Interest in the psychology of tuberculosis has existed since as early a time as the description of the disease. Belief in a close relationship between emotions and tuberculosis can be traced back to Sanskrit and Hellenic sources. Galen (1st century) discussed hectica ex ac macrere, while Susrata (5th century) mentioned grief as the effective pathogenic factor. Belief that love and phthisis are closely connected was commonly prevalent in India and elsewhere.

Literature and folk wisdom are rich with association between unsuccessful love and tuberculosis. Traditionally, considerable observations have existed suggesting association between negative emotions and deterioration in the disease, and positive emotions and improvement in the disease. In the absence of any specific treatment, contribution of emotional state in the prognosis of the disease was of paramount importance. But discovery of the specific organism as a causative agent shook the old myths. Further, discovery of specific antibiotics diminished the role of emotions in prognosis. Hence, scientists with specificity approach were very confident of curing all tuberculous patients. But thus far their hopes have been belied and a hundred percent recovery rate has been a distant dream. It is a generally accepted medical fact that some patients do not respond to treatment despite near perfect
diagnostic and treatment techniques. This frustration of the physicians was voiced in American National Tuberculosis Association Bulletin (65), which stated, that, "while we are medically and technically capable of advancing rapidly towards the final defeat of tuberculous germs, we are not always capable in human terms. There are human weaknesses and the knowledge we have had at our finger tips for many years fails to be applied. The barriers are not medical or technical but human and behavioural".

This recognition of the psychological factors in treatment and prognosis of tuberculosis was also supported by the most ardent supporter of the theory of specificity, Pasteur, who according to Syle 1954, had observed during his last days that seed is not the total answer, soil is also important.

Similarly, tuberculosis specialists in failing to get answers in medical science turn to psychological explanations. Even the most somatic oriented physician recognise the psychological aspect of tuberculosis, and it has been universally acknowledged fact that tuberculosis is a disease affecting the whole social organism. Burhoe (1934) summarized this position in a statement: "Tuberculosis cannot be successfully treated as a medical problem alone for the social implications are too insistent to be disregarded. The discovery and treatment of the social malady are essential to recovery." The importance of psycho-
logical factors has been expressed powerfully by Sir William Osler, the great medical teacher, who warned physicians that the fate of the tuberculous patient depends more on what is in his head than what is in his chest. Similarly, Wittkower (1955) stresses the role of psychological factors by observing that probably every one has tuberculosis at one time or another, and joins others in asking 'Why do so few succumb?' It may, therefore, be hypothesised that the ever present tubercle bacillus appears to be lying in wait for a neurosis to provide satisfactory environment within which to become seriously pathogenic.

In the light of the above, it is evident that management of tuberculosis is beyond the complete control of medical science alone and affords social scientists a fruitful area of research.

Control of tuberculosis poses a gigantic problem universally. Expressing this, Dr. K. Styblo observed during the proceedings of Centenary Celebrations of the Discovery of the Bacillious of Tuberculosis by Robert Koch, (1984) that at least 3 million deaths occur every year due to tuberculosis. Each year, there are four to five million new cases, and two out of three of these patients die within two years. In all, there are ten million discovered cases of tuberculosis in the world today. Sen Gupta (1986) pointing to the tremendous problems of tuberculosis states that among treated cases "no more than 50% achieve a cure".
The position in India is also alarming. It is estimated that in India five million patients are suffering from tuberculosis of which 1.5 million cases are believed to be infectious. Tuberculosis Mortality in Asian countries is estimated to be of the order of four million every year. In India, at least five hundred thousand known patients die of tuberculosis. In the city of Delhi alone, the prevalence rate is 12 per thousand, (Pamra, 1972-73). It is therefore understandable that control of tuberculosis is a matter of considerable interest both for the medical profession as well as for the social scientists.

The exact number of patients suffering from pulmonary tuberculosis in India is rather difficult to assess. However, on the basis of a countrywide sample survey carried out in 1955-57, it was found that out of every 1000 persons, 15 are suffering from tuberculosis, needing treatment, and out of these 15 patients, four are infectious. Of these four infectious cases, two are known and the other two are unknown. Of the 11 non-infectious cases, 8 are unknown and only 3 or 4 are known (Pamra 1973). The result of the national survey further showed that the disease is found more in the slums where poor people live in unhygienic and crowded environment. The National Survey Report (Pamra 1973) shows that incidence of tuberculosis to be 14-18 per thousand persons in the population. In the city of Delhi alone there are about one lac eight hundred patients suffering from tuberculosis.
Pulmonary tuberculosis is a disease caused by a specific bacillus called Koch's bacillus, inhaled through the lungs. This discovery of mycobacterium tuberculosis by Robert Koch in 1882, as the causative agent is a landmark in the history of tuberculosis. The discovery of X-Ray by professor Reontgen in 1895 and the discovery of tuberculin test, where dead tubercle bacilli are injected into the skin to establish immunity against the disease (1907), have proved to be valuable tools in diagnosis and in epidemiological studies. Research in chemotherapy led to introduction of the drug streptomycin in 1947, which was followed by other drugs as such as para-aminosalicylic acid (PAS) and isonicotinic acid hydrazide (INH) and lately even more effective drugs such as Rifampicin and Pyrazinamide. Along with chemotherapy, advanced thoracic surgery developed, revolutionizing the treatment of tuberculosis. B.C.G. (Bacillus Calmette Guerin) vaccination, where a harmless living bacillus similar to the tubercle bacillus, is injected into the individual producing antibodies, has also been developed in order to protect the individual from infection, by providing artificial immunity.

In pulmonary tuberculosis, the tubercle bacilli that are inhaled, reach the lung tissue setting up a tiny focus of inflammation. The immediate response of the body to the first attack of tubercle bacilli is to surround and, if possible,
to destroy the invading germs by white blood cells. Owing
to the power of resistance of the individual, this small
focus of infection is strangled and the disease does not
break open. As a result of this primary infection, the body
acquires resistance for further infection with the tubercle
bacilli and individual's skin develops allergy to tuberculin
test. A primary infection, therefore, acts as a vaccination
against further infection perhaps, ninety five times out
of hundred (Pamra 1969). This process is called immunity.
In the rest of the cases the primary infection progresses
unchecked to develop into the disease of pulmonary tuberculosis.
In these cases, the body tries to limit the infection by
producing a barrier of fibrous tissue around the infection,
preventing the spread of inflammation to normal surrounding
tissue. Once fibrosis or calcification takes place, tubercle
bacilli usually remain inactive, not causing the disease.
However, the bacilli may break open the body defences and
escape, causing the lung disease.

Secondary or clinical tuberculosis results from secondary
infection with the tubercle bacilli. When the resistance
of the body is lowered due to either poor diet, insufficient
rest or emotional trauma, the bacilli may break open the
calcification. As the infection advances the lung tissue
undergoes degenerative changes resulting in exodus of struc-
trueless cheesy material called caseation. When the dead centre of the disease area is drained off by expectoration, and is subsequently coughed up, a cavity is formed. This cavity is a very active lung tissue where tubercle bacilli spread fast to the adjoining area.

**CLINICAL PICTURE**

Clinical picture of the patient is one of progressive loss of weight, cough with expectoration, pain in the chest, fever and feeling of debilitation. If untreated, deterioration is fast. At times there is haemoptysis when the patient coughs out frank blood due to rupture of blood vessels in the diseased lung tissue. The clinical picture of the patient varies with severity of the disease. The onset of secondary pulmonary tuberculosis takes many different forms but is usually some what insidious.

**TREATMENT**

Traditionally, sanatorium treatment, was the first form of organized treatment. The sanatoria were quasi-medical-cum-health resorts mostly located in the hills, amongst pine trees. This line of treatment was introduced by a German doctor. This treatment provided rest to the body as well as the mind. Artificial collapse of the lung tissue was
the next advancement whereby healing of the disease lung tissue takes place due to disuse. Then came the remarkable discovery of anti, tubercular drugs—streptomycin, PAS and INH. These medicines, which are given for a prolonged period of at least one year, effectively arrest the disease. They act only on the multiplying bacilli and not on the dormant bacilli. (Towards the end of treatment large number of bacilli have died, however, some bacilli remain dormant in the scar of healed disease, which could be a source of relapse whenever the body resistance is low).

SURGICAL TREATMENT

Surgical treatment is given when chemotherapy fails to close a cavity. Minor surgical procedures like artificial pneumothorax, when lung is collapsed by introducing air in the pleura of the lung, or phrenic crush, which is performed by crushing the phrenic nerve in the neck, paralysing the diaphragm to collapse the lower portion of the lung, are used. The use of these procedures is however on decline.

Major surgery like thoracoplasty is performed by removing six to seven ribs. Resection is another surgical procedure where diseased portion of the lung tissue is removed. When one lobe of the lung is removed it is called lobectomy and when entire lung is removed it is called pneumonectomy.
DOMICILIARY TREATMENT

Efficacy of the sanatorium or hospital treatment was studied against the home treatment at the Madras chemotherapy Centre. The results showed that the number of contacts who developed the disease was nearly equal both in hospital treatment as well as home treatment. Hence risk of infection was not found to be greater when the patient was treated at home. Effectivity of the treatment carried at home was also found to be as good as in the hospital. Also, the domiciliary treatment provides better emotional security and care of the family members which the hospital treatment can not provide. Hence, it was established that domiciliary treatment is as effective as and cheaper than hospital treatment. Therefore, we see that the domiciliary treatment has effectively replaced hospital treatment for care of the tuberculous population in most cases.

PSYCHOLOGICAL ASPECTS OF TUBERCULOSIS

The malady of pulmonary tuberculosis has certain psychological characteristics and subsequent psycho-social implications. The disease, as is well known, is infectious and infects others through coughing and inhalation. The contagious nature of tuberculosis is a widely known fact. However, the ensuing
segregation of the patient leads to various unfortunate consequ-
ences. Relatives and other people become wary of the patient
and even of the patient's entire family. Myths rather than
knowledge start dictating interpersonal relationships, since
there is danger to one's own life as well as to the lives
of one's family members. Hence, precautionary segregation
for a short period of time, which is an adequate precaution,
is replaced by prolonged social ostracism of the patient
and his family, thereby endangering his job prospects, marriage
prospects and other social prospects.

In order to escape the humility of this social malpractice,
patients and their family members often attempt to conceal
the disease, though this concealment, tragically, is against
the interests of the patient inasmuch as it prevents timely
treatment at proper public tuberculosis clinic. This secrecy
is an additional source of psychological stress upon the
patient's mind, and possibly aggravates his condition.

Other characteristics of the tuberculous patient is the very
rapid deterioration in their physical condition due to which
they progressively get confined to the home, producing fear
of death and anxiety about health, worsening patient's mental
condition. Thus, there is a simultaneous deterioration in
physical and psychological condition.
Possibility of surgical intervention could be another fear of the tuberculous patient. The disease requires prolonged treatment which calls for patient's determination and will-power for sustained effort of taking regular treatment. Financial problems due to disability of the male patient to attend to his job and extra expenditure due to the disease add to the financial worries of the patients. Prolonged treatment for at least one year, taking three kinds of medicines, injections, diet restrictions and rest restriction require the patient to be very organized, vigilant and disciplined. The curative efforts must be maintained for a long period even after the disease symptoms have subsided. Laxity in the treatment regime by the patient adversely affects the rate of progress, and deterioration may take place. Even after a clean chit has been given by doctors, patients have to report periodically for checkup to detect X-Ray evidence of relapsed disease.

Facing adverse social response is another problem with which patients have to live. Social attitudes and fears about tuberculosis seem to remain encapsulated and unaffected by the medical advances resulting in control of the rate of cure in tuberculosis, reducing death rate, period of infectiousness and inactivity.
At best, tuberculosis can be arrested and not completely cured. Tubercle bacilli may lie dormant in apparently healed lung tissue, until the lesion breaks up under stress, causing active disease. Hence, fear of relapse is always there and constant vigilance is required even when the disease is healed. All these problems make tuberculosis a special disease with distinct psycho-social characteristics.

PSYCHOSOMATIC ASPECT OF TUBERCULOSIS

Tuberculosis is a disease which is caused by a specific bacilli. But the fact that the tubercle bacilli is ever present in the air, and yet only a few develop the disease calls for some other explanation. Research has also shown that emotional stress plays a very significant role in the etiology of tuberculosis. Incidence of stress is found to be commonly associated with breakdown of tuberculosis. Observations also reveal vacillation of the course of disease which is closely associated with positive and negative emotions. A close link between emotional stress and relapse is another significant factor pointing to the intimate association between mind and body. Hendrieke (1951) rightly observed that there is more to the etiology of tuberculosis than the bacilli.

Establishing the relationship between emotions and tuberculosis, Lachman (1972) advocates two theoretical formulations to account for the role of emotionality in genesis, development,
exacerbations, and remission of tuberculosis. Firstly, as
a consequence of pronounced or prolonged emotionality, general
bodily resistance is lowered, which he explains, might be
due to excessive expenditure of or lack of availability of
bodily resources. Secondly, as a consequence of pronounced
or prolonged emotionality there may be particular physiological
changes that occur to maximize the predisposition of an in-
dividual to specific kind of disorders like tuberculosis.

Stressing the role of psychological factors Selye (1955)
maintains that psychological stress plays a very important
part, perhaps more than in most diseases, because the disease
depends so much on one's own defensive measures, on antibody
formation on inflammation, on encapsulation and calcification.

Looking at tuberculosis from psychologist's point of view,
it is a disease which involves lungs, the organ of breathing.
Breath is the very life. Long before the body suckles or
defecates, it performs the act of breathing which is more
basic and fundamental to its very existence. We get choked
with emotions and are breathless with anticipation; we hold
our breath lest something happens, when we are afraid. In
other words, breathing is very much altered. So, it can
safely be assumed that a person who has been experiencing
stress and strain would express it psycho-somatically in
different manners and one of these is altered breathing.
This can lead to the likelihood of lowering of lung resistance. Inhalation of carbon dioxide, which threatens asphyxia, brings on the most profound anxiety. Anxiety that interferes with easy breathing immediately sounds the alarm reaction and mobilizes all available defences. So we see that whenever we are under the impact of emotions, respiration is one system that is under stress, which may lower the resistance of lungs, particularly if the stress is profound and prolonged.

Explaining the relationship between emotions and tuberculosis, Dunbar (1954) in her chapter on psychosomatic nature of tuberculosis, writes that respiratory system is well suited to express resentment against smothered love in its various forms. Whether a person becomes choked up and stuffy with resentment because of inability to communicate his needs and obtain help, or whether he gets so much attention that he cannot take a breath of his own, makes little difference. Finally, whether, or not such infant experiences has anything to do with susceptibility to tuberculosis, it indeed has a bearing upon the patient's resistance to the disease and healing of lesions.

However, these aspects of the mechanism of emotions do not explain why any particular disease develops as a result of certain emotional trauma. There are no operational differences between anger, hostility, aggression and so on. It is perhaps anot so much the nature of the conflict that determines somatic
reactions as the species of the animal, his physical conditions and his particular somatic vulnerability. Psychiatric and psychoanalytic observations seem to indicate that the same individual can have a kaleidoscopic array of somatic disturbances depending not so much upon the yearnings or frustrations of the moment, but on many other biodynamics. (Coleman 1969) quotes the following general theories which attempt to explain organ specificity, i.e. why one individual reacts with spasms and another with peptic ulcers, and the third with tuberculosis.

According to the first theory, various personality characteristics are associated with particular psycho-physiological disorders, e.g. persons suffering from hypertension tend to be rigid, sensitive to threat and prone to underlying hostility (Kalis 1957). The second theory states that, emotional tension may influence practically any physiological process in any organ and particular symptoms depend upon the history and constitutional makeup of the patient.

Wolff (1950) points out that some people react to emotional strain with quickened pulse, but no change in blood pressure, whereas for others the reverse may be true. Similarly some people may be "nose reactors" or "stomach reactors", or pulse reactors", and so on. Inherited weak organs or repeated
infections may make the individual's organs vulnerable and these organs may under stress respond in a manner that alters or interferes with physiological functions of the organ. In some cases, early conditioning may develop individualized neuro-physiological responses to stress involving particular organ or organs due to sustained and exaggerated emotional tension. According to this theory, the individual's 'Achilles heel' will be affected whether it is due to heredity or early conditioning.

According to the third theory, differences in physiological changes accompanying various emotional states determine the organ vulnerability. In states of fear, adrenalin is released, it is well known that both these states lead to differing conditions.

Fear dries the mouth and reduces gastric secretion, whereas anxiety produces increased salivation all secretion of stomach. If such changes are maintained over a period of time, they tend to lead to organ pathology, whose nature is influenced by the character of the organ system and the type of emotional state.
Most psychosomatic investigations adopt an approach involving all the above mentioned theories. However, these theories fail to explain the dynamics of the psycho-physiological disorder, the precise mechanism by which the mind affects the body.

Thus, in tuberculosis, where for the development of the disease, body defences, apart from the presence of tubercle bacilli, are very important contributing factors, it is probable that the psychological factors, mediated through the autonomic nervous system and the body chemistry, help constitute this lowered resistance.

It is admitted, that the powerful influence of mind over the body has been well established in many disease. In tuberculosis too, the powerful impact of emotional states in onset, course, the healing process and relapse has been the general observation of physicians attending on tuberculous patients.

In the present study it is aimed to study the various psychological, factors in the cause, course, and arrest of the disease. One other aim is to arrive at a comparative understanding of the various psychological factors of those patients who respond favourably and those who do not respond to the
treatment of the disease, and establish if there are any differences in the respective psychological make up of the two groups of patients. We also aim to look into the various social factors in the favourable and unfavourable response groups. Our general hypothesis is that when patients disease is in a treatable condition and are under treatment, the cause of poor response to treatment could be in the psyche of the patients. hence, we aim to explore and establish the cause of differing responses, favourable and unfavourable to treatment.

The empirical findings may help suggest the various measures to the medical men to enhance the recovery rate and to reduce the failure response to treatment. This, in turn, should help the suffering population of tuberculosis patients. As has been earlier stated, there are a large number of tuberculous patients who do not recover, and who are constant threat and to themselves causing grave concern to medical practitioner. Thus, the present study may go a long way in proving beneficial to the physicians attending on tuberculous patients, as well as it is expected to provide useful insights into the understanding of linkages between tuberculosis and various dimensions of psychological make up of tuberculous patients. In this latter respects, the study is expected to be a modest contribution to the social psychology of tuberculosis.