CHAPTER - I
INTRODUCTION

1.1 Background

Health, being a basic human right and development issue, has been considered an integral component of the development process and means to improve the quality of life of the people. Health is closely related to socio-economic conditions and education status of the people. Due to poor socio-economic and low education status of the people, the government services are under-utilized. This results in deprivation of health causing a poverty-ridden life characterized by illness for most people. World Health Organization (WHO) conference (1987) viewed health as a most important world-wide social goal.

The WHO conference (1987) directly indicating strong positive association between health and productivity illuminated that, “By 2000 every one should enjoy a level of health that will permit them to lead a socially and economically productive life”. Health is essential for building strong societies, with improved health leading to social development, improved quality of life and conditions more conducive to world peace.

1.2 Health and Poverty:

Health, in other words, is thought to be influenced by relative income, suggesting that levels of health can be considered as an indicator of the socio-economic development within which people live, as well as to how rich or poor as the society is on average. Inequality can affect health through a variety of social factors, like access to life opportunities, levels of social cohesion and psycho-social explanations, like hopelessness, lack of control, isolation, and chronic stress (Kawachi, et. al., 1999). Poor health, in turn, further contributes to these social factors, draining social capital and creating conditions where sections of a society become trapped in a cycle of self-reinforcing social segregation. On a macro level, health is a major cornerstone of economic development, while at the micro level, health is essential to warrant that people can accomplish a more ‘economically productive life’. Increasingly, research is showing that a healthy population is an engine for economic growth. This new thinking supplements and to a certain extent re-aligns, the traditional justifications of spending on health, which were rooted in humanitarian and equity arguments.
Research has also highlighted the significance of health improvements to human development; better health itself contributes to economic growth. Indeed, while economic growth is not essential for health, health may be crucial for economic growth. Numerous studies have established that healthier the people the more productive they are. The growing focus on the Millennium Development Goals (MDGs) has further highlighted the importance of making tangible progress in key health indicators.

In line with this, World Bank (1993) revealed that over the past forty years life expectancy has improved more than during the entire previous duration of human history. In 1950, life expectancy in developing countries was forty years; by 1990 it had improved to sixty-three years. Not only these improvements translate into direct and substantial gains in well-being, but also decrease the economic burden inflicted by unhealthy workers and sick or absent schoolchildren. Notwithstanding these remarkable improvements, enormous health problems persist. Absolute levels of mortality in developing countries remain unacceptably high. Every year, 7 million adults die of conditions that could be inexpensively prevented or cured; tuberculosis alone causes 2 million of these deaths.

Good health, as people know from their own experience, is a critical part of well-being, but spending on health can be justified on purely economic grounds. Improved health contributes to economic growth in four ways:

(i) it reduces production losses caused by worker illness;

(ii) it permits the use of natural resources that had been totally or nearly inaccessible because of the disease;

(iii) it increases the enrollment of children in school and enhances their learning abilities; and

(iv) it frees the resources for alternative uses that would otherwise have to be spent on treating illness.

The economic gains are relatively greater for poor people, who are most handicapped by ill health and who stand to gain the most from the development of underutilized natural resources. The most obvious sources of gain in work productivity are fewer work days lost to illness, increased productivity, greater opportunities to obtain
better-paying jobs and longer working lives. A study of lepers in urban Tamil Nadu, India, as reported in World Bank, 1993, estimates that the elimination of deformity would more than triple the expected annual earnings of those with jobs. The prevention of deformity in all of India’s 645,000 lepers would have added an estimated US$ 130 million to the country’s 1985 GNP. Health workers earn more because (as research in Bangladesh has demonstrated) they are more productive and can get better-paying jobs (World Bank, 1993). In Cote d’Ivoire, daily wage rates are estimated to be 19 percent lower, on an average, among men who are likely to lose a day of work per month because of illness than among healthier men (World Bank, 1993).

The health consequences of poverty are severe: the poor die younger and suffer more from disability. The poor are exposed to greater risks from unhealthy and dangerous conditions, both at home and at work. When a family’s breadwinner becomes ill, other members of the household may at first cope by working harder themselves and by reducing consumptions, perhaps even of food. Both adjustments can harm the health of the whole family. If free health care is not available, the costs of treatment may drive a household deeper into debt.

Because poverty has a powerful influence on health, it is not just income per capita that is significant; the distribution of income and the number of people in poverty matter as well. In developing countries, the number of people in poverty is an important reason for differences in health. According to the study reported in World Development Report (World Bank), 1993, which looked at twenty-two developing countries with comparable data on poverty (defined as the share of the population consuming less than US$ 1 a day at 1985 PPP prices) found that variation in the prevalence of poverty and in per capita public spending on health is important in explaining cross-country variation in life expectancy. In the twenty-two countries, roughly one-third of the effect of economic growth on life expectancy came through poverty reduction and the remaining two-thirds through increased public spending on health (World Bank, 1993). In Sri Lanka an increase in per capita public spending on health was twenty-two times more effective in reducing infant mortality than was the same increase in average income. In Sri Lanka, the near-eradication of malaria during 1947-77 is estimated to have raised national income by 9 percent in 1977. The cumulative cost was US$52 million, compared with a cumulative
gain in national income over the thirty-one years of US$ 7.6 billion, implying a spectacular benefit-cost ratio of more than 140 (World Bank, 1993).

Further, World Development Report (World Bank), 1993, states that because fewer people live in poverty as average incomes rise, there is generally a strong link between incomes and health status. Across countries, more than 75 percent of the health is associated with income differences. Indeed, this relation is not merely associative but causal and structural: income growth leads directly to better health. Within the household, health improves rapidly as people escape from poverty and low education. Beyond the household, every society’s health services are affected by its national income. Its ability to acquire and apply new scientific knowledge depends on the level of schooling of the population.

Various studies which have been reported in the World Development Report: Investing in Health, 1993, firmly established that different morbidities have various levels of economic impact at micro and macro level. At micro level, it affects individual and households while at macro level; it affects industry, sectors and economy as a whole. Morbidities with less severity and comparatively less duration of illness inflict less health and low economic effect but morbidities like AIDS and TB have been found to be more devastating in nature causing enormous burden and profound losses at all the levels.

WHO estimates that a third of the world's population is infected with TB, which depletes the incomes of the world's poorest communities by $12 billion a year\(^1\). A WHO (2005) report, expressed that through-out the world, poor people and those from disadvantaged social groups suffer more illness and die sooner than the more privileged. Poor and socially excluded people face greater exposure to many health threats, and when they fall sick they are much less likely to receive adequate care. Social factors including the effects of poverty account for the bulk of the global burden of disease and death and for the largest share of health inequalities between and within countries. The average estimated incidence of TB is 20 times in low income countries compared to high income countries. The document also states that, poverty is the greatest impediment to human and socioeconomic development. The United Nations (UNs) and its specialized agencies are focusing on poverty reduction as a leading priority. In the health sector, poverty

\(^1\)http://timesofindia.indiatimes.com/India_is_worlds_TB_capital/articleshow/2879742.cms
represents a principal barrier to health and health care. Figure 1.1 presents factors influencing vulnerability to ill-health.

**Figure - 1.1**

*Factors Influencing Vulnerability to Ill-Health*

![Diagram showing factors influencing vulnerability to ill-health](source: Addressing Poverty in TB Control: Options for National TB Control Programmes, WHO, Geneva, 2005)

1.3 **TB and Poverty:**

WHO’s commitment to the promotion of equity and pro-poor policies in its disease prevention and control activities is based on the recognition of poverty as a major barrier to health and health care. In the case of TB, the links between poverty and disease burden have been documented for many years. Elucidating the links between poverty and TB, the WHO report (2005) expressed that TB thrives in conditions of poverty and can worsen poverty. There is a long history of documented associations between TB and poverty at societal, community and patient levels. Although confirming that documentation on linkages between TB and poverty in low-income countries is far from comprehensive, the fundamental conclusion from these reviews is that, “while TB is not exclusively a disease of the poor, the association between poverty and TB is well established and widespread” (WHO 2005). The figure 1.2 shows a schematic presentation of the vicious cycle that exists between TB and poverty.
The report documents several barriers to treatment i.e. economic, geographical and social cultural barriers. Pertinent to the present study and one of most prominent among them is economic barrier. TB imposes significant economic costs on patients and households, with a disproportionate impact on the poor. Each of these costs is barrier to care. Clearly, patients who are suffering are less able to work and generate lesser income for themselves and their dependents. Less obviously, people with TB may have to take many steps along the pathway to care, and each step is associated with significant costs. For each health consultation there will be some combination of the following costs:

1. Charges for the health services (user-fees);
2. Transport, accommodation and subsistence; and
3. Lost income, productivity and time.

Charges for consultation, diagnostic tests and drug treatment each present significant barriers to poor patients. The time lost in repeat visits to health providers is also costly in various ways, for instance through opportunity costs including lost earnings, neglected household responsibilities and lost productivity. Overall, therefore, costs to patients can easily accumulate even when diagnostic tests and drugs for TB

treatment are provided free of charge. Although average costs for poor people tend to be lower in real terms than costs for other social groups, costs relative to annual or monthly income are much higher for poor people than for others. Most low-income workers operate in the informal sector, so they are particularly vulnerable not only to loss of income but also to the possibility of loss of business or dismissal from work. The table 1.1 illustrates that the poor spend less than the non-poor but the overall costs faced by the poor are extremely high relative to their incomes.

### Table - 1.1

**Average Direct Costs for an Episode of TB before and after Diagnosis within the National TB Control Programme in Thailand (in Thai Baht)**

<table>
<thead>
<tr>
<th>Patients</th>
<th>Income below poverty line</th>
<th>Income above average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average household income</td>
<td>21,584</td>
<td>194,028</td>
</tr>
<tr>
<td>Average expenditure before diagnosis</td>
<td>1,430</td>
<td>1,669</td>
</tr>
<tr>
<td>Average expenditure after diagnosis</td>
<td>1,467</td>
<td>1,422</td>
</tr>
<tr>
<td>Average total expenditure</td>
<td>2,618</td>
<td>2,922</td>
</tr>
<tr>
<td>Expenditure as % of household income</td>
<td>15.3%</td>
<td>1.8%</td>
</tr>
</tbody>
</table>


The WHO 2005 report also reveals that the socio-economic consequences of TB are substantial for all groups and may even push the non-poor towards poverty. The consequences of poor patients and their households can be devastating. Poor patients may have to cope with the economic demands of the illness by reducing expenditure on other items that are important for their health, such as food and safe water. This and other coping mechanisms, such as the sale of assets or taking on debts, are themselves impoverishing in the longer term. Patients may also stop treatment because they cannot afford the range of costs associated with continuing treatment, even when treatment itself is provided free of charge. TB may also remain undetected or in the diagnostic process because TB patients cannot afford the costs of seeking TB care.
1.4 Tuberculosis:

After discussing irrefutably and concurring to the fact that there is no qualm that there is strong direct and reverse relationship between health and income. Among leading morbidities, as discussed and explained above, TB is a scourge claiming almost two million lives per year globally. Now, in this sub-section, we present epidemiology of tuberculosis disease, its global burden and menace in India.

WHO\(^2\) states that TB is a contagious disease and like the common cold, it spreads through the air. Only people who are sick with TB in their lungs are infectious. When infectious people cough, sneeze, talk or spit, they propel TB germs, known as bacilli, into the air. A person needs only to inhale a small number of these to be infected. Left untreated, each person with active TB disease will infect on average between 10 and 15 people every year. But people infected with TB bacilli will not necessarily become sick with the disease. The immune system "walls off" the TB bacilli which, protected by a thick waxy coat, can lie dormant for years. When someone's immune system is weakened, the chances of becoming sick are greater. Some facts about TB are\(^3\):

(i) Somewhere in the world one person is newly infected with TB bacilli every second in the world;

(ii) Overall, one-thirds of the world's population is currently infected with the TB bacillus; and

(iii) Five to ten percent of people who are infected with TB bacilli (but who are not infected with HIV) become sick or infectious at some time during their life. People with HIV and TB infection are much more likely to develop TB.

The global community woke up to this disease when, in 1993, the WHO declared TB as a global emergency. Dr Margaret Chan\(^4\), Director-General of the WHO while addressing a gathering at Center for Disease Control and Prevention (CDC), USA on World TB Day, 2010 said that “Since 1995, when DOTS was introduced, more than 36 million people have been cured, according to internationally recognized standards of care, and about 6 million deaths have been averted. These are big numbers, and this is

\(^3\)http://www.who.int/mediacentre/factsheets/fs104/en/index.html
big progress. But there are other big numbers and big causes for concern. Last year, TB still claimed a staggering 1.8 million lives, making it the second biggest infectious killer of adults worldwide. Rates of new TB cases are falling slowly in all regions, but not yet in all countries. The rate of decline in cases and deaths is far slower than needed and far slower than what is possible”. Declaring the situation to be grave, she said that, no one should die of TB and certainly not nearly two million people in a year. The emergence of resistant forms of TB (MDR and XDR) represents the failure of the entire health system in which TB programmes operate. Again, highlighting relationship between poverty and TB she said that today, TB is largely a disease of deprived populations. A disease that resurged with a vengeance is now being stubbornly maintained by poverty and social disadvantage. To conclude, she said that the MDGs promote health as part of an overarching strategy for poverty reduction.

Incongruously, so many lives are lost despite the fact that free treatment is available for TB which ensures complete cure. Medicine is provided free of cost to all the patients and is rendered at closest government facility, or at a private provider or a pharmacy. Globally, the approach for TB cure is known as Directly Observed Treatment Strategy (DOTS). In India, TB control programme is known as Revised National TB Control Programme (RNTCP). TB treatment follows three categories i.e. I, II and III. All RNTCP treatment regimens are given thrice weekly on alternate days. During the intensive phase, each dose of medication is packed in blister packs containing one day’s medication and is given under the direct observation of a DOT provider. During the continuation phase, medication is packed in weekly blister packs with the first of the thrice weekly doses being given under direct observation. Patients treated with Category I and II regimens, whose smears are positive at the end of the intensive phase, are given another month of intensive phase treatment before being started on the continuation phase. The treatment regimen is presented in table 1.2.
### Three Categories of TB Treatment with Treatment Regimen

<table>
<thead>
<tr>
<th>Category</th>
<th>Status of patient and diagnosis result</th>
<th>Medicine*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category I</td>
<td>New sputum smear-positive</td>
<td>2H3R3Z3E3 +</td>
</tr>
<tr>
<td></td>
<td>Seriously ill** sputum smear-negative</td>
<td>4H3R3</td>
</tr>
<tr>
<td></td>
<td>Seriously ill** extra-pulmonary</td>
<td></td>
</tr>
<tr>
<td>Category II</td>
<td>Sputum smear-positive relapse</td>
<td>2H3R3Z3E3S3</td>
</tr>
<tr>
<td></td>
<td>Sputum smear-positive failure</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Sputum smear-positive treatment after default</td>
<td>1H3R3Z3E3 +</td>
</tr>
<tr>
<td></td>
<td>Others***</td>
<td>5 H3R3E3</td>
</tr>
<tr>
<td>Category III</td>
<td>New sputum smear-negative, not seriously ill</td>
<td>2H3R3Z3 +</td>
</tr>
<tr>
<td></td>
<td>New extra-pulmonary, not seriously ill</td>
<td>4H3R3</td>
</tr>
</tbody>
</table>

* The number before the letters refers to the number of months of treatment. The subscript after the number of doses per week. The dosage strengths are as follows: H: Isoniazid (600mg), R: Rifampicin (450mg), Z: Pyrazinamide (1500mg), E: Ethambutol (1200mg), S: Streptomycin (750mg). Patients who weigh 60 kg or more receive additional 150mg. Patients who are more than 50 years old receive Streptomycin 500 mg. Patients who weigh less than 30kg receive drugs as per body weight. Patients in Categories I and II who have a positive sputum smear at the end of the initial phase receive an additional month of intensive phase treatment.

** Seriously ill includes any patient, pulmonary or extra-pulmonary, who is HIV positive and declares his sero-status to the categorizing/treating medical officer. For the purpose of categorisation, HIV testing should not be done.

*** In rare and exception cases, patients who are sputum smear-positive or who have extra-pulmonary disease can have relapse or failure. The diagnosis in all such cases should be made by the MO and should be supported by culture or histological evidence of current active TB. In these cases, the patient should be categorized as ‘others’ and given Category II treatment.

Source: LS Chauhan and SP Agarwal, Chapter 3 (RNTCP,) Tuberculosis Control in India.

Inconsistent\(^5\) or partial treatment, when patients do not take all their medicines regularly for the required period because they start to feel better, because doctors and health workers prescribe the wrong treatment regimens, or because the drug supply is unreliable results in drug-resistant TB known as multidrug-resistant TB (MDR-TB), which is defined as the disease caused by TB bacilli resistant to at least Isoniazid and Rifampicin, the two most powerful anti-TB drugs. Rates of MDR-TB are high in some countries, especially in the former Soviet Union, and threaten TB control efforts. While drug-resistant TB is generally treatable, it requires extensive chemotherapy (up to two years of treatment) with second-line anti-TB drugs which are more costly than first-line drugs, and which produce adverse drug reactions that are more severe, though manageable. The emergence of extensively drug-resistant (XDR-TB) TB, particularly in settings where many TB patients are also infected with HIV, poses a serious threat to TB control, and confirms the urgent need to strengthen basic TB control and to apply the new WHO guidelines for the programmatic management of drug-resistant TB.

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\(^5\)http://www.who.int/mediacentre/factsheets/fs104/en/index.html
WHO (2008) in a report, "Anti-tuberculosis drug resistance in the world", found that extensively drug-resistant tuberculosis (XDR-TB), a virtually untreatable form of the respiratory disease, has been recorded in 45 countries. Based on the analysis of the survey data, WHO estimates that are nearly half a million new cases of MDR-TB a year, which is about 5% of nine million new TB cases of all types. Dr Mario Raviglione, Director of the WHO Stop TB Department said\(^6\) that "TB drug resistance needs a frontal assault. If countries and the international community fail to address it aggressively now we will lose this battle".

### 1.5 TB – Global Scenario:

A WHO (2009) report discloses that in 2008:

- There were an estimated 8.9-9.9 million incident cases of TB;
- 9.6-13.3 million prevalent cases of TB;
- 1.1-1.7 million deaths from TB among HIV-negative people; and
- An additional 0.45-0.62 million TB deaths among HIV-positive people (classified as HIV deaths in the International Statistical Classification of Diseases

The number of notified cases of TB in 2008 was 5.7 million, equivalent to 55-67% of all incident cases. Among patients in the 2007 cohort, 86% were successfully treated; this is the first time that the target of 85% (first set in 1991) has been exceeded at global level. Table 1.3 presents global and regional incidence of TB. Mortality and incidence is highest for South-East Asia region while prevalence in this region is as close as that in Africa.

\(^6\)http://www.who.int/mediacentre/news/releases/2008/pr05/en/index.html
Table - 1.3

Estimated TB Incidence, Prevalence and Mortality, 2008

<table>
<thead>
<tr>
<th>WHO region</th>
<th>Incidence¹</th>
<th>Prevalence²</th>
<th>Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. in thousands</td>
<td>Percent of global total</td>
<td>Rate per 100,000 pop</td>
</tr>
<tr>
<td>Africa</td>
<td>2828</td>
<td>30%</td>
<td>351</td>
</tr>
<tr>
<td>The Americas</td>
<td>282</td>
<td>3%</td>
<td>31</td>
</tr>
<tr>
<td>Eastern Mediterranean</td>
<td>675</td>
<td>7%</td>
<td>115</td>
</tr>
<tr>
<td>Europe</td>
<td>425</td>
<td>5%</td>
<td>48</td>
</tr>
<tr>
<td>South-East Asia</td>
<td>3213</td>
<td>34%</td>
<td>183</td>
</tr>
<tr>
<td>Western Pacific</td>
<td>1946</td>
<td>21%</td>
<td>109</td>
</tr>
<tr>
<td><strong>Global total</strong></td>
<td><strong>9369</strong></td>
<td><strong>100%</strong></td>
<td><strong>139</strong></td>
</tr>
</tbody>
</table>

¹Incidence is the number of new cases arising during a defined period.
²Prevalence is the number of cases (new and previously occurring) that exists at a given point in time.


HIV and TB form a lethal combination, each speeding the other's progress. HIV weakens the immune system. Someone who is HIV-positive and infected with TB bacilli is many times more likely to become sick with TB than someone infected with TB bacilli who is HIV-negative. TB is a leading cause of death among people who are HIV-positive. In Africa, HIV is the single most important factor contributing to the increase in the incidence of TB since 1990.

RNTCP report, 2010 reports that a MoHFW, GoI report (2008) stated that there were estimated 9.4 million new cases equivalent to 139 cases per 100,000 population of TB globally. The report further states that, provisional estimates indicate that women account for 3.6 million cases. Though, globally the incidence of TB is still on the rise due to population growth. The slow reduction in incidence rates continues to be outweighed by the increase in population. Most of the estimated cases in 2008 occurred in Asia (55%) and Africa (30%). The 22 high burden countries account for 80% of all estimated cases world-wide. The five countries that rank first to fifth in terms of number of incident cases

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in 2008 are India (1.98 million), China (1.3 million), South Africa (0.47 million), Nigeria (0.45 million) and Indonesia (0.43 million). India and China alone account for an estimated 35% of TB cases worldwide (Refer figure 1.3). There were an estimated 11.1 million prevalent cases of TB in 2008 equivalent to 168 cases per 100,000 population. The South East Asia region accounts for 34% of the global TB burden.

**Figure - 1.3**

*India - the Largest TB Burden Country in the World*

Source: TB: Burden of the Disease in India, Central TB Division, MoHWF, TB India, 2010, RNTCP Status Report, March 2010

RNTCP Status Report (2010) reveals that globally, MDR-TB is emerging as a major challenge to programme managers. There were an estimated 0.5 million cases of MDR-TB in 2007. The countries that ranked first to fifth in terms of numbers of MDR-TB cases in 2007 were India (131,000), China (112,000), the Russian Federation (43,000), South Africa (16,000) and Bangladesh (15,000).

### 1.6 TB and India:

RNTCP report (2010) states that India contributes about one-thirds of the global burden of TB. Every year, there are approximately 2.2 million new cases in the country. The situation is more complicated when one considers countries such as India where TB
disproportionately affects the young\textsuperscript{9}. India accounts for one-thirds of the global TB burden, with 1.8 million developing the disease each year and nearly 0.4 million dying due to TB annually. The National AIDS Control\textsuperscript{10} Organisation (NACO) states that tuberculosis is the biggest killer of HIV patients in India. Over 60 percent of HIV patients contract and ultimately die of TB.

Tuberculosis Control (TBC) India\textsuperscript{11} website reflects these key facts about TB in India:

(i) TB is one of the leading causes of mortality in India- killing - 2 persons every three minute, nearly 1,000 every day

(ii) The strategy of Directly Observed Treatment, Short-course (DOTS) is based largely on research done in India in the field of TB over the past 35 years.

(iii) Since 1997, after successful piloting DOTS has been implemented in India as the Revised National Tuberculosis Control Programme (RNTCP). In the RNTCP, the proportion of TB cases which are confirmed in the laboratory and the cure rate are both more than double that of the previous programme,

(iv) The operational feasibility of DOTS in the Indian context has been demonstrated, with 8 out of 10 patients treated in the programme being cured, as compared with approximately 3 out of 10 in the previous programme.

(v) Multidrug - resistant tuberculosis (MDRTB) is a result and symptom of poor management of TB patients. DOTS has been shown to prevent the emergence of MDRTB and to reverse the trend of MDRTB in communities in which it has emerged.

(vi) TB is the most common opportunistic infection among people living with HIV.

(vii) Revised National Tuberculosis Control Programme (RNTCP) has covered the entire population of the country by March 2006.

(viii) Every patient who is cured stops spreading TB, and every life saved is a child, mother, or father who will go on to live a longer, TB-free life.

Table 1.4 presents reported TB cases, estimated TB incidence, estimated TB prevalence, and estimated TB deaths for India for the years 2000 to 2005 (WHO Website

\textsuperscript{10}http://timesofindia.indiatimes.com/India/ Govt_to_club_AIDS_TB-control_drives/ articleshow/3121795.cms
\textsuperscript{11}http://www.tbcindia.org/key.asp
with TB Statistics for India). It also reveals that though there is an increase in TB cases, but the numbers of deaths due to TB per 100,000 populations have declined.

Table - 1.4

Key Tuberculosis Indicators for India (2000-2005)

<table>
<thead>
<tr>
<th>Year</th>
<th>Reported TB cases (New and relapse cases) – Total</th>
<th>Estimated TB incidence (per 100,000 population per year) – Total</th>
<th>Estimated TB prevalence (per 100,000 population per year) – Total</th>
<th>Estimated TB deaths TB mortality (per 100,000 population per year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>1,115,718</td>
<td>168</td>
<td>457</td>
<td>42</td>
</tr>
<tr>
<td>2001</td>
<td>1,085,075</td>
<td>168</td>
<td>420</td>
<td>39</td>
</tr>
<tr>
<td>2002</td>
<td>1,060,951</td>
<td>168</td>
<td>396</td>
<td>37</td>
</tr>
<tr>
<td>2003</td>
<td>1,073,282</td>
<td>168</td>
<td>353</td>
<td>34</td>
</tr>
<tr>
<td>2004</td>
<td>1,136,182</td>
<td>168</td>
<td>312</td>
<td>30</td>
</tr>
<tr>
<td>2005</td>
<td>1,156,248</td>
<td>168</td>
<td>299</td>
<td>29</td>
</tr>
</tbody>
</table>

Source: http://www.tbcindia.org/key.asp

Though, there has been improvement in TB control in India WHO Stop TB Director, Mario Raviglione cautioned that, "More new TB cases are slipping through the detection net. India saw TB case detection rates increase by 10%-12% between 2001-05. However, it fell to 5% in 2006. This could be because India's Revised National TB Control Programme, which made rapid strides during the previous five years, has almost completed all planned expansions and was therefore unable to continue at the same pace in 2006". Further, Marcos Espinal, Executive Secretary of WHO Stop TB, said that "The major concern is that there is a slowdown rather than acceleration in TB control efforts. India needs to enhance collaboration with private care providers and non-governmental, faith-based and community organisations" (Times of India, 2008).

RNTCP report (2010) emphasize that it is important to look at TB progress viz a viz MDGs. The indicator 23 of the MDGs is to halve prevalence of TB disease and deaths due to TB between 1990 and 2015. With respect to the progress towards indicator 23, as per the WHO estimates in the year 1990, the prevalence of TB in India was 586 per 100,000 populations and the mortality due to TB was 42 per 100,000 populations. In comparison, in the year 2008, the prevalence of TB was estimated by WHO to be 185 per
100,000 populations, and the mortality due to TB is 24 per 100,000 populations. The estimates show that India has progressed in reducing the prevalence rate by 68% and mortality rate by 43% (RNTCP Report, March 2010).

1.7 TB and Punjab:

United Nations Development Programme (UNDP) (2004) report says that as elsewhere in India, tuberculosis is a major disease in the state of Punjab also. The annual administrative report of 1999-2000 of the Department of Health and Family Welfare, Government of Punjab, acknowledges TB to be the major public health problem of the state. The report estimated that currently there were around 3 lakh persons suffering from TB in Punjab, of which 75,000 cases were “highly infectious”. The report also analyses that “one of the major reasons of the spread of infections is migratory labour who come into the state”.

Notwithstanding the fact that the nature and extent of the disease is immense with serious impacts, not many studies have been undertaken on this important aspect of poor people’s life in India in general. The present study would focus comprehensively on all aspects of the treatment and capture economic burden. It will assess economic burden since the first visit to a health provider and encompasses not only medical cost but also estimate indirect cost resulting from loss of income. The loss of income will be assessed not only for the patient as well as for the attendants. In addition to this, the research will also capture expenses incurred on supplementary diet which is although medically not suggested but is taken-up by the large majority of the patients due to the nature of treatment, heavy dosage dosages of medication and resultant weakness. The study will also assess cost of hospitalization, impact on household income and economic coping strategies.

This study will help comprehend the dynamics of the problem at the district level and further bolster efforts to study the phenomenon on a larger scale, thus benefiting larger sections of the population. The study will of course, contribute to the body of knowledge towards assessing economic impact of tuberculosis on households. The study would also help the academicians, researchers and policy makers at national and international level in gaining in-depth knowledge and understanding of the economic impact of TB on households.
1.8 Objectives of the Study:

The primary objective of the study is to analyze economic impact of tuberculosis on households. However, specifically the study aims at:

(i) Estimating direct and indirect costs of TB;
(ii) Assessing economic burden of tuberculosis by economic stratification of households;
(iii) Assessing economic burden of tuberculosis by caste;
(iv) Assessing economic burden of tuberculosis by location (urban and rural areas);
(v) Estimate economic burden for government and private health care seeking TB patients separately; and
(vi) Develop understanding of household economic coping strategies for Tuberculosis treatment.

1.9 Chapterisation Scheme of the Study:

The study has been divided into ten chapters including the present one.

Chapter II reviews the literature pertinent to the study topic.

Data sources and methodology are described in Chapter III.

Chapter IV presents background characteristics of the patients.

Health care seeking for Diagnosis of Tuberculosis is presented in Chapter V.

Chapter VI reveals cost analysis of post-diagnosis treatment of tuberculosis.

Chapter VII analyzes hospitalisation cost of tuberculosis patients.

Household coping strategies for tuberculosis treatment are presented in Chapter VIII.

Chapter IX entails analysis of expenditure under the RNTCP programme in India in general and Punjab in particular.

Chapter X presents summary and conclusions of the study.