DEFAULTING OF TUBERCULOSIS TREATMENT IN KHOMAS REGION, NAMIBIA

by

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at the

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NOVEMBER 2008
DECLARATION

I declare that DEFAULTING OF TUBERCULOSIS TREATMENT IN KHOMAS REGION, NAMIBIA is my own work and that all sources that I have used or quoted have been indicated and acknowledged by means of complete references and that this work has not been submitted before for any other institution.

__________________________     _____________________
SIGNATURE           DATE
(Mrs DM Mainga)
The purpose of the study was to investigate the problem of defaulting of tuberculosis (TB) treatment in the Khomas region of Namibia.

A quantitative, descriptive research approach was used to investigate the reasons for defaulting of TB treatment under the DOTS strategy in Khomas Region of Namibia. Data was collected by using a structured interview schedule with 54 participants who were on DOTS strategy and defaulted. Data were analysed by using the Epi info computer program. The major findings from the data obtained, revealed that the respondents did not have an in-depth knowledge of TB and the health education was not successful. This contributed to the defaulting of their treatment. Based on the study findings nurses should improve health education to TB patients on DOTS and also educate members of the community to address the stigmatisation of TB. Recommendations for further improvement in the compliance of TB treatment were made.

**KEY CONCEPTS**

Directly Observed Treatment Short Course Strategy; Tuberculosis; Treatment supporter; Defaulter; Multi-drug resistant tuberculosis; Treatment completion.
ACKNOWLEDGEMENTS

I offer my heartfelt thanks to my husband Judge SS Mainga for his unswerving and loving support through-out my study and to our children, Inonge, Imogen, Wayne and Glen for their assistance.

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Mrs R Coetzer, for the final formatting and layout of the manuscript.

Mrs I Cooper, for critically and professionally editing the manuscript.

Many thanks and praises to the Almighty God for giving me opportunity to complete this study.
Dedication

I dedicate this study to my late mother and father.
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<tr>
<td>ARV</td>
<td>Ant-Retroviral</td>
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<tr>
<td>DOTS</td>
<td>Directly Observed Treatment Short course</td>
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<td>CB-DOTS</td>
<td>Community-based</td>
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<td>CNR</td>
<td>Case notification rate</td>
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Annexure B  Permission granted from the MoHSS

Annexure C  Permission requested from Research and Ethics Committee, Department of Health Studies

Annexure D  Informed consent

Annexure E  Questionnaire
CHAPTER 1

ORIENTATION TO THE STUDY

1.1 INTRODUCTION

Tuberculosis (TB) is a bacterial disease caused by Mycobacterium tuberculosis which can spread to any organ in the body, but is most often found in the lungs. The disease is spread from person to person through the air when people with TB of the lung (pulmonary TB) cough, sneeze, talk, or laugh. People nearby can breathe in the bacteria and become infected (Harries, Maher & Graham 2004:23-24).

In most cases, the disease can be cured with current anti-TB drugs. As soon as TB treatment is commenced, the number of infectious micro-organisms starts to decrease, and within five days of treatment, the initially infectious patient is no longer infectious, thus curbing the disease spread, the incidence and the cost of treating many other TB patients. To be effective, however, the drugs must be taken exactly as prescribed (MoHSS 2006a:42).

Defaulting from treatment or not completing the treatment may lead to relapse of the disease resulting in continued transmission of TB to other members of the community (Manders, Banerjee, Van den Borne, Harries, Kok & Salaniponi 2001:838). Successful treatment of TB depends on close cooperation between the patient and doctor and other health care workers. Poor, inconsistent or partial treatment when patients do not take all their medicines regularly for the required period of time because they start to feel better, or the doctors and nurses prescribe incorrect drugs or incorrect combinations of drugs, may lead to multi-drug-resistant strains (MDR-TB). This is a dangerous form of TB resistant to at least isoniazid (INH) and rifampicin, which are the two most powerful anti-TB drugs. MDR-TB requires especially lengthy, complex and more expensive treatment. In developing nations, nearly all patients are condemned to die because effective treatment is often impossible to afford because it costs 100 times more to cure MDR-TB than drug-susceptible TB (WHO 2002:2).
The key elements in TB control are the individual patient, interrupting transmission of TB to others, and preventing the tubercle bacilli from becoming drug resistant. Therefore, the highest priority in stopping MDR-TB is its prevention through prompt diagnosis of TB and adequate treatment with supervision (Farah, Tverdal, Steen, Heldal, Brantsaeter & Bjune 2005:1).

The Directly Observed Treatment Short Course Strategy, popularly known as DOTS, is the internationally recommended strategy which was launched by WHO in 1995 (WHO 2006a:4). Its key components include: government commitment; case detection; standardised short-course chemotherapy (SSC) with direct observation of pill swallowing; regular drug supply; and a monitoring system for programme supervision and evaluation swallowing (Corbett, Watt, Walker, Maher, Williams, Raviglione & Dye 2003:1009-1021).

The strategy is based on a six-month treatment regimen with first-line drugs, namely isoniazid, rifampicin, pyrazinamide, and ethambutol, for new patients and an eight-month treatment regimen for retreatment patients with the same drugs as for new patients plus streptomycin (Nathanson, Lambregts-van Weez denbeek, Rich, Gupta, Bayona, Blöndal, Caminero, Cegielski, Danilovits, Espinal, Hollo, Jaramillo, Leimane, Mitnick, Mukherjee, Nunn, Pasechnikov, Tupasi, Wells & Raviglione 2006:1389).

DOTS prevents the spread of TB as it is a patient-centred approach that provides support to TB patients by watching them swallow the prescribed tablets to ensure that they are taking the right combination of drugs and for the appropriate duration. Namibia adopted the DOTS strategy in 1993 (MoHSS 2006a:12). However, too many patients, stop taking their treatment before completion of the prescribed period; die during treatment due to HIV/AIDS and late presentation and or develop MDR-TB (MoHSS 2004:11).

1.2 BACKGROUND TO THE STUDY

TB is a serious and increasing threat, causing grave concern throughout the world, especially in Africa. This study briefly examined the incidence of TB globally and in South Africa and Namibia.
1.2.1 Global TB incidence

As a disease, TB never “went away”. It is re-emerging as a global threat, affecting even industrialised nations, causing considerable concern (Porter & Grange 2002:9). Globally, 9.2 million new cases and 1.7 million deaths from TB occurred in 2006, of which 0.7 million cases and 0.2 million deaths were in HIV-positive people. Asia accounts for 55% of global cases, and Africa accounts for 31%; the other three regions account for relatively small fractions of global cases. The African Region has the highest incidence rate of 363/100 000 population (WHO 2008a:4).

1.2.2 TB in South Africa

South Africa ranked 4th among the twenty-two countries with a high burden of TB in the world in 2006 following India, China and Indonesia. The country reported 454 000 new TB cases in that year giving it a case notification rate (CNR) for all forms of TB of 940/100 000 population which ranked the country 2nd to Swaziland. Although South Africa’s population was 0.7% of the world’s population in 2006, it housed 28% of the global number of HIV-positive TB cases and 33% of HIV positive cases in the African Region (WHO 2008a:19-21).

South Africa reached the case detection rate of 70% for the first time in 2006. However, the treatment success rate remain low as it is reported that the country achieved a 71% treatment success rate for new smear positive TB patients treated under DOTS in the 2005 cohort; patients that died during treatment comprised 7% while those that defaulted from treatment 10% (WHO 2008a:145). The outcome targets, which are related to DOTS implementation, are to achieve a case detection rate of at least 70% under DOTS and to reach a treatment success rate of at least 85% in DOTS cohorts (WHO 2008a:18).

South Africa is facing one of the worst TB epidemics, namely Extreme Drug Resistance TB, known as XDR-TB. South Africa represents almost one-sixth of all known XDR-TB cases reported worldwide. Of the 544 patients studied in KwaZulu-Natal in South Africa during 2005 to 2006, 221 had MDR-TB, that is, *Mycobacterium tuberculosis* that is resistant to at least rifampicin and isoniazid. Of these 221 cases, 53 were identified as XDR-TB that is MDR-TB plus resistance to at least three of the six classes of second-line agents. Of the 53, 44 were tested for HIV and all were HIV infected. Mortality rate was
found to be very high as 52 (98%) of the patients died (Singh, Upshur & Padayatchi 2007:0019). The 2005–2006 XDR-TB outbreak in KwaZulu-Natal serves as a serious warning that gains made in HIV care and treatment might be lost if drug-resistant TB is not effectively and rapidly addressed (Weyer 2007:391).

1.2.3 TB in Namibia

In Namibia, TB remains a challenging public health problem. The country continues to report one of the world’s highest TB rates. Although Namibia is not recognised as one of the 22 high TB burden countries, the country continues to report one of the world’s highest CNR. The country’s CNR of all forms of TB has increased from 656/100 000 population in 1997 to 822 in 2004 and slightly decreased to 765 in 2006. At regional level within Namibia, the distribution of CNR varies with Erongo, Hardap, Karas and Oshikoto regions on top of the list in that order reporting CNR of over 1 000 per 100,000 population (MoHSS 2006b:9-11).

The CNR for new cases was reported as 7171/100 000 for 2006 and this ranked Namibia second to Swaziland with 730/100 000 population. The CNR for all forms of TB for the same year (765/100 000) ranked Namibia third after Swaziland with 1155/100,000 and South Africa with 940/100 000 population (WHO 2008a:198-199).

In 2006, the country reported that out of the 4653 TB patients that were tested for HIV, 3117 (67%) were HIV positive (MoHSS 2006b:12).

The Khomas region, the site for this study, had the highest TB burden in the country with a total of 3,102 TB patients and a CNR 1 102/100 000 per population in 2004 (MoHSS 2006a:2). The region continued to report the highest burden although in 2006 the total number of patients had reduced to 2 616 with a CNR of 859/100 000 population.

1.2.4 Factors contributing to TB in Namibia

The main factors contributing to TB in Namibia are poverty and the HIV pandemic. Poverty leads to people living in poorly ventilated, crowded conditions that facilitate the transmission of infection. Moreover, poverty promotes poor nutrition and a tendency to alcoholism, both of which undermine the immune system thereby allowing TB infection to
develop into active TB disease. The HIV pandemic fuels the TB situation and is the prime risk factor for reactivation of latent TB infection into the full disease (MoHSS 2004:20).

1.3 THE DOTS STRATEGY

DOTS stands for Directly Observed Treatment Short Course, which means that a trained second person watches the patient takes the right combination of drugs and for the appropriate duration. The important and unique feature of DOTS as a strategy is the use of patient observers. The observer could be any person who is taught about the signs and symptoms of TB, how to recognise the side-effects of the drugs and the importance of taking the drugs every day. Liu, Li and Schlugger (2005:884). Suhadev, Swaminathan, Rajasekaran, Thomas, Arunkumar, Muniyandi, and Meenalochani (2005:179) emphasise the effectiveness of DOTS in improving TB treatment outcomes even in people who are HIV positive. WHO (2006a:4) affirm that DOTS implementation has helped countries make major progress in TB control leading to improved cure rates and reduced mortality due to TB at the same time diminishing or stabilising.

However, there has been some debate about how much additional benefit is derived from the element of direct observation. Kironde and Meintjies (2002:605) had earlier on stated that there was a great deal of debate on whether universal or daily DOTS is feasible, essential or even acceptable. The arguments ranged from questioning the reality to provide DOTS to every TB patient in high burden settings to the fact that some patients do adhere to anti-TB treatment anyway and would therefore be offended at having to submit to direct observation while they swallow their medications.

1.4 DOTS OUTCOMES

Globally, the treatment success rate in DOTS programmes was 84.7% in 2005, just short of the 85% target. However, the African Region achieved 76% (WHO 2008a:4). The relatively poor outcomes in the African region can be attributed, in part, to the complications of HIV co-infection and drug resistance, high proportions of patients who fail to complete treatment, die, or are lost from the DOTS cohorts, as well as the failure of DOTS programmes to monitor the outcomes of treatment for all patients. To reach the target of 85% treatment success globally, concerted efforts must be made to improve cure rates in the African region (WHO 2006b:2-3).
Despite the availability of effective TB treatment and the introduction of DOTS in Namibia, the control of TB has not yielded the expected outcomes. Namibia registers a 75% TB treatment success rate, which is below the ratified target of 85%, and has a 10% defaulter rate for smear positive pulmonary TB (PTB) and 14% smear positive re-treatment PTB. Khomas region, the study site, recorded a 12% defaulter rate for the new smear positive PTB patients and 17% for re-treatment PTB and these percentages are higher than the country (MoHSS 2006b:14-15, 24).

1.5 RATIONALE FOR THE RESEARCH

While DOTS has been widely implemented, little is known of how patients value the strategy and why patients still default on it although they are so closely monitored (Dick, Murray & Botha 2005:1). Although some research has been done on the DOTS strategy in other regions of Namibia, no findings on this topic could be located in the Khomas region and the region continues to have the highest defaulter rate despite the implementation of the DOTS strategy.

The researcher’s rationale for the study was therefore:

- Khomas region has the highest defaulter rate in Namibia and a very low TB treatment success rate.
- Defaulting from treatment may lead to relapse of the disease resulting in continued transmission of TB to other members of the community thus increasing the incidence and prevalence of the disease. Also, defaulting from treatment may lead to MDR-TB and XDR-TB.
- When TB is diagnosed early and the patient is not seriously ill, it is possible to cure nearly 100% of the cases if the micro-organisms causing TB are not resistant to the current anti-TB drugs.
- Even though Khomas region is among those implementing DOTS, there has been little impact on reducing the default rate.

The researcher therefore considered it important to investigate what TB patients themselves perceived as factors contributing to defaulting under DOTS.
1.6 PURPOSE OF THE STUDY

The purpose of the study was to explore and describe the reasons why TB patients default, and examine TB patients’ perceptions of the DOTS strategy.

1.7 OBJECTIVES OF THE STUDY

In order to achieve the purpose of the study, the objectives were to

- Explore and describe the level of knowledge of TB patients in the Khomas region of Namibia of TB as a disease, its transmission, prevention and treatment.
- Explore and describe the perceptions of TB patients in the Khomas region of Namibia of the DOTS strategy.
- Explore and describe stigmatisation of TB in the Khomas region of Namibia.
- Explore and describe the reasons why TB patients in the Khomas region of Namibia default their TB treatment on DOTS.
- Obtain suggestions from TB patients in the Khomas region of Namibia that would prevent defaulting on the treatment.
- Make recommendations based on the research findings to improve the DOTS strategy in the Khomas region in Namibia.
- Make recommendations for further research in this field.

1.8 STATEMENT OF THE PROBLEM

Despite the implementation of the DOTS strategy in the Khomas region of Namibia, this region reported the highest defaulter rate of 29% and a TB treatment success rate far below the international target of 85%. The reasons for the high default rate were unknown, as no research findings on this topic in the Khomas region of Namibia were available or found.

Based on the research problem, the study wished to answer the following questions:

- What is the level of knowledge of TB patients in the Khomas region of Namibia on TB as disease, its transmission, prevention and treatment?
• What are the perceptions and experience of the DOTS strategy of TB patients in the Khomas region of Namibia?
• Is TB stigmatised in the Khomas region of Namibia?
• What are the reasons why TB patients in the Khomas region of Namibia default from TB treatment under the DOTS strategy?
• What, according to the TB patients in the Khomas region of Namibia, would prevent TB patients from defaulting their treatment?

1.9 SIGNIFICANCE OF THE STUDY

The study should provide useful information to health providers and policy makers to improve the delivery of DOTS in the Khomas region of Namibia as well as other regions in and outside the country.

1.10 CONCEPTUAL FRAMEWORK

A conceptual framework is “the abstract, logical structure of meaning that guides the development of the study and enables the researcher to link the findings to the existing body of knowledge” (Burns & Grove 2005:37). Brink, Van der Walt and Van Rensburg (2006:24) points out that a framework helps the researcher to organise the study and provides a context in which the researcher examines a problem and gathers and analyses data. Furthermore, a conceptual framework is one that the researcher has developed through identifying and defining concepts and proposing relationships between these concepts. By developing a framework in which ideas are organised, researchers are able to show that the proposed study is a logical extension of current knowledge (Brink et al 2006:24).

Conceptual frameworks are a type of intermediate theory that has the potential to connect to all aspects of inquiry (e.g. problem definition, purpose, literature review, methodology, data collection and analysis) (Stommel & Wills 2004:15).

In this study, the researcher used the objectives as the framework.
1.11 RESEARCH DESIGN AND METHODOLOGY

The researcher adopted a quantitative approach, using an exploratory and descriptive design (see chapter 3).

1.11.1 Quantitative research

Quantitative research is conducted to describe new situations, events or concepts, to describe relationships among concepts or ideas, and to determine the effectiveness of treatment on the health of families (Burns & Grove 1997:23). Quantitative research involves “the systematic collection of numerical information, often under conditions of considerable control and analysis of that information using statistical procedures” (Polit & Beck 2008:449). As this study intended to measure variables such as to what extent the respondents agreed with statements related to DOTS treatment, the researcher considered a quantitative approach appropriate (see chapter 3).

1.11.2 Research design

A research design is an overall plan for obtaining answers to research questions (Polit & Beck 2008:66). According to Burns and Grove (2005:231) and Stommel and Wills (2004:32), a research design is a blueprint or plan that is used to direct the conduct of the study in order to maximise control over factors that would interfere with the desired outcome and enable achievement of answers to the research questions at the same time achieving validity for the study (see chapter 3). A research design guides researchers in planning and implementing the study in a way most likely to achieve the intended goal (Burns & Grove 2005:211; Stommel & Wills 2004:32).

1.11.3 Exploratory

According to Polit and Beck (2008:20), exploratory research begins with a phenomenon of interest and explores the full nature of the phenomenon. Since the researcher found no research findings on this problem and the factors that influenced patients’ behaviour, she decided to examine the defaulting of treatment. An exploratory approach was therefore considered appropriate (see chapter 3).
1.11.4 Descriptive

A descriptive design enables researchers to describe variables in order to answer research questions with no attempt at establishing a course-effect relationship (Brink et al 2006:102). The study explored the defaulting of TB treatment and described the reasons for this behaviour and other findings of the analysed data.

1.11.5 Population and sample

A population is a “well-defined set that has certain specified properties” of interest to the researcher and meets the criteria the researcher is interested in studying so as to be able to achieve the study objectives (Brink et al 2006:123).

In this study, the population consisted of TB patients who defaulted from treatment under DOTS in the Khomas region of Namibia from June 2007–April 2008.

1.11.6 Sample and sampling

A sample denotes subjects selected from the target population to be included in the study. Sampling is the process of selecting a particular subset of subjects from a larger population with whom to conduct the study. This study applied a simple random sampling procedure to decide which five of the ten clinics in the Khomas region of Namibia should be included in the study. From these clinics a census was taken of all available and willing respondents in these clinics (Burns & Grove 2005:341; Polit & Beck 2008:323; Stommel & Wills 2004:160, 297, 443) (see chapter 3). Fifty-four respondents took part in the study. Babbie and Mouton (2002:124) emphasise that a sample should be representative of the population from which it is selected to enable generalisation of findings to be made about that population.

1.11.7 Data collection and data-collection instruments

Data collection is the precise, systematic process of gathering data or all information from the study subjects that is relevant to the purpose of the study, research questions or hypothesis (Burns & Grove 2005:430; Stommel & Wills 2004:363).
The researcher used an interview schedule as data-collection instrument during interviews with the respondents (see annexure E). An interview schedule is similar to a questionnaire and is a formalised set of questions for obtaining information from respondents (Polit & Beck 2008:414).

1.11.8 Data analysis

Data analysis involves the process of editing; organising or categorising and coding, ordering, manipulating and summarising the data as well as describing it in order to give its meaning. In other words data is analysed in order to cluster identical data and to isolate the exception. The current study used statistical strategies in combination with tables and graphs to present the data and facilitate understanding (Mouton 2004:108).

The research instrument was coded to facilitate entry and analysis, using the Epi Info software computer program (see chapter 3).

1.12 VALIDITY AND RELIABILITY

The quality of a research instrument is determined by its validity and reliability (see chapter 3). In quantitative studies, validity and reliability are two of the most important concepts used by researchers to evaluate the rigour with which they are carried out (Parahoo 2006:407).

Brink (1990:157) describes reliability as the extent to which measures are consistent or repeatable over time. Reliability in this study referred to the possibility that someone else using the same method in the same circumstances would obtain the same findings thus the findings become consistent, stable and repeatable (Varkevisser, Pathmanathan & Brownlee 2003:13).

According to Varkevisser et al (2003:13), validity means that the scientific observations or the data-collection tools actually measure what they intend to measure and assist in arriving at correct conclusions.
The researcher took the following steps to ensure reliability:

- The interview schedule was developed following the objectives of the study.
- The interview schedule was written in simple language to facilitate respondents’ understanding (comprehension).
- The questions in the interview schedule were worded clearly.
- A pre-test was carried out on respondents with the same attributes, but who were not included in the main research. This was done to identify any ambiguity in the wording, sensitive questions, or as well as wrongly placed questions with the aim of revising the interview schedule.

Validity of the research and research instrument was ensured by means of the following (Polit & Beck 2008:458-461):

- A literature review was conducted to find relevant questions for the interview schedule and to contrast the findings of the analysed research instrument.
- The sample size was large enough to be representative of the phenomenon under study.
- A special attempt was made to ensure congruence between research questions, objectives, investigation, findings and recommendations.

1.13 ETHICAL CONSIDERATIONS

Ethics deals with matters of right and wrong. Collins English Dictionary (1991:533) defines ethics as “a social, religious, or civil code of behaviour considered correct, especially that of a particular group, profession, or individual” (Jackson 2007:23). Ethical considerations are essential to the design of any research involving human subjects in order to protect the rights of the research participants. The goal of ethics in research is to ensure that no one is harmed or suffers adverse consequences from research activities. According to Burns and Grove (2005:83), the purpose selected for the investigation must be ethical which means that the subjects’ rights and the rights of others in the setting will be protected.

In this study, the researcher followed the ethical principles of respect for persons, beneficence and justice (see chapter 3).
• **Permission.** Written permission was obtained from the Ministry of Health and Social Services through the Permanent Secretary (see annexure A and chapter 3).

• **Informed consent.** Informed consent was obtained from each participant (see annexure D and chapter 3).

• **Beneficence.** The right to protection from discomfort and harm is based on the ethical principle of beneficence. The principle of beneficence states that one should do good and, above all, do no harm (Burns & Grove 1997:165). Discomfort and harm can be physical, emotional, economic, social or legal. In this study, there were no risks of exposing the respondents to discomfort or harm.

### 1.14 LIMITATIONS

Limitations are the weaknesses, restrictions or problems in a study that may decrease the generalisability of the findings (Burns & Grove 2005:39). This study was limited to the Khomas region, one of the thirteen regions of Namibia; five of the ten health facilities in the region, and adult pulmonary TB patients that defaulted from treatment while on DOTS from June 2007 to April 2008. No health workers and/or treatment supervisors were included (see chapter 5 for limitations).

### 1.15 DEFINITIONS OF KEY CONCEPTS

For the purposes of this study, the following concepts as used are defined below.

- **DOTS**

DOTS refers to Directly Observed Treatment Short Course Strategy. This means that a trained person supports and directly observes the TB patient swallowing the anti-TB tablets (Harries et al 2004:45) the DOTS strategy is a patient-centred approach that provides support to TB patients, in Khomas region of Namibia, by watching them daily when swallowing tablets to ensure that they are taking the right combination of drugs and for the appropriate duration (Corbett et al 2003:1009-1021).
Tuberculosis (TB) is defined as a bacterial disease caused by Mycobacterium tuberculosis, also known as tubercle bacilli or as acid-fast bacilli (AFB) (Harries et al 2004:23).

**Treatment supporter**

A treatment supporter is a person, not necessarily a health worker, chosen and trusted by the TB patient to make sure that the patient takes the anti-TB drugs regularly, on schedule, for the full duration of the treatment (Nkele 1998:164). In this study, a treatment supporter is a willing, responsible person selected by a health worker in consultation with the TB patient, and could be a family member, neighbour, or local shopkeeper, and not necessarily a health worker.

**Defaulter**

A defaulter is a patient who interrupts treatment for two consecutive months or more (MoHSS 2006a:44). In this study, defaulters are patients who had failed to take their anti-TB medication for two consecutive months after registration or longer over the duration of treatment (Kironde & Meintjies 2002:602).

**MDR-TB**

MDR-TB is the abbreviation for Multidrug-Resistant Tuberculosis, which describes strains of TB that are resistant to at least two main first-line TB drugs, namely isoniazid and rifampicin (Nathanson et al 2006:1389). In this study, MDR-TB is resistant to the most potent TB drugs (isoniazid and rifampicin), with or without resistance to the other drugs necessary for treating TB (Du Plessis 2002:5).

**Treatment completion**

The term “treatment completion” refers to the situation where a patient has completed treatment but who does not meet the criteria to be classified as cured or failure (MoHSS 2006b:44). In this study, treatment completion refers to a patient who has completed
treatment, but does not meet the criteria for cure and continues to be on anti-TB treatment until the criteria for cure are met (WHO 2007a:15).

1.13 OUTLINE OF THE STUDY

Chapter 1 introduces the study; outlines the problem, purpose, objectives and significance of the study; briefly describes the research design and methodology and ethical considerations, and defines key concepts.

Chapter 2 presents the literature review conducted for the study.

Chapter 3 describes the research design and methodology.

Chapter 4 discusses the data analysis and interpretation and findings.

Chapter 5 concludes the study, describes its limitations and makes recommendations for practice and further research.

1.14 CONCLUSION

This chapter discussed the research problem, rationale for and purpose, significance and conceptual framework of the study, as well as the research design and methodology; defined key concepts, and described the ethical considerations.

Chapter 2 discusses the literature review conducted for the study.
CHAPTER 2

Literature review

2.1 INTRODUCTION

The problem and purpose of the study as well as the research design and methodology were outlined in chapter 1.

This chapter discusses the literature review conducted for the study. The literature review was guided by the objectives of the study, covered the latest developments in DOTS as the strategy for TB control, and assisted the researcher to redefine the research questions. The literature review enabled a comparison and discussion of this study’s findings (see chapter 5).

This chapter also expands on the rationale for and significance of the study presented in chapter 1.

2.2 GLOBAL TB INCIDENCE

TB is a disease caused by bacteria called *Mycobacterium tuberculosis* and like the common cold, it spreads through the air and is therefore contagious. Only people who are sick with pulmonary TB are infectious. The bacteria can attack any part of the body, but usually attack the lungs. When infectious people cough, sneeze, talk or spit, they propel TB germs, known as bacilli, into the air. People nearby may breathe in these bacteria and become infected. Not all people infected with TB will necessarily contract the disease. The immune system protects the human body, but once the individual has come into contact with an infected TB patient the TB bacilli can lie dormant for years in the body of the healthy person.

Up to 90% of HIV negative people infected with the TB bacteria never develop active TB disease because a properly working immune system is capable of suppressing the infection and preventing the bacteria from multiplying. However, when the immune system
is weakened, by HIV or poor nutrition for example, the bacteria begin to multiply and this often leads to active TB. The risk of developing active TB in an HIV-negative individual is 10% over the course of their lifetime. This risk increases 5-10 times per year in HIV-positive people (Achmat & Roberts 2005:4).

According to the WHO (2007b:1-2; 2008b:1), 1 in 10 people infected with TB bacilli will become ill with active TB in their lifetime; people with HIV are at much greater risk. Left untreated, each person with active TB will infect between 10 and 15 people on average every year.

Without treatment, seven in ten people with infectious TB will die of it within four to five years of onset, even if they are young when they contract it (WHO2007b:1-2; 2008b:1).

A patient with smear-positive TB becomes non-infectious after five days on treatment. Evidence from good control programmes shows that treatment success rates of between 85% and 95% can be achieved when patients are well informed about TB; treatment is provided at the patients’ convenience; patients receive support from significant others, and clinicians adhere fully to the technical treatment guidelines (MoHSS 2006a:42).

Globally, 9.2 million new cases were recorded in 2006, of which 0.7 million were among HIV-positive people, and 1.7 million deaths from TB occurred. In spite of the availability of curative treatment for three decades, TB still kills and remains an important but neglected cause of adult and childhood morbidity and mortality in the African region. It is a leading killer among HIV-infected people with weakened immune systems and 0.2 million (i.e. 200 000) HIV-positive people, mainly in Africa, died. TB is one of the most common preventable causes of death from a single infectious agent, and Africa has the highest incidence rate per capita (363 per 100 000 of the population) (WHO 2008a:1). Figure 2.1 displays the ten countries with the highest TB case notification rates in Africa.
2.2.1 Multidrug Resistant TB (MDR-TB) and Extensive Drug Resistant TB (XDR-TB)

Multidrug Resistant TB (MDR-TB) refers to strains of TB that are resistant to at least the two main first-line TB drugs: isoniazid and rifampicin (Nathanson et al 2005:1389; WHO 2007b:1). XDR-TB is defined as TB resistant to multiple drugs as well as to any one of the fluoroquinolone drugs and to at least one of the three injectable second-line drugs namely amikacin, capreomycin or kanamycin (WHO 2007b:1). This is a virulent drug-resistant strain of TB that leaves patients virtually untreatable with currently available anti-TB drugs (WHO 2007b:1).
Resistance to anti-TB drugs in populations is a phenomenon due primarily to poorly managed TB care. Problems include incorrect drug prescription, poor quality drugs, or erratic supply of drugs, and also patient non-adherence. XDR-TB poses a grave public health threat, especially in populations with high rates of HIV and where there are few health care resources (WHO 2006b:1-2). Globally, there were an estimated 0.5 million cases of MDR-TB in 2006 (WHO 2008a:3). The emergence of MDR-TB itself is evidence of the systematic failure of the global community to tackle a curable disease (Singh et al 2007:0019).

While drug-resistant TB is treatable, it requires extensive chemotherapy (up to two years of treatment) that is often prohibitively expensive (often more than 100 times more expensive than treatment of drug-susceptible TB), and is also more toxic to patients (WHO 2008b:2).

Failure to adhere to MDR-TB therapy may result in primary transmission of MDR-TB in the community, amplify resistance to second-line drugs, and increase the emergence of XDR-TB. Therefore, during the intensive phase of treatment the health worker directly observes and records the patient’s drug-intake, thus preventing the drug defaulting problem, which is a major cause of MDR-TB. Poorly managed treatment practices are the root cause of MDR-TB.

2.2.2 TB in South Africa

South Africa experienced a rapid escalation of TB as a major public health problem between 1996 and 2006.

In 2006, the WHO ranked South Africa fifth among the world’s 22 high-burden TB countries, and third among the African countries with the highest notification rates (see figure 2.1). The incidence for all cases was reportedly 940/100 000 population and the notification rate for new and relapse cases was 628/100 000 population per year. This was a major increase from 2004, which had an incidence rate of 718 cases per 100 000 people (WHO 2008a:145).
Since South Africa adopted the DOTS strategy in 1996, all districts have implemented the core DOTS components, although coverage varies widely within and among districts. Despite South Africa’s investments in TB control, progress towards reaching programme objectives has been slow. Although CNR increased to 70% in 2006, treatment success rates in South Africa nevertheless remained low for new smear-positive TB patients with death and default as the most frequent negative outcomes (WHO 2008a:145).

Factors that exacerbate the TB epidemic in South Africa and contribute to the emergence of MDR-TB and XDR-TB include high treatment interruption rates of drug-sensitive TB as about 15% of patients default on the first-line six-month treatment while almost a third of patients default on second-line treatment; inappropriate drug regimens, and HIV/Aids leading to high TB-HIV co-infection rates. Alongside these factors, poverty and lack of infection control in institutions increase the TB burden (Singh et al 2007:0019-20).

An outbreak of XDR-TB in an HIV-positive population in KwaZulu-Natal in South Africa in 2005 to 2006 was characterised by extremely high mortality rates. Out of 544 patients, 221 had MDR-TB, of whom 53 (23%) were also resistant to kanamycin and ciprofloxacin and 52 died within a median range of 16 days of initial sputum collection. Half of the patients had never previously received anti-TB treatment. Of the 53 patients declared XDR-TB, 44 were tested for HIV and all were found to be HIV-positive. Among the 52 patients who died, 15 (28%) were receiving anti-retroviral drugs (ARV) (Singh et al 2007:0019; Weyer 2007:391; WHO 2007b:3).

Namibia borders on South Africa and needs to strengthen basic TB care to prevent the emergence of drug-resistance, the MDR- and/or XDR-TB.

### 2.2.3 TB in Namibia

TB remains a public health problem in Namibia, with one of the highest case notification rates in the world. According to table 2.1, which depicts the notification rates of TB in the thirteen regions of Namibia, the country’s case notification rate ranks second after Swaziland.

Four of the regions, namely Erongo, Hardap, Karas, and Oshikoto, reported an incidence above 1 000 cases/100 000 population in 2006. This is above the national case notification
rate of 765 cases per 100 000 population. The Khomas region, the site for this study, ranks first according to notified cases (MoHSS 2006b:11).

**Table 2.1 Namibia’s TB notification rates by region, 2006**

<table>
<thead>
<tr>
<th>REGION</th>
<th>NOTIFIED TB CASES</th>
<th>RANKING ACCORDING TO NUMBER OF CASES</th>
<th>INCIDENCE PER 100,000 POPULATION</th>
<th>SEVERITY RANKING ACCORDING TO CNR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erongo</td>
<td>1585</td>
<td>3</td>
<td>1380</td>
<td>1</td>
</tr>
<tr>
<td>Hardap</td>
<td>867</td>
<td>9</td>
<td>1251</td>
<td>2</td>
</tr>
<tr>
<td>Karas</td>
<td>837</td>
<td>10</td>
<td>1132</td>
<td>3</td>
</tr>
<tr>
<td>Oshikoto</td>
<td>1863</td>
<td>2</td>
<td>1038</td>
<td>4</td>
</tr>
<tr>
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<td>1</td>
<td>859</td>
<td>5</td>
</tr>
<tr>
<td>Oshana</td>
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<td>5</td>
<td>830</td>
<td>6</td>
</tr>
<tr>
<td>Caprivi</td>
<td>686</td>
<td>11</td>
<td>786</td>
<td>7</td>
</tr>
<tr>
<td>Olojzondjupa</td>
<td>1167</td>
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<td>751</td>
<td>8</td>
</tr>
<tr>
<td>Omaheke</td>
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<td>12</td>
<td>643</td>
<td>9</td>
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<tr>
<td>Kavango</td>
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<td>641</td>
<td>10</td>
</tr>
<tr>
<td>Omusati</td>
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<td>6</td>
<td>505</td>
<td>11</td>
</tr>
<tr>
<td>Ohangwena</td>
<td>1115</td>
<td>8</td>
<td>434</td>
<td>12</td>
</tr>
<tr>
<td>Kunene</td>
<td>265</td>
<td>13</td>
<td>351</td>
<td>13</td>
</tr>
<tr>
<td><strong>Namibia</strong></td>
<td><strong>15771</strong></td>
<td></td>
<td><strong>765</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source: (MoHSS 2006b:11)

The TB burden in Namibia is exacerbated mainly by HIV/AIDS. In 2006, out of 4 653 TB patients tested for HIV, 3 117 (67%) tested positive (MoHSS 2006b:11-12).

Namibia adopted the DOTS strategy within the country’s TB control policy. The country has embarked on the expansion of community-based DOTS using a successful model developed in the Omaheke region. It is envisaged that this programme will enable every patient in Namibia to be treated under DOTS either at home or at a health facility. The country has 100% coverage with DOTS because all thirteen regions in the country implement the programme. However, the treatment success rate is 75%, far below the target of 85%. This is because 10% of the patients notified, defaulted from treatment; 6% transferred out; 3% died, and 2% reported treatment failure (MoHSS 2006a:17).

Namibia maintains treatment regimens recommended by WHO and all international TB agencies (MoHSS 2006a:45). The guidelines describe the different drugs and types of TB treatment, depending on which part of the body is affected. For example, extra-pulmonary,
MDR-and smear-negative TB have different treatment regimens compared to smear-positive PTB (MoHSS 2006a:46-47).

Namibia uses fixed-dose combination (FDC) of drugs, namely Rifampicin (R), Isoniazid (H), Pyrazinamide (Z), and Ethambutol (E). The treatment for smear-positive PTB has two phases. Phase 1, which is the intensive phase, lasts for two months in new patients and three months for re-treatment patients. Phase 2 lasts for four months for new patients and five months for re-treatment (MoHSS 2006a:48).

2.2.4 Contributing factors to the TB situation

TB has re-emerged as a global public health problem and epidemic in recent years and is likely to remain a serious problem for decades to come (Onozuka & Hagihara 2007:1). Some of the factors contributing to the burden of TB include:

- *Increasing poverty, social upheaval and crowded living conditions in developing countries and inner city populations in developed countries*

TB thrives in conditions of poverty and can worsen poverty at societal, community and patient levels (WHO 2005:15). The average patient loses three to four months of work time as a result of TB, and lost earnings can total up to 30% of annual household income. The economic and human impact of TB is many times greater on poor households and poor nations than on the developed world. The high incidence levels of TB found in many poor nations means a sick labour force, extra strain on limited health services, and shackled economic growth (JEET 2008a:1-2).

The number of refugees and displaced people in the world is increasing. Untreated TB spreads quickly in crowded refugee camps and shelters. It is difficult to treat mobile populations, as treatment takes at least six months and should ideally be supervised. It is estimated that as many as 50% of the world's refugees could be infected with TB. As they move, they may spread TB (JEET 2008a:1-3; WHO 2002:1-3).
• **Inadequate health coverage and poor access to health services**

An absence of good quality health care facilities is common in poor communities. With no health services to diagnose or treat patients, there is a longer delay between disease and cure, perpetuating the spread of TB. The poor lack of access to essential medicines for reasons include poverty itself, lack of outreach, geographical reasons, shortages of health workers, and burdensome procedures (JEET 2008a:3; WHO 2002:3-4). Geographical distance presents a major barrier to accessing general health services and affects the poor disproportionately. (WHO 2005:25).

• **Poor nutrition and inadequate living conditions contribute to the spread of TB and its impact upon the community**

Poor nutrition and an inadequate diet weaken the immune system and increase the chances of infection and developing active TB. Good nutrition during TB treatment is important for a good recovery of the patient, even more so when the patient also has Aids. A well balanced diet with high protein content should be provided (MoHSS 2006a:88).

• **TB and HIV**

TB and HIV form a lethal combination, each speeding the other's progress (WHO 2008b). About a third of the people living with HIV (PLWH) worldwide are co-infected with Mycobacterium TB, and at least 70% of those co-infected live in sub-Saharan Africa (Maher, Floyd & Raviglione 2001:11; Harries et al 2004:36). TB is the leading cause of death among people living with HIV in Africa and a major cause of death elsewhere. It is also the most common presenting illness among people living with HIV, who are taking anti-retroviral treatment. At least one-third of the 33.2 million people living with HIV worldwide are infected with TB and have up to a 15% risk of developing TB every year, compared to those without HIV who have a 10% risk over their lifetime (WHO 2008c:1). Up to 70% of patients with sputum smear-positive PTB are HIV-positive, and up to half of PLWH develop TB (JEET 2008b:13).
Prior to the 1950s, there were no drugs to cure TB. Now, strains resistant to a single drug as well as strains resistant to all major anti-TB drugs have emerged. Inconsistent or partial treatment, when patients do not take all their drugs regularly for the required period because they start to feel better, doctors and health workers prescribing the wrong treatment regimens, or unreliable drug supplies cause this. When people fail to complete standard treatment regimens, or are given the wrong treatment regimen, they might remain infectious. The tubercle bacilli in their lungs might develop resistance to anti-TB drugs. People they infect will have the same drug-resistant strain (WHO 2008b:2). Inefficient TB control programmes lead to low cure rates, because of inadequate and interrupted treatment.

Factors associated with the increase of TB in Namibia include the emergence of MDR-TB; poor quality of care in TB clinics; insufficient allocation of full-time dedicated and qualified staff at national level; poor diagnosis, treatment services, management, and follow-up of cases including DOTS; increase in TB cases due to HIV; poverty, population growth and migration; inadequate treatment regimens and failure to use standardised treatment regimens; lack of supervision and information management systems for rigorous evaluation of treatment outcomes and misguided health sector reforms with cuts in health budgets and resultant reduction in financial support to peripheral health services (MoHSS 2006a:3; Makombe 2005:1).

The WHO (2005:31) suggests provision of free TB services and use of incentives and enablers for poor patients to address economic problems; bringing services to remote populations to address geographical issues; reducing stigma and gender barriers as well advocating for behaviour change to address social barriers and improving staff attitudes and communication skills to address health system barriers.

2.3 DIRECTLY OBSERVED TREATMENT SHORT COURSE (DOTS)

The DOTS approach was partly based on evidence that detecting 70% of smear-positive, that is the most infectious, patients and curing the majority of these could reduce TB incidence by 6% per year effectively halving TB in 10 years (Hakoköngäs 2005:7).
DOTS allows for standardised, accurate diagnosis and effective treatment as well as enhances adherence. It attacks the source of infection, rendering people non-infectious by treating them with appropriate drugs for an appropriate period of time, thus protecting children and communities from the spread of the disease (WHO 2006a:1-2).

One of the main characteristics of DOTS as a strategy is the use of patient observers. The observer could be any person who is taught about the signs and symptoms of TB, how to recognise the side-effects of the drugs and the importance of taking the drugs every day. Treatment completion is therefore a critical benchmark of cure (Mishra, Hansen, Sabroe & Kafle 2005:1134). DOTS brings treatment close to the patients where they live, work or go to school. With DOTS no travelling to the clinic on a daily basis is required; no patient travelling costs or waiting time at the clinic for services are involved; patients go on with their work/home chores, and health workers are alleviated of the burden of supervision and control (Zvavamwe 2006:201).

2.3.1 DOTS components

The DOTS components include political commitment and funding; early detection; standardised treatment, with supervision and patient support; effective drug supply and management, and monitoring, evaluation, and impact measurement.

2.3.1.1 Political commitment with increased and sustained financing

Clear and sustained political commitment by national governments is crucial for effective implementation of DOTS. Political commitment is needed to foster national and international partnerships as well as to support the overall structural and financial changes necessary to improve the availability, distribution and motivation of adequate and competent human resources.

Strategic action plans should address technical and financial requirements and promote accountability for results at all levels of the health system. Sustained effort is required to mobilise additional resources from domestic as well as international sources, with a progressive increase in domestic funding (JEET 2008c:1-3; WHO 2006a:1).
2.3.1.2 Case detection through quality-assured bacteriology

Bacteriology remains the recommended method of TB case detection, first using sputum-smear microscopy and then culture and drug susceptibility testing. A wide network of properly equipped laboratories with well-trained personnel is necessary to ensure access to quality assured sputum-smear microscopy (WHO 2006a:1).

2.3.1.3 Standardised treatment, with supervision and patient support

The mainstay of TB control is organising and administering nationwide standardised short course regimens for all adult and paediatric TB cases. The treatment should be of fixed-dose drug combinations to facilitate adherence to treatment and to reduce the risk of developing drug resistance. Every TB patient has the support of another person who observes that he or she swallows the medication daily as a way of ensuring adherence to treatment. Services for TB care should identify and tackle factors that could make patients interrupt or stop treatment. Supervision must be carried out in a context-specific and patient-sensitive manner, and is meant to ensure adherence on the part both of providers to giving proper care and support and of patients to taking regular treatment (WHO 2006a:2).

2.3.1.4 Effective drug supply and management system

An uninterrupted and sustained supply of quality assured anti-TB drugs is fundamental to TB control. Anti-TB drugs are made available free of charge to all TB patients, both because many patients are poor and may find them unaffordable, and because treatment has benefits that extend to society as a whole since cure prevents transmission to others (WHO 2006a:2-3).

2.3.1.5 Monitoring and evaluation system, and impact measurement

A reliable monitoring and evaluation system with regular communication between all levels of the health system is vital. This requires standardised recording of individual patient data, including information on treatment outcomes, which are then used to compile quarterly treatment outcomes that can be used to evaluate the performance of each
programme. Regular programme supervision should be carried out to verify the quality of information and to deal with performance problems (WHO 2006a:3).

### 2.3.2 Importance of DOTS

According to Farmer (2005:12), JEET (2008c:2-3) and MoHSS (2006a:12) DOTS is the most effective treatment because it

- effectively cures active TB. Good DOTS programmes rapidly reduce both death and disease, curing over 85% of patients.
- quickly makes TB patients non-infectious, thus protecting the community from being infected.
- indirectly alleviates poverty. Saving lives, reducing periods of illness, and prevention of new infections results in fewer years of productive work life lost.
- saves taxpayers' money. It costs less than previous TB control strategies and is ranked as one of the most cost-effective interventions available by the World Bank.
- prevents treatment failure and the emergence of even more deadly strains of drug resistant TB. For example, the number of MDR-TB patients dropped from 13 in 2001 to 1 in 2004 under DOTS in the Omaheke region of Namibia (Oxfam Canada 2005:17).

DOTS has gained increased attention and resources for TB (Hakoköngäs 2005:8).

### 2.3.3 Case detection and treatment outcomes under DOTS

In 1991, the World Health Assembly set the outcome targets of detecting at least 70% of new smear-positive cases in DOTS programmes and successfully treating at least 85% of detected cases (WHO 2008a:3).

In 2005, the global treatment success rate in DOTS programmes was 84.7%, just short of the 85% target. The African region achieved 76%, which was 9% lower than the international target. In 2006, the global case detection rate for new smear-positive cases in DOTS programmes reached 61%, and the African region achieved 46%, which is far short of the 70% target (WHO 2008a:5).
Regarding treatment success rates, according to the WHO (2008a:202), the top five African countries with the highest case notification rates achieved the following treatment success rates: Swaziland (42%); Namibia (75%); South Africa (71%); Lesotho (73%) and Botswana (70%). None of these countries reached the international target of 85%.

In Namibia, community-based DOTS (CB DOTS) was first introduced in the Omaheke Region in 2000. Table 2.2 indicates the situation in this region before and after the introduction of CB DOTS.

**Table 2.2  TB treatment outcomes before and after the introduction of CB DOTS in the Omaheke region**

<table>
<thead>
<tr>
<th></th>
<th>BEFORE INTRODUCTION OF CB DOTS</th>
<th>AFTER INTRODUCTION OF CB DOTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default rate</td>
<td>51.4%</td>
<td>0%</td>
</tr>
<tr>
<td>Treatment success</td>
<td>37%</td>
<td>91%</td>
</tr>
<tr>
<td>Cure rate</td>
<td>28%</td>
<td>91%</td>
</tr>
<tr>
<td>Case detection</td>
<td>3%</td>
<td>71%</td>
</tr>
</tbody>
</table>

Source: (Oxfam Canada 2005:17)

National and organisational access barriers to effective implementation of DOTS have been mainly political and managerial while community and individual obstacles have been geographical, social and economic in nature. Furthermore, DOTS poor results have been attributed to external factors, particularly the lack of human resources; poor health system infrastructure, organisation and management; private sector treatment, and the impact of health system restructuring, especially decentralisation. Additional limitations to DOTS were that ambulatory non-observed treatment was common; and reporting mechanisms were largely absent (Hakoköngäs 2005:7-11; JEET 2008c:5).

### 2.4 PATIENTS’ EXPERIENCE OF DOTS

DOTS is sometimes wrongly perceived as an intervention by nurses and other health care providers to “control” the swallowing of TB drugs, often obliging patients to stay away from their families. Implementing DOTS in this way diminishes patients’ empowerment (Macq 2007:12).
In a study in the Omaheke region on TB patients’ experience of DOTS, Zvavamwe (2006:182) found that the majority of the respondents (63.7%) indicated that DOTS was comforting and reassuring that someone cared for their health and shared the responsibility of their treatment; 33.6% felt the supervisor encouraged and supported them when they were weak and wanted to give up, and 1.4% (2 patients) actually enjoyed DOTS, saying “although my mother was the treatment supervisor, everybody in the family took turns to watch me swallow the tablets so there was team work and it was fun”. Furthermore, of the 146 respondents, only 1.4% (n=2) were dissatisfied with DOTS and both were supervised by their employers (Zvavamwe 2006:182).

Farmer (2005:13) and Hakoköngäs (2005:12) found that some individuals described DOTS as time-consuming and labour-intensive, requiring continuous motivation and training of health care workers to be effective. Individuals suffering from TB sometimes perceive the DOTS requirement as implying that they are incapable or irresponsible with regard to their own health; some even view DOTS as insulting and some view it as demeaning or punitive (Farmer 2005:13; Hakoköngäs 2005:12).

2.5 FACTORS ASSOCIATED WITH DEFAULTING FROM TB TREATMENT UNDER DOTS

TB staff frequently cite personal stresses, such as the need to earn money, alcoholism, pessimism, poor previous experiences with TB treatment, and family migration, as reasons for defaulting. However, health care restructuring and health care service limitations also seem to play a role in deterring adherence. Other than that, little is known about why TB and MDR-TB patients stop taking treatment. Consequently, identifying and addressing preventable risk factors for non-adherence is a critical task otherwise poor adherence to treatment may result in ineffective treatment and community spread of TB strains resistant to second-line anti-TB drugs. Knowledge of factors associated with patient default could assist health care workers in identifying the particular personal stressors that inhibit adherence with TB treatment, as well as provider-level impediments to achieving treatment completion (Weyer & Holtz 2008:2).

In Ndola, Zambia, Kaona, Tuba, Siziya and Sikaona (2008:1) found that the major factors leading to non-compliance included patients beginning to feel better; lack of knowledge on
the benefits of completing a course; running out of drugs at home, and TB drugs being too strong. Farmer (2005:40-42) identified lack of awareness of TB severity; stigmatisation; substance abuse; living alone; housing issues; no family support; work schedule; forgetfulness; fear of side-effects of drugs; previous experience with TB, and HIV status as barriers to treatment adherence. Moreover, psychiatric illness, substance abuse, homelessness, and history of non-adherence typically predict non-adherence.

2.6 CONCLUSION

This chapter discussed the literature review conducted for the study. The review covered the types and treatment of TB, global and local TB status, DOTS, and barriers to treatment adherence.

Chapter 3 discusses the research design and methodology.
CHAPTER 3

Research design and methodology

3.1 INTRODUCTION

Chapter 2 discussed the literature review conducted for the study. The review covered TB as an international health problem and DOTS as the recommended strategy to address it.

This chapter describes the research design and methodology including the geographical area, aim of the study, population, data collection, data-collection instrument, data analysis, and ethical considerations.

3.2 DELIMITATION OF THE RESEARCH

The focus of this study was to determine factors associated with defaulting from TB treatment under DOTS in the Khomas region of Namibia. It was also the intention of the study to explore and describe the knowledge and perspectives of the TB patients on the DOTS strategy and then make recommendations to improve TB treatment outcomes under DOTS.

3.3 GEOGRAPHICAL AREA

The study setting was the Khomas region, which is one of the thirteen regions of Namibia. The Khomas region covers 872 square kilometres and has an estimated population of 339,147. The region consists of urban and rural areas and one district, and hosts Windhoek, the capital of the Republic of Namibia, with the largest population.

Khomas region is bordered by Omaheke region to the east, Hardap region to the south, Erongo region to the west and Otjozondjupa region to the north. This makes Khomas region a centre of inhabitants who move from the rural areas seeking employment in the city. Due to the unavailability of accommodation in the region, these people end up living in informal settlements and squatter camps which are overcrowded and unhygienic, and do
not have enough ventilation. This situation causes serious health problems and communicable diseases are therefore rife (MoHSS 2006:2).

3.4 PURPOSE OF THE STUDY

The aim of the study was to explore and describe the reasons why TB patients in the Khomas region default treatment while on DOTS strategy, examine their perceptions of DOTS, and recommend ways to promote adherence to the programme thereby improving treatment outcomes under DOTS.

In order to achieve the purpose of the study, the objectives were to

- explore and describe the level of knowledge of TB patients in the Khomas region of Namibia of TB as a disease, its transmission, prevention and treatment
- explore and describe the perceptions of TB patients in the Khomas region of Namibia of the DOTS strategy
- explore and describe stigmatisation of TB in the Khomas region of Namibia
- explore and describe the reasons why TB patients in the Khomas region of Namibia default their TB treatment on DOTS
- obtain suggestions from TB patients in the Khomas region of Namibia that would prevent defaulting on the treatment
- make recommendations based on the research findings to improve the DOTS strategy in the Khomas region in Namibia
- make recommendations for further research in this field

3.5 CONCEPTUAL FRAMEWORK

A conceptual framework is “the abstract, logical structure of meaning that guides the development of the study and enables the researcher to link the findings to the existing body of knowledge” (Burns & Grove 2005:37). Brink et al (2006:24) points out that a framework helps the researcher to organise the study and provides a context in which the researcher examines a problem and gathers and analyses data. Furthermore, a conceptual framework is one that the researcher has developed through identifying and defining concepts and proposing relationships between these concepts. By developing a
framework in which ideas are organised, researchers are able to show that the proposed study is a logical extension of current knowledge (Brink et al 2006:24).

As this was a dissertation of limited scope, the formulated research questions and research objectives of this study formed the conceptual framework of the study (see chapter 1).

3.6 RESEARCH DESIGN

A research design is an overall plan for obtaining answers to research questions (Polit & Beck 2008:66). It is a blueprint or plan to direct the conduct of a study in order to maximise control over factors that would interfere with the study’s desired outcome. The research design guides the researcher in planning and implementing the study in a way that is most likely to achieve the intended goal (Burns & Grove 2005:211; Stommel & Wills 2004:32).

The design enables researchers to obtain answers to the research questions while at the same time achieving validity of the study in examining the research problem. In this study, the researcher selected a quantitative approach, using an exploratory and descriptive design.

3.6.1 Quantitative

A quantitative study is a formal, objective and systematic process to describe and test the relationships and to examine cause-and-effect interaction among variables (Burns & Grove 2005:747). The research design in this study was quantitative because the researcher used structured procedures and a formal instrument to collect data that was then analysed by computer into numerical information through statistical procedures (Brink et al 2006:11).

3.6.2 Explorative

According to Polit and Beck (2008:20), explorative research begins with some phenomenon of interest and explores the full nature of the phenomenon. This design is usually used in qualitative research. However, since a structured research method was used to collect data and no research findings on the problem could be located, the research design could also be considered to be explorative.
3.6.3 Descriptive

A descriptive study involves describing the characteristics of a particular situation, event or case in order to answer the research questions (Varkevisser et al 2003:23). A descriptive study enables the researcher to gain more information about the study problem. The purpose of such a study is to observe, describe, and document aspects of a situation as it naturally occurs and sometimes to serve as a starting point for hypothesis generation or theory development (Burns & Grove 2005:232; Polit & Beck 2008:21).

In this study, the researcher used a non-intervention descriptive design to establish and describe the respondents’ views and to identify factors associated with defaulting from TB treatment in the Khomas region of Namibia.

3.7 RESEARCH POPULATION

A research population is the entire aggregation of cases in which a researcher is interested. It is all the elements (individuals, objects, events, or substances) that meet the sample criteria for inclusion in a study (Polit & Beck 2008:274; Stommel & Wills 2004:297). The population for this study was all adult pulmonary TB patients that defaulted from treatment while on DOTS in the Khomas region of Namibia from June 2007 to April 2008.

In the five health faculties randomly selected in the Khomas region of Namibia, there were 959 cases of adult PTB registered during the period under study, which comprised 20 percent of the total TB cases in the Khomas region of Namibia. The health facilities where the research population were found were Okuryangava Clinic, with 281 cases of adult pulmonary TB and 104 defaulters; Robert Mugabe Clinic, with 34 cases and 12 defaulters; Khomasdal Clinic, with 280 cases and 14 defaulters; Donkerhoek Clinic, with 150 cases and 11 defaulters, and Katutura Health Centre, with 214 cases and 50 defaulters. Although a total of 191 defaulters were recorded at the five clinics, only 54 could be traced.
3.8 SAMPLING AND SAMPLE

It is often impossible in research to study the whole population and researchers make use of sampling procedures to select subjects who represent the whole research population. Sampling is “the process of selecting a portion of the population to represent the entire population” (Polit & Beck 2008:337). Therefore sampling involves the process followed in selecting a group of people, events, behaviours, or other elements with which to conduct a study. The purpose of sampling is to increase the efficiency of a study by concentrating on a smaller number of subjects rather than the entire population.

In this study, the researcher applied no sampling method to select respondents, as all the available respondents were included (Polit & Beck 2008:323). Nevertheless, simple random sampling was used to obtain the clinics from which the respondents were selected (Polit & Beck 2008:323). Simple random sampling is the most basic sampling method used in research, and is not subject to researchers’ biases (Polit & Beck 2008:345). As it was impossible to include all ten available clinics in the Khomas region, the researcher decided to include five clinics in the sample. Using only one clinic would not provide enough respondents, but using five clinics provided enough respondents for a representative sample of the region. The researcher wrote the names of the ten clinics in Khomas region on pieces of paper and placed them in a bowl. An independent person drew the names of the clinics, one after another, until five names were obtained (Brink et al 2006:126; Cooper & Schindler 2003:183-184).

The researcher then visited the clinics and obtained the names of patients who had defaulted their TB treatment from the clinic personnel. These patients were contacted and asked to take part in the research project. The researcher, treatment supervisors, and health workers then negotiated and arranged suitable dates for interviews with the respondents who indicated their willingness to take part in the study. As there were only 54 respondents in the research population, the researcher decided to do a census of these respondents, interview them all and analyse all the interviews (Polit & Beck 2008:323).

The researcher included all available and willing respondents who fitted the criteria for the sample. Eligibility criteria are the characteristics essential for inclusion in the target population, such as age limitation, ability to read and write, and fluency in the English
language. The researcher therefore decides what attributes members of the research population should have to be considered for inclusion in the sample (Burns & Grove 2005:342).

To be included in this study, the respondents had to be

- currently suffering from PTB and be on the District TB register of the Khomas region
- teenagers or adults, as no children were included in the sample
- previously under supervision of DOTS strategy
- willing and able to take part in the study
- living in the Khomas region and be attending any one of the following clinics: Okuryangava, Robert Mugabe Clinic, Khomasdal Clinic, Donkerhoek Clinic, Katutura Health Centre Clinic

Ultimately the research could find 54 respondents who fitted the inclusion criteria for the sample.

3.9 DATA COLLECTION AND DATA-COLLECTION INSTRUMENTS

Data collection is the precise, systematic process of gathering data or all information from the study subjects that is relevant to the purpose of the study, research questions or hypothesis (Burns & Grove 2005: 430; Stommel & Wills 2004:363).

In this study, data were collected by means of face-to-face interviews using an interview schedule.

Early in the morning of the set date for the interview session, the researcher visited the clinic where the respondents were to be interviewed. The researcher used the rooms designated specially for this purpose in the five clinics. The rooms were in a quiet section of the buildings and well ventilated, as the respondents were TB patients. Interruptions and disturbance were kept to a minimum during interviewing. The researcher placed the chairs so that researcher and respondent faced each other, without any barriers. Fresh cold water and glasses were available for the respondents.
At Donkerhoek, Khomasdal and Robert Mugabe Clinics, the interviews were conducted in one day. At Katutura Health Centre, the interviews were conducted over a two-day period and at Okuryangava Clinic, over a three-day period. Table 3.1 indicates the dates on which the interviews were conducted and the health facilities concerned.

Table 3.1 Dates of interviews and health facilities

<table>
<thead>
<tr>
<th>NAME OF HEALTH FACILITY</th>
<th>DATE VISITED</th>
<th>TOTAL NUMBER OF RESPONDENTS INTERVIEWED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robert Mugabe Clinic</td>
<td>23/07/08</td>
<td>3</td>
</tr>
<tr>
<td>Khomasdal Clinic</td>
<td>24/07/08</td>
<td>5</td>
</tr>
<tr>
<td>Donkerhoek Clinic</td>
<td>25/07/08</td>
<td>6</td>
</tr>
<tr>
<td>Katutura Health Centre</td>
<td>28/07/08</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>29/07/08</td>
<td>8</td>
</tr>
<tr>
<td>Okuryangava Clinic</td>
<td>30/07/08</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>31/07/08</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>01/08/08</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>54</td>
</tr>
</tbody>
</table>

3.9.1 The interview

A structured data-collection approach was adopted, using an interview schedule or questionnaire (see annexure E). The structured approach was chosen because it “yields data that is easy to analyse and does not require much effort from the respondents” (Polit & Hungler 1997:202).

Brink et al (2006:151) describe an interview as a method of data collection in which an interviewer obtains responses from a subject in a face-to–face encounter. Interviews have the ability to obtain certain kinds of information, such as the subjects’ attitudes and beliefs, which would be difficult to obtain without asking the subject directly (LoBiondo-Wood & Haber 2002:303).

The researcher chose interviews for the following reasons (Polit & Hungler 1997:205; Babbie & Mouton 2002:258; Brink et al 2006:147):

- Face-to-face interviews yield a high response rate.
- Interviews are feasible with most people.
• They are a flexible and convenient method of data collection.
• In face-to-face interviews respondents are less reluctant to refuse to participate while it is easy to ignore a mailed questionnaire.
• Interviews allow for probing, particularly in open-ended questions.
• Respondents do not have to be literate and researchers can explain and clarify questions for them.
• They are easy to administer and analyse.
• They yield a high degree of consistency for comparative purposes.
• The same information is collected from all respondents.

The researcher read the questions to the respondents during the interview, as some were illiterate. The researcher asked the questions exactly as formulated in the interview schedule. It took a respondent 30 minutes to complete the questionnaire. For the purposes of the dissertation, the interview schedule had to be compiled in English, but the researcher verbally translated questions into Afrikaans where necessary and the respondents could answer the questions in Afrikaans. The research instrument used to collect data from the respondents was prepared and pre-tested.

Interviews also have disadvantages, such as that bias could be a problem. To overcome this, the researcher concentrated on the questions in the interview schedule, taking special care not to influence the respondents to choose certain responses. The presence of the interviewer during data collection could over-stimulate respondents to give imaginary information just to make the interview interesting, or what they thought the researcher wanted to hear (LoBiondo-Wood & Haber 2002:303). Before the interview, however, the respondents were asked to answer openly and honestly. The researcher personally conducted the interviews. The interview schedule was extensive, and required the interviewer’s constant concentration while recording the respondents’ answers.

3.9.2 Interview schedule

An [interview schedule] questionnaire is “a formal, written document in which respondents complete the instrument themselves in a paper-and-pencil format. When the same questions are asked orally in a face-to-face or telephone format, it is called an interview”
In this study, the researcher developed the interview schedule on the basis of the study objectives and the literature review. The researcher’s supervisors in the Department of Health Studies, University of South Africa, a statistician and experts in the field evaluated the interview schedule. After their feedback and approval, the interview schedule was tested in a pre-test to ensure that the items measured what they were intended to measure (LoBiondo-Wood & Haber 2002:305).

3.9.3 Format of interview schedule

The interview schedule consisted of closed-ended and open-ended questions. The closed-ended questions required the respondents to choose among fixed alternatives (Brink et al 2006:151). The open-ended questions allowed the respondents to answer in their own words and to give their own experiences and perceptions. Enough space was allowed for the researcher to write the respondents’ exact words when answering the open-ended questions. The interview schedule was kept as short as possible while at the same time including questions to cover all aspects of the defaulting of TB treatment in Khomas region of Namibia. The items followed the preferred systematic approach and covered the research objectives and research questions (see annexure E). Both open-ended and closed-ended questions have strengths and weaknesses. Closed-ended questions are usually difficult to construct but easy to analyse.

The interview schedule was divided into six sections (see annexure E for interview schedule):

- **Section A**
  Consisted of seven closed-ended questions on biographical information, including sex, ethnic group, age, occupation, marital status, level of education and clinics where interviews were conducted.

- **Section B**
  This section probed the knowledge and opinions of TB defaulters.
Section C
This section evaluated the respondents’ perceptions and experience of treatment under the DOTS strategy.

Section D
This section examined the stigma attached to TB.

Section E
This section examined their reasons for defaulting TB.

Section F
This section covered the respondents’ suggestions to prevent patients from defaulting TB treatment.

3.10 PRE-TEST

A pre-test is a trial run to determine whether the instrument is clearly worded and free from major biases and whether it solicits the desired information (Brink et al 2006:94). It provides an opportunity to try out the technique or instructions that will be used with an instrument, especially if the instrument has not been used with a specific population, as in the case of this study. According to LoBiondo-Wood and Haber (2002:305), pre-testing of an interview schedule identifies problems in the design and sequencing of questions or procedures for recording responses, and determines its reliability and validity.

The researcher pre-tested the interview schedule in a pilot study with five respondents who did not participate in the main study. This was done to

- identify and correct possible problems such as ambiguity, vague or difficult language or confusing statements
- determine any weakness in the organisation and administration of the interview schedule
- establish the reliability and validity of the instrument
After the pre-test typing errors, incorrect numbering of items, and coding were corrected. Then copies were made for use in the interviews.

After the final interviews the completed interview schedules were posted to the statistician for analysis on the Epi info computer program.

### 3.11 DATA ANALYSIS

Data analysis is the process of bringing order, structure and meaning to collected data. Data analysis is conducted to reduce, organise and give meaning to the data. In quantitative research, analysis techniques include descriptive and inferential analysis. The analysis techniques implemented are determined primarily by the research objectives, questions, or hypothesis (Burns & Grove 1997:43). The researcher coded the items in the interview schedule to facilitate entering of the data into the computer. A statistician analysed the data using the Epi info computer program and presented the findings in frequency tables, bar graphs and pie diagrams (see chapter 4 for data analysis and interpretation).

### 3.12 RELIABILITY AND VALIDITY

In quantitative studies validity and reliability are two of the most important concepts used by researchers to evaluate the rigour with which they are carried out (Parahoo 2006:407). It is important for quantitative data to be as precise and objective (detached) as possible. For this reason, numerical values are assigned to specific attributes. It is then possible to establish how much of an attribute is present by measuring it. The three attributes are stability, homogeneity (internal consistency), and equivalence (LoBiondo-Wood & Haber 2002:319). In quantitative studies the quality of tools determines the validity and reliability of the findings, provided sources of bias are controlled.

LoBiondo-Wood and Haber (2002:319) define reliability as the extent to which the instrument yields the same results on repeated measures. Reliability testing focuses on stability, equivalence and homogeneity. As time could affect the stability of a measure when data is collected from people on separate occasions, the researcher took the following steps to guard against this possibility:
Interviews were conducted over a short period. Only the researcher knew the adult PTB patients who discontinued their DOTS treatment. The interviews were conducted in the five selected health facilities in Khomas region on the dates indicated (see table 3.1).

The respondents were asked not to inform any of the other respondents about the interview process and what they had been asked.

To ensure internal consistency, the researcher developed and used an interview schedule, based on the literature review and the study objectives, made sure that the wording of the interview schedule was clear by consulting experts in TB as a disease, and by pre-testing the research instrument.

The respondents were interviewed using the structured interview schedule. The researcher wrote down the respondents’ responses to the open-ended questions verbatim and the responses to the closed-ended questions by writing the relevant key of the chosen alternatives.

Validity refers to whether an instrument accurately measures what it is supposed to measure (Burns & Grove 2005:376). There are various types of validity such as face, content, criterion-related and construct validity. In this study the interview schedule was only tested for content and face validity (Polit & Beck 2008: 458).

Content validity represents the universe of content, or the domain of a given construct. The interview schedule was judged for content validity (LoBiondo-Wood & Haber 2002:314). The researcher and supervisors concentrated on the content of the interview schedule, which were derived from the literature review, consultation with experts, and study objectives. In addition, the interview schedule was tested in the pre-test and corrected where necessary (Polit & Beck 2008:458).

Face validity is a rudimentary type of validity that basically verifies that the instrument gives the appearance of measuring the concept. It is an intuitive type of validity in which experts in the field and the supervisors were asked to read the instrument and evaluate the content in terms of whether it appeared to reflect the concept the researcher intended to study (LoBiondo-Wood & Haber 2002:315). The researcher, experts in the field as well as the supervisor and the joint-supervisor were of the opinion that the research instrument used in this research looked as
though it would measure the appropriate construct and therefore had face validity (Polit & Beck 2008:458). As this was a dissertation of limited scope with the objective of determining whether the researcher was able to conduct research, no more tests for reliability and validity were required.

3.13 ETHICAL CONSIDERATIONS

According to Polit and Beck (2008:167), when “humans are used as study participants – as they usually are in nursing research – care must be exercised in ensuring that the rights of those humans are protected”.

The goal of ethics in research is to ensure that no one is harmed or suffers adverse consequences from research activities. In observance of the ethical constraints, underlying the undertaking of this research, the following aspects were considered: permission to conduct the study; respect for persons; beneficence, and justice.

3.13.1 Permission

Permission to conduct the study was requested (see annexure A) from and granted by the Ministry of Health and Social Services of Namibia (see annexure B). The Research and Ethics Committee of the Department of Health Studies, Unisa, also granted permission subsequent to the review and approval of the interview schedule (see annexure C).

3.13.2 Self-determination

The right to self-determination is based on the principle of respect for persons, which states that an individual has the right to decide whether or not to participate in a study, without the risk of penalty or prejudicial treatment (Burns & Grove 2005:181; Polit & Beck 2004:171).

In this study the respondents were treated as autonomous agents who had the freedom to conduct their lives as they chose without external control from the researcher. The respondents were informed about the proposed study and were allowed to voluntarily choose to participate or not to participate. They were all aware that they were respondents
of this study, and no one was forced to participate. There was no deception and the researcher made all the explanations in the respondents' preferred language.

3.13.3 Anonymity and confidentiality

On the basis of the right of privacy, the respondents had the right to anonymity and to assume the data collected would be kept confidential. Complete anonymity exists if even the researcher cannot link subjects' identity with their individual responses (Burns & Grove 2005:188).

The interview schedule was designed to achieve and preserve respondent anonymity, by the fact that their names did not appear on the questionnaire. The findings of the completed study could also not be linked to any of the individuals who took part in the study (Polit & Beck 2008:172).

3.13.4 Privacy

According to Burns and Grove (2005:186), privacy is the right an individual has to determine the time, extent, and general circumstances under which personal information will be shared or withheld from others.

In this study the interviews were conducted in a private room where no person could overhear the conversation. The respondents were informed that data gathered would only be shared with those involved in the study. The respondents had the right to decide whether they wanted to reveal their personal information.

3.13.5 Fair treatment

The right to fair treatment is based on the ethical principle of justice. This principle holds that each person should be treated fairly and should receive what he or she is due or owed (Burns & Grove 2005:189).

In this study the respondents' selection was fair as they were selected for reasons directly related to the problem being studied.
3.13.6 Protection from discomfort and harm

The right to protection from discomfort and harm is based on the ethical principle of beneficence, which holds that one should do good and, above all, do no harm (Burns & Grove 2005:190).

There were no anticipated negative effects for the respondents, as the study was non-experimental. However, a potential risk that the respondents’ right to privacy might not be protected was taken care of.

3.13.7 Informed consent

Informed consent is the ethical principle of voluntary participation and protecting the participants from harm (Brink et al 2006:35). Informing is the transmission of essential ideas and content from the researcher to the participants (Burns & Grove 2005:193).

The researcher welcomed the respondents and thanked them for their willingness to take part in the research. Then the researcher explained the nature, purpose and objectives of the study, and their role as respondents. Their cooperation was requested, as it was believed that it might prolong their visit to the health service, and they were assured that they could terminate the interview at any stage without incurring any penalty whatsoever. Their ethical rights were explained and discussed with them before asking them to sign the informed consent forms. Only after the researcher was sure that the respondents understood the process, were they requested to sign the printed consent form (see annexure D). They were given the opportunity to ask questions before, during and after the interview.

During the interview the researcher marked the respondents’ choices in the closed-ended questions in the relevant spaces on the interview schedule. The researcher also wrote down the respondents’ answers to the open-ended questions verbatim on copies of the interview schedule.
3.13.8 Research benefits

The respondents were informed that they would receive no monetary benefits from participating in the study. The research findings could benefit the Khomas region in terms of providing input for preventing defaulting TB treatment under the DOTS strategy.

3.14 CONCLUSION

This chapter discussed the research design and methodology. The study was quantitative, descriptive and exploratory and the TB patients who defaulted TB treatment under the DOTS strategy and attended the five randomly selected health facilities within the Khomas region of Namibia were the population. Data were collected by means of face-to-face interviews, using a structured interview schedule. The steps taken to ensure reliability and validity as well as the ethical considerations were described.

Chapter 4 presents the data analysis and interpretation.
CHAPTER 4

Data analysis and interpretation

4.1 INTRODUCTION

After discussing the research design and methodology in chapter 3, this chapter presents the data analysis and interpretation of the findings.

4.2 RESEARCH QUESTIONS

Fifty-four (54) respondents, who were TB patients on DOTS and had defaulted, were interviewed at five health facilities in the Khomas region of Namibia.

Based on the research problem, the study wished to answer the following questions:

- What is the level of knowledge of TB patients in the Khomas region of Namibia on TB as disease, its transmission, prevention and treatment?
- What are the perceptions and experience of the DOTS strategy of TB patients in the Khomas region of Namibia?
- Is TB stigmatised in the Khomas region of Namibia?
- What are the reasons why TB patients in the Khomas region of Namibia default from TB treatment under the DOTS strategy?
- What, according to the TB patients in the Khomas region of Namibia, would prevent TB patients from defaulting their treatment?
4.3 RESPONDENTS’ BIOGRAPHICAL INFORMATION (SECTION A)

Section A covered the respondents’ age, gender, ethnic group, employment status, and marital status.

4.3.1 Respondents’ gender (N=54) (Item A1)

Of the respondents, 52.0% (n=28) were females and 48.0% (n=26) were males (see table 4.1).

Table 4.1 Respondents’ gender (N=54)

<table>
<thead>
<tr>
<th>SEX</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>26</td>
<td>48</td>
</tr>
<tr>
<td>Female</td>
<td>28</td>
<td>52</td>
</tr>
<tr>
<td>Total</td>
<td>54</td>
<td>100</td>
</tr>
</tbody>
</table>

4.3.2 Ethnic group of respondents (N=54) (Item A.2)

Of the respondents, 44.0% (n=24) were Ovambo; 37.0% (n=20) were Nama/Damara; 13.0% (n=7) were Afrikaner; 4.0% (n=2) were Kavango; and 2.0% (n=1) were Herero. There were no respondents from the San or Tswana ethnic groups.

4.3.3 Age of respondents (N=54) (Item A.3)

The respondents’ ages ranged between younger than 14 to 64 years (see figure 4.1).
Of the respondents, 41% (n=22) were 25-34 years old; 37% (n=20) were 35-44; 13% (n=7) were 45-54; 7% (n=4) were 15-24, and 2% (n=1) were 55-64.

4.3.4 Employment status of respondents (N=54) (Item A.4)

Of the respondents, 74% (n=40) indicated that they were unemployed, 17% (n=9) were informally employed, and 9% (n=5) were formally employed (see figure 4.2).
A high rate of unemployment contributes to the development of TB as it causes poverty, poor living standards, overcrowding, and lack of adequate nourishing food. It is imperative for TB patients to have sufficient nutrition to help with the healing process (MoHSS 2006a:108).

4.3.5 Marital status of respondents (N=54) (Item A5)

Of the respondents, 76% (n=41) were single; 9% (n=5) were married; 5% (n=3) were separated; 4% (n=2) were living together; 4% (n=2) were divorced, and 2% (n=1) were widows/widowers. No relationship has been found between individuals’ marital status and their knowledge of TB (Kaona et al 2004:68).

Table 4.2 indicates the respondents’ marital status.

Table 4.2 Respondents’ marital status (N=54)

<table>
<thead>
<tr>
<th>MARITAL STATUS</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Divorced</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Separated</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Living together</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Widow/er</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Single</td>
<td>41</td>
<td>76</td>
</tr>
<tr>
<td>Total</td>
<td>54</td>
<td>100</td>
</tr>
</tbody>
</table>

4.3.6 Level of education of the respondents (N=54) (Item A6)

Of the respondents, 43% (n=23) completed Grade 4 to 7; 32% (n=17) completed Grade 8 to 10; 9% (n=5) completed Grade 1 to 3, 7% (n=4) completed Grade 11-12 and only 2% (n=1) had higher than Grade 12. In addition, 7% (n=4) had never attended school (see table 4.3).
### Table 4.3 Respondents’ level of education (N=54)

<table>
<thead>
<tr>
<th>LEVEL OF EDUCATION</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never attended school</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Grade 1 -3</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Grade 4-7</td>
<td>23</td>
<td>43</td>
</tr>
<tr>
<td>Grade 8-10</td>
<td>17</td>
<td>32</td>
</tr>
<tr>
<td>Grade 11-12</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Above Grade 12</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>54</td>
<td>100</td>
</tr>
</tbody>
</table>

### 4.3.7 Clinic where interviews were conducted (N=54) (Item A.7)

The interviews were conducted at the five health facilities in the Khomas region, namely Okuryangava, Donkerhoek, Khomasdal and Robert Mugabe Clinics and Katutura Health Centre. Figure 4.3 displays the number of respondents interviewed at each clinic.

![Number of respondents interviewed per clinic](chart.png)

**Figure 4.3: Number of respondents interviewed per clinic (N=54)**

Okuryangava Clinic caters for informal settlements in the high-density residential areas, where most residents are socio-economically under-privileged. Overcrowding and poor sanitary conditions are also prevalent in these communities (MoHSS 2006a:106). Most of the respondents lived in high-density areas and this might contribute to the spread of TB if treatment is not followed carefully.
4.4 KNOWLEDGE AND OPINION OF RESPONDENTS (SECTION B)

This section allowed the respondents to provide their own answers.

4.4.1 Meaning of acronym TB (N=54) (Item B1)

The respondents were asked what the acronym “TB” stands for. Of the respondents, 52% (n=28) knew what it means, while 48% (n=26) did not (see table 4.4).

Table 4.4  Respondents’ knowledge of the acronym TB (N=54)

<table>
<thead>
<tr>
<th>RESPONDENTS’ RESPONSE</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stands for Tuberculosis</td>
<td>28</td>
<td>52</td>
</tr>
<tr>
<td>Didn’t know</td>
<td>18</td>
<td>33</td>
</tr>
<tr>
<td>For disease</td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td>Coughing too long</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>TOTAL</td>
<td>54</td>
<td>100</td>
</tr>
</tbody>
</table>

4.4.2 Whether TB is an infectious disease (N=54) (Item B2)

Of the respondents, 74% (n=40) answered that TB is infectious; 15% (n=8) answered “no”, and 11% (n=6) were not sure if TB is infectious. This finding shows that 26% (n=14) of the respondents did not know that TB is infectious and might therefore not take precautions to prevent the spread of the disease. Table 4.5 presents the respondents’ knowledge of whether TB is infectious or not.

Table 4.5  TB is an infectious disease (N=54)

<table>
<thead>
<tr>
<th>TB IS AN INFECTIOUS DISEASE</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>40</td>
<td>74</td>
</tr>
<tr>
<td>No</td>
<td>8</td>
<td>15</td>
</tr>
<tr>
<td>Uncertain</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>TOTAL</td>
<td>54</td>
<td>100</td>
</tr>
</tbody>
</table>

According to the World Health Organization (WHO) (2004:23), TB is a common and highly infectious disease caused by Mycobacteria, mainly *Mycobacterium Tuberculosis*. The greatest source of infection is the patient with TB of the lung, or pulmonary TB (PTB), who
is coughing. Coughing produces a tiny infectious droplet nucleus that contains TB bacilli. Anyone inhaling this air with droplets could then be infected and later develop TB.

**4.4.3 Causes of TB (N=54)**

The respondents were asked to indicate the causes of TB. Table 4.6 displays the respondents’ understanding of the causes of TB. As some respondents provided more than one answer, the totals do not compute to the number of respondents or 100%.

**Table 4.6 Causes of TB (N=54)**

<table>
<thead>
<tr>
<th>RESPONDENTS’ CAUSES OF TB</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germs/bacteria</td>
<td>20</td>
<td>37</td>
</tr>
<tr>
<td>Environmental factors</td>
<td>16</td>
<td>30</td>
</tr>
<tr>
<td>Life style factors</td>
<td>16</td>
<td>30</td>
</tr>
<tr>
<td>Don’t know</td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td>Poor hygiene</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Poor nutrition</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

Of the respondents, 37% (n=20) indicated that TB is caused by germs or bacteria; 30% (n=16) indicated environmental factors; 30% (n=16) indicated life style factors; 13% (n=7) did not know; 9% (n=5) indicated poor hygiene, and lastly 4% (n=2) indicated poor nutrition. Although the respondents did not mention the causative organism, they had some idea of the contributing factors.

**4.4.4 First three important symptoms of TB (N=54) (Item B4)**

The respondents were asked to identify the first *three symptoms* of TB from the list provided in the interview schedule and responded as follows (see figure 4.4):

- The majority of the respondents namely 91% (n=49) correctly indicated that should a patient cough for a period of three weeks, TB should be suspected. However, 7% (n=4) did not agree and 2% (n=1) were uncertain.
- The majority of the respondents, namely 87% (n=47) correctly believed that night sweat was another symptom of TB, although 7% (n=4) did not agree, and 6% (n=3) were not sure.
Of the respondents, 80% (n=43) chose weight loss as one of the first symptoms of TB, but 5% (n=3) did not agree, and 15% (n=8) were uncertain.

Figure 4.4: First three symptoms of tuberculosis identified by respondents (N=54)

All the respondents answered “no” to the following symptoms, which were listed in the interview schedule as the first three symptoms of TB:

- fever (Item B4.2)
- diarrhoea (Item B4.3)
- difficulty breathing (Item B4.5)
- coughing up blood (Item B4.7)
- severe fatigue (Item B4.8)
- enlarged glands (Item B4.9)

At the same time, some respondents identified other symptoms not listed in the interview schedule, namely sneezing, spitting, talking, confusion, loss of appetite, swelling and painful legs and bones, chest pains and feeling weak at all times as some of the first three symptoms of TB.
It is of concern that of the respondents, 9% (n=5) did not know that cough; 13% (n=7) did not know that night sweats, and 21% (n=11) did not know that weight loss were the first three symptoms of TB. Individuals who do not know the first symptoms of TB are a danger to the rest of the population, as they will not present themselves for treatment before they have infected other unsuspecting people.

4.4.5 Fatality of TB (N=54) (Item B5)

To the question of whether a person can die of TB, of the respondents 87% (n=47) indicated that people could die of TB; 5.6% (n=3) indicated that people could not die of TB, and 7.4% (n=4) were not sure. This finding implied that some TB patients currently on treatment do not have sufficient information about the seriousness of the disease.

4.4.6 Condition with the highest death rate per annum in Namibia (N=54) (Item B6)

The respondents were asked to choose the condition listed in the interview schedule that had the highest death rate per annum in Namibia.

Of the respondents, 72% (n=39) indicated HIV/Aids as the condition that caused the highest mortality rate per annum in Namibia; 18% (n=10) indicated TB; 6% (n=3) selected motor vehicle accidents, and 4% (n=2) each believed that violence and measles had the highest mortality rate in Namibia. None of the respondents considered malaria as a serious condition. However, TB is by far the single leading cause of death in patients dying from Aids (MoHSS 2006a:93). Figure 4.5 represents the respondents’ selection of the condition causing the highest mortality rate in Namibia.
4.4.7 Manner in which uninfected individuals could contract TB (N=54) (Item B7)

The respondents were asked how uninfected individuals contract TB (see table 4.7). Of the respondents, 91% (n=49) indicated correctly that coughing by individuals who have TB spreads the disease (Item B7.5). When patients with active PTB cough, they produce tiny infectious droplet nuclei. Droplet nuclei can also be spread into the air by talking, sneezing and spitting, and can remain suspended in the air for long periods (WHO 2004:23).

Of the respondents, 74% (n=40) believed that TB is spread by TB patients’ sneezing (Item B7.4), and 70% (n=38) indicated that TB is spread by TB patients’ spitting on the pavement (Item B7.7) (see table 4.7).
Table 4.7  Respondents’ knowledge of spread of TB (N=54)

<table>
<thead>
<tr>
<th>HOW TB IS SPREAD</th>
<th>YES (n)</th>
<th>NO (n)</th>
<th>NOT SURE (n)</th>
<th>TOTAL (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sexual intercourse</td>
<td>24% (13)</td>
<td>50% (27)</td>
<td>26% (14)</td>
<td>100% (54)</td>
</tr>
<tr>
<td>Touching a TB patient</td>
<td>24% (13)</td>
<td>56% (30)</td>
<td>20% (11)</td>
<td>100% (54)</td>
</tr>
<tr>
<td>Using the same utensils with a TB patient</td>
<td>30% (16)</td>
<td>52% (28)</td>
<td>18% (10)</td>
<td>100% (54)</td>
</tr>
<tr>
<td>Sneezing of TB patient</td>
<td>74% (40)</td>
<td>17% (9)</td>
<td>9% (5)</td>
<td>100% (54)</td>
</tr>
<tr>
<td>Coughing of individual with TB</td>
<td>91% (49)</td>
<td>9% (5)</td>
<td>0% (0)</td>
<td>100% (54)</td>
</tr>
<tr>
<td>Talking to TB patient</td>
<td>33% (18)</td>
<td>45% (24)</td>
<td>22% (12)</td>
<td>100% (54)</td>
</tr>
<tr>
<td>TB patient spitting on pavement</td>
<td>70% (38)</td>
<td>17% (9)</td>
<td>13% (7)</td>
<td>100% (54)</td>
</tr>
<tr>
<td>Through contaminated food</td>
<td>11% (6)</td>
<td>35% (19)</td>
<td>54% (29)</td>
<td>100% (54)</td>
</tr>
<tr>
<td>Through polluted water</td>
<td>15% (8)</td>
<td>41% (22)</td>
<td>44% (24)</td>
<td>100% (54)</td>
</tr>
</tbody>
</table>

The findings were of concern, as

- 24% (n=13) indicated that TB could be transmitted by sexual intercourse and 26% (N=14) were not sure whether it could be transmitted this way (Item B7.1).
- 24% (n=13) believed that touching a TB patient could spread it and 20% (n=11) were not sure of this. This could be one of the reasons why individuals stigmatise TB (Item B7.2), and is a problem that health workers have to address.
- 30% (n=16) believed that using the same utensils as a TB patient spreads the disease (Item B7.3).
- 33% (n=18) indicated that talking to a TB patient could spread TB, and 22% (n=12) were not sure of this (Item B7.6).
- 11% (n=6) were misinformed, as they believed that TB could be spread through contaminated food, and 54% (n=29) were uncertain about this mode of transmission (Item B7.8).
- 15% (n=8) were of the opinion that TB could spread through polluted water and 44% (n=24) were uncertain (Item B7.9).
4.4.8 All people infected with TB bacteria become ill (N=54) (Item B8)

The respondents were asked whether a patient who has been infected with TB would necessarily become ill. Of the respondents, 83% (n=45) indicated that all people infected with the TB bacteria would become ill; 10% (n=5) believed that even if people were infected, they would not become ill, and 7% (n=4) were not sure. The majority of infected people with intact immunity will never develop TB. Individuals with a weak immune system might develop TB during the first year of infection (MoHSS 2006a:17).

4.4.9 How long should TB patients take treatment before being cured (N=54) (Item B9)

The researcher wanted to know whether the respondents knew the duration of TB treatment before patients were cured. Of the respondents, 56% (n=30) indicated that TB patients could be cured within 6 to 8 months if the drugs were taken [as prescribed and patients adhered to treatment]; 20% (n=11) believed that patient were never cured; 17% (n=9) indicated that TB took longer than a year to be cured; 4% (n=2) believed that TB could be cured in one month, and 4% (n=2) indicated within 2 to 3 months.

None of the respondents believed that TB could be cured quickly, as none indicated that cure was possible within 0 to 3 weeks, or within 4 to 5 months either.

Some TB patients remain sputum smear-positive even though they took the drugs as prescribed and these patients are referred to as treatment failure and need re-treatment (MoHSS 2006a:44).

4.4.10 Duration of TB treatment’s role in decision to discontinue treatment (N=54) (Item B10)

Most of the respondents (69%; n=37) answered, “Yes” to the question, “Did your answer to question 9, that the treatment takes so long, influence your decision to discontinue the TB treatment?”
4.4.11 HIV-positive people can be successfully treated for TB (N=54) (Item B11)

The respondents were asked whether HIV-positive people could be treated successfully for TB. Of the respondents, 54% (n=29) indicated that individuals infected with HIV could not be successfully treated for TB; 35% (n=19) indicated that they could, and 11% (n=6) were not sure. Figure 4.6 depicts the respondents’ knowledge of whether HIV-positive people can be successfully treated for TB.

![Figure 4.6: Respondents’ perceptions of whether HIV-positive people can be successfully treated for TB (N=54)](image)

TB can be effectively cured in patients with HIV/Aids (MoHSS 2006a:56).

4.4.12 Importance of completing TB treatment (N=54) (Item B12)

The respondents were asked why it was important to complete TB treatment. Of the respondents, 81% (n=44) indicated that a TB patient has to complete treatment in order to be cured. Other responses included:
- To fight TB (4%; n=2)
- Waste of time (4%; n=2)
- Did not know (4%; n=2)
- To please my supervisor (2%; n=1)
- People not taking drug” (2%; n=1)
- To avoid MDR (2%; n=1)
- To avoid dying (2%; n=1)

Table 4.8 depicts the respondents’ perceptions of the importance of completing TB treatment.

Table 4.8  Respondents’ perceptions of the importance of completing TB treatment (N=54)

<table>
<thead>
<tr>
<th>RESPONSES</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>To be cured/get well</td>
<td>44</td>
<td>80</td>
</tr>
<tr>
<td>To fight TB</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Waste of time</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Don’t know</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>People not taking drugs</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>To please my supervisor</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>To avoid MDR</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>To avoid death</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>TOTAL</td>
<td>54</td>
<td>100</td>
</tr>
</tbody>
</table>

4.5  DOTS TREATMENT (SECTION C)

This section explored the respondents’ perceptions and experience of the DOTS treatment.

4.5.1  Respondents’ perceptions and experience of the DOTS strategy (N=54) (Item C1)

The respondents were asked to indicate to what extent they agreed or disagreed with the statements listed related to their experience of the DOTS treatment.

- Treatment supervisors encouraged the respondents to continue with their treatment (n=54) (Item C1.1)
The majority of the respondents (65%; n=35) strongly agreed and 33% (n=18) agreed that their treatment supervisors encouraged them to continue with their treatment

- *DOTS allowed the respondents to stay with their own people at home* (n=54) (Item C1.2)

Of the respondents, 67% (n=37) indicated that they strongly agreed and 13% (n=7) agreed that the DOTS strategy allowed them to stay with their families at home.

- *DOTS allowed the respondents to continue with their normal lives* (n=54) (Item C1.3)

The majority of the respondents 76% (n=41) strongly agreed and 20% (n=11) agreed that DOTS allowed them to continue with their normal lives.

- *Respondents did not need to travel far as treatment was obtained close to home* (n=54) (Item C1.4)

Of the respondents, 67% (n=36) strongly agreed and 28% (n=15) agreed with the short distance to the DOT point which also brings TB treatment close to home.

- *Respondents did not need to queue for a long time at the clinic* (n=54) (Item C1.5)

The majority of the respondents (61%; n=33) strongly agreed and 17% (n=9) agreed that less time was spent at the clinics.

- *Respondents liked the food provided at the DOTS points* (n=54) (Item C1.6)

Of the respondents, 52% (n=28) indicated that they strongly agreed and 43% (n=23) agreed with the statement.
Like to walk to the DOTS points (n=54) (Item C1.7)

Of the respondents, 17% (n=9) strongly agreed and 43% (n=23) agreed that they liked walking to the DOTS points, and 41% (n=22) strongly disagreed.

Treatment supervisor visited the respondents when they defaulted (n=54) (Item C1.8)

The majority of the respondents (31%; n=17) strongly agreed and 59% (n=32) agreed that their treatment supervisors visited them when they defaulted.

The respondents perceived the treatment supervisor as unfriendly (n=54) (Item C1.9)

Of the respondents, 87% (n=47) strongly disagreed that their treatment supervisors were unfriendly, while 13% (n=7) agreed that their treatment supervisors were unfriendly.

Treatment supervisor understood TB (n=54) (Item C1.10)

All the respondents (100%; n=54) strongly agreed that their treatment supervisors understood TB.

Treatment supervisor educated the respondents on TB (n=54) (Item C1.11)

Of the respondents, 41% (n=22) strongly agreed and 52% (n=28) agreed that their treatment supervisors educated them on TB.

Respondents were satisfied with the support received from the treatment supervisor (N=54) (Item C1.12)

Of respondents, 96% (n=52) were satisfied with the support received from their treatment supervisors.
- Treatment supervisor included the respondents in decision making (N=54) (Item C1.13)

Of the respondents, 78% (n=42) indicated that their treatment supervisors included them in the decision making.

- Respondents felt good knowing that someone else cared for their health (N=54) (Item C1.14)

Of the respondents, 92% (n=50) strongly agreed that it felt good to know that someone else cared for their health (see table 4.9).

Table 4.9  Respondents’ perceptions of DOTS treatment (N=54) (Item C1)

<table>
<thead>
<tr>
<th>DOTS TREATMENT</th>
<th>STRONGLY AGREE</th>
<th>AGREE</th>
<th>DISAGREE</th>
<th>STRONGLY DISAGREE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment supervisor encouraged them</td>
<td>65% (n=35)</td>
<td>33% (n=18)</td>
<td>2% (n=1)</td>
<td>0% (n=0)</td>
<td>100% (N=54)</td>
</tr>
<tr>
<td>DOTS allows them to stay with their people at home</td>
<td>69% (n=37)</td>
<td>13% (n=7)</td>
<td>11% (n=6)</td>
<td>7% (n=4)</td>
<td>100% (N=54)</td>
</tr>
<tr>
<td>DOTS allows them to continue with their normal life</td>
<td>76% (n=41)</td>
<td>20% (n=11)</td>
<td>0% (n=0)</td>
<td>4% (n=2)</td>
<td>100% (N=54)</td>
</tr>
<tr>
<td>Did not need to travel far as treatment is close to home</td>
<td>67% (n=36)</td>
<td>28% (n=15)</td>
<td>5% (n=3)</td>
<td>0% (n=0)</td>
<td>100% (N=54)</td>
</tr>
<tr>
<td>No queuing at clinic for long time</td>
<td>61% (n=33)</td>
<td>17% (n=9)</td>
<td>18% (n=10)</td>
<td>4% (n=2)</td>
<td>100% (N=54)</td>
</tr>
<tr>
<td>Respondents liked food provided at DOTS point</td>
<td>52% (n=28)</td>
<td>43% (n=23)</td>
<td>5% (n=3)</td>
<td>0% (n=0)</td>
<td>100% (N=54)</td>
</tr>
<tr>
<td>Respondents liked to walk to the DOTS point everyday</td>
<td>17% (n=9)</td>
<td>43% (n=23)</td>
<td>35% (n=19)</td>
<td>5% (n=3)</td>
<td>100% (N=54)</td>
</tr>
<tr>
<td>Treatment supervisors visits them at home when they default</td>
<td>31% (n=17)</td>
<td>59% (n=32)</td>
<td>6% (n=3)</td>
<td>4% (n=2)</td>
<td>100% (N=54)</td>
</tr>
<tr>
<td>Treatment supervisors are unfriendly</td>
<td>6% (n=3)</td>
<td>7% (n=4)</td>
<td>43% (n=23)</td>
<td>44% (n=24)</td>
<td>100% (N=54)</td>
</tr>
<tr>
<td>Treatment supervisors understand TB</td>
<td>35% (n=19)</td>
<td>65% (n=35)</td>
<td>0% (n=0)</td>
<td>0% (n=0)</td>
<td>100% (N=54)</td>
</tr>
<tr>
<td>Treatment supervisor educated them on TB</td>
<td>41% (n=22)</td>
<td>52% (n=28)</td>
<td>5% (n=3)</td>
<td>2% (n=1)</td>
<td>100% (N=54)</td>
</tr>
<tr>
<td>Satisfied with the support received from treatment supervisor</td>
<td>48% (n=26)</td>
<td>48% (n=26)</td>
<td>0% (n=0)</td>
<td>4% (n=2)</td>
<td>100% (N=54)</td>
</tr>
<tr>
<td>Treatment supervisor included them in the making of important decisions</td>
<td>20% (n=11)</td>
<td>57% (n=31)</td>
<td>17% (n=9)</td>
<td>6% (n=3)</td>
<td>100% (N=54)</td>
</tr>
<tr>
<td>Felt good to know that someone else cared for their health</td>
<td>70% (n=38)</td>
<td>22% (n=12)</td>
<td>2% (n=1)</td>
<td>6% (n=3)</td>
<td>100% (N=54)</td>
</tr>
</tbody>
</table>
4.5.2 Respondents' treatment supervisors (N=54) (Item C2)

Of the respondents, 61% (n=33) indicated that their family members were responsible for their supervision; 13% (n=7) indicated health workers; 13% (n=7) indicated friends; 11% (N=6) indicated community members, and 2% (n=1) were not supervised by someone else. None of the respondents was supervised by the employer.

4.6 STIGMATISATION OF TB STATUS (SECTION D)

4.6.1 Disclosure of TB status (N=54) (Item D1)

The respondents had to answer “Yes”, “No” or “I am not sure” to the following questions listed in the interview schedule, which related to the disclosure of their infection and on the stigmatisation of TB.

- **Whether members of the community know that the respondents have TB (N=54) (Item D1.1)**

  Of the respondents, 83% (n=45) indicated that their communities were aware of their TB status; 11% (n=6) indicated that their communities had no idea of their TB status, and 6% (n=3) were not sure whether their communities were aware of their TB status. The fact that 17% (n=9) of the respondents did not inform other members of the community of their infection did not necessarily mean that TB is stigmatised in the area. It could be that they merely did not think it important enough to inform the whole community or strangers. At the same time, however, it could be an indication that TB is stigmatised in the area.

- **Whether workers at the workplace know that the respondents have TB (N=54) (Item D1.2)**

  Out of the respondents, 74% (n=40) did not respond because they were unemployed; 17% (n=9) informally employed and were uncertain, and 9% (n=5) indicated that their co-workers were aware that they had TB. The fact that 17% (n=9) were not sure whether the other workers in their workplace knew of their infection could mean that they informed the workers nearest to them, but not all. Again, it could also be an indication that TB was stigmatised.
- **Whether the respondents’ employers know that they have TB** (N=54) (Item D1.3)

Of the respondents, 74% (n=40) indicated that they were not employed, therefore they did not respond (see section 4.3.1.4). All the respondents (100%; n=5) who were employed indicated that their employers were informed of their infection. Lastly, the informally employed respondents 17% (n=9) did not respond, as they were self-employed.

- **Whether members of the community treat the respondents differently because of TB** (N=54) (Item D1.4)

Of the respondents, 70% (n=38) believed that members of the community treated them differently because they had TB; 22% (n=12) did not believe that the community treated them differently, and 8% (n=4) were uncertain. A comparison of these findings with those of Item D1.5 revealed that the respondents did not inform the community of their infection due to the fact that they believed they would be treated differently. This was, therefore, an indication that the respondents felt that TB was stigmatised in the community.

- **Whether their colleagues treat the respondents differently because they have TB** (n=5) (Item D1.5)

As to whether their colleagues treated them differently because they had TB, most of the employed respondents (60%; n=3) indicated that they were definitely treated differently; 20% (n=1) were not treated differently; and 20% (n=1) were uncertain. It would thus seem that all the employed respondents were of the opinion that their co-workers treated them differently since becoming aware of their TB infection. Clearly, then, the respondents felt that TB was stigmatised in their workplace.

- **Whether the respondents’ employers treat them differently because of the TB** (n=5) (Item D1.6)

Out of the five respondents who were employed, three (60%) did not agree with the statement and two (40%) believed that the employer treated them differently due to the fact they had TB.
Whether the respondents were ashamed of the fact that they had TB (N=54) (Item D1.7)

Of the respondents, 76% (n=41) felt ashamed that they had TB, and 24% (n=13) were not ashamed. The fact that the respondents were treated differently by people who knew that they had TB; and the finding that some respondents were convinced that other people thought that people with TB had Aids (Item B1.17) could lead to feeling ashamed of their TB status. These findings confirm that stigma is a barrier, an obstacle to successful TB control and its association with conditions already stigmatised such as HIV/AIDS which often prevents people from seeking health care and decreases adherence to treatment (World Economic Forum 2008:1).

4.7 DEFAULTING TB TREATMENT (SECTION E)

This section evaluated why the respondents defaulted TB treatment.

4.7.1 Respondents’ reasons for defaulting their TB treatment (N=54) (Item E1)

The respondents had to indicate to what extent they agreed or disagreed with the reasons listed in the interview schedule as to why they discontinued their TB treatment.

- Respondents did not like the side-effects of the treatment (N=54) (Item E1.1)

  Of the respondents, 80% (n=43) strongly agreed that they did not like the side-effects of the drugs and this could be a reason why patients discontinued their treatment.

  Patients default their treatment because they are not allowed to eat before taking the drugs (N=54) (Item E1.2)

  Of the respondents, 72% (n=39) disagreed that they were not allowed to eat before taking the drugs. This indicated that information on all aspects of the disease and its treatment was provided.
➢ When TB patients feel better they think they are cured (N=54) (Item E1.3)

Of the respondents, 87% (n=47) indicated that they interrupted their treatment because they felt better and thought they were cured.

➢ Respondents were not willing to take treatment for a long time (N=54) (Item E1.4)

Of the respondents, 83% (n=45) strongly agreed that the length of TB treatment was one of the reasons for defaulting treatment. Item B10 also showed that most of the respondents (69%; n=37) indicated that the fact that the treatment takes so long influenced their decision to discontinue the TB treatment.

➢ Patients believed being discharged from hospital meant they are cured (N=54) (Item E1.5)

Most of the respondents (81%; n=44) strongly believed that being discharged from hospital meant they were cured and this was one of the reasons for defaulting treatment.

➢ Drugs made them feel sick (N=54) (Item E1.6)

Of the respondents, 72% (n=39) indicated that the drugs made them feel sick and this contributed to the interruption of treatment.

➢ Work schedule made it difficult for me to take drugs under supervision (N=54) (Item E1.7)

Of the respondents, 69% (n=37) strongly disagreed that their work schedules made it difficult to take drugs under supervision, as the majority of the respondents were unemployed (see item 4.3.1.4).

➢ No support from family (N=54) (Item E1.8)

The majority of the respondents (61%; n=33) strongly agreed that they had support from their family members.
- **Forget to take pills regularly** (N=54) (Item E1.9)

  Of the respondents, 54% (n=29) indicated that they did not forget to take their pills regularly.

- **Doubted whether treatment was working** (N=54) (Item E1.10)

  The majority of the respondents (72%; n=39) had doubts whether the treatment was working. This indicated that health workers therefore have an important role to play in informing TB patients of the length of the treatment.

- **Did not want to stop smoking** (N=54) (Item E1.11)

  Of the respondents, 59% (n=32) strongly disagreed with the statement.

- **Did not want to stop abusing alcohol** (N=54) (Item E1.12)

  Of the respondents, 54% (n=29) indicated that they wanted to stop abusing alcohol.

- **Did not get along with the health worker** (N=54) (Item E1.13)

  Of the respondents, 72% (n=39) indicated that they did not agree that this is a possible reason for defaulting treatment.

- **Ran out of drugs at home** (N=54) (Item E1.14)

  The majority of the respondents (80%; n=43) indicated that they had enough drugs at home.

- **Respondents’ poor previous experience with TB treatment** (N=54) (Item E1.15)

  Of the respondents, 85% (n=46) felt that patients discontinued their treatment due to their previous experience with TB treatment.
- *Whether the stigma attached to TB caused the respondents to interrupt their TB treatment (N=54) (Item E1.16)*

Most of the respondents (85%; n=46) strongly agreed that the stigma attached to TB was instrumental in their decision not to take the treatment.

- *People think that TB patients have Aids (N=54) (Item E1.17)*

Of the respondents, 89% (n=48) strongly agreed that people believed that TB patients were HIV positive and felt this is one of the reasons that could lead them to stop taking treatment.

- *Had to take too many pills (N=54) (Item E1.18)*

Of the respondents, 61% (n=33) strongly agreed that they had too many pills to take per day.

- *Care at TB clinic was unsatisfactory (N=54) (Item E1.19)*

Of the respondents, 78% (n=42) strongly disagreed that the care at the TB clinic was unsatisfactory. This finding indicated better health services.

- *TB patients are never cured, so why bother (N=54) (Item E1.20)*

Most of the respondents (61%; n=33) believed that TB patients were never cured, so did not see the reason for taking drugs for such a long time. This outcome would appear to indicate a lack of information to the respondents or a lack of full understanding of the implications on their part. In item B11 the respondents 54% (n=29) indicated that individuals infected with HIV could not be successfully treated for TB.

- *Moved to another area and did not know where the clinic was (N=54) (Item E1.21)*

Of the respondents, 74% (n=40) strongly disagreed that they moved to another area and did not know where the clinic was.
Shortage of drugs in the clinic (N=54) (Item E1.22)

The majority of the respondents (85%; n=46) strongly disagreed that there was a shortage of drugs in the clinics.

Long distance to the treatment observer (N=54) (Item E1.23)

Most of the respondents (61%; n=33) indicated that the DOTS points were still far from their homes, and this was one of the reasons that led them to stop taking treatment.

Too much trouble to go the clinic for drugs (N=54) (Item E1.24)

Of the respondents, 65% (n=35) indicated that they found it difficult and too much trouble to go to the clinics for the drugs.

Travelling cost to treatment points is too expensive (N=54) (Item E1.25)

Of the respondents, 67% (n=36) indicated that they interrupted their treatment due to travelling costs to treatment points. This concurred with the finding that 74% of the respondents were unemployed (see section 4.3.4). This finding corresponds with E1.23 which indicated that 61% (n=3) of the respondents said that DOTS points were far from their homes.

Disease was not serious (N=54) (Item E1.26)

Of the respondents, 67% (n=36) felt that the disease was not serious.

Did not care about their own health (N=54) (Item E1.27)

Of the respondents, 54% (n=29) did not care about their own health and therefore defaulted their treatment.

Many of the respondents regarded the following as the most probable reasons for defaulting treatment:
Respondents did not understand the disease (N=54) (Item E1.28)

Of the respondents, 80% (n=43) strongly agreed that they did not understand the disease and therefore defaulted treatment.

Respondents did not understand the treatment (N=54) (Item E1.29)

Of the respondents, 81% (n=44) indicated that they did not understand the treatment and therefore interrupted their TB treatment. This is a serious indictment of health personnel as one of the cornerstones of the DOTS strategy is the provision of information on all aspects of the disease and its treatment.

Was too ill to go to the DOTS point (N=54) (Item E1.30)

Of the respondents, 52% (n=28) strongly disagreed that they were too ill to go to the DOTS point.

Clinic hours are inconvenient (N=54) (Item E1.31)

The majority of the respondents (83%; n=45) strongly disagreed that the clinic hours to see health personnel were not convenient.

TB treatment is time consuming (N=54) (Item E1.32)

Of the respondents, 72% (n=39) indicated that they interrupted their treatment because TB treatment is time consuming.

Tablets too big and difficult to swallow (N=54) (Item E1.33)

Of the respondents, 61% (n=33) strongly agreed that the tablets were too big to swallow and this was one of the reasons that led them to interrupt treatment.
Did not like to be pressured to take treatment (N=54) (Item E1.34)

More than half of the respondents (57%; n=31) strongly agreed that they did not like to be pressured to take treatment and this could be a reason why patients discontinued their treatment.

Had to stop working until treatment was completed (N=54) (Item E1.35)

Of the respondents 85% (n=46) strongly disagreed that they had to stop working until treatment completed.

4.8 RESPONDENTS’ SUGGESTIONS FOR PREVENTING DEFAULTING TB TREATMENT (SECTION F)

In this section the respondents were asked to provide suggestions that might prevent patients from defaulting.

4.8.1 Factors that might prevent patients from defaulting TB treatment (N=54) (Item F1)

In the following questions the respondents had to indicate to what extent they agreed or disagreed with statements related to factors that might prevent patients from defaulting TB treatment. They answered as follows:

Increasing community education will prevent patients defaulting (N=54) (Item F1.1)

The majority of the respondents (87%; n=47) strongly agreed that increasing community education would prevent TB patients from defaulting treatment, 11% (n=6) agreed; 2% (n=1) disagreed, and none strongly disagreed.

Drugs should be available at the clinics (N=54) (Item F1.2)

Of the respondents, 87% (n=47) strongly agreed; 9% (n=5) agreed; 4% (n=2) disagreed, and none strongly disagreed.
 Clinic should give food to all TB patients (N=54) (Item F1.3)

The majority of the respondents (74%; n=40) strongly agreed that food should be given to all patients at the clinic because it would prevent patients from defaulting their TB treatment, and 20% (n=11) agreed.

 Health workers should regularly visit TB patients at home (N=54) (Item F1.4)

Of the respondents, 68% (n=37) felt that health workers should regularly visit TB patients at home to prevent patients from defaulting; 30% (n=16) agreed, and only 2% (n=1) felt that it would not help.

 Supervisors should visit patients at home when they skip treatment visits (N=54) (Item F1.5)

Of the respondents, 70% (n=38) strongly agreed that DOTS supervisors should visit patients at home who skipped their treatment to prevent them from defaulting; 26% (n=14) agreed, and 4% (n=2) disagreed, indicating a shortage of transport and supervisors to support their responses. This finding corresponded with section C 1.8 where the majority of the respondents (91%; n=49) agreed that treatment supervisors should visit the respondents when they defaulted from treatment, 35% (n=17) strongly agreed, and 65% (n=32) disagreed.

 Supervisors need incentives (N=54) (Item F1.6)

Of the respondents, 91% (n=49) strongly agreed, 7% (n=4) disagreed, and 2% (n=1) gave no response that as a way to prevent TB patients defaulting their treatment, the supervisors should be given an incentive, as that would facilitate the process.

 Nurses should educate patients more on TB (N=54) (Item F1.7)

All the respondents (100%; N=54) strongly agreed that nurses should educate patients more on TB to prevent them from defaulting. In Item F1.1 only 87% of the respondents strongly agreed that members of the community should be educated to prevent TB patients from defaulting. Clearly, then, the respondents were of the opinion that health education
should be directed to TB patients themselves. In item E1.28 the respondents also revealed that they did not have enough knowledge on various aspects of TB.

- Nurses should teach patients about DOTS (N=54) (Item F1.8)

All the respondents (100%; N=54) strongly agreed that teaching patients more about DOTS would prevent TB patients from defaulting their treatment.

- Health workers should be friendlier (N=54) (Item F1.9)

The majority of the respondents (98%; n=53) strongly agreed that health workers should be friendlier as this would prevent TB patients from defaulting their TB treatment, but 2% (n=1) disagreed.

- Reduce number of TB tablets patients should take per day (N=54) (Item F1.10)

Of the respondents, 67% (n=36) strongly agreed that there should be a reduction of TB tablets a patient should take per day, as this would prevent TB patients from defaulting their treatment; 29% (n=16) disagreed; 2% (n=1) strongly disagreed, and 2% (n=1) gave no response.

- Provide DOTS at workplace (N=54) (Item F1.11)

Of the respondents, 94% (n=51) strongly agreed that, even though the majority (n=40) were unemployed, they supported their fellow working TB patients; 2% (n=1) disagreed; 2% (n=1) strongly disagreed, and 2% (n=1) gave no response.

- TB patients should receive subsidies on food (N=54) (Item F1.12)

All the respondents (100%; N=54) strongly agreed that TB patients should receive subsidies on food, as this would prevent them from defaulting. This corresponded with the finding in Item A4 where 74% of the respondents were unemployed, signifying they had difficulty in obtaining food. TB causes food insecurity indirectly in both patients and their immediate family, as illness impedes productivity in farming or other economic activities or because limited family resources are directed to health care (PIH 2008:1).
The majority of the respondents (76%; n=41) strongly agreed that the community should be more involved in DOTS; 22% (n=12) agreed, and 2% (n=1) strongly disagreed.

Forty-four suggestions were received from the respondents that might prevent defaulting from treatment. Ten respondents did not provide any suggestions. According to the respondents the following would improve compliance to treatment:

- **Government to transport TB patients upon discharge from TB hospital to their residences** (7.0%; n=3).
- **Food given at DOTS points should be increased and brought early** (9.0%; n=4).
- **More community education [should be provided] on how TB is spread** (16.0%; n=7).
- **Good support from nurses [should be provided]** (2.0%; n=1).
- **Family support [would] help patients** (5.0%; n=2).
- **Government to provide food for TB patients** (2.0%; n=1).
- **[Patients should] Stop alcohol while on treatment** (5.0%; n=2).
- **[Patients should] Be serious with treatment and follow instructions** (7.0%; n=3).
- **Food to be increased** (5.0%; n=2).
- **Reduce the months of TB treatment** (2.0%; n=1).
- **Was shy to go to the clinic to collect drugs** (5.0%; n=2).
- **To give drugs to patients when travelling** (2.0%; n=1).
- **Stop giving injection; it is painful** (5.0%; n=2).
- **Should be two treatment supervisors per TB patient** (2.0%; n=1).
- **Clinics to be open throughout the day** (2.0%; n=1).
- **Patients should be given fruit and vegetables to take home** (2.0%; n=1).
- **Expand or add more DOTS points** (2.0%; n=1).
- **No quarrelling at DOTS points** (2.0%; n=1).
- **Supervisor did not understand my problem** (2.0%; n=1).
- **Provide training skills; for example, needlework at DOTS points** (2.0%; n=1).
- **Health facility DOTS is the best** (2.0%; n=1).
- **Nurses should bring TB patients’ tablets at home** (5.0%; n=2).
- **Field promoters should always be punctual** (2.0%; n=1).
- **TB patients should be admitted for six months** (2.0%; n=1).
• **TB drugs should always be available** (2.0%; n=1).
• **Defaulters should be locked up** (2.0%; n=1).
• **Be self-confident that you will be cured** (2.0%; n=1).

### 4.9 CONCLUSION

This chapter discussed the data analysis and interpretation. The findings indicated that the respondents lacked adequate knowledge on their condition; were satisfied with the supervision and support they received from their treatment supervisor and family members, and preferred the DOTS strategy. According to the respondents, there is still a stigma attached to TB.

Chapter 5 concludes the study and makes recommendations for practice and further research.
CHAPTER 5

Findings, conclusions, limitations and recommendations

5.1 INTRODUCTION

This chapter presents the findings, conclusions, and limitations of the study and makes recommendations. The study was an investigation into the problem of defaulting from TB treatment, the reasons why TB patients in the Khomas region, Namibia default, and TB patients' perceptions of the DOTS strategy.

5.2 SUMMARY OF THE STUDY

TB is a serious and increasing threat, causing grave concern throughout the world, especially in Africa. In Namibia, TB remains a challenging public health problem. The country continues to report one of the world's highest TB rates. The main factors contributing to TB in Namibia are poverty and HIV/AIDS. In most cases, TB can be cured with anti-TB drugs. To be effective, however, the drugs must be taken exactly as prescribed. The principal mechanism for achieving adherence to treatment is the Directly Observed Treatment Strategy, known as DOTS, in which a trained second person watches the patient swallowing the tablets to ensure that the patient takes the right combination of drugs and for the appropriate duration. DOTS significantly reduces drug resistance and relapse rates as well as increases sputum conversion rates. Despite the availability of effective TB treatment and the introduction of DOTS in Namibia, the control of TB has not yielded the expected outcomes. While DOTS has been widely implemented, little is known of how patients value the strategy and why patients still default on it although they are so closely monitored (Dick et al 2005:1). The researcher therefore considered it important to investigate what TB patients themselves perceived as factors contributing to defaulting under DOTS. The study also intended to determine the knowledge and opinions of TB defaulters on the importance of DOTS for control of PTB.
The objectives of the DOTS strategy (MoHSS 2006a:1) are to

- minimise TB treatment interruption
- reduce the spread of the disease
- improve patients’ and the public’s knowledge of TB
- reduce the mortality rate
- minimise the fear of stigma attached to TB

The objectives of the study were to

- explore and describe the level of knowledge of TB patients in the Khomas region of Namibia of TB as a disease, its transmission, prevention and treatment
- explore and describe stigmatisation of TB in the Khomas region of Namibia
- explore and describe the perceptions of TB patients in the Khomas region of Namibia with regard to DOTS
- explore and describe the reasons why TB patients in the Khomas region of Namibia default their TB treatment on DOTS
- obtain suggestions from the TB patients in the Khomas region of Namibia that would prevent TB patients from defaulting their treatment
- make recommendations based on the findings to improve the DOTS strategy in the Khomas region of Namibia
- make recommendations for further research in this field

The study was quantitative, explorative and descriptive. The population were adult PTB patients, who attended the five selected clinics and defaulted from treatment while on DOTS in the Khomas region of Namibia from June 2007 to April 2008. No sampling method was applied to select the respondents as all available respondents were included in the study, but simple random sampling was applied to select five clinics from which the respondents were then selected (Polit & Beck 2008:323). A total of 54 respondents were included in the study, which was enough for the requirements for a Master’s of limited scope.

The researcher conducted interviews with the respondents using a prepared and pre-tested interview schedule. The interview schedule was coded for easy analysis and the
data analysed by computer using the Epi Info version 3.2.2 with the assistance of a statistician. The findings were discussed and presented in frequency tables, bar and pie graphs.

The findings revealed that both genders were fairly evenly represented, as 52% (n=28) were females and 48% (n=26) were males. The respondents were between 14 and 75 years and older. Most of the respondents were 25 to 34 years old. The ethnic groups most represented were the Ovambo (44.0%) and Nama/Damara (37.0%). The majority (74%) of the respondents were unemployed, which does not forecast a good outcome for recovery. Most (76%) of the respondents were single and most had an educational level of Grade 4 to 7. The interviews were conducted at five health facilities in the Khomas region, but the most were conducted at Okuryangava Clinic.

5.3 FINDINGS

The findings are presented according to the objectives.

5.3.1 Level of knowledge of TB patients in the Khomas region of Namibia of TB as a disease, its transmission, prevention and treatment

The respondents had some knowledge of TB as a disease, its transmission, prevention and treatment. Since one of the objectives of DOTS is to increase patients’ knowledge, however, the respondents could be expected to have a good in-depth knowledge, which was not the case.

Only 52% of the respondents knew that TB stood for Tuberculosis, although most of them (74%) knew that TB was infectious, and that the infection could be fatal. They had a general idea of what caused TB and could identify the first three symptoms of TB. Most (72%) of the respondents felt that HIV/Aids was the most serious condition and caused the highest mortality rate per annum in Namibia. The majority (91%) of the respondents indicated that TB was spread through individuals who had TB and were coughing. Only 56% of the respondents indicated that TB could be cured within 6 to 8 months if the drugs were taken as prescribed and the patients adhered to treatment.

The findings were of concern, however, as many of the respondents did not know how TB was transmitted. For example, 24% indicated that TB could be transmitted by sexual
intercourse; 24% indicated by touching a TB patient; 30% believed that TB spread by using the same utensils as a TB patient; 33% believed that merely “talking to a TB patient” could spread TB; 11% indicated that TB could be spread through contaminated food, and 15% indicated that TB was spread through polluted water. The health education provided to these respondents was therefore not successful.

Of the respondents, 54% indicated that HIV-infected individuals could not be successfully treated for TB.

At the same time, it was encouraging that the majority (80%) of the respondents knew that they should complete their treatment to be cured.

5.3.2 Perceptions of TB patients in the Khomas region, Namibia of DOTS

The majority of the respondents either strongly agreed or agreed with the advantages listed in the interview schedule, which indicated that the respondents knew and understood the philosophy behind the DOTS strategy. The findings clearly indicated that the respondents were involved in the choice of their treatment supervisors; were included in the making of important decisions concerning their treatment, and were informed and educated. The respondents felt part of the process and therefore accepted DOTS. Most of the respondents liked walking to the DOTS point every day and indicated that they liked the food provided. They were also very satisfied with their supervisors and indicated that they were always friendly.

It was concluded from the responses, then, that the respondents were satisfied with the DOTS strategy and it should continue to successfully control TB; the treatment support system was effective, and all the people involved in the respondents’ life appeared to be informed and supportive. It was surprising, however, that the respondents still defaulted on their TB treatment while on DOTS.

5.3.3 Reasons why TB patients in the Khomas region, Namibia default their TB treatment on DOTS

The findings revealed the following reasons why the respondents defaulted their TB treatment:
- People would think they had Aids (89%).
- They thought they were cured when they started to feel better (87%).
- The stigma attached to TB (85%).
- Poor previous experiences of TB treatment (87%).
- They believed that they were cured when they were discharged from hospital (81%).
- They did not understand the treatment (81%).
- They did not understand the disease (80%).

All the above reasons could be eliminated with proper health education and motivation of patients on treatment. Although the respondents were satisfied with the treatment they received from the DOTS supervisor, the supervisors could clearly do more to prevent defaulting from treatment.

5.3.4 Determine whether TB is stigmatised in the Khomas region of Namibia

The respondents revealed that TB was stigmatised in the Khomas region of Namibia and was one of the main reasons why they defaulted on treatment. The findings also indicated that more female than male respondents gave this reason for defaulting on treatment.

The findings show that the fact that they had TB was in most cases not a secret, as the community, colleagues and employers knew it. However, most of the respondents believed that the community and their colleagues treated them differently because of having TB. Those that were employed were not sure whether their employers treated them differently. Nevertheless, the majority (76%) of the respondents were ashamed that they had TB, because they believed that other people would think that they were HIV positive and would die.

If people were better informed on TB, how it can be prevented, and how it is spread and treated, the stigma attached to the disease could be lessened to a great extent.
5.3.5 Respondents’ suggestions on how to prevent TB patients from defaulting their treatment

The respondents made the following suggestions to prevent TB patients from defaulting treatment:

- increased patient education (100%)
- community education (98%)
- availability of drugs at the clinics (96%)
- treatment supervisors and health workers should visit TB patients at home when they skip visits to the DOTS point (96%)  

Although the respondents indicated that they were satisfied with the DOTS supervisors and indicated that they were friendly, the findings revealed that the respondents believed that defaulting from treatment could be prevented if the supervisors were friendlier (98%). They also felt that the supervisors should receive incentives (91%).

5.4 CONCLUSIONS

DOTS strategy in the Khomas region of Namibia has been successful to a certain extent, but there is room for improvement.

The TB patients were satisfied with the treatment they received from the DOTS supervisors, and it seems that there was no significant shortage of TB treatment.

The findings revealed that the knowledge of the respondents on all aspects of TB should be improved. It was clear from the findings that people in general and the respondents themselves had incorrect knowledge of the cause, prevention and control of the disease. This contributed to continued stigmatisation of TB and defaulting of TB treatment in the Khomas region of Namibia.

Although the respondents indicated their trust in DOTS and the supervisors, they defaulted their treatment and lacked the necessary motivation, support and knowledge to continue until they were cured. This could be rectified by proper intervention by the DOTS supervisor. Many of the respondents indicated that they had not had good experiences of
previous TB treatment, although the number of tablets they had to take, the side-effects of the treatment or the availability of the treatment did not play a role in their decision to default.

The respondents themselves indicated that improving patient and community education and involvement would prevent patients from defaulting.

HIV/Aids appeared to have influenced the way in which the community in general and TB patients in particular perceived TB. The fact that they experienced the effect of HIV/AIDS on the lives and early death of patients every day in their communities, had not helped them to develop a positive attitude towards TB and its outcome. Special and concerted efforts should be made to address the stigma attached to TB.

5.5 LIMITATIONS

The researcher identified the following limitations in the study:

- The findings could not be generalised to other parts of the country, as the sample was not large enough.
- Another sample, which included a representative number of TB patients from all ten clinics, could elicit different findings and would be representative of the Khomas region.
- Some of the items in the interview schedule should have been investigated further, such as the effect of stigma attached to TB and why some respondents felt that people think that TB patients have AIDS.
- Qualitative research could elicit quite different findings particularly on the stigmatisation of the disease.
- No opinions were obtained from the health workers and treatment supervisors.

5.6 RECOMMENDATIONS

Based on the findings, the researcher makes the following recommendations for practice and future research.
5.6.1 Practice

In order to prevent defaulting on TB treatment in the Khomas region of Namibia and elsewhere, the researcher recommends that

- More emphasis be placed on health education of TB patients, the community and employers on TB as disease, prevention of the condition, how it is transmitted, and treatment and curability of the condition.
- Health workers should make special efforts to address the stigma attached to TB. This is a long and difficult process. Make patients aware of patients who have been successfully treated with DOTS, and use these patients as motivators. Health education and motivation of TB patients should be provided on a one-to-one basis rather than in larger groups.
- Provision should be made for continuing (on-going) training for health workers and DOTS supervisors and the findings of research like this should be brought to their attention. They are not doing their work properly if findings reveal that patients do not have the necessary knowledge to prevent defaulting.
- Former TB patients should be used as treatment supervisors.
- Follow-up on TB patients who default from treatment should be strengthened.
- Health workers or TB focal persons should be paid a risk allowance, if possible.
- Health authorities should look for innovative ways to motivate patients to take treatment as prescribed. Providing food for patients at DOTS points would promote adherence to treatment and benefit the patients because most are unemployed, poor and need nutritional food to recover.
- National and local authorities should do more to alleviate poverty in the country, especially as it aggravates the plight of TB and HIV/Aids patients.

5.6.2 Further research

Further research is recommended on the following:

- An investigation of the extent of the defaulting of TB treatment in the rest of the country.
• A similar study with the same sample after a few years to determine whether the suggestions have been implemented and whether the default rate has declined.
• Stigmatisation of TB and HIV/Aids and how it affects the decisions of patients.
• Compare the default rate of patients on DOTS and those who have been on the previous method of TB treatment.
• Determine to what extent all the DOTS objectives have been achieved.
• Determine what health education methods are the most successful in this region.
• A qualitative study on the reasons for defaulting, with defaulters describing their lived experience as TB patients.
• An investigation into supervisors’ experiences of DOTS or why patients default.

5.8 CONCLUSION

This chapter summarised the study and discussed the main findings under each objective. Although the respondents seemed satisfied with the DOTS system and supervisors, they defaulted their treatment. The DOTS supervisors could remedy this situation with improved support, motivation and education. Factors contributing to the problem of defaulting on TB treatment need urgent attention, as HIV/Aids have increased the stigmatisation of TB and made treatment and cure more difficult. Authorities should increase humanitarian support in the form of food and grants to improve the plight of TB patients and their families. Health institutions and DOTS supervisors should make concerted efforts to improve the training of personnel, and educating communities and patients.

The findings of this study should assist policy makers and authorities to develop innovative approaches to ensure treatment completion among TB patients under DOTS.
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JEET – see Joint Effort to Eradicate Tuberculosis.


MoHSS – see Ministry of Health and Social Services.


PIH – see Partners in Health.


Quédraogo, M, Kounda, S, Dembélé, M, Dadoum, G, Bambara, M, Yaogho, MG & Drago, TJ. 2006. *Obstacles to the implementation of Dot in Ouagadougou, Bukino Faso*.


WHO – see World Health Organization.


AN INVESTIGATION INTO THE DEFAULT OF TUBERCULOSIS TREATMENT
IN KHOMAS REGION, NAMIBIA.

Number of respondent

Date of interview: 
Name of the interviewer: 

Please enter the number provided in the key that corresponds with the answer of the respondent into the block provided in the block in the right margin. Please ignore the coding of the blocks.

SECTION A

BIOGRAPHICAL DATA OF RESPONDENTS

A.1. What is your sex?
   Key: Male = 1
       Female = 2

A2

A.2 To which one of the following ethnic groups do you belong?
   Key: Ovambo = 1
        Tswana = 2
        Nama/Damara = 3
        San = 4
        Herero = 5
        Afrikaans = 6
        Other = 7

Please specify “other” in A.2
A.3 Age of the respondent

Key: Younger than 14 years = 1
    15 to 24 years = 2
    25 to 34 years = 3
    35 to 44 years = 4
    45 to 54 years = 5
    55 to 64 years = 6
    65 to 74 years = 7
    75 years and older = 8

A.4 Occupation of respondent

Key: Formal employment = 1
    Informal employment = 2
    Unemployed = 3
    Other = 4

Please specify “other” in A.4

A.5 Marital status respondent

Key: Married = 1
    Divorced = 2
    Separated = 3
    Co-habitating = 4
    Widow/er = 5
    Single = 6
A.6. Highest education level completed
Key: Never attended school = 1
Grade 1 to 3 = 2
Grade 4 to 7 = 3
Grade 8 to 10 = 4
Grade 11 to 12 = 5
Above Grade 12 = 6

A.7 Clinic where interview was conducted
Key: Okuryangava clinic = 1
Robert Mugabe clinic = 2
Khomasdal clinic = 3
Donkerhoek clinic = 4
Katutura clinic = 5

SECTION B

KNOWLEDGE AND OPINIONS OF RESPONDENTS

B1 What does the acronym TB stand for?
________________________________________________________________

B2 Is TB an infectious disease?
Key: Yes = 1
No = 2
I am not sure = 3
________________________________________________________________

B3 What causes TB?
B4 Which of the following are the *first three* symptoms of TB in a patient?

Key: Yes = 1
     No = 2
     I am not sure = 3

B4.1 Night sweat.

B4.2 Fever

B4.3 Diarrhoea

B4.4 Cough for a period of 3 weeks.

B4.5 Difficulty breathing.

B4.6 Weight loss.

B4.7 Coughing up blood.

B4.8 Severe fatigue

B4.9 Enlarged glands

B4.10 Other

Please specify other marked in B4.10

B5 Can people die of TB?

Key: Yes = 1
     No = 2
     I am not sure = 3

B5
B6  Which of the following conditions has the highest death rate in this country per annum?

Key:  
- TB = 1
- HIV/Aids = 2
- Malaria = 3
- Motor vehicle accidents = 4
- Violence = 5
- Measles = 6

B6

B7  How does an uninfected individual get TB?

Key:  
- Yes = 1
- No = 2
- I am not sure = 3

B7.1  Through sexual intercourse with TB patient  
B7.2  By touching a TB patient  
B7.3  Using utensils used by a TB patient  
B7.4  Sneezing of TB patient  
B7.5  Coughing of individual who has TB  
B7.6  Talking to TB patient  
B7.7  TB patients spitting on pavement  
B7.8  Through contaminated food  
B7.9  Through polluted water
B8  Will all people infected with the TB bacteria become ill?
   Key: Yes   = 1
       No    = 2
       I am not sure = 3

B9  How long should a patient take TB treatment before s/he is cured?
   Key: One week = 1
       1-3 weeks = 2
       One month = 3
       2-3 months = 4
       4-5 months = 5
       6-8 months = 6
       Longer than a year = 7
       A patient is never cured = 8

B10 Did your answer to questions 10 influence your decision to
discontinue the TB treatment?
   Key: Yes = 1
       No = 2

B11 Can people who are HIV positive be successfully treated for TB?
   Key: Yes = 1
       No = 2
       I am not sure = 3

B12 Why is it important to complete TB treatment?
## SECTION C

**DOTS TREATMENT**

C.1 Please indicate to what extent you agree/disagree with the following statements regarding DOTS treatment.

<table>
<thead>
<tr>
<th>Key: Strongly agree</th>
<th>= 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>= 2</td>
</tr>
<tr>
<td>Disagree</td>
<td>= 3</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>= 4</td>
</tr>
</tbody>
</table>

### C1.1
Treatment supervisor encourages me to continue with the treatment.

<table>
<thead>
<tr>
<th>C1.1</th>
<th></th>
</tr>
</thead>
</table>

### C1.2
DOTS allows me to stay with my own people at home.

<table>
<thead>
<tr>
<th>C1.2</th>
<th></th>
</tr>
</thead>
</table>

### C1.3
DOTS allows me to continue with my normal life.

<table>
<thead>
<tr>
<th>C1.3</th>
<th></th>
</tr>
</thead>
</table>

### C1.4
I do not need to travel far as treatment is obtained close to home.

<table>
<thead>
<tr>
<th>C1.4</th>
<th></th>
</tr>
</thead>
</table>

### C1.5
I need not queue at clinic for a long time.

<table>
<thead>
<tr>
<th>C1.5</th>
<th></th>
</tr>
</thead>
</table>

### C1.6
I like the food they provide at DOT points.

<table>
<thead>
<tr>
<th>C1.6</th>
<th></th>
</tr>
</thead>
</table>

### C1.7
I like to walk to the DOTS point every day

<table>
<thead>
<tr>
<th>C1.7</th>
<th></th>
</tr>
</thead>
</table>

### C1.8
Treatment supervisor visits me at home when I default.

<table>
<thead>
<tr>
<th>C1.8</th>
<th></th>
</tr>
</thead>
</table>

### C1.9
Treatment supervisor is unfriendly.

<table>
<thead>
<tr>
<th>C1.9</th>
<th></th>
</tr>
</thead>
</table>

### C1.10
Treatment supervisor understands TB.

<table>
<thead>
<tr>
<th>C1.10</th>
<th></th>
</tr>
</thead>
</table>

### C1.11
Treatment supervisor educates me on TB.

<table>
<thead>
<tr>
<th>C1.11</th>
<th></th>
</tr>
</thead>
</table>
C1.12 I am satisfied with the support I receive from the treatment supervisor.

C1.13 Treatment supervisor includes me in the making of important decisions.

C1.14 I felt good to know that someone else cared for my health.

C2 Who was your treatment supervisor?

Key: Family member = 1
Community member = 2
Employer = 3

Friend = 4
Other = 5

Please specify other mentioned in C2.

SECTION D

STIGMATISATION OF TB

D1 Disclosure of TB status

Key: Yes = 1
No = 2
I am not sure = 3

D1.1 Do the members of your community know that you have TB?

D1.2 Do the workers at your workplace know that you have TB?

D1.3 Does your employer know that you have TB?
D1.4 Does member of the community treat you differently because of the TB?

D1.5 Does your colleague treat you differently because of the TB?

D1.6 Does your employer treat you differently because of the TB?

D1.7 Are you ashamed of the fact that you have TB?

SECTION E

REASONS FOR DEFAULTING TB TREATMENT

E.1 Indicate to what extent you agree/disagree with the statements that describe the reasons why you interrupted your TB treatment.

Key:  
Strongly agree = 1  
Agree = 2  
Disagree = 3  
Strongly disagree = 4

E1.1 I did not like the side effects of the treatment.

E1.2 I was not allowed to eat before taking the drugs.

E1.3 I felt better and thought I was cured.

E1.4 I was not willing to take treatment for such a long time

E1.5 I believed that being discharge from hospital meant that I was cured.
E1.6 Drugs made me feel sick.
E1.7 My work schedule made taking drugs under supervision difficult.
E1.8 My family did not support me.
E1.9 I forgot to take pills regularly.
E1.10 I doubted that the treatment was working.
E1.11 I did not want to stop smoking.
E1.12 I could not stop abusing alcohol.
E1.13 I did not get along with the health worker.
E1.14 I ran out of drugs at home.
E1.15 My poor previous experiences with TB treatment affected me.
E1.16 The stigma attached to TB affected me.
E1.17 People think that TB patients have Aids.
E1.18 I had to take too many pills per day.
E1.19 Care at TB clinic was unsatisfactorily.
E1.20 TB patients are never cured, so why bother.
E1.21 I moved to another area, and did not know where the clinic was.
E1.22  There is often a shortage of drugs in the clinics.  
E1.23  I had to travel far to my treatment observer.  
E1.24  It was too much trouble to get to the clinic to obtain drugs.  
E1.25  Travelling costs was too expensive.  
E1.26  I felt that the disease was not serious.  
E1.27  I did not care much about my own health.  
E1.28  I did not understand the disease.  
E1.29  I did not understand the treatment.  
E1.30  I was too ill to go to DOTS points.  
E1.31  The clinic hours to see health personnel was not convenient.  
E1.32  To go for TB treatment is time consuming.  
E1.33  Tablets are too big therefore difficult to swallow.  
E1.34  I did not like being pressured to take my tablets in someone else’s presence.  
E1.35  I had to stop working until I completed treatment.
SECTION F

SUGGESTIONS TO PREVENT TB PATIENTS FROM DEFAULTING

F14 To what extent do you agree/disagree with the following statement related to factors that might prevent patients of defaulting TB treatment.

Key: Strongly agree = 1
     Agree       = 2
     Disagree   = 3
     Strongly disagree = 4

F14.1 Increasing community education will prevent patients defaulting

F4.2 Drug should always be available at the clinics.

F4.3 Clinic should give food to all TB patients.

F14.4 Health workers should regularly visit TB patients at home.

F14.5 Supervisors should visit patients at home when they skip treatment visits.

F14.6 Supervisors need incentives.

F14.7 Nurses should educate patients more on TB.

F14.8 Nurses should teach patients about DOTS.

F14.9 Health workers should be friendlier.

F14.10 Tablets that should be taken by TB patients should be reduced.
F14.11 Provide DOTS at workplace.

F14.12 TB patients should receive subsidies on food.

F14.13 Community should be more involved in DOTS.

PLEASE PROVIDE ANY OTHER SUGGESTIONS THAT WOULD IMPROVE PATIENT’S COMPLIANCE TO TB TREATMENT.

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THANK YOU