CHAPTER I

INTRODUCTION

1. BACKGROUND AND RATIONALE

Tuberculosis is a contagious bacterial infection caused by Mycobacterium tuberculosis. The Lungs (Pulmonary TB) are primarily and mainly involved (more than 80% of cases) but the infection can spread to other organs, for example, Lymph nodes, kidneys, bones, Joints etc (extra pulmonary TB).

Pulmonary tuberculosis in adults is often sputum smear positive and therefore highly infectious. Cases, which are only sputum culture positive or culture negative are 7 to 10 times less infectious than which are positive on microscopic examination of sputum smears. The outcome of smear negative cases when not treated is more favorable than that of smear positive cases [1]

Tuberculosis can affect anyone of any age. Immune compromised individuals such as those with AIDS, those undergoing chemotherapy or transplant recipients taking anti rejection drugs are at increased risk of rapid progression to disease.

Tuberculosis spreads through the air. When a person with tuberculosis who is not taking anti tubercular medication coughs or sneezes, the germs get into the air. Prolonged exposure to the tuberculosis organism is normally necessary for infection to occur.

Tuberculosis infection may result after close contact with a person who has tuberculosis disease. Tuberculosis infection is determined by a significant reaction to the mantoux test with no symptoms of tuberculosis and no tuberculosis organism found in

the sputum. Tuberculosis disease is characterized by the appearance of symptoms, a significant reaction to a mantoux test and organism found in the sputum.

In order to spread the tuberculosis germs a person must have tubercular disease. Having TB infection is not enough to spread the germ. Tuberculosis may last for a lifetime as an infection never developing into disease.

The most common symptoms of Pulmonary TB are persistent coughing (usually with sputum, sometimes blood stained), fever and chest pain for 3 weeks or more (W.H.O).

The incidence of tuberculosis steadily declined during the first three quarters of the twentieth century.[2] But after a generation of decline, tuberculosis (TB) case rates like those of many other infectious diseases rose alarmingly in the recent years.[3,4] Tuberculosis remains a major problem however in areas of low socioeconomic status and in large cities.[5]

It is well recognized and has often been stated that worldwide tuberculosis is the largest cause of death from a single infection; it infects fully one third of the world's population, is fully 100% curable and 100% preventable and yet is no where near being eliminated in any area of the globe including the most developed nations.

The failure to eliminate this, possibly the most easily controllable of all scourges must rank as one of the mankind's most serious ongoing blunders. After all we know the pathogenesis, transmission, how to diagnose, treat and prevent almost all tuberculosis cases, yet TB killed more individuals every year till now than it did when Robert Koch discovered the bacillus that causes TB in 1882, more than a century ago. [6]

It has been estimated that worldwide there are at least five hundred million people infected with tubercle bacilli. Among those twenty million are believed to be sputum smear positive and six hundred thousands to three million of them die each year, i.e. 8000 people die in a day due to TB. Eight to ten million new cases of active tuberculosis (including 170,000 among children) develop annually. This compares with case rates of 200 to 400 per 100,000 population in developing countries.[7] 18.5% of all deaths in adults, aged between 15-59 years are due to tuberculosis. It kills more people than either AIDS or malaria. Half of the afflicted ever get any treatment. Only one in four patients ever get effective treatment.[8]

This is not new. The historical permutations caused by these numbers are also staggering. At its apex in the 17th and 18th centuries TB took one in five adult lives. It has been estimated that between 1850 and 1950, one billion people died of tuberculosis. Between 1990-1999, 300 million new people supposed to be infected, 90 million new cases occurred and 30 million supposed to die. [9]

Tuberculosis is different from almost any other disease, in that cases of TB must be actively sought and treated to keep them from spreading to others. In most diseases the untreated case dies and harms no body. In TB the untreated or improperly treated case becomes resistant and spreads drug resistant TB until it is found and properly treated. In fact an active TB patient if untreated is likely to infect another 10 to 15 people in one year. [6]

No one knows exactly how many tuberculosis cases occur each year in Bangladesh. But TB is extremely common and spreads easily in this densely populated country.

The prevalence rate of tuberculosis is 5 per 1000 population in Bangladesh.[10] Among the total tuberculosis patients, about half of them is estimated to be sputum smear positive and this proportion has not decreased over the past 25-30 years.[11] Mortality from tuberculosis is about 150,000 every year in this country. Tuberculosis is twice as common in men than women and more common in urban than rural areas.[12]

So, tuberculosis still continues to be a major public health problem throughout the world including Bangladesh. Several factors have contributed to this resurgence, including human immune deficiency virus infection,[13, 14] out breaks among homeless and institutionalized people,[15] increased rates of drug resistance,[16,17] immigration from areas of the world where tuberculosis remains endemic,[18] cases in drug addicts,[19] among the elderly and those in nursing homes[20] also contribute to the increase incidence of tuberculosis.

Undoubtedly, another major and related component of the current epidemic is the failure of many patients to comply a complete course of anti tubercular chemotherapy.[21] Interrupted or incomplete treatment increases the risk of treatment failure, relapse of disease and acquisition of drug resistant tuberculosis.[22] This has led to the spread of the disease to other vulnerable patients as well as to the emergence of significant number of new cases of tuberculosis.[23] By tracking that noncompliance patients to ensure that they complete treatment could prevent further emergence and spread of drug resistant tuberculosis in the community.

Though reasons for non compliance with medical therapy in general and with anti tubercular therapy in particular are multiple and complex, non compliance with

tubercular treatment has been previously associated with history of homelessness, drug or alcohol abuse and minimal educational achievement.[24]

The World Health Organization promotes a strategy of effective treatment under directly observed therapy (DOTS) as most promising for curbing the epidemic of tuberculosis. This strategy is currently implemented in a rising number of country which has proved to be successful by markedly improving compliance with treatment regimens and decreasing the rates of relapses and development of drug resistance, which ultimately increases the cure rates among detected cases.[25]

Since 1993, Bangladesh has also undertaken the National tuberculosis control program (NTP) with W.H.O collaboration under which the DOTS strategy is followed to detect and cure infectious TB cases in unprecedented numbers. The aim of the fight against tuberculosis through DOTS in Bangladesh is:

1. For individual patients: to cure their disease, to preserve or quickly restore their work capacity, to allow them to remain with in their family, ethnic group and community and in this way to maintain their socioeconomic position.
2. For a community: to decrease the risk of tuberculosis infection in the community and by this means to improve the situation of tuberculosis and thus the economic and social conditions of the community.

So, the first priority of the tuberculosis control program is the treatment and cure of tuberculosis patients, especially of patients whose sputum is positive on direct microscopy. Sputum smear positive patients are the most potent sources of infection and

without chemotherapy the outcome of their disease is poor, as two- thirds of them die within 2-3 years.

In Bangladesh under the DOTS strategy it is followed that case finding and treatment of tuberculosis should be carried out at the General Health Institutions and be performed by paramedical workers after they are properly trained and regularly supervised. Case finding and cure of infectious cases of tuberculosis are the key to effective control of the disease. Both case finding and treatment reduce suffering and if adequately applied, prevent death from tuberculosis.

The major objectives of the program are to reduce mortality, morbidity and risk of infection due to tuberculosis by:

1. Increasing the cure rate of diagnosed new sputum smear positive pulmonary cases from less than 40% to 85%.
2. Increasing case detection (once cure rates of detected cases has reached 85%) from the present 10% to over 50% of the estimated incidence.

Still it is found that some patients (about 18%) are non compliant with directly observed therapy (DOTS), failing to make themselves available for doses of complete treatment, which indicates that DOTS does not by itself, ensure compliance completely. (26)

So, in addition to high cure rates and high levels of case detection, early diagnosis with prompt treatment and treatment compliance by the patient are the corner stones for effective tuberculosis control program.

More over better and factual understanding among communities regarding beliefs and perceptions of tuberculosis, recognition of early symptoms and increased health seeking behavior may reduce the noncompliance rate among tuberculosis patients. Early diagnosis, prompt treatment and treatment compliance in turn requires the close cooperation between the individual and the health care facility.

So, for effective tuberculosis control program, among various factors patient compliance with the treatment is regarded as the most important factor. Again various factors are related to the noncompliance of treatment among the patients.

Previously no study was performed in Bangladesh regarding the factors related to the noncompliance of treatment among tuberculosis patients. So this study was conducted in a Sub district hospital in Bangladesh to know the proportion of sputum smear positive tuberculosis patients who did not comply the complete course of anti tubercular treatment and the factors which were associated with noncompliance of treatment among them under DOTS strategy.