Abstract

India is going through a period of transition, both epidemiological and demographic transition. Infectious diseases are still persisting as major health problems in spite of having national programmes for the control of most of these diseases for almost half a century now. This paper focuses on two national programmes: the success story of the National Leprosy Eradication Programme; and the National Anti-Malaria Programme that has failed to achieve its objectives. There are re-emerging infectious diseases which are adding to the burden of diseases. In addition, there is an increasing prevalence of non-communicable diseases as a result of lifestyle changes and urbanization. These are the challenges that are to be tackled in the new millennium.

INTRODUCTION

Main determinants of health and disease lie outside the realm of direct medical competency - Sir Douglas Black.

Health care is interdisciplinary and multi-sectoral. “Health care” is often confused with medical care. Medical care is only a part of health care and comes into picture whenever there is deviation from health, i.e., when disease or illness prevails. ‘Health services’ by and large provide only the curative, i.e. medical services, which are often of poor quality and not satisfactory for the sick persons who attend the health centre or hospital. Health status is determined by the following basic factors:

i) Healthy environment, especially safe drinking water supply, sanitary disposal of excreta and other wastes, and pollution-free housing and work places.

ii) Adequate nutrition, which in turn depends on production and availability, accessibility, affordability and intra-familial distribution of food.

iii) Control over communicable disease.

iv) Lifestyle changes that influence the occurrence of non-communicable diseases.

Government initiatives in the public health sector have recorded some noteworthy successes over time. Small pox and Guinea worm disease have been eradicated from the country; polio is on the verge of being eradicated; leprosy, kala azar, and filariasis can be expected to be eliminated in the foreseeable future. There has been a substantial drop in the total fertility rate and infant mortality rate. The success of the initiatives taken in the public health field are reflected in the progressive improvement of many demographic changes / epidemiological shifts / infrastructural indicators over time. These are presented in Tables 1, 2 and 3 respectively. However, the dictum of public health remains “what is important is not what has been achieved but what remains to be done”.

Though considerable achievements have been made, the goal of “Health for All by the Year 2000” has yet to be met even though we have crossed the year 2003. Lack of basic health services for the majority of the population, environmental degradation, a total collapse of the health care machinery during any epidemic crisis, and a population, which has already crossed the one billion mark, are all challenges the country is facing after 50 years of planned development.

Table 1: Demographic changes through the years - 1951-2000

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Life-expectancy at birth</td>
<td>36.7</td>
<td>54.0</td>
<td>64.6* 64***</td>
</tr>
<tr>
<td>Crude Birth Rate per 1000 population</td>
<td>40.8</td>
<td>33.9**</td>
<td>26.1** 21***</td>
</tr>
<tr>
<td>Crude Death Rate per 1000 population</td>
<td>25.0</td>
<td>12.5**</td>
<td>8.7** 9***</td>
</tr>
<tr>
<td>Infant mortality rate per 1000 live birth</td>
<td>146</td>
<td>110</td>
<td>70** 60***</td>
</tr>
</tbody>
</table>

*Registrar General of India, **Sample Registration System, ***National Health Policy, 1983
development. The last two decades have witnessed a gradual but sure decay in the health services of the country. Diseases claimed to be under control like malaria, poliomyelitis, dengue fever and kala azar are resurfacing with renewed vengeance. Gross disparity in health status and availability of health care services exist all over the country. As a result of industrialization, socio-economic development, urbanization and changing lifestyles, India is also facing a growing burden of non-communicable diseases, as well.

The turn of the century found India far distant from achieving the optimistic goal of the Alma-Ata declaration. The underlying problem may be due to the period of transition, which India is undergoing, commonly termed as demographic and epidemiologic transition.

**Demographic transition**

Demographic transition is the transition of high to low fertility (and mortality) rates in a country. This was formerly thought to be related to technological changes and industrialization but probably more directly related to female literacy and status of women than many other factors. India is in this state of transition as shown in Table 1.

**Epidemiologic transition**

There are three phases of transition which a population goes through as a result of the demographic transition:  

i) The age of “pestilence and famine”  
ii) The age of “receding pandemics”  
iii) The age of “degenerative and manmade diseases”

Transition from first phase to second phase through the second phase is called epidemiologic transition. Different countries take different time periods to reach the third phase from the first phase. On an average, developed countries took a shorter course than the developing countries. The developed world is now facing the epidemiological transition, i.e., a transition from infectious diseases like measles, diphtheria, pneumonia etc, to chronic lifestyle-related diseases like heart diseases, cancer, stroke, hypertension and diabetes. Currently, developing countries like India are experiencing the double burden of diseases. On the one hand, infectious diseases are still highly prevalent amongst people of the lower socio-economic group due to poverty, poor water supply and sanitation. On the other hand, non-communicable diseases are on the rise amongst the upper class of society, as they adopt similar lifestyles as those of the developed world.

### Table 2: Epidemiological shifts through the years - 1951-2000

<table>
<thead>
<tr>
<th>Year</th>
<th>1951</th>
<th>1981</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malaria (cases in million)</td>
<td>75</td>
<td>2.7</td>
<td>2.2</td>
</tr>
<tr>
<td>Leprosy cases per 10,000 population</td>
<td>38.1</td>
<td>57.3</td>
<td>3.7</td>
</tr>
<tr>
<td>Small Pox (no. of cases)</td>
<td>&gt;44,887</td>
<td>Eradicated</td>
<td>N.A.</td>
</tr>
<tr>
<td>Guinea worm (no. of cases)</td>
<td>N.A.</td>
<td>&gt;39,792</td>
<td>Eradicated</td>
</tr>
<tr>
<td>Polio</td>
<td>N.A.</td>
<td>29,709</td>
<td>265</td>
</tr>
</tbody>
</table>

### Table 3: Infrastructure indicators through the years 1951-2000

<table>
<thead>
<tr>
<th>Year</th>
<th>1951</th>
<th>1981</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-Centre/Primary Health Centre/Community Health Centre</td>
<td>725</td>
<td>57,363</td>
<td>1,63,181*</td>
</tr>
<tr>
<td>Dispensaries and Hospitals(all)</td>
<td>9209</td>
<td>23,555</td>
<td>43,322**</td>
</tr>
<tr>
<td>Doctors (Allopathic)</td>
<td>61,800</td>
<td>2,68,700</td>
<td>5,03,900+</td>
</tr>
<tr>
<td>Nursing personnel</td>
<td>18,054</td>
<td>7,37,000#</td>
<td></td>
</tr>
</tbody>
</table>


### CURRENT STATUS OF COMMUNICABLE DISEASES IN INDIA

Till date, the diseases we have been able to eradicate in India are smallpox (in 1977) and guinea worm (in 2001) though we have many more in the agenda (polio, leprosy, yaws). Diseases like yaws and plague have been under control. During 1997, as many as 8515 cases of yaws were reported and treated. While during 2001, only 168 cases have been reported and treated i.e. 50 times reduction in four years time. Epidemics of cholera are not that frequent as in old days. Reported cases of cholera were 176,307 with 86,997 deaths in 1950. However, now total number of cases in a year is about 5,000 and mortality is also low.

Dengue was predominantly an urban problem but now cases and outbreaks have been reported from rural areas also. There has been a decline in dengue fever/dengue hemorrhagic fever (DHF) incidence after 1996 outbreak in Delhi. However during 2001, outbreaks have been reported from Rajasthan, Tamil Nadu, Karnataka and Gujarat. Malaria is still a public health problem till today. The programme for eradication of malaria has been in place for the past 50 years under different names in our country. At the peak level of the success of programme in 1964, malaria was contained to less than 100,000 cases and no deaths. However, the situation slipped out of control and by 1976 we had 6,467,215 cases of malaria with 99 deaths. The total number of leprosy cases has dropped substantially from 2.91 million in 1981 to 0.44 million cases reported in March 2002. The prevalence rate has reduced from 57 per 10,000 in 1981 to 4.2 cases per 10,000 population in 2002. However, it is still much higher than the target, which is 1 case per 10,000 populations, of National Leprosy Elimination Programme.

With these limited progresses, we have failed on many counts. Some diseases, which were once thought to have been conquered, have re-emerged in the recent years. Plague, which was a public health problem in the 1940s, speedily declined as a result of large scale application of dichloro-diphenyl-trichloroethane (DDT) in the year 1946.

There was no laboratory confirmed plague in India during 1966 to 1993. However, during 1994, an outbreak of pneumonic plague was reported from Surat, Gujarat. Recently, in February 2002, an outbreak of plague was reported from Shimla,
Tuberculosis has not responded to our control programme despite having a National Tuberculosis Control Programme since 1962. Poor management, lack of motivation of the medical personnel, stigma associated with the disease, unavailability of drugs, incomplete treatment are some of the reasons for the persistence of the disease. Every year there are approximately 2.2 million new cases of tuberculosis, of which approximately one million are new smear positive cases that are highly infectious cases. Every year half a million deaths take place due to tuberculosis. Diarrhoeal diseases and acute respiratory infections combined together are the main killers of children below five years of age and account for 2/3rd of childhood mortality. The problem of HIV/AIDS in India has been increasing for the past one and a half decade. The current estimates of HIV positive cases in India are 3.86 million. Table 4 gives information on the current burden of communicable disease in India available as per the latest information and the goals to be achieved by the year 2015.

In the following paragraphs we are going to describe about two different programmes which have evolved over the last 50 years with different end results. The National Malaria Eradication Programme which is still striving to achieve its objectives, and the National Leprosy Eradication Programme showing the successful implementation and drastic reduction of cases in the country.

National Anti-Malaria Programme (NAMP)

**History**

Malaria is one of the serious public health problems in India. At the time of independence, there were about 75 million cases and 0.8 million deaths every year. In 1953, the Government launched a National Malaria Control Programme with the objective of bringing down malaria transmission to a level at which it would cease to be a public health problem. The principal strategies were residual insecticidal spraying of human dwelling and cattle sheds, surveys by the malaria control teams to monitor the malaria incidence and provision of anti-malarial drugs. The results after this programme was started were encouraging. The total number of cases was brought down substantially; similar results were also seen in other parts of the world. Therefore, the World Health Assembly decided to change the concept from, “control to eradication”. Thus, the National Malaria Eradication Programme was launched in 1958 with the objective of eradicating malaria.

There was a spectacular reduction in cases and no death was reported in 1965. However, the programme suffered a setback due to various constraints like financial, logistic, administrative and technical. This resulted in the resurgence of malaria during the 1970’s. It was also realized that the urban areas have not received special attention in the programme. This could be one of the reasons of resurgence of malaria in the country. In 1971, Urban Malaria Scheme was launched. In spite of this, by 1976, very high number of cases were recorded. Consequently, in 1977, the Modified Plan of Operation (MPO) was implemented. Under MPO, the strategy was changed and there was a reclassification of endemic areas. Consequently, the upsurge of malaria cases dropped down from 6.74 million cases in 1976 to 2.1 million cases in 1984. Till date the number of malaria cases have reached a plateau at around two million. Malaria has been a serious problem in the North Eastern states. These states together contribute 8.5 to 11 percent of the total malaria cases and 13 to 15 percent of malaria deaths of the country.

During the year 1994, there was a resurgence of malaria. There were large scale epidemics, primarily in eastern India and western Rajasthan. This compelled the Government of India to appoint an expert committee to identify the problem areas and to suggest specific measures against the different paradigms of malaria. Thus, Malaria Action Plan (MAP) was evolved. Besides the activities that were already going on, this plan necessitated the need to strengthen the health promotion campaign by observing “anti-malaria month” before the onset of monsoon (during the month of June).

The anti-malarial activities were intensified with additional inputs in 100 districts in the states of Andhra Pradesh, Bihar, Gujarat, Maharashtra, Madhya Pradesh, Rajasthan and Orissa. An Enhanced Malaria Control Project has been launched in these states with the World Bank support. India spends US$ 100 million on malaria consuming half of the total health budget.

**Current status**

During the year 2000 there were about 2 million cases reported in the country, of which 1.04 million (50%) were due to P. falciparum there were 972 deaths. The maximum number of deaths in the year 2000 was reported from Orissa (442
deaths). During 2001, as per provisional reports received upto November 2001, there has been a decline of 3.4 % in the total malaria cases and 11% decline in P. falciparum incidence as compared to the corresponding period of the year 2000.4

The only way to eradicate malaria, besides case detection and treatment, is by improving the environmental sanitation. This implies that there should be an inter-sectoral coordination between all concerned departments like environment, civil engineering, land and building, agriculture etc. This is an area which is lacking in our country. There is no political will to eradicate the disease, and people have lost faith in the government machinery. The changing face of the malaria programme from time to time, introduction of new strategies has led to more of a confusion amongst the health personnel. The emergence of resistance to insecticides and anti-malarial drugs poses a great challenge.

The fight against malaria in India tells a story of a public health problem which was on the verge of eradication, but unfortunately due to complacency, the situation has gone out of control.

The National Leprosy Eradication Programme (NLEP)

History

In 1955, the National Leprosy Control Programme was launched to achieve control of leprosy through early detection of cases and dapsone monotherapy on an ambulatory basis. The 1980s witnessed a change in the strategy of leprosy control from monotherapy to multidrug therapy due to wide spread emergence of dapsone resistant strains of M. leprae. This needed a revision of the control programme. In 1983, the programme was renamed as the National Leprosy Eradication Programme with the goal of eradicating leprosy at the turn of the century.

The revised strategy was based on early detection of cases by population surveys, school surveys, contact examination and treatment with short-term multidrug therapy. The regimens recommended by WHO have been adapted to suit the operational and administrative requirements. NLEP provides free domiciliary treatment through specially trained staffs. In moderate to low endemic areas, it provides services through mobile leprosy treatment units and primary health care personnel. Treatment of cases was being taken up in a phased manner. As a result the number of cases discharged as cured are increasing progressively over the years.

Since 1998, there have been special drives named as Modified Leprosy Elimination Campaign (MLEC). In this approach, camps are being organized for one or two weeks in which services like detection, treatment and referral to reconstruction facilities are available. The strategy for MLEC differs according to the endemicity of different regions.

Achievements of National Leprosy Eradication Programme (2001)

The prevalence rate of leprosy has reduced from 57 per 10,000 in 1981 to 4.2 per 10,000 in 2002. The total estimated number of cases as reported by March 2002 is 0.44 million. MDT coverage has increased to 99.5%.4

The discovery of MDT has been a major breakthrough in the treatment history of leprosy. The disease, which was once considered a “curse” from God, is slowly losing its stigma. Many patients have been cured and returning back to their normal lives. Deformities and disability are becoming rare. The availability of the correct treatment regime provided free of cost through public sector ensures that all patients receive standard and uniform treatment. This has been instrumental in reducing the emergence of drug resistance.

Leprosy is on the verge of elimination. The WHO has set a new target of elimination of leprosy by the year 2005 and has formed a Global Alliance for Elimination of Leprosy.

Current Status of Non-communicable Diseases in India

As a result of industrialization, socio-economic development, urbanization, changing age-structure, changing lifestyles, India is facing a growing burden of non-communicable diseases.

In India, there is no regular system for collecting data on non-communicable diseases (NCDs)-which can be said to be of adequate coverage or quality. Thus, most of these estimates at best may be taken as approximation only. According to SRS-1998 estimates NCDs are responsible for 32% of all deaths in the country (approximately three million deaths per year). Of these, cardiovascular diseases constituted 13%, injuries 8.7% and chronic respiratory diseases 6.7%. Cancers with 3.4% and diabetes with 0.2% were the other contributors. The prevalence of hypertension ranges from 10 to 15% amongst the adult population in urban areas and 3 to 8 % in the rural areas.7 Rheumatic heart disease (RHD) is prevalent in the range of 5 to 7/1000 in the 5 to 15 years age group. There are about 1.9 million RHD cases in India. RHD constitutes 20% to 30% of hospital admission due to all cardiovascular diseases (CVD) in India.8 It has been recently estimated that there are about one million cases of stroke occurring every year in the country, of these more than 100,000 die. This could be an underestimate as not all strokes are recognized and treatment sought for it.7 Based on studies conducted, it has been estimated that there are 2.5 million cases of ischemic heart diseases (IHD) in the country.7

The International Diabetes Federation estimates that there are about 32.7 million diabetics in the country. A more recent WHO estimate puts it at 28.7 million.7 Indians seem to have a genetic predisposition towards diabetes. This becomes manifest on exposure to richer diet and consequent increase in body weight. This is perhaps also borne out by the temporal trends in diabetes prevalence in India. Studies until the early 1970s essentially showed prevalence rates of less than 3%. A study in 1972 showed a prevalence of 2.7% in urban Delhi and 1.9% in rural areas near Delhi.8 More recent studies (1990 to 2001) show a significantly higher prevalence than that reported above. Studies in Southern India report an overall prevalence rate of diabetes as 5%.7

Cancer has become one of the ten leading causes of death...
in India. It is estimated that there are nearly 1.5 to 2 million cancer cases at any given point of time. Over 600,000 new cases of cancer and 300,000 deaths occur annually due to cancer.

In addition to the dual burden of communicable diseases and non-communicable diseases in India, there are other serious lacunae in the health system, which need to be corrected if the targets set by the National Health Policy are to be achieved. The expenditure in the health sector is estimated to be 5.2% of the GDP. However, only 17% (i.e. 0.9% of the GDP) of the overall expenditure is public expenditure, and almost the entire balance is out-of-pocket expenditure. While reflecting on this quantum of public health spending, it needs to be borne in mind that 26% of the population lives below the poverty-line. India remains in the slab of one of the lowest public health spending countries in the world.

There is a need to increase the proportion of public health spending by the government. The National Health Policy (NHP) 2002 has set the target of increasing the health expenditure by the Government from the existing 0.9% to 2% of the GDP. However, this was not fulfilled in the current budget 2003-2003. In addition, a social health insurance scheme funded by the government and with service delivery through the private sector would be experimented.

Even by the modest norms adopted for provision of public health facilities, there is a significant deficit in manpower and infrastructure available in the country. The deficit for the major items include Community Health Centres (56%), Primary Health Centers (15%), Subcentres (15%), Doctors (31%), ANMs/Midwives (23%), MPWs (49%) etc. Even where public health services exist, the quality of services is extremely poor. There is paucity of medical consumables and infrastructure apart from the already mentioned inadequacy of financial resources.

The way forward

The public health care system today, lacks the necessary political will, community organization and effective local leadership. The inroads made by modern medicines in such a scenario has further led to a situation where application and utilization of modern science towards development of health care is non-optimal and where our traditional heritage of self-reliance in health care has slipped from our hands.

The need is to focus on comprehensive health care, which is interdisciplinary and multi-sectoral. Medical care, which has unfortunately become synonymous with health care, must be recognized as but one determinant of the above mentioned comprehensive health care strategy. The other determinants are basic provisions like safe drinking water, adequate nutrition, factors influencing lifestyles like health information, economic status, and social justice etc. Control of both communicable and non-communicable disease need to be taken up with equal vigour and this can be achieved only by laying adequate stress on environmental health. A comprehensive five-point programme is recommended towards control of communicable diseases in India.

i) Strengthening of general health services.

ii) Environmental health, sanitation and hygiene programme.

iii) Information, education and communication (IEC) campaign.

iv) Establishment of epidemiological services.

v) Disease-specific measures for control and prevention of high priority infections.

If the five-point program is followed conscientiously, it can go a long way in redeeming our lost heritage of self-reliance in public health care.

The best medical care for NCD may give relieve to some patients at prohibitively high costs but it will never prevent and control occurrence of NCDs. These diseases can be prevented only through making lifestyle conducive to health. It is relevant to mention here that programmes to change lifestyle and behaviour need much more determination and inputs than those required for control and prevention of infectious diseases.

To bring about the desired changes in health care system in a diverse society like ours is difficult. However, by putting our existing infrastructure to optimal use and by exploiting the facilities of socio-political system, this can indeed be a reality in the not so distant future.

The need of the hour is to provide quality health care at all

<table>
<thead>
<tr>
<th>NCD (year)</th>
<th>Morbidity</th>
<th>Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total no. of cases</td>
<td>Source of data</td>
</tr>
<tr>
<td>Cancer (1998)</td>
<td>593,803</td>
<td>Cancer registry</td>
</tr>
<tr>
<td>IHD (1998)</td>
<td>25 million</td>
<td>From ad hoc surveys</td>
</tr>
<tr>
<td>Stroke (1998)</td>
<td>1 million</td>
<td>From ad hoc surveys</td>
</tr>
<tr>
<td>Diabetes (1998)</td>
<td>28 million</td>
<td>From ad hoc surveys</td>
</tr>
<tr>
<td>Chronic respiratory disease (1998)</td>
<td>65 million</td>
<td>From ad hoc surveys</td>
</tr>
<tr>
<td>Injuries (1998)</td>
<td>6.9 million</td>
<td>From ad hoc surveys</td>
</tr>
</tbody>
</table>

Source: NCD in South-east Asia region-A profile. WHO, New Delhi 2002
levels by using methods which are feasible, affordable, acceptable and accessible to all. All national programmes need full-hearted support of the community so as to ensure sustainability and success. There is a need for qualified persons with good governing skills at every level, and all activities should be based according to the needs of the community at large.

Community participation in the field of health care should be increased. The government has undertaken a concerted drive to empower decentralized local self-government institutions to undertake increasing responsibilities in social sector development activities. The 73rd and 74th Constitutional Amendments of 1992 have provided the legal framework for the local self-government institutions to begin exercising their powers over delivery centers. The NHP envisages that the disease control programmes should be exclusively implemented through NGOs and other civil institutions. The state would encourage handing over of public health service outlets at any level for management by NGOs and other institutions of civil society like Panchayati Raj Institutions (PRI).

**CONCLUSION**

It is evident that inspite of the declining mortality and changing morbidity pattern, India still has the “unfinished agenda” of combating the traditional infectious diseases that continue to contribute to a heavy disease burden and take a sizeable toll. Along with these, the country has to deal with the “emerging agenda” which includes chronic and newer diseases induced by the changing age structure, changing lifestyles and environmental pollution. We need to prepare ourselves to face the challenges of widening disparities between sections of the population in terms of access to good health.

**REFERENCES**