the health posts who will also undertake basic curative services.

Depending on the stage of their evolution, the existing health posts are classified into three types: the "old type" or non-integrated health posts; the E type (FP/MCH integrated); and the I type or fully integrated health posts. The non-integrated health posts provide mostly static medical services with limited preventive services. The E stage health posts provide a small range of services; they have a small number of paramedical staff and undertake few field visits. The fully integrated health posts provide a full range of services in the health posts clinics as well as in the field through monthly domiciliary visits. The services include smallpox and malaria surveillance, tuberculosis and leprosy control, FP/MCH services, nutrition and health education, immunization, recording of vital events and ordinary curative services. There were 483 posts in the country in 1978 and of these 65 were fully integrated, 233 were E type and the remaining 190 were the old non-integrated type.[9] By 1980, it is expected that 810 health posts – 597 in remote and hilly regions and 213 in the Terai – will provide basic health services to more than 10 million people.

Table 71. Distribution of health posts by area and health post/population ratio, 1974-1975

	Remote areas	Hills	plains (Terai)	In the whole kingdom
Number of health post	50	156	145	351
population per health post	31000	35000	38000	36000
square kilometres for health posts	858[a]	392	232	392

a Areas which remain snowbound round the year are not included.

The population covered per health post varied, on the average, from 31,000 persons in remote areas to 38,000 in the plains (table 71). The total number of health posts planned for the future is based upon the allocation of one health post per 5,000 population in the remote high mountains, one per 10,000 to 15,000 in the hilly regions, and one per 20,000 to 25,000 in the Terai.

(b) *Ayurvedic and other systems of medicine*

In Nepal, the Ayurvedic system of medicine is practiced throughout the country. This system of medicine, which evolved among the Hindus, has a long history dating back over 2000 years.

> "It was originally based on the *Ayurveda* (the Veda of Long Life), but a vast literature has since accumulated around this original text. According to Ayurvedic theory, the body, like the universe, consists of three forces – phlegm, bile and wind – and physical and spiritual well-being rests on maintaining the proper balance among these three internal forces. Ayurvedic Pharmacopoeia is based on roots, herbs and plants."[10]

The system has received due recognition from the Government and a separate Ayurvedic Division has been set up in the Department of Health services.

It is estimated that over 75 per cent of the people receive treatment for common ailments in their own village with the locally available herbs as compounded by local *vaidyas* or traditional medical practitioners. Two hundred and eighty practitioners of various categories graduated from the programme of the Department of health Services between 1934 and 1979, and 8 graduates with certificates in Medical Science, Ayurved (Chikitsha Shastra Visharad – Ayurved), graduated in 1974 from the institute of Medicine. In addition, it is estimated that about 1,500 persons who obtained training in the traditional manner (father-son) are practicing in the country.

At present, there are only a few institutions providing Ayurvedic services in the country. Owing to the lack of necessary physical facilities and limited funds, these institutions have not been able to provide the required services. The only hospital in the country, located in Kathmandu, has 25 beds. There are 82 Ayurvedic dispensaries scattered all over the country, including the remote areas. As in any other field of medicine in Nepal, a lot remains to be done in this field. The system is well within the nation's economic capacity and is traditionally accepted by the people and the need to expand and improve the quality of Ayurvedic services has been felt by the Government. Accordingly, the current plan includes a number of programmes for strengthening the Ayurvedic services. The existing 25-bed Ayurvedic hospital is being converted into a 50-bed hospital. Since most of the Ayurbedic drugs are produced locally from indigenous materials, they are less expensive and more popular. It has, therefore, been decided that the health posts should also provide limited Ayurvedic medicines to those who need them. There is one 6-bed homeopathy hospital and a Yunani dispensary in Kathmandu. The bed capacity of the homeopathy hospital is to be increased to 15.

As in many other developing countries, there is an extensive indigenous network providing health care in the rural areas of Nepal where the vast majority of the people live. In Nepalese society, traditional bias and superstition play a distinct role in the life of the people. In such a situation the traditional functionaries of health care, namely the "Jhankris" (faith healers), "Dhami (magic curers),[11] and "Sudini" (traditional birth attendants) receive wide public acceptance and are playing a significant role in meeting the health care needs of the villagers.

In view of the widespread illiteracy and ignorance among the village people, it may be too premature to try to make a sudden break in the people's beliefs in this indigenous system of healing. The viability of involving traditional healers will have to be determined on the basis of the surveys that will be undertaken in a few districts. At present, the Government has adopted the policy of gradually utilizing the services of such functionaries in the delivery of basic health care by providing them with the necessary training and orientation. The example of this can be found in the successfully completed training of the traditional birth attendants.

(c) *Regional imbalances*

The distribution of the various types of health institutions by development regions and population covered is shown in table 72. it will be noted that institutional medical facilities are unevenly distributed in the country. The western region appears to be in a very advantageous situation in regard to the availability of hospitals and Ayurvedic dispensaries: the hospital/population ratio as well as Ayurvedic dispensary/population ratio is the lowest in this region. The central region which contains the largest proportion of the population also has the largest number of hospitals, beds, health posts and Ayurvedic dispensaries. The hospital/population ratio as well as the bed/population ratio are the highest in the far-western region which is also not very well favoured in regard to the availability of the services of health posts.

(d) *Health manpower*

In Nepal, shortage of medical personnel has been a major constraint in expanding the basic health services throughout the country as well as in providing quality care in the existing institutions. During the fourth plan period (1970-1975), the net deficit of high-level health manpower was reported to be 142 and those of middle and low levels to be 260 and 1,252 respectively.[12] Most of this backlog, however, continues in the current plan. The present availability, estimated requirements and the production target of medical personnel in the current plan are presented in table 73.

The existing stock of health manpower in the country as shown in table 73 is indeed much too inadequate compared to the need for delivering health services to the entire population. This shortage, if measured in terms of medical personnel population ratio presents a more serious picture. For example, in 1974, the ratio of doctor to population in Nepal was 1:40,125 compared with 1:5,000 in India, 1:4,500 in Sri Lanka, 1:930 in the United Kingdom and 1:580 in the USSR. The situation with regard to other categories of paramedical personnel is similar.

There is no medical college in Nepal. Every year, 25 to 30 students are sent to foreign countries like India for training in medicine. "If it is assumed that 25 doctors will be added to the present stock of doctors annually, the ratio after one and two decades will be 1:24,320 and 1:20,883, respectively. This could hardly be called a significant improvement in the current state of affairs as two decades would be a long time."[13]

Table 72. Distribution of health institutions by development region. 1973

Regions	population	Number of districts	Hospitals	Hospital/ population ratio	Beds	Beds/population ratio	Health centres	Health centre/population ratio	Health posts	Health bed/ population ratio	Ayurvedic dispensaries [a]	Ayurvedic dispensaries/ popultion ratio
Eastern region												
1.Mechi	617760	4	2	308880	40	15444	3	205920	16	38610	6	102960
2.Kosi	866260	5	6	144377	210	4125	2	433130	33	26250	3	288753
3.Sagarmatha	1313480	7	4	328370	91	14434	4	328370	41	32036	8	164185
Total	2797500	16	12	233125	341	8204	9	310833	90	31083	17	164559
Central region												
1.Janakpur	1265755	6	4	316439	105	12055	3	421918	32	39555	7	180822
2.Bagmati	1496971	8	14	106926	1030	1453	4	374243	27	55443	15	99798
3.Narayani	1103027	5	5	220605	130	8485	1	1103027	46	23979	4	275757
Total	3865753	19	23	168076	1265	3056	8	483219	105	36817	26	148683
Western region												
1.Gandaki	1023110	7	5	204622	140	7308	2	511555	51	20061	14	73076
2.Lumbini	1165701	6	8	145713	165	7065	3	388567	21	55509	7	166529
3.Dhaulagiri	276729	4	2	138364	30	9224	2	138364	11	25157	4	69182
Total	2465540	17	15	164369	335	7360	7	352220	82	29705	25	98622
Far western region												
1.Rati	705813	5	1	705813	15	47054	2	352906	22	32082	5	141163
2.Karnali	188012	4	1	188012	15	12534	1	188012	10	18801	1	188012
3.Bheri	575075	5	3	191690	80	7188	2	287536	13	44236	3	191690
4.Seti	597124	5	2	298562	40	14928	3	199041	14	42652	6	99521
5.Mahakali	361170	4	2	180585	40	9029	1	361170	14	25798	2	180585
Total	2427190	23	9	269688	190	12775	9	169688	73	33249	17	142776
Grand total	11555983	75	59	195864	2131	5423	33	350181	351	32923	85	135935

Source: Nepal Health Institution, July 1975, table 1.

a Including Ayurvedic Hospital, Homeo Hospital and Unani Dispensary.

Table 73. Availability, estimated requirements and the production target of medical manpower in the fifth plan (1976-1980)

Manpower category	Number available in 1974	Estimated requirements	Production target
Doctors	311(336)[a]	421	100
Dentist	14	26	12
Nurses	262	412	150
Assistant nurse midwife	572	1131	570
Health asistants /Senior auiliary health workers	232	814	580
Auxiliary health workers	590	753	400
Pharmacists	1	45	22
Laboratory technicians	52	133	65
Radiographers	14	47	13
Ayurveic baidayas and kabirajs	172	237	66
Village helt workers		2100	

Source: Janchbugh Kendra, "Long-term health plan", Royal Palace, 1976, table 7.

a In addition to the 311 doctors listed, there are 25 other doctors working in various non-governmental health institutions.

During the past few years it has been observed that many of the students who go abroad for training in medicine do not return or delay their return after completing studies. Lack of attractive living and working conditions in the country, low salaries, lack of facilities for post-graduate training, and the fear of being posted to the remote and hilly areas of the country are some of the factors which discourage the doctors from returning to the country immediately after completing their studies. These are also the factors responsible for some amount of "brain drain" among the Nepalese doctors in recent years.

The main responsibility for producing the middle and low level health manpower in the country is entrusted to the Institute of Medicine established in 1972 under Tribhuvan University. In view of the shortage of paramedical workers for delivering the basic health care services, the emphasis has been laid on the production of auxiliary nurse midwife (ANM), auxiliary health workers (AHW) and health assistant (HA). The Institute is also concentrating on the training of nurses (public health nurses, nurse tutors and post basic midwife, etc.) and selected categories of paramedics such as health laboratory technicians, radiographers and pharmacists. The Institute of Medicine also produces middle-level Ayurvedic physicians known as baidya and kabiraj. During the current plan period it aims to start diploma level courses as well, in order to produce higher-level medical personnel in the country.

The long-term health plan envisaged that "the manpower of different categories will be produced by the Institute of Medicine according to the requirements of the Ministry of Health". The Institute of Medicine, being in its early stage of development, still lacks adequate physical and technical facilities and has not yet been able to meet the demand for various categories of paramedical personnel at present.

The over-all shortage of medical manpower in Nepal has been a serious problem and as a result, it has not been possible to fill up the vacancies in many of the health establishments in the country. This is evident from table 74 which indicates the positions sanctioned and the positions actually filled with respect to a few categories of health manpower in the four development regions of the country. It shows a large number of vacancies with respect to doctors, particularly in the western region, and the situation is further aggravated by the concentration of available personnel in and around Kathmandu valley and a few urban centres. This has resulted in a geographical mal-distribution of medical personnel in the various regions of the country. The central region, which includes the capital, has one doctor per 20,000 population while the most backward and inaccessible far-western region has one doctor for more than 100,000 population.

(e) *Long-term health plan*

A long-term health plan (1975-1990) has been formulated covering the first five years of the current fifth plan and the sixth (1980-1985) and seventh plan periods (1985-1990). The basic objective of the long-term health plan is to promote the physical, mental and social health of

Table 74. Health manpower in the four development regions in 1974-1975

Region	Doctor			Nurse			Assistant nurse midwife			Health assistant			Auxiliary health workers		
	Demand	Supply	Percentage	Demand	Supply	Percentage	Demand	Supply	Percentage	Demand	Supply	Percentage	Demand	Supply	Percentage
Eastern region	63	42	67	37	34	92	262	133	51	99	55	56	217	129	59
Central region	293	207	71	158	148	94	368	229	62	121	76	63	309	211	68
Western region	60	34	57	27	25	92	208	81	39	91	66	72	186	113	61
Far-western region	46	29	63	20	17	85	161	41	25	82	23	28	144	85	59
Total	462	312	67	242	224	92	999	484	48	393	220	62	856	538	63

Source: National Planning Commission, "Impact of the fourth plan achievements on public life".
Note: Demand refers to the posts sanctioned and supply to the posts actually filled.

the general public by increasing the average life expectancy of the people through the reduction of the morbidity and mortality rates. The important features of the plan are: (i) the development of basic health services, particularly in the rural, remote and backward areas, with a view to making health services available to the masses; (ii) the control of population growth in order to bring about a better balance between population and economic development; (iii) the production of technical manpower in the country and the effective utilization of the existing technical manpower through the provision of better incentives; (iv) the eradication or control of infectious diseases; (v) the extension of health and nutrition education and the development of consciousness on environmental sanitation; (vi) the improvement and development of hospital services; and (vii) a study of the effectiveness of Ayurvedic medicine, the promotion of the production of these medicines, and the delivery of preventive as well as family planning services through Ayurvedic institutions.

The long-term health plan has given highest priority to "rural health services" which aim to deliver basic health services to the rural population. These services will gradually absorb the activities of the village-level programmes of different projects presently in operation. By the end of the sixth plan, that is by 1985, the vertical projects like smallpox eradication, tuberculosis, and leprosy control will be terminated and their activities will be integrated into the rural health service. As the malaria control tasks are beyond the capacity of the rural health service, an agency will be set up to carry out the task of malaria epidemic control and to take care of the pertinent technical matters. Such technical units will also be set up to carry out the control activities for other vertical projects and the Epidemiology Division of the Department of Health Services will co-ordinate these activities. The long-term health plan also provides high priority to the family planning and maternal child health services, where greater emphasis will be laid on making the programme more effective with greater community participation.

In the field of curative services, 15-bed hospital facilities will be provided in all the 75 districts of the country by 1985. the number of hospitals is expected to increase to 99 with a total of 4,020 beds. A 15-bed Ayurvedic hospital will also be established in each of the four development regions. No new hospital is planned during the seventh plan period (1985-1990) but the bed capacity will be raised to 4,664. If these are achieved, one hospital bed will be available for every 3,515 people by 1990.

The long-term health plan aims to establish a total of 1,462 health posts to cover the entire country by the end of the seventh plan. Based on this, by 1990, the total population per health post for the country as a whole would come to 11,000 covering an area of 94 square kilometers. For the remote area, however, there will be one health post for 4,000 people covering a smaller area of 80 square kilometers.

One of the significant features of the rural health service in the long-term health plan is the provision of village health workers who will be the basic home-visitors at the village panchayat level.[14] They will exercise the primary responsibility for taking the health services to the people at the grass-roots level. The village health worker will be recruited from among the local people and will be attached to the health posts as a regular staff.

Village health workers will provide door-to-door health services to the village panchayat area where they live and report to the health posts for necessary instructions and supplies. They are, thus, the main health links between the community and the health post. During the sixth plan, there will be one such village health worker in every village panchayat. By the seventh plan, this number will be raised from four to six

depending on the area, population and geographical terrain of the village panchayat.

In Nepal, so far, programmes relating to nutrition and environmental sanitation have not received adequate attention from the public health point of view. The long-term health plan has adopted an intersectoral approach to deal with these programmes. Since health education is fundamental to all other health problems in teaching the people the importance of personal hygiene, sanitation, control of infectious diseases, family planning and so on, the long-term health plan has considered it an integral part of the rural health services.

(f) *Financing health services*

The share of health allocation to the total public sector plan outlay in the different plan periods is given in table 75. Although in absolute terms the health sector outlay rose by more than 14 times between the first and the fifth plan period, the percentage of the health sector allocation

Table 75. Plan outlay for health in different plan periods.

Plan period	Total plan outlay	Plan outlay for health service	Percentage of total outlay
	(millions of Nepal rupees)		
First(Five years)Plan 1956-1961	330.1	25.0	7.6
Second(Three Years)Plan 1965-1965	600.0	37.0	6.2
Third(Five Years)Plan 1965-1970	1740.0	120.0	6.9
Fourth(Five Years)Plan 1970-1975	2570.1	151.2	5.9
Fifth(Five Years)Plan 1975-1980	7545.0	455.0	6.0

Source: National Planning Commission, Five-year plans.

in relation to the total outlay has remained more or less static within the range of 5.9 to 7.6 per cent. The rate has actually declined to 6 per cent in the current plan compared with 7.6 per cent in the first plan.

An analysis of the health budget for 1975-1976, 1976-1977 and 1977-1978 also demonstrated the low percentage of the health expenditure to the total national budget which comes to 5.6, 6.2 and 5.3 per cent for the three respective years. Table 76 shows the total health budget as well as its distribution among the different health programmes. Since priority in the health service development in Nepal is given to the preventive aspect, more than 50 per cent of the total health budget for 1975-1976 and 1976-1977 have been earmarked for these services. Malaria and the FP/MCH Project take up the major portion of the total preventive health budget. In the field of curative health services, hospital development has received the greater share followed by basic health services programme including the health post. In 1977-1978, however, in view of the greater emphasis on the basic health services, the percentage of the annual budget for curative services has risen to 59.2 per cent as against 40.8 per cent for preventive services.

The lower allocation of the total budget for health services development in Nepal does not, however, mean that the health programme has been given a lower priority. It only indicates the limited resources that were devoted to the health sector. In Nepal, the health budget depends largely on the total government budget, which in turn depends on the rate of economic growth. During the past decade, gross domestic product in Nepal was estimated to have increased by around 2 per cent and the rate of economic growth has also shown a similar trend. There has hardly been any increase in the rate of *per capita* income during this period. In this situation, one cannot expect a major increase in the health sector allocation.

In projecting the government health budget, the country health programming exercise:

> "assumed that the government tax revenue will form an increasing proportion of GDP from 1970 to 1990 – from 5 to 15 per cent and will remain stable. Thereafter, it was also assumed that foreign aid will remain at the level of around 250 million a year. The sum of tax revenue and foreign aid obtained by applying these assumptions to the projections of G.D.P. (2 and 4 per cent) gives a projected level of the total government budget. It is further assumed that the proportion of this budget applied to health remains at its present level of about 7 per cent."[15]

This yields the level of government health expenditure for 1970-2000 as shown in table 77. the projection indicates that it is economically possible to plan for a substantial improvement in the health sector allocation in Nepal over the period 1970-2000 provided that a growth rte of 4 per cent or more of the GDP is achieved.

In Nepal, the provision of health services to the public is the responsibility of the government, but the public sector has not been able to provide adequate services both in terms of the type of services required as will as the total coverage. Although no figure is available on health expenditure by individual consumers, the share of the private and the local bodies in meeting the health expenditure is assumed to be substantial.

Table 76. Distribution of health budget among programmes
(Nepal Rupees)

Particulars	1975-1976			1976-1977			1977-1978		
	Regular	Development	Total	Regular	Development	Total	Regular	Development	Total
1.National budget	691086	1455847	2146933	823437	1783183	2606620	938526	2148898	2087424
2.Health budget	35244	85510	120754	36172	126312	162484	47257	116803	164060
3.preventive health service									
a. Nepal malaria eradication project	-	43631	43631	-	57669	57669	-	44290	44290
b. EP/MCH project	-	18500	18500	-	23428	23428	-	14118	14118
c. Smallpox eradication project	-	2894	2894	-	3710	3710	-	3833	3833
d. Tuberculosis control project	-	409	409	-	818	818	-	1612	1612
e. Leprosy control project	-	1719	1719	-	2231	2231	-	3018	3018
		67153				87856			66871
Percentage of the total health budget		55.6				54.1			40.8
4.Curative and other health services									
a. Hospital	20367	5555	25922	22640	10425	33065	26833	22886	49719
b. Health posts	9290	4000	13290	8859	8719	17578	15175	19381	34556
c. Others	5587	8802	14389	4673	19312	23985	5249	7665	12914
			53601			74628			97189
Total percentage of the total health budget			44.4			45.9			59.2
5.Percentage of health budgets to national budget			5.6			6.2			5.3

Source: Ministry of Finance.

Table 77. Projected government health expenditure, 1970-2000
(thousand of Nepal rupees)

Gross rate (%)	Year	Tax revenue	Government expenditure	Government health expenditure
2	1970	536	786	55
	2000	2912	3162	214
4	1970	536	786	55
	2000	5211	5461	382

Source: Country Health Programme Nepal, p. 44.

D. Summary and Conclusions

In a report on the state of the world's public health services in 1973, the WHO Executive Board pointed out that "in many countries, the health services are not keeping pace with the changing population either in quantity or in quality. It is likely that they are getting worse." The report further states that "these appears to be widespread dissatisfaction among the populations about their health services for varying reasons" and one of the main reasons has been singled out as "a failure to meet the expectations of the population."[16]

In Nepal, the rising population requires increased health services, both quantitatively and qualitatively. The country is still in the rudimentary stage and the existing network is far too inadequate to meet the current health needs of the majority of the Nepalese people. With further increase in population, the task would become tremendously difficult. The problems and constraints for the development of health services in Nepal have already been determined. Taking into consideration the socio-economic, cultural and geographical features of country, it is not possible to expect a rapid coverage of modern medical services in the years to come.

The over-all ratios such as "population per doctor" or "hospital bed per 1,000 population" should also not be taken as very reliable indicators of the state of health services, since the traditional Ayurvedic and other indigenous systems have also been providing health services to a vast majority of the people of Nepal. These methods are well accepted by the community, they are less expensive and are available whenever needed. The number of Ayurvedic physicians in Nepal is estimated to be around 2,000, which is far greater than those trained in modern medicine. Therefore, in the present context of Nepal, it is necessary to make a proper study of how the traditional system can be improved and integrated into the primary health care delivery system.

Owing to the widespread illiteracy and ignorance of the people which is manifested in the superstitious beliefs and prejudices, a great number of Nepalese people, especially those living in the rural areas, tend to accept the modern methods of treatment only at a later stage when other methods have failed. A survey undertaken by the Institute of Nepal and Asian Studies in a village 50 miles north-west of Kathmandu in 1974-1975 has shown that when both the traditional and the modern system of treatment are available side by side "villagers easily combine western medicine with traditional practices. Such observation suggests that villagers have little difficulty integrating western medicine with their own traditions on an ideological level. Even when these systems of medicine are explicitly recognized as compatible, this is not reflected in behaviour".[17] For example, villagers unquestionably maintain that "doctor medicine" is totally ineffective for causes of illness caused by "witchcraft". However, they have been observed to use alternative sources of western medicine in combination with traditional treatment. By and large, the non-acceptance of modern medical treatment is due to a number of institutional inadequacies: the services provided may not be within the easy reach of the villages or their financial means or the care provided in these institutions lacks quality. Hence, the Government will have to create health network acceptable to

the villagers and available in the villages. "Patients should be treated as close to their homes as possible in the smallest, cheapest, most humbly staffed and most simply equipped unit that is capable of looking after them adequately."[18] Once the programme reaches the villages the problems should be correctly represented and expressed so as to develop confidence among the people and create the demand for more and better services. People in general tend to have a greater demand for curative services. It is the government who would be in a better position to identify the "needs".

These factors have led to the "formulation of intervention strategies aimed at eh dual challenges of fertility and mortality reduction" in Nepal. The concept of basis health care services adopted by the Government has the potential to provide services to the maximum number of people in Nepal. It would be foolish, however, to expect a rapid cure of all the problems within a short span of time. Priority must be set in policies and a proper programme must be developed. It has been seen that, in umber control of communicable diseases, family planning, including maternal and child health care, environmental sanitation, and preventive as well as curative services will demand immediate attention. The prerequisite seems to be a campaign of health education, especially in the rural areas, rapid expansion of primary education and functional literacy, development of paramedical manpower and integrated approach t the periphery and intermediate levels of services. The development of health services cannot meet the demand unless effective measures are also taken to moderate the rate of population growth.