

# **CHAPTER 2**

## **Literature review**

### **2.1 INTRODUCTION**

The purpose of the study was to investigate the knowledge levels of clients on long-term TB treatment. This chapter presents a review of related literature. The purpose of a literature review is “to orientate the researcher with what is already known about the problem under investigation, to select appropriate research methods previously used by others, to avoid flaws, which may compromise validity and reliability, and also unnecessary replication” (Polit & Hungler 1995:70).

Several sources were consulted, including medical textbooks, medical and research journals, newspapers and the WHO newsletters and policy documents. Sources were obtained from libraries at the Medical School of the University of Zimbabwe, the Ministry of Health and Child Welfare (MOH/CW), the Kwekwe School of Nursing, the University of South Africa and the Internet.

### **2.2 DEFINITION AND HISTORIC BACK GROUND TO TB**

TB is a bacterial disease caused by the mycobacterium tubercle, which can affect any tissue of the body but its predominant form is pulmonary TB (PTB), which affects the lungs. Those with the active disease spread it, mostly exogenously; that is, from person to person through aerosolisation, that is the airborne route. When an infected person coughs, laughs, sneezes or sings, droplet nuclei are produced and may be inhaled by others. The disease can also occur endogenously, that is through reactivation of a primary infection (Jaramillo 1999:393; Stanhope & Lancaster 1996:775).

TB is an ancient disease. In 1680, Bunyan (in Kaplan 1997:42) described TB as “the captain of all these men of death”. At that time, there was no cure for the disease. The disease was prevalent in the slums of Britain during the Industrial Revolution and the United States because of overcrowding and poor ventilation. The only treatment was isolation in a sanatorium or being sent away into the country where it was believed plenty of fresh air helped somehow in the treatment (Berkow 1999:885).

In 1940, there was a decline in TB because of a breakthrough in successful chemotherapy, improved standards of living and the advent of vaccination of children with Bacille Calmette Guérin vaccine (BCG). These improvements led to reduced public expenditure on TB treatment and control (Jaramillo 1999:394). However, in the mid-1980s, the number of cases worldwide in both developing and developed countries began to rise again. AIDS in combination with overcrowding, unsanitary conditions, homelessness and prisons have again made TB a serious health problem (Berkow 1999:886).

In 1998, the WHO (1998:15) reported TB to be the most widely prevalent disease with between 25 and 30 percent of the world's population already infected. The majority are latent cases, and under suitably depressed socio-economic conditions, reactivation occurs because of lowered resistance by malnutrition and poor living conditions. The WHO stated further that in developing countries between 8 and 10 million cases are reported each year and between 3 and 5 million cases die each year from TB. TB kills more than any other disease and is still the "captain of all these men of death".

### **2.3 RECENT TB STATISTICS**

In Zimbabwe, in the early 1960s, the number of clients on TB treatment had declined to less than 50 new cases per 100 000 of the population. The rate increased, however, from about 68 cases per 100 000 in 1987 to more than 350 cases per 100 000 in 1998 (Zimbabwe, Ministry of Health & Child Welfare 1999a: 6). Motsi (2003:8) reported 55 000 (435/100 000) people on TB treatment for the year 2001. Zimbabwe has a population of 12 million (Zimbabwe, Ministry of Home Affairs 2002:12)

The overwhelming reason for the resurgence of TB was the onset of the HIV/AIDS pandemic which has been particularly devastating for Zimbabwe. In South Africa, there is a similar scenario. Since the appearance of HIV/AIDS in South Africa, this epidemic has become the greatest risk factor in fuelling the TB epidemic, with recent increases in TB incidences linked largely to the spread of HIV/AIDS (Van Rensburg 2004:255).

### **2.4 THE HEALTH SYSTEM IN ZIMBABWE**

According to the National Health Strategy for Zimbabwe, (Zimbabwe, Ministry of Health & Child Welfare 1999b: 30), the early 1980s saw the reorganisation of the health system

in Zimbabwe, moving away from centralisation to decentralisation of operational responsibilities. Top of the hierarchy is the Ministry of Health and Child Welfare (central level), which retains authority and control of resources, giving leadership and maintaining coherence and consistency in performance at all levels of health care. Below the central level are four central hospitals. The role of the central hospitals, referred to as the quaternary level, is to offer specialist services to clients referred from the tertiary level. At tertiary level are the provincial hospitals. The provincial hospitals are responsible for tertiary care within the provinces. Below the tertiary level is the secondary level. At secondary level are district hospitals responsible for the basic planning for the implementation of all primary health care activities as well as management of clients referred from the primary level. The primary level is where all the primary health care activities are implemented, for example at rural, urban and mobile clinics.

In essence, clients are required to present at the primary level first, and then to be progressively referred to the district level, the secondary level up to the quaternary level, depending on the complexity of the illness. Clinics in the urban setting also offer primary health care but are under the management of the local authorities. There are also profit-making organisations, such as private hospitals and practitioners, who offer mainly curative services. In government institutions, TB treatment is free of charge. Paying clients pay a certain fee for all services rendered.

With regard to TB, the central level is responsible for planning, co-ordination, monitoring and evaluating TB diagnosis, standardising anti-TB treatment, drug supplies, health data compilation and liaison between the environmental health department, public health laboratory and pharmaceutical services. The quaternary level is responsible for review of special cases, such as spinal or pericardial TB. The tertiary level is responsible for co-ordination of the TB programme, implementation at district level, staff training, supervision, compilation and analysis of TB data. The district level and local authority are responsible for supervision of clinics and health data recording. The primary care level manages the daily supply of TB drugs, ensuring DOTS is implemented and the maintenance of TB records and registers. Private practitioners and institutions are responsible for the diagnosis of TB clients and referral to government institutions for notification and treatment. At every level within the Ministry of Health and Child Welfare, there is an appointee to coordinate the TB programme (Zimbabwe, Ministry of Health and Child Welfare 1999a: 8-9).

There is a great need for sustained effort to control TB at all levels of the health system. If any of the levels fail in their objectives, defaulting and control of TB would be a problem. In their study in Delhi, India, Jaiswal, Singh, Ogden, Porter, Sharma, Sarin, Arora and Jain (2003:628-629) reported that defaulting from TB treatment is the product of programme problems or failures as much as, if not more than, client problems. Jaiswal et al (2003:625) found that clients on TB treatment defaulted because of health workers' poor communication skills as well as barriers to re-joining treatment after a period of interruption. Jaramillo (1999:395) also cited managerial incompetence of health workers in resolving operational difficulties faced by TB clients on treatment.

## **2.5 WESTERN AND TRADITIONAL MODELS OF HEALTH CARE**

In Africa, clients have two models of health care they can consult: Western medicine or traditional medicine. Western medicine comprises the legally sanctioned healing professions. This model uses the scientific way of diagnosing and treatment, using technology and pharmaceutical medications. Helman (1996:74) points out that it is important to realise that Western scientific medicine provides only a small portion of health care in most countries of the world. Most health care takes place in traditional settings. Traditional medicine in Africa is as old as African culture, and is therefore strongly related to cultural beliefs and health-seeking behaviours. It is widely accepted in African culture that there is a force, power or energy permeating the whole universe of which God is the source and controller. The spirits have access to this force but only a few human beings, such as priests and medicine men, can manipulate this energy for the good or ill of society. While most white clients would accept that the cause of TB is the tubercle bacillus, Africans may not accept that explanation and fail to comply with treatment because they believe that witchcraft is causing the illness. To cure the illness, the traditional healer uses herbs, barks and roots freshly collected (Ferreira 1992: 81).

Having both these systems available, clients often use both. They sometimes start with medical treatment and then default and turn to traditional healers, not realising the effects of doing so because they are bound by their cultural beliefs.

## **2.6 COURSE OF THE DISEASE**

### **◆ Transmission of infection**

The transmission of TB occurs by airborne spread of infectious droplets. The source of infection is a person with PTB. This person is usually sputum smear-positive, which means that his/her sputum has the *Mycobacterium tubercle*, the organism responsible for causing TB. Coughing produces tiny infectious droplets called droplet nuclei. Transmission usually occurs indoors, where droplets can stay in the air for a long time. Ventilation removes the droplet nuclei. Direct sunlight quickly kills the bacteria, but they can survive in the dark for several hours. Two factors determine individuals' risk of exposure, that is, the concentration of droplet nuclei in the air and the length of time they breathe that air (WHO 1996:19).

The transmission of the infection is closely related to personal and environmental hygiene.

### **◆ Risk of infection**

Individuals' risk of infection depends on the extent of exposure to droplet nuclei and their susceptibility to infection. The risk of infection of a susceptible individual is therefore high with close, prolonged indoor exposure to a person with sputum smear-positive PTB. The risk of exposure to a person with sputum smear-negative PTB is low and with extra-pulmonary TB is even lower (Jaramillo 1999:393; WHO 1998:19).

HIV increases the susceptibility to infection with TB (WHO 1996:29). Environmental factors also increase the susceptibility to infection. These include poor living standards like overcrowding and inadequate diet (Berkow 1999:886; WHO 1996:124; WHO 1998:15).

### **◆ Risk of progression to disease**

Berkow (1999:887) emphasises that once infected with *Mycobacterium tubercle*, a person stays infected for many years, probably for life. The vast majority (90,0%) of people without HIV infection who are infected with the bacteria do not develop the

disease. Usually a person with TB has a 5,0% chance of developing an active infection within one to five years. The rate of progression depends, in particular, on the strength of a person's immune system. In these healthy asymptomatic but infected individuals, the only evidence of infection may be a positive tuberculin test which is a test done on the skin to indicate the presence of infection.

#### ◆ **Untreated TB**

The WHO (1996:83) warns that without treatment, after five years, 50,0% of the clients will be dead, 25,0% will be healthy (self-cured by strong immune defence) and 25,0% will remain ill with chronic infectious TB.

#### ◆ **Primary infection**

Primary infection is the period between inhalation of the microorganism to the healing of an infected area in the lung with subsequent calcification and fibrosis of the lung tissue. There is also enlargement of the adjacent lymph nodes. Five percent of clients with primary infection advance to the active disease and fifty percent are normal hosts for the microorganism. The tubercle bacilli remain encapsulated in the fibrous tissue for the rest of that person's life, with reactivation occurring when conditions are favourable, for example, when the HIV suppresses immunity (Kumar & Clark 1999:801).

#### ◆ **Post-primary infection**

Kumar and Clark (1999:802) state that a person can either have TB infection or the disease. A person exposed to TB bacteria has the TB infection or latent TB. This latent TB can progress to the active disease. In the active disease (when activated as stated above), the fibrous tissue encapsulating the bacilli in the lungs ruptures, leaving cavities within the lungs and resulting in huge clones of bacteria being released into the lungs. These bacteria further attack healthy lung tissue and are also coughed up, spreading the infection to others. Prolonged exposure to a person with an active disease or close contact with that person by friends, relatives, colleagues and health workers can result in them contracting the disease. TB affects people from all walks of life.

### ♦ **Clinical manifestations**

Kumar and Clark (1999:802) and Stanhope and Lancaster (1996:775) state that a person with TB presents with

- fever, especially at night
- low grade fever in the afternoons
- cough lasting more than two weeks
- diaphoresis at night
- fatigue
- gradual loss of appetite and weight
- possibly coughing up blood due to erosion of blood vessels as infection spreads
- chest pain

This information is supposed to be given during health education sessions but in a study in Pakistan, Khan, Walley, Newell and Imdad (2000:250) indicated that clients and their family members were not aware of the symptoms of TB.

### ♦ **Diagnosis**

TB is diagnosed through the clinical manifestations as outlined above, which are confirmed by examination of sputum smears and chest X-rays. The sputum smears are checked on three consecutive days for identification of the bacilli. The chances of finding the bacteria are greater with three sputum samples than with two or one sample (WHO 1996:39).

### ♦ **Complications of TB**

TB is a major cause of disability and death in many parts of the world. The disease is more common in men than women who have to work to fend for their families where they are exposed more. The infection may progress to cause anaemia and collapse of the lung, leading to permanent disability. The bacteria may spread from the lungs via blood or lymph to other parts of the body, such as the brain, genital organs or the bones (Kumar & Clark 1999:803).

## ◆ TB and HIV/AIDS

According to the WHO (1996:29), in 1995, about one third of the 15 million HIV-infected people worldwide were also co-infected with TB. Seventy percent of the co-infected live in sub-Saharan Africa. HIV increases a person's susceptibility to infection with the TB tubercle. HIV is also a potent cause of progression of TB infection to disease because of the suppressed immunity in these clients. The impact of HIV on TB control is quite substantial. There are usually high defaulter rates because these clients develop adverse anti-TB drug reactions and as a result, they stop taking TB treatment. The cure rates in HIV clients are low resulting in high mortality rates. There is also an increase in the emergence of drug resistance, especially with defaulting treatment. However, provided TB is diagnosed early in these clients and effectively managed, TB can be cured even if they are HIV positive. This should be emphasised in health education.

### 2.7 TREATMENT OF TB

Before the discovery of antibiotics, TB used to claim many lives because the organisms overwhelmed the body's natural defences. The discovery of chemotherapy in 1940 led to reduced morbidity and mortality (Clark 1996:773).

The aims of treatment according to Webber (1997:306) are to treat individual cases, reduce infectiousness, and provide a method of disease reduction as well as reducing morbidity from the disease. Long, Scalcini, Olle, Desvarieux, Johnson and Pape (2001:1546) also concur that treatment of TB aims to provide a lasting cure with few treatment failures and relapses as well as preventing drug resistance.

Murray, Styblo and Rouillon (1990) cited in Proudfoot, Chitando, Munganasa, Matose, Nhara and Chapman (1996:11) also say that treatment is the best way to prevent death and the most cost-effective intervention available in the health armamentarium. However, the same authors state that the benefits of TB treatment only hold if it is taken regularly according to prescription for at least six to eight months.

In Zimbabwe, the MOH/CW's health policy of 1994, cited in the Zimbabwe, Ministry of Health and Child Welfare (1999a:35), advocates the use of multi-drug therapy once a firm diagnosis has been made.



The treatment consists of two phases. The first phase is the intensive phase lasting two months where four drugs are used. The second phase is the continuation phase lasting for four to six months in which two drugs are used (see 1.8.4). In South Africa, a pharmaceutical company Lederle Laboratories has launched a triple drug combination tablet called Myrin. The drugs, Ethambutol, Rifampicin and Isoniazid are combined into one tablet which is better for patients in as far as compliance is concerned rather than taking several tablets (12 tablets) once a day as is the case in Zimbabwe (Tuberculosis: The Hard Facts 1995:26).

The drugs used are: Rifampicin, Isoniazid, Pyrazinamide, Ethambutol, and Streptomycin (Zimbabwe, Ministry of Health & Child Welfare 1999a: 36). Anti-TB treatment is timeous because it is difficult to kill the semi-dormant TB bacilli. The drugs are given in combinations, because the TB bacilli can form resistance to any of the drugs and so if given in combination, the other drugs can cover for the resistance (WHO 1996:84). This, however, seems to be too much for clients. A study by Haynes, Taylor and Sackett (1979), cited in Naing, D'Este, Issa, Salleh, Baker and Mahomed (2001:378), indicated that clients default treatment because of the complex treatment regimens as well as long treatment duration.

Having knowledge of the reasons for the combination treatment and for the long duration of treatment may prepare clients to follow the treatment regime.

#### ♦ **TB treatment policy in Zimbabwe**

The Ministry of Health and Child Welfare (MOH/CW) has categorised the protocols of TB treatment into those who are sputum positive, sputum negative, all forms of TB, all those who have relapsed and those who are not responding to treatment.

According to the Zimbabwe Tuberculosis Control Programme Manual (Zimbabwe, Ministry of Health and Child Welfare 1999a:35), TB treatment should be free of charge to ensure proper control and completion of treatment. Treatment should be provided at government hospitals. Those treated at private surgeries should get their supplies from government hospitals. TB is a notifiable disease and the local health authority is notified through special forms so that records can be updated and contacts traced.

The MOH/CW policy also states that only the very ill clients and those who are failing to comply with treatment are admitted to hospital. The rest should be treated at home.

In Zimbabwe, there are two main categories of treatment each with its own regimen. Category 1 consists of all new cases of TB regardless of site or severity. In this category, four drugs namely, Rifampicin, Isoniazid, Pyrazinamide and Ethambutol are given for two months (intensive phase) then the drugs are reduced and two drugs, that is Isoniazid and Pyrazinamide are given for a further six months (continuation phase) giving a total of eight months, taking drugs daily. If the client is directly observed taking the drugs, then the six months of taking the two drugs can be reduced to four months.

Category 2 is for all re-treatment cases of any form of TB, clients are given five drugs for duration of two months, Rifampicin, Isoniazid, Pyrazinamide, Ethambutol and Streptomycin, then one month taking Rifampicin, Isoniazid, Pyrazinamide and Ethambutol and another five months of taking Isoniazid and Ethambutol. The whole duration in this category is eight months. The initial phase of two months is meant to rapidly kill the TB bacilli. Infectious patients become non-infectious within about two weeks after taking treatment. The symptoms also improve. The continuation phase has fewer drugs, which are, however, taken for a longer period. The drugs eliminate the remaining TB bacilli (Zimbabwe, Ministry of Health & Child Welfare 1999a: 36).

#### ◆ **Side-effects of TB drugs**

Most TB clients complete their treatment without any significant drug side effects. However, a few clients do develop side effects. Among the side effects experienced are severe rashes, hearing loss or disturbed balance, visual disturbances and a burning sensation of the feet. Clinical monitoring for side effects of all TB clients is therefore important during treatment. A study carried out in Egypt by Mukherjee, Banerjee, Pati and Mullick (2003: 18) revealed that clients do default treatment as a result of being afraid of the side-effects.

Health education on the possible side effects and the value of clinical monitoring may prove valuable to ensure compliance.

## **2.8 DIRECTLY OBSERVED THERAPY SHORT COURSE STRATEGY**

To ensure that the treatment for TB cures the client, health workers have to ensure client adherence to the treatment. Client adherence to short course chemotherapy means the client takes every dose of the recommended treatment regimen. It is difficult for clients to adhere to anti-TB treatment for eight months. It is also difficult to predict which clients will adhere to self-administered treatment. One certain way to ensure client adherence to treatment is Directly Observed Therapy Short Course (DOTS).

The WHO introduced DOTS in 1993 as a technical and management strategy to improve global TB control. This strategy has proved to be cost effective and also prevents MDR-TB (Nachega & Chaisson 2000:33). According to Bastian, Rigouts, Van Deun and Portaels (2000:239), DOTS is a method to ensure high levels of adherence and completion of TB treatment.

DOTS entails that a health worker, volunteer, village health worker, home based caregiver, community member or family member takes the responsibility of observing the client take and swallow every dose of the drug. Akkslip, Rasmithat, Maher and Sawert (1999:1064) studied family members supervising taking of TB treatment. They recorded a cure rate of 85,0% in the directly observed sputum positive clients compared to a cure rate of 70,9% in those who opted for self-administered treatment. The study further indicates that family members may contribute to effective implementation of DOTS leading to reduction of defaulter rates.

To ensure compliancy the MOH/CW in its TB treatment policy has recommended the DOTS strategy. The treatment can be administered in a wide range of clinical settings including at home, workplace, school or any convenient designated area. Missed doses of anti-TB treatment are immediately detected when clients are on DOTS as all tablets taken daily are recorded on a card. Great success on DOTS has been reported in different countries such as Bangladesh, China, Peru and Tanzania (WHO 1998:14). DOTS is also a last line of defence against MDR TB. DOTS has a number of advantages, mainly that it is the only way to ensure that clients receive complete treatment of TB and become TB free. DOTS also stops MDR TB and it is also a potential gain to the community to see clients managed and cured in the community and this decreases the stigma of TB.

However, Burman and El-Sadr (1999:600-601) assert that DOTS may make the client's situation worse and not better. They argue that negative perceptions regarding DOTS such as surveillance of pill swallowing can be alienating and authoritarian causing clients with TB to avoid health care and hence contribute to defaulting. The authors seem to assume that DOTS is less attractive to clients than self-administered therapy. Heyman, Brewer and Sell (1999:602) in the same article also point out that DOTS is more effective than self-administered therapy only for clients who have not adhered to previous treatment. Zwarensten, Schoeman, Vundule, Lombard and Tatley (2000:30) also carried out a study in South Africa at Khayelitsha and Elsie's River and proved that self-supervision can produce better results than the use of DOTS. In the study, self-supervised clients achieved better outcomes, 74,0% as compared to 42,0% of patients on DOTS. A number of authors however feel that DOTS is still a strategy waiting to be used extensively as its success has been proved in various studies (Barker, Millard & Nthangeni 2002:294; Bayer & Desvarieux 1999:605; Burman, Cohn, Reitmeijer, Judson, Sbarbaro & Reves 1997:1172; Westaway, Conradie & Remmers 1991:143; WHO 1998:14). Kochi (1997:225) on DOTS says, "no other new health intervention of this decade has achieved such significant results".

## **2.9 PREVENTION OF TB**

*Collins English Dictionary* (1991:1231) defines *prevent* as "to keep from happening, esp. by taking precautionary action" and *prevention* as "the act of preventing". Prevention of the disease is the primary concern of the MOH/CW. The WHO made the commitment to adopt the Primary Health Care concept in 1978 at the Alma Ata Conference and Zimbabwe was among the countries that signed the Declaration.

TB can be prevented through immunisation of children at birth with the BCG vaccine. Tracing people who have been in contact with the disease so that they can be treated before larger groups of people are infected can also prevent it. Murray, Styblo and Rouillon (1990:18) cited in Proudfoot et al (1996: 77) state that the best way to reduce the transmission of TB infection is to cure clients with sputum-positive TB. Complete BCG coverage at birth only prevents 10,0% of mortality. BCG is most effective in preventing serious but non-infectious forms of childhood TB. Good ventilation also helps reduce TB transmission indoors. Sunlight is a source of ultraviolet light, which can kill the TB bacilli, so ideally wards should have large windows. Health workers can also teach TB suspects and TB clients' simple measures to decrease the risk of transmitting

TB, including covering the mouth with the hand when coughing and using sputum pots with lids for coughing in and their proper disposal (WHO 1996:124).

#### ◆ **Components of TB control**

The Zimbabwe, Ministry of Health & Child Welfare (1999a: 6) states that among the priority health issues identified for attention and more action is the control of TB. It is therefore recommended that health centres should be adequately staffed with competent trained health personnel to ensure effective management of patients with TB. Drugs should be available, treatment short, effective and provided free of charge. Health education should be given to all clients who commence TB treatment so that they are empowered with information and are aware of their condition hence understand the importance of completing treatment. Clients who have been in contact with TB patients should be actively followed up and screened by health personnel to avoid the spread of TB. Emotional support should be given to all clients on TB treatment as well as the family.

### **2.10 MULTI-DRUG-RESISTANT TB (MDR TB)**

In MDR TB a client is resistant to the anti-TB drugs Rifampicin and Isoniazid with or without resistance to other anti-TB drugs. These two drugs are the basis of TB treatment. Combined Rifampicin and Isoniazid resistance is expensive to treat, as it requires prolonged treatment of between 18 and 24 months with second line agents, which produce multiple side effects. MDR TB arises from failure to deliver anti-TB drug treatment properly and reflects a failure of the TB control system. It is virtually 100,0% preventable. The danger associated with MDR TB is that as the pool of clients excreting MDR bacilli expands, there is an increasing risk of transmission of the bacilli to healthy individuals who also will develop MDR disease from the outset. Bastian, Rigouts, van Deun and Portaels (2000:239) report that several outbreaks of MDR TB occurred in hospitals in the USA and Europe among clients who were HIV positive in the early 1990s. These outbreaks were associated with high mortality rates and the transmission of the disease to HIV-positive and HIV-negative contacts, including staff. In developing countries, notably India, Africa and Asia, Cohn, Bustreo and Raviglione (1997) (cited in Bastian et al 2000:240) reported high rates of MDR TB with no relationship to HIV. Resistance to TB treatment thus has a huge impact on the duration, ease and success of anti-TB chemotherapy.

## **2.11 ADHERENCE TO TREATMENT**

One of the goals of the NTP (Zimbabwe, Ministry of Health & Child Welfare 1999a: 7) is to maintain a cure rate of 85,0% of new cases through systematic client education, effective chemotherapy and defaulter retrieving. TB treatment is free in Zimbabwe and with the introduction of DOTS, defaulting TB treatment is not expected to be a problem. However, defaulting is still a problem in Kwekwe. In Malawi, Krut, Krut, Boeree, Harries, Salaniponi and Van Noord (1999:388) found that clients default treatment because of ignorance of the duration of treatment. In Masvingo Province, Zimbabwe, Proudfoot et al (1996:65) indicate that defaulting was a result of high travel cost for supply of drugs and reviews, inadequate support from relatives and employers and poor understanding of modern treatment. Mukherjee et al (2003:17) indicate that in several states in India, the main reasons for defaulting were distance from the treatment centre, indifference due to improvement in symptoms, and lack of motivation.

Naing, D'Este, Issa, Salleh, Baker and Mahmood (2001:378) cite Haynes et al (1979), who also describe factors associated with defaulting such as long treatment duration and complex medical regimes. In their study in Malaysia, Naing et al (2001:375) attribute defaulting to lack of DOTS, highlighting that clients who were not on DOTS had three times significantly higher chances of defaulting. Therefore, they strongly recommend that DOTS be offered to every client on TB treatment. Furthermore, distance from health facilities was a major factor because clients who lived more than 10 kilometres from a health centre had six times higher odds of defaulting. In Kwekwe, clients come to the hospital as referrals from the surrounding rural and urban clinics. These patients travel distances ranging from 5 to 65 kilometres. Naing et al (2001:378) point out, however, that their findings were in contrast with another study carried out in Malaysia where distance had no significant effect on defaulting behaviour. They also disputed factors such as knowledge about complete dosage of treatment, side effects of the drugs, waiting time and dissatisfaction with services contributing to defaulting whereas Khan et al (2000:247) maintain that these factors contribute to defaulting.

In Saudi Arabia, Al-Hajjaj and Al-Khatim (2000:347) found that older age groups (41-60 years) tend to be less compliant than younger adults possibly due to illiteracy among the older adults. This observation was supported by the fact that in the same study, defaulting was more common among clients with no or minimal education.

## **2.12 EMPOWERMENT THROUGH KNOWLEDGE**

Successful prevention of disease depends on a positive change of habits or way of life of a group of people or an individual (Clark 1996:127). The tendency to behave in a certain way is based on knowledge and information gained from health education. A positive change in attitude through proper knowledge may lead to a positive change in behaviours. Health education is a vital component for behavioural change because the promotion, maintenance and restoration of health rely on clients' understanding of health care requirements (Stanhope & Lancaster 1996:263).

### **◆ Health education**

Mellish and Wannenburg (1996:84) define health education as “that form of education which is provided for people to enable them to attain and maintain health”. Health education is concerned with the knowledge, feelings and behaviour of people with regard to health. Health education is taught so that clients can be restored to health where possible or be helped to make maximum use of their remaining potential. Empowering clients with health education makes them active participants in the business of being healthy. When people lose their health, they usually need information about their condition. This would then be an opportunity for health workers to use this period as a “teachable moment”. Behavioural patterns are learnt and it is the core business of health workers to make this learning possible, as they are responsible in this field.

In a hospital setting, health workers, specifically nurses, are with clients 24 hours a day and are therefore the main resources giving health education.

Mellish and Wannenburg (1996:84) further highlight topics that should be taught during a health education session, such as health care, good health habits and the knowledge needed for people to meet their own health care needs.

TB sufferers are long-term clients. It is therefore part of the nurse's duties to see that the clients understand the nature of the disease, the length of time a cure takes, the danger of not continuing with treatment, the effect relapsing will have on them and their

family and the fact that the disease is not yet cured although they feel better. Nurses have a responsibility and a duty to motivate clients to continue with treatment.

#### ♦ **Role of the nurse in health education**

If the nurse is to fulfil her function of giving health education, she should:

- have the necessary background in cultural and socio-economic factors in relation to clients and health so that the information she gives does not offend their cultural beliefs.
- be convinced of the necessity to carry out health education and have the time available for such activity. A good portion of the time should be spent talking to clients, finding out how they think, explaining their illness in a way they can understand instead of spending time on relatively unimportant tasks.
- be encouraged by their authorities to do health education. Studies have shown that clients lack information on TB hence the importance of encouragement (Khan et al 2000:247; Krut et al 1999:388; Tolba, Maseh, Mokhtar & Decoster 1995: 26).
- be supplied with a number of visual aids to assist in the education, especially for those clients who are illiterate. These aids should be chosen with care so as not to offend the clients' culture.
- be able to assess clients' needs and the teachable moment when it arrives. Health education should occur before discharge and should be continuous, not sporadic.
- have the necessary knowledge of the disease, causes, prevention and the after-care of clients. The nurse must keep abreast of TB health information, by reading professional literature, attending seminars and workshops so that the information given to clients is current (Mellish & Wannenburg 1996:91).

Health workers giving health education must also know the principles of adult learning as well as the value of teaching media if health education is to meet the needs of clients on TB treatment.

#### ♦ **Principles of adult learning**



Principles are guidelines that can guide health workers in helping adults learn. Clark (1996:129) outlines the following principles that help create situations and experiences conducive to learning.

➤ *People learn best what they perceive to be most relevant*

This principle means that health educators should make the content to be taught as relevant as possible in order to motivate and influence the TB clients to understand their condition, treatment and hence adhere to treatment. It is important to start with health education on the first contact with clients and their family.

➤ *People learn in different ways*

People differ in the way they learn. Some learn best from what they see and some from what they hear. This means that the health educator has to use various modes of presenting health-related material in order to cater for the variations within the adults. Various teaching methods can be used, such as the lecture method, which provides for new information and is ideal for TB clients as this disease would be a new experience for most of them (Fry, Ketteridge & Marshall 1999:84). The lecture method is also ideal as it can be combined with other methods, such as the discussion method, which can accomplish optimal interaction between the educator and the client. The lecture method can be used for a group or an individual (Muller 1998:332). At times individualised presentation of health education enhances learning in some adults. The health educator should be able to discern which clients would do well in learning as a group or individually.

➤ *Motivation to learn enhances learning*

Adults are highly motivated to learn in areas relevant to their current life crises. Therefore the content given should be relevant with specific objectives to meet their knowledge deficit.

➤ *Learning situation*

The context of the learning situation influences learning. Health education should be given when clients are receptive to learning. For example, when the clients are feeling better and are about to be discharged or when they are less stressed.

➤ *Presentation of content*

Presentation of positive data instead of negative data facilitates behaviour change. Active participation of the clients facilitates learning, for example asking them questions or drawing on their past experience. Media chosen should meet the needs of the clients, for example using pamphlets or slides for those who can read. Media should complement the content. Although information should be scientifically correct, it should be presented on the client's level, for example lay terms and appropriate examples.

➤ *Content*

Relevant information that holds the clients' attention and empowers them should be given. Topics that should be covered in a TB health education session include what TB is, causes, signs and symptoms, how it is spread, treatment of TB, DOTS, duration of treatment, the importance of completing treatment, MDR TB, side effects and follow-ups.

➤ *Reinforcement and retention*

Repetition enhances learning. Throughout the treatment phase this principle can be utilised to help keep clients focused. As the clients adhere to their treatment, positive reinforcement is also given through personal support, being sympathetic and empathetic.

Khan et al (2000:247) and Mukherjee et al (2003:21) emphasise that clients' lack of knowledge about the nature of their disease contributes significantly to defaulting. This anomaly rests with both doctors and nurses. In their study in Egypt, Tolba et al (1995:26-27) found that clients lacked knowledge about the nature of their disease. In a study of clients' attitudes to and knowledge of TB and factors associated with treatment compliance in Kuala Lumpur, Malaysia, Liam (1999:300-309) found that a large proportion of TB clients did not understand the symptoms of TB and had limited

knowledge and many misconceptions about the transmission and treatment of the disease.

Health education is important in TB management so that clients can be empowered with information, make informed decisions and thus understand the cause of the disease and the treatment. Knowledge is a state of knowing and is essential if attitudes are to change. Knowledge in clients can be improved by using pamphlets, which reach a wider group of people and can be referred to at any time. Lectures can also be used to give information to a large group as well as individualised instruction. Clients on TB treatment need to be given information so that they understand their condition and hence comply with treatment.

### **2.13 CONCLUSION**

This chapter described the literature review conducted for the study, which covered the background to TB, the drugs used in TB, DOTS, prevention of TB, effects of TB, components of TB control, TB and HIV/AIDS, MDR TB, defaulting treatment, knowledge of clients with regard to TB, and related studies. Chapter 3 discusses the research methodology.