

**A STUDY ON HEALTH CARE WORKERS' KNOWLEDGE, ATTITUDES AND  
EXPERIENCES OF DOTS IN THE WINDHOEK DISTRICT OF THE KHOMAS  
REGION (NAMIBIA)**

by

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### DECLARATION

I declare that **A STUDY ON HEALTH CARE WORKERS' KNOWLEDGE, ATTITUDES AND EXPERIENCES OF DOTS IN THE WINDHOEK DISTRICT OF THE KHOMAS REGION (NAMIBIA)** is my own work and that all the 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 degree at any other institution.



.....

**SIGNATURE**

Carolina Dulce Songo Teixeira

10 June 2018

.....

**DATE**

# **A STUDY ON HEALTH CARE WORKERS' KNOWLEDGE, ATTITUDES AND EXPERIENCES OF DOTS IN THE WINDHOEK DISTRICT OF THE KHOMAS REGION (NAMIBIA)**

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## **ABSTRACT**

The purpose of this study is to explore and describe the knowledge, attitudes and experiences of health care workers who care for patients receiving treatment under DOTS strategy at public health facilities in the Windhoek District of the Khomas Region. A qualitative explorative, descriptive and contextual research design was used in this study. A purposive sampling was used to select participants who met the inclusion criteria for the study. The inclusion criteria was to be a health care worker who at the time of the study was working with patients who are on DOT for at least 6 months. A semi-structured interview guide was used to collect data. The study was conducted in the Windhoek district of the Khomas region, with a sample of 14 health care workers. Data was analysed by means of content analysis, a process of organizing and integrating narrative, qualitative data according to emerging themes and concepts. The three themes, which emerged from data analysis, were the knowledge of health care workers regarding the implementation of DOTS, the attitudes of health care workers towards patients on DOT which may affect the success of their treatments, and the experiences of health care workers when attending to patients on DOTS. The findings from the study may be used to engage stakeholders to address the shortcomings that exist in the implementation of the DOTS strategy in the district.

### **Keywords**

Attitudes, Directly Observed Treatment Short Course (DOTS), experiences, health care workers, knowledge, qualitative research, Tuberculosis.

## ENGONGO

Elalakano lypekapeko ndika olya li okukoneka nokutongonona ontseyo, omagamo noowino dhaanilonga yokukaleka po uundjolowele mbo haya panga aavu, mboka taya ehama uuvu wepunga (otiibii) nomokuya panga ohaku longithwa opulana hayi ithanwa melaka lyOshiingilisa “Directly Observed Treatment Short Course (DOTS)” miipangelo yomoshikandjo shaWindhoek moshitopolwa shaKhomas. Mepekapeko ndika omupekapeki okwa longitha omikalo hadhi ithanwa okukoneka nokutongonona. Okasambula konomenawina oka longwithwa mokuhogolola aakuthimbinga mboka ya li ya gwanitha iyelekitho mbi tayi landula mpa: aakuthimbinga oya li aaniilongo yokukaleka po uundjolowele, mboka pethimbo epekapeko ndika lya li tali konakonwa ya li haya panga aavu yotiibii noya li ye shi ningi ya longitha omukalo goDOTS methimbo lyuule woomwedhi hamano nenge shi vule po. Omukalo gokugongela omatseyithokonakonwa ogwa li gwomapulokonakono ge eguluka kashona. Omatseyithokonakonwa oga gongelwa moshitopolwa shaKhomas. Aakuthimbinga oya li aanilonga yokukaleka po uundjolowele ye li 14. Omatseyithokonakonwa oga vongokononwa komukalo hagu ithanwa evongokonono lyoshikalimo. Evongokonono ndika oha li pula omatseyithokonakonwa ga ongololwe (pongololwe) nokutulwakumwe nelalakano lyokweeta po omanenehuku niiuviwako. Omanenehuku gatatu ngoka ga zi mevongokonono ndika ongaashi taga landula: ontseyo yokulongitha omukalo goDOTS yaaniilonga yokukaleka po uundjolowele, amagamo gaaniilonga mbaka ngoka ga li taga nwetha mo nayi oonkambadhala dhawo dhokupanga aavu yepunga taya longitha omukalo goDOTS, noowino dhaaniilonga yokukaleka po uundjolowele ndhoka dhi na sha nokupanga aavu taya longitha omukalo goDOTS. Ilzemo yepekapeko ndika otayi vulu okulongithwa mokundungika aakuthimbinga ya vule okukutha po omwaka ngoka gu li metulomiilonga lyomukalo gwokulongitha oDOTS moshikandjo shaWindhoek.

### **Litya mbi simana**

Omaihumbato, Omukalo gokuriwa omiti montaneho yaantu mule wethinbo efupi Lya tulwapo, linima mbi wa pita muyo, anilonga moshikondo shuundjolovele, Ontseyo, Epakaapeko tali tala ongushu yoshinina itaashi vulu okuyalulua, Omukithi go komapunga.

## **ABSTRAK**

Die doel van die studie was om die kennis, houdings en ondervindinge van gesondheidswerkers wat pasiënte versorg wat behandeling onder die direkte waarneming behandelingstrategie ontvang by publieke gesondheidsfasiliteite in die Windhoekdistrik van die Khomas Streek te ondersoek. Die navorser het 'n kwalitatiewe, ondersoekende en beskrywende en konteks in die studie gebruik. Doelgerigte steekproefneming is gebruik om die deelnemers, wat die insluitingskriteria nagekom het, te kies. Om aan die studie deel te neem, moes die kandidate gesondheidswerkers wees wat ten tyde van die studie met pasiënte gewerk het wat minstens ses maande op direkte waarneming behandelingstrategie was. Data is met 'n semi-gestruktureerde onderhoudsvraelys ingesamel. Die studie is in die Windhoekdistrik van die Khomasstreek, met 'n steekproef van veertien (14) gesondheidswerkers, onderneem. Die narratiewe, kwalitatiewe data is met inhoudsanalise geanaliseer, en in temas en konsepte georganiseer en geïntegreer. Die drie temas wat voorgekom het, was die deelnemers (gesondheidswerkers) se kennis van die implementering van direkte waarneming behandelingstrategie; houdings teenoor pasiënte wat op direkte waarneming behandelingstrategie was wat die sukses van hulle behandeling mag beïnvloed, en ondervindinge wanneer hulle pasiënte op direkte waarneming behandelingstrategie behandel het. Die studiebevindinge kan gebruik word om belanghebbendes te betrek om die bestaande tekortkominge in die toepassing van die direkte waarneming behandelingstrategie in die distrik aan te spreek.

### **Sleutelwoorde**

Houdings, direkte waarneming behandelingstrategie, ondervindinge, gesondheidswerkers, kennis, kwalitatiewe navorsing, Tuberkulose (TB).

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## *Dedication*

*I dedicate this study to my parents, Mr Joaquin Teixeira and Mrs Evalina Songo Teixeira, my husband, Mr Gerardo Acebes, and my children, Maria-Elena, Elisa and Rodrigo.*

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**LIST OF ABBREVIATIONS AND ACRONYMS**

AIDS	Acquired Immune Deficiency Syndrome
ART	Anti-Retroviral Therapy
DOT	Directly Observed Therapy
DOTS	Directly Observed Treatment Short Course
DR-TB	Drug Resistant Tuberculosis
DST	Drug Sensivity Test
HIV	Human Immunodeficiency Virus
ISTC	International Standards for Tuberculosis Care
LTBI	Latent Tuberculosis Infection
MDR-TB	Multi-Drug Resistant Tuberculosis
MoHSS	Ministry of Health and Social Services
MTB/RIF	Mycobacterium Tuberculosis/Rifampicine
NSP	New Smear Positive
NTP	National Tuberculosis Programme
PAL	Practical Approach to Lung Health
Par	Participant
Pg	Page
RHE	Rifampicin, Isoniazid, Ethambutol
RHEZ	Rifampicin, Isoniazid Ethambutol, Pyrazinamide
RR-TB	Rifampicin Resistant Tuberculosis
SANAC	South Africa National AIDS Council
SDG	Sustained Development Goals
TB	Tuberculosis
UNISA	University of South Africa
USAIDS	United States Agency for International Development
WHO	World Health Organization
XDR-TB	Extensively Drug Resistant Tuberculosis

# CHAPTER 1

## INTRODUCTION AND ORIENTATION TO THE STUDY

### 1.1 INTRODUCTION

This first chapter provides an orientation to the study. It describes a qualitative enquiry into the health care workers experiences, knowledge, and experiences on Tuberculosis Directly Observed Treatment Strategy (TB DOTS) in the Windhoek district of the Khomas Region (Namibia). It also gives an overview of the background and rationale, the statement of the problem, the significance of the study, the purpose and the objectives of the study. It further presents the methods used and discusses the definitions of key concepts. This chapter concludes with an outlook of the structure of the chapters to follow.

### 1.2 BACKGROUND AND RATIONALE OF THE STUDY

Globally, in 2016 there were an estimated 10.4 million incident cases of TB (range, 8.8 million to 12.2 million) equivalent to 140 cases per 100,000 population. Most of the estimated number of cases in 2016 occurred in the WHO South East Asia with 45% of the cases, in the WHO African region with 45%, and the WHO Western Pacific with 17%. The WHO region of East Mediterranean accounted for, lower numbers with 3%, the WHO region of Europe with 3% and the WHO Region of the Americas with 3% (WHO 2017a:28). The 5 countries which stood out as having the largest numbers of incidence cases in 2016 were, in descending order; India, Indonesia, China, the Philippines, and Pakistan (WHO 2017a:28).

There were an estimated 1.3 million (range, 1.2 million and 1.4 million) deaths from TB among HIV-negative people in 2016, and 374,000 (range, 325,000-427,000) deaths from TB among HIV-positive people (WHO 2017a:35).

TB is the ninth leading cause of death from a single infectious agent, ranking above HIV/AIDS. Most of these deaths could be prevented with early diagnosis and appropriate treatment (WHO 2017a:35).



The African region continues to bear a significant proportion of the global burden of tuberculosis and accounts for 28% of the estimated 9.6 million incident tuberculosis cases that occurred worldwide in 2014. Between 2000 and 2014, the implementation of the DOTS and Stop TB Strategies by member states resulted in an estimated 10.1 million lives saved in the African region. The region also achieved a 37% decline in the TB mortality rate from 2000 to 2014 and 47% among people living with HIV. The Stop TB strategy target of 85% treatment success rate by 2015 was achieved by 21 member states, while the regional average stands at 79% (WHO 2017b:2).

The WHO estimates that between 32,000 and 49,000 multidrug-resistant tuberculosis cases occurred in the African region in 2014. Programmatic management of drug-resistant TB has been scaled up in countries, resulting in the detection of 26,531 of the 32,000 (83%) estimated MDR-TB cases among notified TB patients in 2014. Sixty-eight percent of diagnosed cases have been enrolled on treatment but with a less than satisfactory average treatment success rate of 55% in 2012 (latest available information). Therefore, MDR-TB remains a public health crisis due to gaps in access to diagnosis and treatment (WHO 2017b:2).

### **1.2.1 Burden of Tuberculosis in Namibia**

The distribution of TB cases in the country is not uniform, with the majority of the cases being reported in the Khomas, Erongo, Ohangwena and Kavango regions (MoHSS 2014:1). Khomas region remains the region with the highest TB burden in the country with 1,851 cases of all forms of TB notified in 2013 (MoHSS 2014:8). There was a marginal increase in the number of new smear cases in 2013 compared to 2012. The treatment success rate for Khomas Region was 83% among new smear positive (NSP) cases for 2012 cohort, an improvement compared to the previous cohort. The death and treatment failure rates remain relatively high (MoHSS 2014:8).

The following principles of TB control were adopted and implemented in Namibia to better manage and control the disease:

**(a) Identifying the drivers of TB and its corrective measures**

Risk factors of transmission of TB at population level that were identified include poor living and working conditions as well as factors that impair the host's immune system, such as HIV infections, malnutrition, smoking, diabetes, alcohol abuse and indoor air pollution. Addressing these factors in their totality is therefore crucial to achieve the goal of eliminating TB as a public health problem in Namibia (MoHSS 2012:3).

**(b) Adopting the DOTS strategy**

Namibia has adopted WHO's DOTS strategy, which is the most cost-effective public health approach to fight TB. This strategy features the following five elements:

- Sustained political commitment to TB control, expressed in terms of adequate human and financial resources.
- Access to quality acquired network of sputum smear microscopy.
- Standardised short-course chemotherapy for all cases of TB under proper case management conditions, including directly observed treatment.
- Uninterrupted supply of quality assured anti-TB medicines.
- Recording and reporting system enabling treatment outcome, assessment of all patients and assessment of overall program performance (MoHSS 2012:7).

**(c) Going beyond the DOTS strategy by adopting the Stop TB strategy**

This strategy has been implemented to compliment the DOTS strategy. It was implemented in 2006 and its goes beyond the DOTS strategy. According to the WHO, this strategy looks at the following components:

- Pursue high quality DOTS expansion and enhancement, which is to secure political commitment and adequate and sustained financing.
- Management and efficient supply of medicines are ensured.
- Good monitoring and evaluation to monitor the programme.
- Address TB-HIV, multi-drug resistant TB and the needs of poor and vulnerable populations by ensuring collaborative activities of TB/HIV prevention and

management of multi-drug resistant TB. Trace and address the needs of TB contacts.

- Improve infection control in health services and better dissemination of information regarding TB prevention and management in the communities.
- Engage all health care providers by involving all public and private approach initiatives in improving TB treatment.
- Training of health care workers in TB guidelines and TB infection-control guidelines.
- Support and supervisory visits by program managers to health facilities to address the shortcomings in the management and control of TB (MoHSS 2012:8).

### **1.2.2 Rationale of the study**

To better understand the TB problem, it is important to fully analyse and understand the implementation of TB policies, such as DOTS, so that possible shortcomings on the implementation of these policies can be identified. One of the most important elements of TB policies are the health care workers. It is therefore essential to investigate these elements in order to improve their performance in fighting TB, in particular their knowledge, attitudes and experiences on DOTS strategy. In this regard, getting first-hand information from health care worker as they engage in their daily duties to help patients who are on long treatments and learning from their experiences and attitudes is very relevant to get a broader picture on TB DOTS strategy. While research has been done on this topic in other regions of Namibia, the same is not readily available in the Khomas Region. Therefore, the researcher's rationale for this study is that more information is needed to improve the treatment outcome of TB in Namibia.

### **1.3 STATEMENT OF THE RESEARCH PROBLEM**

The focus of this study is on healthcare worker's knowledge, attitudes and experiences of DOTS strategy in the Windhoek district, of the Khomas region. This study seeks to explore and to understand the problem in the Khomas Region's low treatment success rate of 83% among new smear-positive cases. The foregoing is still below the WHO's global target of 90% success rate. As previously indicated, Khomas Region remains with the highest TB burden in the country with 1,851 cases of all forms of TB notified in 2013 (MoHSS 2014:31). The researcher assumption is that one possible explanation for the

above statistics could be attributed to health care workers' inappropriate attitudes, lack of knowledge and experiences that could have contributed to low treatment and success rate in the region. This research is therefore, necessary to ascertain or dismiss the above assumptions since there are no records available on similar studies conducted in the region.

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

- What is the knowledge of health care workers regarding the implementation of the DOTS strategy in the Windhoek district of the Khomas region?
- What are the attitudes of health care workers towards the DOTS strategy when caring for TB patients, which may affect the success of the treatment?
- What are the experiences of health care workers in regard to the DOTS strategy in their daily activities when attending to TB patients?

#### **1.4 PURPOSE OF THE STUDY**

The purpose of the study is to explore and describe the knowledge, attitudes and experiences of health care workers. Specific focus is placed on health care workers who, on a daily basis, deal with TB patients on DOTS at public health facilities in the Windhoek district of the Khomas Region.

#### **1.5 OBJECTIVES OF THE STUDY**

The objectives of the study are:

- To explore the knowledge of health care workers regarding the implementation of the DOTS strategy in the Windhoek district of the Khomas region.
- To describe the attitudes of health care workers towards the DOTS services when caring for TB patients.
- To explore the experiences of health care workers on DOTS services and their role with TB patients.

Ultimately, it was also the objective of this research to find out how health care workers' attitudes could affect the treatment success rate in the Windhoek district of the Khomas Region.

## **1.6 SIGNIFICANCE OF THE STUDY**

The significance of the study indicates how a research will refine, revise, or extend existing knowledge in the area under investigation (Creswell 2014:67). The significance of this study was to provide useful information to relevant stakeholders such as the Ministry of Health and Social Services (MoHSS), Khomas Region Directorate. Information will also be provided to interested health care workers, on the experiences, knowledge and attitudes that health care workers have with regard to the implementation of the DOTS strategy. The foregoing could have contributed to lower treatment outcomes in the Windhoek district of the Khomas Region. Therefore, policy makers can use the findings and recommendations of this study, when formulating new approaches in addressing shortcomings in the implementation of DOTS in the Khomas region and beyond.

## **1.7 DEFINITIONS OF KEY CONCEPTS**

### **1.7.1 Health care worker**

The WHO defines health workers to be all people engaged in actions whose primary intent is to enhance health (WHO 2006:1). In this study, health care workers are nurses, health assistants and TB field promoters who work at TB clinics in the Windhoek District of the Khomas Region.

### **1.7.2 Knowledge**

Knowledge is the understanding of or information about a subject that you get by experience or study, either known by one person or by people generally (*Cambridge Academic Content Dictionary* 2009:530).

For the purpose of this study, all health care workers dealing with TB should have knowledge of what is TB, how it is transmitted and controlled, and what are DOTS strategies.

### **1.7.3 Attitude**

Is the way one feels about something or someone, or a particular feeling or opinion (*Cambridge Academic Content Dictionary* 2009:56).

For the purpose of this study, attitudes refer to health care workers' feelings and reactions towards TB patients and the DOTS strategies.

### **1.7.4 Experience**

It is the process of getting knowledge or skill that is obtained from doing, seeing, or feeling things or something (*Cambridge Academic Content Dictionary* 2009:23).

For the purpose of this study, health care workers experiences is define as their familiarity and skills, which they have acquired during their engagements with DOTS and TB patients, over the months or years of actual practice (Grove, Gray & Burns 2015:4).

### **1.7.5 DOTS**

Directly Observed Treatment short course (DOTS) is the internationally recommended strategy for TB control that has been recognised as highly efficient and cost effective strategy (WHO 1999:8).

For the purpose of this study, DOTS is the process whereby health care workers adhere to the strategy of directly observing TB patients swallowing anti-TB medication.

### **1.7.6 UNISA Institutional Repository**

UNISA Institutional Repository is an open digital archive of scholars, intellectual and research output of the University of South Africa (UNISA).

### **1.7.7 Latent TB**

Latent Tuberculosis infection is a state of persistent immune response to stimulation by mycobacterium tuberculosis antigen without evidence of clinically manifested active TB. A person has latent TB if he/she is infected with the TB bacteria but do not feel ill (WHO 2015:50).

### **1.7.8 MDR-TB**

Multi drug resistant Tuberculosis (MDR-TB) is a type of TB that is resistant to at least the first line of anti-TB drugs, rifampicin and isoniazid (MoHSS 2012:62).

## **1.8 RESEARCH DESIGN**

Research design is a blue print for conducting a study that maximises control over the factors that could interfere with the validity of the findings. It guides the planning and implementation of a study in a way that is most likely to achieve the intended goal (Grove et al 2015:511). This was a qualitative, explorative, descriptive and contextual study, which explored and described health care workers' knowledge, attitudes and experiences on DOTS TB services in the Windhoek district of the Khomas region.

### **1.8.1 Qualitative research**

Qualitative research is a systematic approach used to describe experiences and situations from the perspective of the person in the situation. The researcher analyses the words of participants, finds meaning in the words and provides a description of the experience that promotes deeper understanding of the experience (Grove et al 2015:67).

This design was taken in order for the researcher to gather descriptions from health care workers on their experiences with DOTS services and to find out their knowledge regarding TB diagnosis, treatment, the use and implementation of the TB national guidelines. The qualitative approach has been chosen because the study was intended to find out the reality of the health care workers who care for the TB patients on DOT on daily basis.

### **1.8.2 Exploratory research**

Exploratory research is a study that explores the dimensions of a phenomenon or that develops or refines hypotheses about relationships between phenomena (Polit & Beck 2012:727). The researcher's aim to use exploratory research was to explore health care worker's knowledge, attitudes and experiences regarding the TB DOTS services in the Windhoek district of the Khomas region. This could provide a deep understanding on the topic as the participants narrate their experiences.

### **1.8.3 Descriptive research**

In qualitative research, one of the researcher's important tasks is to describe what he or she has obtained and observed during the fieldwork. Descriptive research is the exploration and description of phenomena in real-life situations. It provides an accurate account of characteristics of particular individuals, situations, or group (Grove et al 2015:33).

The aim of the study was to present an accurate description of health care workers' knowledge, attitudes and experiences concerning TB DOTS in the Windhoek district of the Khomas region. Words and sentences from the recorded in-depth interviews, reflective diaries, field notes and participant's observation were used. This was aimed at obtaining these descriptive data and comprehensive summaries of the health care workers' knowledge, attitudes and experiences in caring for TB patients under DOTS.

### **1.8.4 Contextual research**

Grove et al (2015:189) referred to contextual research as a philosophical element of qualitative research. It is the body, world and concern unique to each person, within which that person can be understood. Once health care workers' knowledge, attitudes and experiences have been described, it is important to contextualise the findings. One important aspect of qualitative research is that it is concerned with context.

In this study, the context was on the knowledge, attitudes and experiences of health care workers who work at DOTS points for 6 months or more in the Windhoek district of the Khomas region.



## **1.9 LIMITATION OF THE STUDY**

Limitation is the weaknesses of the study; uncontrollable variables (Brink, Van der Walt & Van Rensburg 2013:214). This study was limited to health care workers in Windhoek district who were working at DOTS points at the time of the study. Findings of the study were not generalised to other health care workers who were not working at DOTS points. Time and availability of health care workers were also limitations to the study as not all participants could be found ready for the interviews as they were busy with their daily duties at the clinics. In this aspect the researcher made bookings with participating health care workers well in advance, and reminded them a day before about the interviews.

## **1.10 ETHICAL CONSIDERATIONS**

When humans are used as study participants, care must be exercised to ensure that their rights are protected (Polit & Beck 2012:150). The human rights principles this study applied were informed consent, justice, anonymity and confidentiality. Details are provided in chapter 3.

## **1.11 STRUCTURE OF THE DISSERTATION**

The report of this study is structured into five chapters. A list of references and relevant supporting documents are included as appendixes at the end of the report.

**Chapter 1:** Introduction and orientation to the study. This includes the background and rationale of the study, the statement of the research problem, the definition of key concepts, research questions, objectives, and the layout of all the chapters contained in this study.

**Chapter 2:** Presents the literature review relevant to the topic studied: TB, DOTS, and health care workers' knowledge, attitudes, and experiences of TB DOTS from previous studies.

**Chapter 3:** Presents the methodology used in the study, such as research design, sampling method, methods of data collection and analysis and ethical considerations.

**Chapter 4:** This chapter gives the findings of the study, demographic information of participants; and the themes that emerged from the study.

**Chapter 5:** Concludes and gives the summary and interpretations of the research findings, conclusions, recommendations, contributions of the study, and its limitations.

## **1.12 CONCLUSION**

This chapter introduced the study and presented an overview of the TB phenomenon with an overview of this disease in the world, South Africa, Namibia, and in the Khomas region, where the research took place.

It also introduced additional information about the study, such as the objectives, the research problem, the research design, and the methodology. The limitations of the study were also discussed.

The next chapter discusses the literature review.

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 INTRODUCTION**

Literature review is a critical summary of research on a topic of interest, often prepared to put a research problem in context (Polit & Beck 2012:732). Literature review of theoretical and empirical sources serves to generate a picture of what is known and what is not known about a particular problem (Grove et al 2015:505). Qualitative approaches to research value depth of meaning and people's subjective experiences and their meaning-making processes. This approach allows researchers to build an understanding of a topic, unpack the meanings people ascribe to their lives, to activities, situations circumstances, people and objects (Leavy 2017:124).

In the previous chapter, the researcher discussed the background and rationale of the study. In this chapter, literature on the situation of TB in the world, in South Africa -as a neighbouring country to Namibia with the highest TB cases in Southern Africa-, in Namibia, and in the Khomas Region (where this study was conducted) will be discussed. Therefore, relevant literature on the topic was consulted, including several studies similar to the topic, such as a quantitative study on health care workers' knowledge, attitudes and practices on TB DOT conducted by Kapweya in 2010 and eight qualitative studies on health care workers' experiences, attitudes and practices on DOTS conducted in other parts of the world. The search for pertinent data began with the identification of terms within the study topic of Health Care Workers' Knowledge, Attitudes and Experiences on DOTS. UNISA Institutional Repository was used for the search of relevant information and valuable help was obtained from the University's librarian. Concepts used for search included: health care workers' knowledge, attitudes and experiences, DOTS, and TB. This was done in order to provide insight into the research problem.

## **2.2 TUBERCULOSIS**

Tuberculosis is an infectious disease caused by micro-organism called *mycobacterium tuberculosis* that most often affects the lungs (Yusuf, Seifu, Gelaw, Gebremariam & Mohammed 2015:2). TB is spread from one person to another through the air. When people with lung TB cough, sneeze or spit, they propel the TB bacteria into the air. A person only needs to inhale a few of these bacteria to become infected. TB is a curable and preventable disease. About one third of the world's population has latent TB, which means that people have been infected by the bacteria but are not (yet) ill with the disease and cannot transmit the disease (WHO 2015:50). People infected with TB bacteria have a 5-15% lifetime risk of falling ill with TB. However, persons with compromised immune systems, such as people living with HIV, malnutrition or diabetes, or people who smoke tobacco, have a much higher risk of falling ill (WHO 2015:50).

## **2.3 GLOBAL OVERVIEW OF TUBERCULOSIS**

Tuberculosis has existed for millennia and remains a major global health problem. It causes ill-health for approximately 10 million people each year and is one of top 10 causes of death worldwide (WHO 2017a:5). TB is a curable disease, yet it remains the leading infectious disease (killer) worldwide; it takes the lives of more than 4,600 people each day (USAIDS 2018:7) The ambitious goal of ending TB by 2030 requires continued action and additional investments on the part of global TB stakeholders (USAIDS 2018:7).

The End TB Strategy was endorsed by the WHO's 194 Member States during the 2014 World Health Assembly and is for the period 2016-2035. The Sustained Development Goals (SDGs) and the End TB Strategy share a common aim: to end the global TB epidemic. Targets set in the End TB Strategy include a 90% reduction in TB deaths and an 80% reduction in TB incidence by 2030, compared with 2015 (WHO 2017a:5).

The consolidated goal on health is the SDG 3. It is aimed to "ensure healthy lives and promote wellbeing for all at all ages", and 13 targets have been set for this this goal. Target 3.3 explicitly mentions TB. "By 2030, end of epidemics of AIDS, tuberculosis, malaria, and combat hepatitis, water borne diseases and other communicable diseases" (WHO 2017a:7).

Despite recent progress in reducing the incidences and mortalities from TB, millions still suffer and die each year. This is as a result of delayed diagnosis, weak health systems, and the ongoing challenges of DR-TB and TB/HIV co-infection (USAIDS 2018:7)

National notifications and vital registrations systems need to be strengthened towards the goal of direct measurement of TB incidences and mortalities in all countries. National TB prevalence surveys provide an interim approach to directly measure the burden of the TB disease in a subset of high TB burden countries. Between 2007 and the end of 2016, a total of 25 surveys that used the screening and diagnostic methods recommended by WHO were implemented (WHO 2017a:21).

According to the USAIDS report 2018, health care workers miss an estimated of one out of every three people who are believed to be suffering from TB. It further reports that many victims never receive proper diagnosis or treatment, while others get a diagnosis but never register for treatment or report to the NTP. Many die from TB, and many others endure a long and difficult illness. Each person with active TB who is not on treatment infects an average of 10-15 people each year (USAIDS 2018:12). For TB programs to succeed, patients must have reliable access to affordable, quality-assured, and effective TB medicines and diagnostic commodities (USAIDS 2018:18).

Worldwide, in 2016, 57% of notified TB patients had a documented HIV test result, up from 55% in 2015 and a 19-fold increase since 2004. In the African region, where the burden of HIV associated TB is highest, 82% of TB patients had documented HIV results. A total of 476,774 TB cases among HIV-positive people were reported and, of these, 85% were on antiretroviral therapy (WHO 2017a:63). Moreover, according to Glaziou, Falzon, Floyd and Raviglioni (2013:11), the prevalence of HIV co-infections in patients with TB is the highest in the African region, and this region accounts for almost 80% of HIV-positive TB cases worldwide. The proportion of known HIV-positive TB patients on Anti-Retroviral Therapy (ART) was above 90% in India, Kenya, Malawi, Mozambique, Namibia, and Swaziland (WHO 2016:13).

MDR-TB is also reported to be a problem in Southern Africa, particularly in South Africa. This is where Hirpa, Medhin, Girma, Melese, Mekonen, Suárez and Ameni (2013:7) revealed that individuals who were not under strict DOTS as per national guidelines

during their first anti-TB treatment had an 11.7 times increased risk for developing MDR-TB (Hirpa et al 2013:7).

MDR-TB is a type of TB that is resistant to at least the first line of anti-TB drugs, rifampicin and isoniazid. MDR-TB occurs when a person is infected with a resistant strain or when the treatment is taken inappropriately due to poor adherence. This can also result from an error in the prescription from the health worker, such as low dosage in relation to the patient's weight. The occurrence of MDR-TB is mainly attributed to human error, although genetic factors are also believed to contribute to a certain extent (Hirpa et al 2013:2).

MDR-TB requires a prolonged duration of therapy and is associated with increased length of hospital stay, frequently and sometimes irreversible adverse events and extremely high costs. Due to the physical and psychological difficulties experienced by patients during the course of treatment, specialized support is of great value (Olaru, Lange, Indra, Meidlinger, Hunulescu & Rumetshofer 2016:1277).

Drug resistance complicates the management of TB and represents one of the most important emerging challenges in the control of TB worldwide. Resistance to TB treatment is believed to develop as a result of inadequate treatment caused by poor adherence and other causes. The mode of transmission of drug resistant TB is the same as that of drug susceptible TB, which is through the inhalation of infected droplets (Glaziou et al 2013:10).

The only WHO-recommended rapid diagnostic test for detection of TB and rifampicin resistance TB (RR-TB) currently available is the Xpert MTB/RIF assay (WHO 2016:2). Following the WHO guidance issued in May 2016, all cases of rifampicin-resistant TB (RR-TB), including those with multidrug-resistant TB (MDR-TB), should be treated with a second-line MDR-TB treatment regimen. Globally, in 2015 there were an estimated 480 000 new cases of MDR-TB and an additional 100 000 people with rifampicin-resistant TB who were also newly eligible for MDR-TB treatment. India, China and the Russian Federation accounted for 45% of these (WHO 2016:15).

Some countries still face barriers which hinder the successful fight of TB (Dlwati, Mavundula & Mbego 2017). This study found that, poverty, shortage of money for food, and transport, were perceived as the principal causes of non-adherence to treatment.

Inadequate training was also observed by the participants who perceived themselves to be inadequately trained to manage TB effectively. The participants identified gaps in the knowledge in terms of TB and HIV co-infection treatment. As a result, the participants who have not undergone TB management training perceived themselves as inadequately prepared in assessing and diagnosing patients that are suffering from TB (Dlwati et al 2017:11).

Furthermore, it cannot be forgotten that health care workers, due to the very nature of their work, are inadvertently and inevitably exposed to TB bacteria. This is owed to the fact that at their work stations they are constantly interacting with patients who are undiagnosed, and untreated (Bhebhe, Van Rooyen & Steinberg 2014:2).

## **2.4 TUBERCULOSIS IN SOUTH AFRICA**

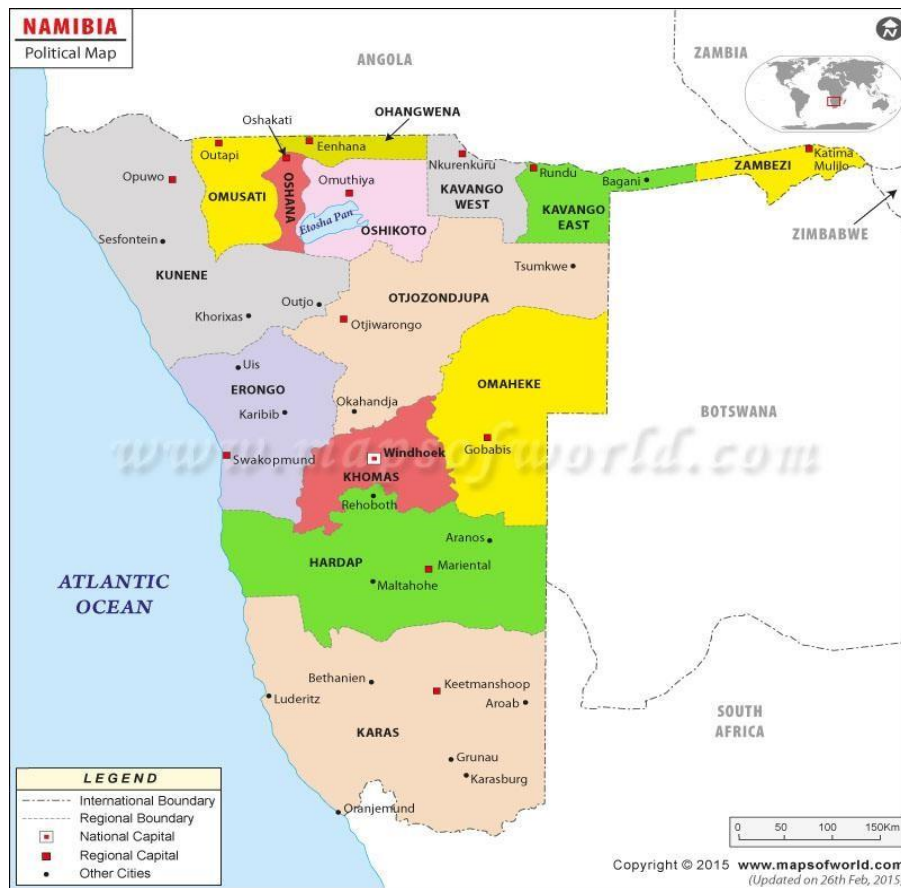
South Africa is the country with the third highest TB burden in the world, including drug-resistant TB (DR-TB). The WHO classifies South Africa as having a high burden of TB, including a high burden of DR-TB. In 2013, South Africa reported and initiated on treatment 328,896 TB cases, including 10,663 multi-drug resistant TB (MDR-TB) cases. In 2013, an estimated 89,000 people (low estimate: 62,000; high estimate: 121,000), including HIV-negative and HIV-positive persons, died of TB in South Africa. The TB epidemic in South Africa has largely been driven by the HIV epidemic. Key populations in South Africa who are at increased vulnerability for TB infection and active TB disease include people living with HIV, household contacts of people with TB, miners, inmates, health care workers, correctional services officers, and people with diabetes. TB was the leading cause of death reported in South Africa in 2011 (10.7% of all deaths), 2012 (9.9%) and 2013 (8.8%) (SANAC 2016:45). According to WHO estimates, 450,000 (410,000 to 520,000) new cases of TB occurred in South Africa in 2013. TB prevalence was estimated at 380,000 (210,000 to 590,000) in 2013 (SANAC 2016:46).

In 2015, South Africa accounted for the largest share (45%) of people living with HIV who received TB preventative treatment for the latent TB infection (LTBI). Other countries that followed are Malawi, Mozambique and Kenya (WHO 2016:13).

Furthermore, DOTS coverage in South Africa is reported to be 100%. However, treatment success rates remain below global targets and the burden of drug resistant TB strains

continues to escalate (Bristow, Podewils, Bronner, Bantubani, Van der Walt, Peters & Mametja 2013:2).

## 2.5 TUBERCULOSIS IN NAMIBIA



**Figure 2.1 Map of Namibia**  
(Source: Maps of World 2015)

Namibia lies on the south-western part of Africa and is bordered by the Atlantic Ocean, Angola, Zambia, Zimbabwe, Botswana and South Africa. The country has a surface area of 824,295 square kilometres, making it Africa’s fifteenth largest country. The 2011 national census determined the population of Namibia to be 2,113,077 with a growth rate of 1.4% per annum between 2001 and 2011 (MoHSS 2015a:1). At that rate, the projected population for 2015 and 2017 is therefore 2,296,905 and 2,333,918 respectively (MoHSS 2015a:1). Namibia is divided into 14 administrative regions, with an ethnical and culturally diverse population. The majority (67%) of the population lives in the communal and commercial farming areas with the remaining 33% living in urban areas (MoHSS



2015a:1). After its independence, Namibia created an integrated National Health Service with four levels of care, namely, national, regional, districts and community.

The Ministry of Health and Social Services has, in order to improve management and services provision, decentralised its authority into 14 Regional Health Directorates and 35 Health Districts (MoHSS 2015a:1).

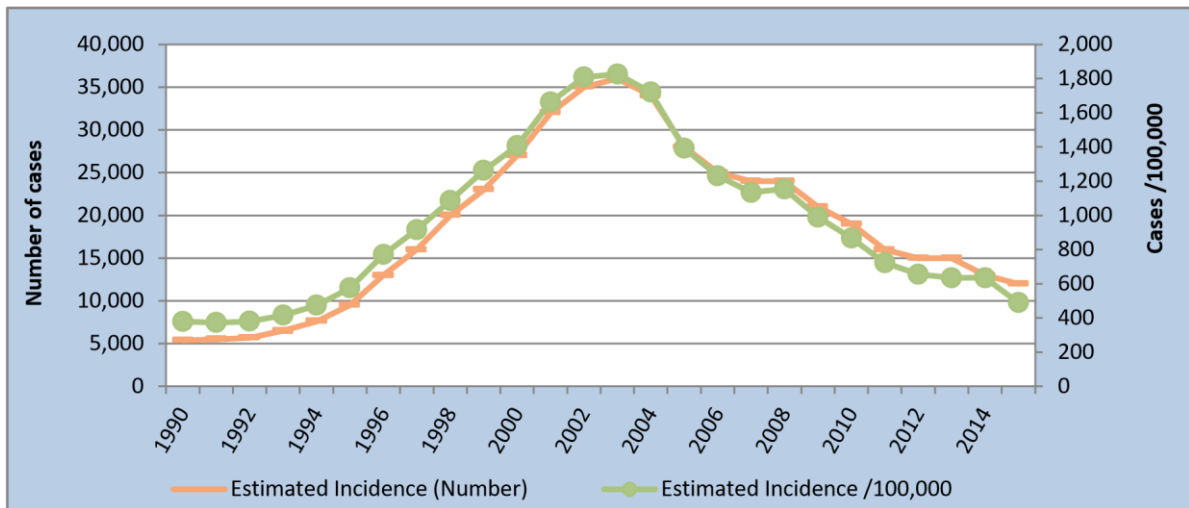
### **2.5.1 Burden of Tuberculosis in Namibia**

Tuberculosis is a communicable disease of major public health proportions in Namibia. The disease is one of the three most frequent causes of hospitalisation and reasons for attendance in the out-patient clinics (MoHSS 2014:1).

The data indicated below, obtained in 2013 by MoHSS, points out that Namibia remains amongst the countries with the highest TB infections per capita in the world.

- 10,610 cases of all forms of TB were notified in the country; 4,331 of these cases were new smear-positive (NSP).
- 45% of the TB patients were HIV infected.
- 6 patients were diagnosed with XDR-TB.
- 174 patients were diagnosed with MDR-TB, and 89 were diagnosed with RR-TB (MoHSS 2014:1).

The per capita burden of TB remains high in Namibia. According to the WHO 2015, 9,944 cases of all forms of TB were reported. After a consistent decline in the number of notified TB cases since 2004, a marginal (0.6%) increase was observed in 2015, compared to the previous year. The reported increase is believed to be on the increased screening using the Xpert MTB/RIF during the anti-TB drug resistance survey conducted during the reported period. Despite this increase, the WHO estimates that the incidence of TB in Namibia continues to decline (WHO 2015) (figure 2.2).



**Figure 2.2 Trend in the estimated incidence of TB in Namibia, 1990-2015**

(Source: MoHSS 2015a:2)

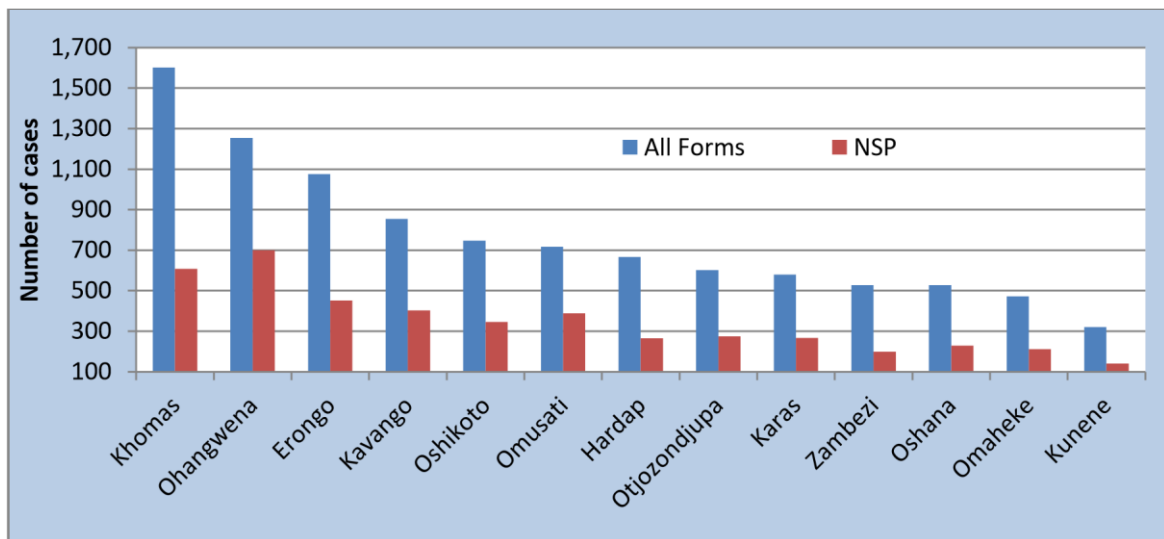
Although India, China, Nigeria and Pakistan are the top 4 countries in terms of absolute numbers of TB cases in the world, Namibia, Swaziland, Lesotho, and South Africa, have the highest estimated per capita burden of TB in the world (MoHSS 2015a:4).

Within Namibia, the distribution of TB burden varies by region. The Khomas and Kavango regions are the most affected according to the 2011 report of the Ministry of Health and Social Services (MoHSS 2012:1).

## 2.6 TUBERCULOSIS IN THE KHOMAS REGION

The Khomas region continues to report the highest number of TB cases in the country, followed by Ohangwena and Erongo respectively. Consistent with previous years, the Kunene region reported the lowest number of TB cases (MoHSS 2015a:2).

The Khomas region remains with the highest TB burden in the country with 1,851 cases of all forms of TB notified in 2013. There was a marginal increase in the number of new smear cases in 2013 compared to 2012. The treatment success rate for the Khomas region was 83% among new smear-positive (NSP) cases for the 2012 cohort, an improvement compared to the previous cohort. The death and treatment failure rates remain relatively high (MoHSS 2014:32).



**Figure 2.3 Regional distribution of all forms and new bacteriologically confirmed pulmonary TB cases, 2015**

(Source: MoHSS 2015a:1)

## 2.7 PRINCIPLES OF TUBERCULOSIS CONTROL

In order to fight TB successfully the WHO announced in 2015, a plan to end tuberculosis by 2035 (their End TB Strategy). They set ambitious intermediate targets to reduce tuberculosis incidences by 50% and mortality by 75% by 2025 (Oxylade & Menzier 2016:764).

### 2.7.1 Drivers of the Tuberculosis epidemic

Risk factors of transmission of TB at population level include poor living and working conditions. Others are factors that impair the hosts' immune systems, such as HIV infections, malnutrition, smoking, diabetes, alcohol abuse and indoor air pollution. Addressing these factors in their totality is, therefore, crucial to achieve the goal of eliminating TB as a public health problem in Namibia (MoHSS 2012:3; Mathema, Andrews, Cohen, Borgdorff, Behr, Glynn, Rustomjee, Silk & Wood 2017:S645).

In addition, poor treatment has also resulted in the evolution of mycobacterium TB strain that does not respond to treatment with standard first line combination of anti-TB drugs (Yusuf et al 2015:2).

### **2.7.2 The DOTS strategy**

Namibia has adopted the WHO's Directly Observed Treatment Short Course (DOTS) strategy, which is the most cost-effective public health approach to fight TB (MoHSS 2012:12). The high cost of implementing DOTS by health workers at health facilities and the huge manpower requirements are areas which require urgent revision especially in low middle income countries. DOTS by community volunteers and family members may provide a solution to these challenges (Otu 2013:230).

The elements of the DOTS strategy were developed to better manage TB and this includes:

- Sustained political commitment to TB control, expressed in terms of adequate human and financial resources.
- Access to a quality-assured network of sputum smear microscopy.
- Standardised short-course chemotherapy for all cases of TB under proper case management conditions, including directly observed treatment.
- Uninterrupted supply of quality-assured anti-TB medicines.
- Recording and reporting system enabling treatment outcome assessment of all patients and assessment of overall programme performance (MoHSS 2012:12).

### **2.7.3 DOT service and the patient support system**

DOT is the most reliable measure to ensure that patients take their medication as prescribed. DOT means that TB patients swallow their pills in the presence of another person observing how they swallow the medicines (MOHSS 2012:7). The observer is called a DOT supporter, because persons on TB treatment need crucial psychological support. The DOT supporter can be a health care worker or any other person who has assumed co-responsibility for the treatment of the patient for the entire treatment period (Zhang, Ehiri, Yang, Tang & Li 2016:2).

The main goal for the TB treatment is to successfully cure the patient and to minimise the transmission of the TB bacilli to others in the community (Hirpa et al 2013:3). Treatment is always demanding on the patient because it requires taking multiple drugs for a relatively lengthy period of time under close observation (Hirpa et al 2013:3). The major

problem hampering a successful TB treatment is poor adherence to the prescribed treatment regimen. If the patient fails to adhere to treatment, the consequences will be treatment failure, relapse, prolonged infectiousness and the development of drug resistance (Hirpa et al 2013:3).

DOTS is regarded as the best method to ensure full adherence and treatment success as the patient is psychological and morally supported throughout the treatment (Bristow et al. 2013:2). DOTS is a highly effective and efficient means of managing TB. (Sunday, Oladimeji, Ebenezer, Akintunde, Abiola, Saliu & Abiodun 2014:3).

DOTS is not only about observing the patient swallowing TB medicine, but also about playing a major role in promptly attending to the patient's problems during the course of treatment that may prevent him/her from completing it (Bristow et al 2013:2). The main advantage of DOTS is that treatment is carried out entirely under the close supervision of a treatment supporter who ensures that medication is taken correctly.

The DOTS supporter is a person who should be accepted by the patient and who is willing to take up the responsibility of daily observing him/her taking the medication for a lengthy period of time. The DOT supporter could be a health care worker, a community based worker, a family member, or even his/her employer (Bristow et al 2013:3). DOTS can be given at any place by an identified DOTS supporter by the patient, who can collect the medication on behalf of the patient. This arrangement helps patients remain in their homes, at their workplace, or schools during therapy rather than waiting for long hours in health facilities. This is particularly important in areas with the high burden of TB (Zhang et al. 2016:2).

DOT is best provided at a health facility situated in close proximity to the patient's place of residence or at one that is on the patient's way to his/her place of work. However, DOT is not offered at health facilities on weekends and public holidays. For those specific days, the patient is given the pills so he/she can take them at home (Bristow et al 2013:3).

Furthermore, Serapelwane, Davhana-Maselesele and Masilo (2016), in their study "Experiences of patients having tuberculosis (TB) regarding the use of Directly Observed Treatment Short course therapy (DOTS) in North West province, South Africa" (2016), found that there was some ineffective use of DOTS such as lack of communication among

different stakeholders. The foregoing include poor nurse–patient relationship, lack of health education for patients using DOTS and lack of supervision. The lack of communication was found to be between hospital, doctors, nurses and patients on DOTS (Serapelwane et al 2016:4).

In another study, it was found that nurses were satisfied in rendering services to patients who were on DOTS strategy. It is further revealed that DOTS supporters show enthusiasm and dedication to the TB program because they come to the clinic on a weekly basis to have feedback meetings with nurses (Dlwati et al 2017:2).

Moreover, in a study by Kigozi, Heunis, Chikobu, Botha and Van Rensburg (2016) on factors influencing treatment default among tuberculosis patients in a high burden province of South Africa, reported that: treatment default among all pulmonary TB cases declined by 1.7% between 2003 and 2012, This suggests an overall positive impact of the DOTS strategy on TB control in the Free State. However, it was also observed that despite the above decline, annual provincial treatment default rates remained persistently higher than the below 5% national norm. This could suggest that the DOT supervision which is the component of the DOTS strategy where treatment defaulters are traced predominantly by the facility based lay health workers and brought into care, is not sufficient to address the problem of treatment in the Free State (Kigozi et al 2016:98).

#### **2.7.4 The Stop TB Strategy**

This strategy has been implemented to supplement the DOT strategy. The Stop TB strategy was launched in 2006 and goes beyond the DOT strategy. When it was developed, the Stop TB Strategy's aim was to halve the TB prevalence and deaths relative to the 1990 levels by the year 2015. The treatment success rate targeted in this strategy was 90% (MoHSS 2012:7).

The components of the Stop TB Strategy are:

**(a) Pursue high quality DOTS expansion and enhancement**

- Government should allocate a bigger portion of the budget to the health services which, in turn, should allocate enough resources to TB.
- Health workers should actively identify patients with TB signs for early diagnosis and treatment.
- Follow protocols to provide standardised treatment with supervision.
- Ensure that medicines are always available at health facilities.
- Monitor and evaluate the results of this strategy.

**(b) Address TB-HIV, MDR-TB, and needs of poor and vulnerable populations**

- Promote and improve collaborative TB/HIV activities.
- Promote and ensure proper treatment to patients to prevent the appearance of MDR-TB.
- Health workers should actively screen TB patients' contacts.

**(c) Contribute to the health system strengthening based on primary health care**

- Help improve health policies, human resources development, financing, supplies, service delivery and information.
- Strengthen infection control in health services, other congregate settings and households.
- Upgrade laboratory networks, and implement the Practical Approach to Lung Health (PAL).
- Adapt successful approaches from other fields and sectors, and foster action on the social determinants of health.

**(d) Engage all care providers**

- Involve all stakeholders, such as community-based workers, public health care workers and volunteers, in the common goal of fighting TB.
- Promote the use of the International Standards for Tuberculosis Care (ISTC).

**(e) Empower people with TB, and communities through partnership**

- Active involvement in social mobilization activities.
- Involve the community to actively participate in TB prevention and care.
- Promote the use of the Patient's Charter for Tuberculosis Care.

**(f) Enable and promote research**

- Conduct research and apply positive results into practice.
- Advocate for and participate in research to develop new diagnosis, medicines and vaccines (MoHSS 2012:6).

### **2.7.5 The End TB Strategy**

In addition to DOTS and Stop TB strategies, a new strategy was developed in May 2012 by Member States at the 65<sup>th</sup> World Health Assembly. It was requested that the Director General submits a comprehensive review of the global tuberculosis situation to date. The Director was also asked to present new multi-sectorial strategic approaches and new international targets for the post-2015 period (WHO 2015:1). At the 67<sup>th</sup> World Health Assembly in 2014 through the executive board, the Member States involved a wide range of partners that provided substantive inputs into the development of the new strategy. These partners included high-level representatives of Member States, national tuberculosis programmes, technical and scientific institutions, financial partners and development agencies, non-governmental organizations, and the private sector (WHO 2015:1). In 2014, at the 67th World Health Assembly, it was resolved to end the tuberculosis epidemic in the 20 years following 2015.<sup>3</sup> The implementation of this 'End TB Strategy' will require new approaches to prevent and treat the disease, including broad-scale action on poverty and determinants of tuberculosis, aligned fully with the



United Nations' Sustainable Development Goals (SDGs). This implies a change in the values that governed anti-tuberculosis (TB) interventions until 2015 (Falzon & Raviglione 2016:1).

The post-2015 global tuberculosis strategies frameworks are as follows:

- Vision: The vision of the End TB Strategy is a world free of tuberculosis with zero deaths and suffering due to this disease.
- Goal: The End TB global tuberculosis epidemic. The milestones for 2025 are a 75% reduction in tuberculosis deaths (compared to 2015) and a 50% reduction in the tuberculosis incidence rate to 55 tuberculosis cases per 100,000 people. The targets for 2035 are to have a 95% reduction in tuberculosis deaths (compared to 2015) and 90% reduction in tuberculosis incidence rate to less than 10 tuberculosis cases per 100,000 people (WHO 2015:2).

The pillars and components of the End TB Strategy are:

### **Integrated, patient-centred care and prevention**

- Early diagnosis of TB, including universal drug susceptibility testing, and systematic screens of contacts and high-risk groups.
- Treatment of all people with TB, including drug-resistant TB, and patient support.
- Collaborative TB/HIV activities and management of co-morbidities.
- Preventative treatment of persons at high risk, and vaccination against TB.

### **Bold policies and supportive systems**

- Political commitment, with adequate resources for tuberculosis care and prevention.
- Engagement of communities, civil society organisations, and public and private care providers.
- Universal health coverage policy and regulatory frameworks for case notification, vital registration, quality and rational use of medicines and infection control measures at all levels to prevent spread of infection.

- Social protection, poverty alleviation, and actions on other determinants of tuberculosis.

### **Intensified research and innovation**

- Discovery, development, and rapid uptake of new tools, interventions and strategies.
- Research to optimize implementation and impact, and promote innovations. (MoHSS 2015a:12).

To address the above-mentioned challenges, innovative, multi-sectorial, and integrated approaches will be required. The DOTS strategies have strengthened public sector tuberculosis programmes in tackling a large burden of this drug-susceptible disease. The Stop TB Strategy was built on DOTS, to help addressing drug-resistant and HIV-associated TB, while promoting research to develop new tools.

The overall goal of collaborative tuberculosis/HIV activities is to decrease the burden of TB and infection in people at risk of being affected by both diseases.

HIV-associated TB accounts for about one quarter of all tuberculosis deaths and a quarter of all deaths due to AIDS.

All TB patients living with HIV should receive antiretroviral treatment to reduce mortality by almost 40% of co-infected patients (WHO 2015:12).

## **2.8 HEALTH CARE WORKERS' KNOWLEDGE, ATTITUTDES AND EXPERIENCES ON MANAGEMENT AND CONTROL OF TB**

### **2.8.1 Knowledge**

Knowledge is the understanding of or information about a subject that you get by experience or study, either known by one person or by people generally (*Cambridge Academic Content Dictionary* 2009:530).

The ability of health care workers to educate, counsel and communicate well with patients depends on health care workers' knowledge of the disease as well as on the training they

have received to manage patients. Without training, health care workers will not be able to counsel and manage patients properly. This will have negative effects on patients' adherence to treatment (Ibrahim, Hadjia, Nguku, Waziri, Akhimien, Patrobas & Nsubuga 2014:3). Therefore, knowledge of health care workers on TB DOTS is required for them to be able to properly treat and counsel patients on the correctness of following a prescription and for patients to be committed to successfully finish the course of their treatment, preventing resistance TB and producing positive treatment outcomes.

Furthermore, treating TB patients with inappropriate drugs regimens that are not in accordance with the WHO treatment guidelines can result in the development of MDR-TB. A prescription of an adequate anti-TB treatment regimen, dosage and duration requires knowledge of the existing treatment recommendations since 1993. The WHO has published and adapted international TB treatment guidelines aiming to provide national TB programmes (NTPs) and the medical profession with evidence-based practical guidance on effective TB case management. Many countries have considered and included these recommendations in their own national TB guidelines (Van der Werf, Langedam, Huitric & Manissero 2012:1248).

In another study carried out by Minnery, Contreras, Pérez, Solórzano, Tintanya, Jiménez, Soto and Lecca (2013) in Lima (Peru), it was found that service gaps existed in the knowledge of frontline TB personnel about TB in highly endemic areas of Lima which mirrors findings from other developing countries facing similar TB burdens. The study also found that studies done in other parts of the country affirm that the consequences of inadequate TB treatment are of serious concern for the Peruvian national TB control programme. Given the nature of MDR-TB, it is reasonable to assume that under- or mis-education about the disease can result in case complications and this, in turn, may lead to drug resistance (Minnery et al 2013:7). Moreover, Minnery et al (2013) found that knowledge of national guidelines is poor among frontline TB personnel and, therefore, this needs to be addressed in future programmes. This study also detected that low knowledge of risk factors that increased the TB burden, such as HIV, diabetes and malnutrition, should be taken in consideration in national programmes in order to better identify and prevent them. The conclusions drawn in the study based on the information obtained from frontline personnel are very useful, as they are the ones who have first-hand experience in the fight against this disease. In this regard, they indicated that a greater community involvement is needed for patients to complete their treatments and

that TB resources at their disposal are not distributed equally. All these should be addressed in national TB programmes, not only in Peru but in other countries with high TB as well (Minnery et al 2013:7).

In order for the health care workers to protect themselves from acquiring TB from patients, they need to know the mechanisms of TB transmission and infection, control protocols and guidelines. It was reported, in a 2017 quantitative study by Shrestha, Bhattarai, Thapa, Basel and Wagle on attitudes of health care workers towards TB infection control in Nepal, that most health care workers who participated in the study were aware of the major symptoms of TB (67%) and route of TB transmission (81%). However, only half of them (54%) could differentiate between TB infection and TB disease. Some health workers stated that the use of respirators can prevent TB infection and, with regard to infection control measures to be implemented in health facilities, 55% of them stated respiratory protection, followed by environmental control (47%) and administrative control (14%) (Shrestha et al 2017:3).

It was found in a study conducted by Noé, Ribeiro, Anselmo, Maixenchs, Sitole, Munguambe, Blanco, Le Souef & García-Basteiro (2017) in Mozambique that health workers who worked with TB patients for longer periods had more knowledge in relation to other health care workers who worked with them for a shorter period (Noé et al 2017:207).

In another study conducted by Malangu and Adebajo (2015:4) in Lesotho, it was found that those health care workers who reported a higher level of knowledge about MDR-TB were protecting themselves better than those who showed lower or insufficient knowledge. This finding suggests that a higher level of knowledge implies a higher level of preventive actions by health care workers, diminishing the chances of suffering an occupational hazard for them.

In a study by Kapweya (2010) on knowledge, attitude and practices of health care workers towards TB-DOTS in the Groetfontein district of the Otjozonjupa region, in Namibia, suggested that there was a reasonably high knowledge of TB-DOT by health workers who participated in the study. What transpired from the findings is that, although health workers had a fairly good knowledge on TB-DOT, some of them still lacked adequate knowledge and positive attitudes (Kapweya 2010:94).

## 2.8.2 Attitudes

Attitudes of health care workers could influence the way patients respond to treatment. An experience of bad attitude from a health care worker can negatively affect the treatment outcome of a patient. On the other hand, a good attitude towards a patient can positively contribute to his/her treatment outcome.

The relationship between a health care worker and his/her patient is a critical element in the success of TB treatment. A patient is expected to follow the instructions from his/her health care worker on their treatment. However, whether or not the patient follows the instructions will depend on the attitude and manner in which his/her health care worker conveys the instructions. Negative and unfriendly attitudes will make patients lose confidence in health care workers, leading to failure in continuing treatment (Ibrahim et al 2014:3).

The findings of a study conducted in Ethiopia by Tadesse, Demissie, Berhane, Kebede, and Abebe (2013) suggest that when TB patients were asked about their perceptions of the quality of health care that they received while on TB treatment, their responses clustered around one theme. They all made reference to the attitudes of the health care workers' team at the health centres in the study area. Although some were not fully satisfied with the attitudes from their health care providers while most of them were satisfied with certain staff (Tadesse et al 2013:4). Interaction based on trust between patients and care providers was expressed as essential for a successful completion of treatment. However, the patients could easily lose their trust in the DOTS strategy if they felt that the provider did not take their concerns seriously (Tadesse et al 2013:13).

Skinner and Claassens (2016), in their study accentuated that "it's complicated: why do tuberculosis patients not initiate or stay adherent to treatment? A qualitative study from South Africa", found that negative attitudes from staff members can create problems. Some respondents reported a feeling that the staff did not care much about patients in some facilities where the study was conducted. While in some facilities, patients coming for treatment got seen quickly and efficiently, in another facilities, patients had to wait for a long time to be attended to (Skinner & Claassens 2016:4).

It was further reported that, in some cases, participants expressed their feelings of experiencing some kind of abusive attitudes by staff. They are treated like children or in a derogatory manner, and some of them were even sent home for not taking the prescribed treatment. All these made some patients not return for the initiation of TB treatment (Skinner & Claassens 2016:4).

Health care workers' attitudes towards TB can be affected if they are not well equipped with the knowledge on how best they can be protected from being infected while attending to the patients. This is evidenced by the quantitative research by Shrestha et al (2017) in Nepal. It was found that 99% of health care workers agreed that there is a need for TB infection control guidelines in the facilities, while 98.4% agreed that they should wear respirators while caring for TB patients. The majority of health care workers (64.7%) were concerned about being infected with TB, and nearly one fifth of them agreed that cough hygiene alone has no role in TB infection control (Shrestha et al 2017:3).

### **2.8.3 Experiences**

Experience is the process of getting knowledge or skill that is obtained from doing, seeing, or feeling things (*Cambridge Academic Content Dictionary* 2009:23).

Health care workers obtain their knowledge from experience through treating and interacting with patients every working day. Health care workers who attend to patients who are on DOTS get first-hand experiences, as they spend a considerable amount of time with them.

In a study conducted in Burundi by Carlsson, Johansson, Eale and Kaboru (2014:8) on the nurses' roles and experiences with enhancing adherence to tuberculosis treatment among patients, indicated that nurses had experienced that most of the patients who were under their care on DOTS had followed well the schedules of their treatment. They also indicated that indeed these nurses were at the forefront of TB care and that they play a critical role in informing about opportunities and obstacles to patients' adherence to TB treatment. The study further reveals that nurses' experienced that indiscipline among patients was also described as a reason for defaulting or incorrect treatment. The patients do not listen to the nurses when they try to teach them about the disease and treatment, then they do not do as they were told. The respondents did not explain what they thought

could help these patients understand the importance of completing treatment. However, participating nurses expressed that individually tailored solutions should be identified to help overcome some of these problems (Carlsson et al 2014:8). The nurses believed that there was a difference among men and women regarding adherence to treatment as all nurses reported observing better adherence among women than men (Carlsson et al 2014:8). This study also indicated that the experience by participants showed that HIV was increasing among patients with TB. They expressed different thoughts regarding whether it was easier or harder for patients suffering from both TB and HIV to follow the treatment compared to patients who suffered only from TB (Carlsson et al 2014:9).

Finally, another study by Yellappa, Lefèvre, Battaglioli, Narayanan and Van der Stuyft (2016:4) found that the experience of patients with TB and their caretakers is indissolubly linked to their experience with DOTS. It was observed that having TB was not solely an individual patient's problem but, in most cases, a family issue. Some patients were found more vulnerable than others because of the relative level of poverty and social support they possessed.

## **2.9 CONCLUSION**

This chapter discussed literature review conducted for the study. The review covered the TB situation in the world, in Southern Africa, in Namibia, and in the Khomas Region, where this study took place. It also discussed the principles of TB control and the health care workers' knowledge, attitudes and experiences on management of TB.

Chapter 3 will discuss the research design and methodology.

## **CHAPTER 3**

### **RESEARCH METHODOLOGY**

#### **3.1 INTRODUCTION**

In this chapter, the research methodology is described in terms of the design, the setting, the sample and sampling techniques, data collection procedures, data management, and scientific rigor. It provides information on how the problem was investigated and why particular methods and techniques were employed. All methodologies used will be analysed.

#### **3.2 RESEARCH DESIGN**

Research design is a blue print for conducting a study that maximises control over the factors that could interfere with the validity of the findings (Grove et al 2015:45). It also deals with the overall plan for addressing a research question, including specifically enhancing the study integrity (Polit & Beck 2012:741).

Furthermore, Gilson (2012:52) states that a research design is concerned with whether the research methods of data collection and analysis are of high quality. The purpose of a research design is to ensure that it relates directly to answering the research question.

For the purpose of this study, a qualitative descriptive design was used in order to obtain information and explore the knowledge, experiences, and attitudes of health care workers. This is done with the aim to establish descriptions from them, with regard to DOTS services.

##### **3.2.1 Qualitative design**

Qualitative research is described as the investigation of phenomena, typically in an in-depth and holistic fashion, through the collection of rich narrative materials using a flexible research design (Polit & Beck 2012:739). Creswell (2014:4) states that qualitative research is an approach used for exploring and understanding the meaning individuals



or groups ascribe to a social or human problem. It is further stated as a systematic, interactive, subjective, holistic approach used to describe life experiences and give them meaning (Grove et al 2015:705).

In this study, views expressed by health care workers were noted and recorded to qualify information about their knowledge, attitudes and experiences towards DOTS services.

### ***3.2.1.1 Characteristics of qualitative studies***

Polit and Beck (2012:487) discusses the characteristics of qualitative studies as follows:

- It often involves merging together various data collection strategies.
- It is flexible; capable of adjusting to new information during the course of data collection and it produces more in-depth, comprehensive information.
- It tends to be holistic and it allows participants to give their own emphasis and meaning to their experiences; it gives participants room to freely express themselves and, in so doing, they provide the researcher with the good overview of the problem.
- It requires the researcher to become intensively involved.
- It requires researchers to become the research instrument.
- It involves ongoing analysis of the data to formulate subsequent strategies and to determine when data collection is done.

The qualitative research is recommended when examining previously unexplored areas (Rossman & Rallis 2012:8). A study on the knowledge, attitudes and experiences of health care workers had not yet been conducted in the Windhoek district of the Khomas region and, therefore, the researcher decided to use this approach. Rossman and Rallis (2012:10) argued that researchers who use a qualitative method will obtain a good overview of the problem from the participants. The problem of a low TB treatment success rate, which still remained at 83% in 2015 (below the WHO target of 95%), prompted the researcher to use the qualitative research method in order to get a good overview of the problem from health care workers who are working at the TB DOTS points.

### ***3.2.1.2 Nature of qualitative research***

The nature of qualitative research is its flexibility, the use of unexpected ideas arising during data collection (emerging designs with open-ended approaches) and the exploratory prompts that are used during interviews. Qualitative research focuses on the meanings and interpretations of the participants (Holloway & Galvin 2016:58). A qualitative research that is exploratory, descriptive, interpretative and contextual in nature was used to understand the phenomenon under study.

### ***3.2.1.3 Explorative research***

This study adopted an explorative research design to gain insights into the health care workers' knowledge, attitudes and experiences regarding TB DOTS. Robson (2011:202) argues that explorative research is used when the researcher seeks to listen to participants and build an understanding based on what is heard, especially because not much has been written about the topic. The researcher therefore employed the individual in-depth interviews approach because it provides the participants with the opportunity to describe their experiences in their own words. In this study, the aim was to present an accurate description of the health care workers' knowledge, attitudes and experiences concerning TB DOTS in the Windhoek District of the Khomas Region.

### ***3.2.1.4 Descriptive research***

In qualitative research, one of the researcher's important tasks is to describe what he or she has obtained and observed during the fieldwork. Descriptive research is concerned with describing, observe and document aspects of a situation as it naturally occurs. Sometimes it serves as a starting point for hypothesis generation or theory development (Polit & Beck 2012:226).

The aim of the study was to present an accurate description of health care workers' knowledge, attitudes and experiences concerning TB DOTS in the Windhoek District of the Khomas Region. Words and sentences from the recorded in-depth interviews, reflective diaries, field notes and participant observation were used in order to obtain these descriptive data and comprehensive summaries of the health care workers' knowledge, attitudes and experiences on TB DOTS services.

### **3.2.1.5 Contextual research**

Grove et al (2015:189) referred to contextual research as a philosophical element of qualitative research. It is the body, world and concern unique to each person, within which that person can be understood. Once health care workers' knowledge, attitudes and experiences have been described, it is important to contextualise the findings. One important aspect of qualitative research is that it is concerned with context.

In this study, the findings are understood only within the context of health care workers who worked at DOTS points for 6 months or more in the Windhoek district of the Khomas region.

## **3.3 THE PHILOSOPHICAL PERSPECTIVE OF THE STUDY**

The philosophical perspective of this qualitative research was guided by constructivism. Grove et al (2015:57) describe philosophy as the view of science that values the uniqueness of individuals and the holistic approach to understand human experiences. In this study, in order to understand the whole picture of health care workers' knowledge, attitudes, and experiences, participants were involved in the research process by availing themselves to participate freely in the study. Digitally recorded one-one in-depth interviews, written reflective diaries, observation and field notes were used in order to obtain multiple realities. The researcher started the interview by asking the first open-ended question from the prepared semi-structured interview guide, in order to encourage the participants to open up and share their views regarding the topic under study. Every participant had his or her own reality and, therefore, multiple realities emerged. The main guiding questions for this study were: What are your experiences and knowledge in working with TB DOTS and what attitudes do you have towards this DOTS services? The broad question was asked in order to encourage the participants to open up and give their insiders' perspectives. These broad questions were followed by other subsequent questions to obtain multiple realities and accurate data.

## **3.4 RESEARCH METHOD**

### **3.4.1 Population and research setting**

A population is the entire aggregation of cases in which a researcher is interested (Polit & Beck 2012:273) and a research setting is the location in which a study is conducted (Grove et al 2015:38).

In this study, the population of interest was health care workers who work at public health clinics of the Windhoek district of the Khomas region. There are currently 140 health workers, according to the information obtained from the Primary Health Care Supervisor of the Windhoek district. In this instance, a particular group of health care workers, who were accessible, available, and who met the inclusion criteria during data collection, participated and were approached in order to seek answers to the research questions.

### **3.4.2 Study setting**

The study setting is the environment within which the researcher collects data pertaining to the problem under observation (Polit & Beck 2012:743). In this study, the public health clinics of the Windhoek district of the Khomas region constitute the research setting. For the purpose of this research, the following health clinics were targeted: Katutura Health Centre, Khomasdal Health Centre, Wanaheda Clinic, Okuryangava Health Centre, Otjomuise Clinic, Donkherhook Clinic, Hakahana Clinic and Robert Mugabe Clinic.

### **3.4.3 Sampling**

Sampling is a process of selecting participants who are representative of the population being studied (Grove et al 2015:37).

Purposive sampling is a non-probability sampling method in which the units to be studied are selected based on the researchers' judgements (Polit & Beck 2012:739). For this study, purposive sampling was used, as the researcher established a set of criteria to select participants who have experienced the phenomenon of interest and were able to describe those experiences.

#### **3.4.4 Sample**

A sample is a subset of a population comprising those selected to participate in a study (Polit & Beck 2012:742). The aim of most qualitative studies is to discover meaning and to uncover multiple realities, not to generalise to a target population (Polit & Beck 2012:515). The sample of this study consisted of 14 health care workers who were working at the DOTS points for 6 month or more during the time of the study.

#### **3.4.5 Inclusion criteria**

The inclusion criteria specify the characteristics of the population that the researcher wants (Polit & Beck 2012:274)

In this study, the researcher selected only those participants who specifically met the criteria, which were:

- Health care workers working in the TB room for at least 6 month or more, providing DOTS services.
- Health care workers who could speak English, to facilitate communication, due to fact that the researcher does not speak the local languages.

#### **3.4.6 Exclusion criteria**

The researcher excluded the following workers:

- Health care workers who were not directly involved with the DOTS strategy.
- Health care workers who could not speak English.
- Health care workers who were not willing to participate in the study.

### **3.5 DATA COLLECTION METHOD AND PROCEDURES**

Data collection is a precise systematic gathering of information relevant to the research purpose and specific objectives, questions or hypothesis of the study (Grove et al 2015:691). Moreover, a qualitative researcher typically goes into the field knowing the most likely source of data while not ruling out other possible data sources that might come

to light as data collection progresses (Polit & Beck 2012:532). The primary method of collecting qualitative data is by interviewing study participants (Berg 2009:52).

The data collection method used for the study was a semi-structured interview guide. Data was collected by the researcher herself, through individual in-depth interviews structured in accordance with the interview guide. The interview guide was focused on the following aspects:

- Knowledge of health care workers regarding TB DOTS strategies in the Windhoek district of the Khomas Region.
- Attitudes of health care workers towards TB DOTS services in the Windhoek district of the Khomas Region.
- Experiences of health care workers regarding TB DOTS services in the Windhoek district of the Khomas Region.
- How health workers proceed when patients miss their appointments for the DOTS.

Individual in-depth interview method of data collection was chosen, and used by the researcher in order for the participant to feel free to express their own experiences on TB DOTS services.

Open-ended questions were used for probing to solicit more information; for example: “Tell me more” or “Can you elaborate more about what you have just said?”

The researcher recorded the interviews, used field notes material, for example, writing pad, and observed the participants reactions to the questions. The researcher conducted the interviews in English.

### **3.6.1 In-depth interviews**

Interviews are an inter-active process in which ideas, thoughts, beliefs, emotions and values are brought to the knowledge of others and shared. The most important issues in people’s lives only become known to others through interviews (Ritchie, Lewis, Nicholls & Ormston 2014:56). Furthermore, a key feature of one-to-one interviews is their depth of focus on the individual, providing an opportunity for detailed investigation of each person’s or individual perspective (Ritchie et al 2014:56).

In this study, one-to-one individual interviews were conducted in English by the researcher herself which helped in obtaining in-depth understanding of the topic under investigation.

### **3.6.2 Semi-structured interview**

In semi-structured interviews, researchers prepare a written topic guide which is a list of areas or questions to be covered with each participant. The interviewer's job is to encourage participants to talk freely about all the topics on the guide and to tell stories in their own words (Polit & Beck 2012:537).

In this study, the researcher used a semi-structured interview guide to obtain information from participants (see Annexure H). This motivated participants to express themselves freely about the topic under investigation.

#### ***3.6.2.1 Phases of data collection***

There were two phases of data collection:

- The initial phase, also called the preparation phase.
- The interview phase.

#### ***3.6.2.2 The initial phase or preparatory phase***

After obtaining the written permission to conduct research from the Khomas Region Directorate (see Annexure E), the researcher made initial contact with participants by visiting all participating clinics. The researcher personally contacted the health care workers at the DOTS points to make arrangements for the interviews whenever their working schedules allowed them to do so. This was done so that the researcher would not arrive unexpectedly and cause inconvenience to the participants at work. During these visits, date and time for the interview with the participants were arranged. The participants were also briefed about the purpose and objectives of the study.

### **3.6.2.3 Interview phase**

Interviews were held in a room specially arranged for the study. Each health facility availed the office of the Registered Nurse in charge of the facility as it was the only quite room available. These rooms were well ventilated. The researcher, in her one-to-one interviews with the participants, ensured that they were comfortable during the interviews.

Before the start of the interview, the researcher gave participants the consent forms to read, allowed questions about it, asked if it was understood and requested them to sign it if they wanted to continue (see Annexure F and G). Permission to use a voice recorder during interview was asked from participants reassuring them about the confidentiality and privacy of the recordings and indicating to them the reasons why this was being done.

The researcher started the interviews by introducing the topic to the participant, and began to ask the questions from the interview guide. Probing was done to clarify or elicit more information from the participants. The researcher had her interviewing skills based on her own experiences, as a former TB DOTS nurse, to encourage participants to talk about their lived experiences in DOTS. This allowed flexibility in getting information from them.

All participants were given opportunity to review, clarify and correct any point within the transcript of the recording. The voice recorder and consent forms were kept at the researcher home, and were kept in a locked safe and were only accessible to the researcher and to the supervisor on her request.

## **3.6 DATA MANAGEMENT AND ANALYSIS**

The purpose of data analysis is to organize, provide structure to, and elicit meaning from data. In qualitative studies, data collection and data analysis often occur simultaneously rather than after data is collected. The search for important themes and concepts begins from the moment data collection gets under way (Polit & Beck 2012:556).

Data analysis is the central step in qualitative research. Whatever the data are, it is their analysis that, in a decisive way, forms the outcomes of the research. Sometimes, data collection is limited to recording and documenting naturally occurring phenomena, for



example by recording interactions. Then qualitative research is concentrated on analysing such recordings (Flick 2014:3).

In this study, data analysis was done by means of content analysis, a process of organizing and integrating narrative, qualitative data according to emerging themes and concepts. All interviews were transcribed verbatim by the researcher (see Annexure I) and data analysis was based on the content of all the transcribed individual semi-structured interviews (see Annexure J). When analysing the data, the researcher adhered to the following steps of content analysis as recommended by Creswell (1998) as cited by Polit and Beck (2012:557). One document was analysed at a time to determine the prevalence of any underlying information.

- A list of recurring topics was made and similar topics were grouped together.
- The most descriptive wording of the topics grouped together, were used as categories. Interrelated and related topics were also grouped into categories.
- The final decision was made on the naming of each category.
- Analysis was performed again on the assembled data to finalise themes and categories.
- Categorised data was discussed and literature control was conducted.

### **3.7 SCIENTIFIC RIGOR**

The measures to enhance the trustworthiness of the study are those suggested by Lincoln and Guba (1985 and 1994), cited in Polit and Beck (2012:585), which are:

#### **3.7.1 Credibility/authenticity**

It refers to confidence in the truth of the data and interpretations of them (persistent observation) (Polit & Beck 2012:585).

In this study, the following strategies for credibility were employed:

- The researcher's own experience in the area of study as a professional nurse working in primary health clinics dealing with all types of patients, including TB patients, for the past 12 years.
- The researcher conducted a qualitative, explorative, and contextual design so that data obtained from participants were of a high quality.
- The researcher consulted relevant existing literature for the purpose of the current study.
- The researcher used individual in-depth interviews and field notes for data collection, and observations were made during interviews.

### **3.7.2 Dependability**

It relates to the consistency of findings such as that, if the study was to be repeated with the same or similar participants in the same or similar context, its findings would be similar (Brink et al. 2013:172). In this study, the following measures were taken to achieve dependability:

- Dense and detailed descriptions of the research method used are given; for example, the interview guide and the order in which participants have answered them.
- The use of the triangulation of data collection methods, including reflective diaries, digitally recorded in-depth interviews and field notes; the information collected was then coded, analysed, and themes emerged.
- Supervision of the research process was followed by the research supervisor who helped checking the transcripts and co-coding the first four transcripts to verify codes and themes.

### **3.7.3 Confirmability**

Confirmability refers to potential for congruency of data in terms of accuracy, relevance or meaning. It is concerned with establishing whether the data represent the information provided by the participants, and that the interpretations of data are not fuelled by researcher's imagination (Brink et al 2013:173).

Literature control and the research results were utilised to evaluate, compare, and to confirm the element of neutrality. Field notes and an audio recorder were used to obtain undiluted information from participants. Audio-recorded interviews were transcribed verbatim, and the co-coding was done by the supervisor to confirm findings.

#### **3.7.4 Transferability**

The researcher must give the recipients of the research sufficient data so that the latter can evaluate if the data obtained can be applicable in other contexts or to other participants (comprehensive field notes) (Brink et al 2013:173; Polit & Beck 2012:585).

In this study, the research was conducted at clinics and health centres in Windhoek with adequate space for participants to feel free and enjoy the interviews. The research process was recorded in depth to allow transferability by other researchers in their own contexts using similar circumstances. The above-mentioned factors contributed to transferability of the study.

#### **3.7.5 Peer debriefing**

Peer debriefing is the review of data and research process by someone who is familiar with the research or the phenomenon being explored (Creswell 2014:252). A peer reviewer provides support, plays devil advocate, challenges the researchers assumptions, pushes the researcher to next step methodology, and asks hard questions about the methods and interpretations (Creswell 2014:252). Polit and Beck (2012:595) reported that peer debriefing involves sessions with peers to review and explore various aspects of inquiry.

In this study, the researcher had discussed with a colleague outside the study setting the methodology, prior to the data collection, and the findings, after the data collection. This was done to ensure that the method used was appropriate and that the findings were worth. The researcher further discussed the process to be undertaken in this study with the supervisor. The first 4 verbatim transcripts were also shared with the supervisor who gave the go ahead with data analysis.

### **3.7.6 Member checking**

Member checking is the verification of data with the participants, to correct obvious errors and to provide additional information. The emerging findings of the study are taken back to the participants, to check if the interpretations of the data are in order with what they have said, as well as the adequacy (Brink et al 2013:172). Creswell (2014:253) discusses that member checking is a qualitative control process by which the researcher seeks to improve the accuracy and validity of what has been recorded during the research interview.

In this study, the researcher took data and interpretations back to the participants so that they could confirm the credibility of the information and the narrative account. Also, the researcher continuously asked the participants if what was recorded was the true reflection of what the researcher has captured. The researcher discussed the themes that emerged from the study with the participants, as well.

### **3.7.7 Reflexivity**

Reflexivity is a process where the researcher engages in explicit, self-aware analysis of their own role in the research, in which an investigator seeks to understand how her/his personal feelings and experiences may influence the study and then strives to investigate this understanding in the study (Holloway & Galvin 2016:9). Reflexivity requires the researcher's self-awareness and considers the possible influences of the researcher's personal characteristics on the study (Holloway & Galvin 2016:9). Creswell (2014:137) discusses that reflexivity is incorporated into the research method not merely to offset a researcher bias and values in the study, but how the background of the researcher actually may shape the direction of the study.

In this study, the researcher's own experience as former TB focal nurse helped in reflecting on past experiences to integrate the views of the participants into the study.

## **3.8 ETHICAL CONSIDERATIONS**

When humans are used as study participants, care must be exercised to ensure that their rights are protected (Polit & Beck 2012:150).

### **3.8.1 Ethical clearance**

The Research Ethics Committee: Department of Health Studies of UNISA (Rec-01274-039) issued an ethical clearance certificate and granted the researcher permission to conduct the study. The ethical clearance certificate is included as Annexure A.

### **3.8.2 Institutional rights and approval**

Whenever a research is undertaken in the field of health care, permission for such research must be obtained from the authority in charge of that field or service point (Pera & Van Tonder 2011:336). Permission to conduct the study was obtained from the Ministry of Health and Social Services of Namibia, and from the Khomas Region Directorate which is the region where Windhoek District is located. These letters of permission are included as Annexure C and E.

### **3.8.3 Informed consent**

Informed consent is the participant's agreement and willingness to co-operate in the research that has been explained to them and that they are able to understand (Flick 2014:538). As a general rule, the researcher must uphold the ethical principles of autonomy and liberty, and informed consent must be obtained from participants by the researcher before information is obtained from them (Pera & Van Tonder 2011:333).

In this study, the researcher asked for consent from the participating health care workers and informed them that they have the right to refuse to participate if they so wished. In this regard, the researcher provided a written informed consent to the participants (see Annexure G). The researcher informed the participants about the purpose of the study, which is academic only, and also informed them that their names were not going to appear anywhere in the data. This was done in order to protect their privacy.

### **3.8.4 Beneficence**

Beneficence encourage the researcher to do good and above all, do no harm (Grove et al 2015:98). In this study, participants would not immediately gain from the study, but

study findings would be communicated to the Windhoek District Directorate and other interested parties. By gaining a better understanding of the Health Care Workers' knowledge, attitudes, and experiences, on DOTS they can propose changes and improvements on the approach of these services.

### **3.8.5 Anonymity and confidentiality**

Any individual participating in a research study has a reasonable expectation that information provided to the researcher will be treated in a confidential manner. Consequently, the participant is entitled to expect that such information will not be given to anyone else (Grove et al 2015:55). In this study the confidentiality of the participants was protected by the researcher whereby no names and site were recorded or noted down during the interviews, rather a coding system was used at all times.

## **3.9 CONCLUSION**

This chapter discussed in details the research design and methodology of the research process. The ethical considerations and the trustworthiness of the study were also discussed in this chapter. The next chapter focuses on the results and findings of the study.

## **CHAPTER 4**

### **DATA ANALYSIS, PRESENTATION AND DESCRIPTION OF THE RESEARCH FINDINGS**

#### **4.1 INTRODUCTION**

This chapter provides a description of the analysis, the presentation and the description of the findings of the study. The data collected by means of individual interviews, and the analysis presented in this chapter occurred according to the research methods described in Chapter 3. The findings are discussed with reference to the research objectives.

#### **4.2 DATA MANAGEMENT AND ANALYSIS**

The verbatim transcriptions from the audio recordings made during the interviews, as well as the notes taken during the same interviews, provided a record of the raw data. The data collected were stored electronically as audio recordings to use as a form of backup. The transcriptions and notes were stored as Microsoft Word files which were protected by a password to ensure security and confidentiality. Data from individual interviews were analysed by means of content analysis, a process of organizing and integrating narrative, qualitative data according to emerging themes and concepts. The following abbreviations were used: Tran = Transcript, Part = Participant and Pg = Page, to be able to identify the origin of the verbatim quotations in the transcripts (page and transcript) as well as the participant's number.

#### **4.3 RESEARCH FINDINGS**

The participants had to respond to the following question:

- What are your experiences and knowledge in working with TB DOTS and what attitudes do you have towards these DOTS services?

Data were collected until data saturation was reached, which happened after 14 participants had been interviewed. All participants gave an informed consent to

participate in the study. Permission for the interview to be audio recorded, and for the researcher to make notes during the interview was also given by participants.

#### 4.3.1 Sample description

The sample consisted of 14 health care workers who were working at Windhoek District Primary Health Care Centres and Clinics of the Khomas region. These health care workers consisted of 2 registered Nurses, 5 enrolled Nurses, 1 health assistant, and 6 community TB field promoters.

**Table 4.1 Description of the participants**

<b>Participant</b>	<b>Gender</b>	<b>Position</b>	<b>Period of allocation</b>
P #1	Female	Enrolled Nurse	2 years
P #2	Male	Health Assistant	5 years
P #3	Female	Enrolled Nurse	1 year
P #4	Female	TB Field Promoter	7 months
P #5	Female	TB Field Promoter	7 months
P #6	Female	Enrolled Nurse	1 year
P #7	Male	Enrolled Nurse	3 years
P #8	Female	TB Field Promoter	10 year
P #9	Female	TB Field Promoter	6 months
P #10	Female	TB field Promoter	9 months
P #11	Female	Registered Nurse	4 years
P #12	Female	Enrolled Nurse	6 months
P #13	Female	TB Field Promoter	11 years
P #14	Female	Registered Nurse	5 years

Participants in the study met the inclusion criteria to participate, which was to be a health care worker for a minimum of 6 months at the DOTS point. To be able to work at a TB DOTS point, a health care worker needs to be knowledgeable about the TB guidelines in use in the country. However, it was found that some participants were not trained on those guidelines or lacked some knowledge about them.



### 4.3.2 Themes

Three themes emerged from the data analysis:

- (1) The knowledge of health care workers regarding the implementation of the DOTS strategy.
- (2) The attitudes of health care workers towards patients on the DOTS strategy, which may affect the success of the treatment.
- (3) The experiences of health care workers when attending to the patients on DOTS strategy.

**Table 4.2 Themes and codes**

<b>Themes</b>	<b>Code</b>
<p><b>Theme 1</b></p> <p>The knowledge of health care workers regarding the implementation of DOTS strategy.</p>	<p>1.1 DOTS</p> <p>1.2 DOTS supporter</p> <p>1.3 Duration of treatment</p> <p>1.4 Mode of TB transmission</p> <p>1.5 Treatment given</p> <p>1.6 Professional development</p> <p>1.7 Barriers to DOTS</p>
<p><b>Theme 2</b></p> <p>The attitudes of health care workers towards patients on the DOTS strategy, which may affect the success of the treatment.</p>	<p>2.1 Positive attitudes</p> <p>2.2 Not scolding patients</p> <p>2.3 (Possible) negative attitude</p>
<p><b>Theme 3</b></p> <p>The experiences of health care workers when attending to patients on the DOTS strategy.</p>	<p>3.1 Barriers to DOTS support-negative experiences</p> <p>3.2 Health education of difficult patients</p> <p>3.3 Management of workload</p> <p>3.4 Follow up of defaulters</p> <p>3.5 Follow up of defaulters/recommendations</p> <p>3.6 Language preferences</p> <p>3.7 Convenient place for DOTS/recommendations</p>

### ***4.3.2.1 Theme 1: The knowledge of health care workers regarding the implementation of the DOTS strategy***

#### **4.3.2.1.1 Code 1.1: DOTS**

The health care workers were asked to describe the DOTS strategy abbreviation. Different answers were obtained for this question. Although they all had an idea of what the abbreviation meant, some could not state the correct words of the abbreviation.

The nurses could decipher the abbreviation, but the lay promoters struggled with it. This is what they said about their knowledge about the DOTS abbreviation:

“DOTS is an abbreviation which stands for direct observe therapy, meaning the patient who comes, drinks the tablet there in front of you while you are observing. It’s a direct observe ... you make sure the person is swallowing the medication.”  
Transcript 6, Participant 6 Page 1 Enrolled Nurse (Tran 6 Part 6 **Pg** 1, Enrolled Nurse)

“DOTS is direct observing short course on treatment”. (Tran 8 Part 8 **Pg** 1, TB Field Promoter)

Some health care workers were not even sure as to what the abbreviation stands for,

“DOTS is daily observe treatment”. (Tran 9 Part 9 **Pg** 1, TB Field Promoter)

DOTS stand for Directly Observed Treatment Short Course. It is the most significantly advanced and cost effective strategy available that has been identified and recommended worldwide by the WHO as guaranteeing effective treatment and community protection from TB infection (Zivavamwe 2016:42). Health care workers who attend to TB patients are expected to have knowledge on the DOTS abbreviation in order for them to be in a better position to give accurate information to patients based on their scientific knowledge.

With the introduction of the DOTS strategy, TB can be completely cured through short-course chemotherapy. Treating TB cases that are sputum smear positive and who can therefore spread the disease to others in their communities through the DOTS strategy is

the most effective means of eliminating TB from a population. Therefore, DOTS, as the internationally recommended strategy for TB control, has been recognised as a highly efficient and cost-effective strategy, and it was adopted by many countries (WHO 2016:8).

DOTS strategies involve observing patients during their intake of medication in order to enhance and prevent the development of DR-TB. It is an important mechanism for monitoring treatment adherence (Dlwati et al 2017:13).

#### 4.3.2.1.2 Code 1.2: DOTS supporter

The health care workers were asked to describe who a DOTS supporter was. Different answers were obtained from participants, and the descriptions given were all suggestive of a DOTS supporter according to their own understanding.

“A DOT supporter is someone who is working at the DOT point. Suppose to know about TB, the importance of treatment for TB and also suppose to, a person who can be able to communicate to people in the community and who can be able to have good attitude to people. Yeah, and also knows background of people and also have love to people.” (Tran 2 Part 2 **Pg** 1, Health Assistant)

“A DOT supporter it’s someone who encourage the person to take their treatment, as they are suppose to take it. And who make sure that this treatment is taken. If the patient is told to take a certain amount of tablets, they must take it as it was prescribed, and not select some and leave the others out. The DOT supporter must also make sure that the tablets are swallowed by the patient.” (Tran 4 Part 4 **Pg** 1, TB Field Promoter)

“A DOT supporter is actually the person that witnesses as the person takes the medication. It can be a relative, it can be a nurse, it can also be a colleague.” (Tran 7 Part 7 **Pg**1, Enrolled Nurse)

Information obtained from literature supports the descriptions given by participants on what a DOTS supporter is. Bristow et al (2013:3) described a DOTS supporter as a person who should be accepted by the patient and who is willing to take up the responsibility of daily observing him/her taking the medication for a lengthy period of time. The DOTS

supporter could be a health care worker, a community based worker, a family member, or even his/her employer.

In addition, the WHO initiative of DOTS is that the patient does not bear the sole responsibility of adhering to treatment. Health care workers, public health officials, governments and communities must all share the responsibility and provide a range of support services patients need to continue and finish treatment (WHO 1999:12). One of the aims of effective TB control is to organize TB services in a way that they are flexible, reachable and accommodative to the patients who receive the treatment. Treatment supporter can be anyone who is willing, trained, responsible, acceptable to the patient and accountable to the TB control services (WHO 1999:15).

Furthermore, Dlwati et al (2017), in their study “Facilitators for and barriers to the implementation of national tuberculosis management guidelines”, describe that one of the contributing factors to drug-resistant TB can be attributed to errors made by health care providers in the management and drug supply to the patients, and by poor adherence to the treatment by the patients. They also indicated that it is important that TB is successfully treated in order to prevent TB related morbidity and mortality. DOTS supporters should show enthusiasm and dedication to the TB programs when they come to the clinics on weekly basis to collect the treatment and to give feedback to the nurses on their daily experiences with the patients they support (Dlwati et al 2017:10).

#### *4.3.2.1.3 Code 1.3: Duration of treatment*

Although most of the health care workers have a good knowledge of the duration of the TB treatment in Namibia, some TB field promoters struggled to describe the correct duration of TB treatment in Namibia.

“The TB treatment for a new case- who are having it for the first time, they are treated for six months. Then we have the relapse case. Those ones will be treated for eight months. There are also extra pulmonary TB, so TB which is also in the lungs ... like cardiac TB is treated for nine months even if it's a new case.” (Tran 6 Part 6 Pg1, Enrolled Nurse)

This participant did not know exactly what the duration of treatment of TB was. But the participant managed to provide the following information:

“TB treatment is four to six months. If it is pulmonary TB without any other problems. Six months.” (Tran 9 Part 9 **Pg** 1, TB Field Promoter)

“Yes, so it is from six to eight months. So the reason why we are extending is because in the case that the patient has maybe interrupted treatment, we have to extend. That is now the time frame the person has to complete the treatment.” (Tran 3 Part 3 **Pg** 3, Enrolled Nurse)

The Namibia TB treatment guidelines indicate that the TB treatment duration depends on the location of the TB in the body, such as pulmonary and extra pulmonary TB. It also depends on whether or not it is the first time the person is suffering from the disease or if the patient is a relapse (MOHSS 2012:28). For a new pulmonary TB, the duration of the treatment requires an initial phase of 2 months of RHZE daily, followed by a continuation phase of 4 months with RHE. For the re-treatment with first-line medicines, the initial phase is of 2 months of RHZES daily, followed by 1 month of RHZE daily, and followed by a continuation phase of 5 months of RHE daily, for a total duration of 8 months.

For extra pulmonary TB, the treatment will depend on the doctor, who will prescribe the treatment according to individual cases. The treatment for extra pulmonary TB can go up to 1 year (MOHSS 2012:28). Health care workers need to have a good knowledge about each individual patient when managing them, so that they can successfully treat them according to the prescribed period of treatment. The majority of TB cases can be cured when medicines are provided and taken properly. The drugs are taken once a day and it is a strict treatment that is ongoing for at least 6 month. But, if the patient’s sputum is still positive for active TB after 2 month, the treatment is extended to 9 months. Inappropriate or incorrect use of antimicrobial drugs or premature treatment interruption can cause drug resistance to the patients (Carlsson et al 2014:2).

#### 4.3.2.1.4 Code 1.4: Mode of TB transmission

Health care workers were asked to describe how TB is transmitted. Nurses had a better knowledge on the mode of TB transmission, whereas some of the TB field promoters had some difficulties in describing this concept.

“TB is transmitted through droplets. So it’s an airborne disease. When that micro bacterium gets into the air, then people get it through inhalation.” (Tran 6 Part 6 **Pg** 2, Enrolled Nurse)

This participant had a different view on the TB transmission, and did not know well how the disease is transmitted. Reference was only made to opening windows.

“TB transmitted by not opening doors and windows, you know when we are in a base of the taxis there is no... to open the windows and this time we were in winter. The windows and doors are all closed”. (Tran 10 Part 10 **Pg** 3, TB Field Promoter)

The transmission of TB was better described by this health care worker, who demonstrated a better understanding on how TB is transmitted.

“TB is an airborne disease, it transmits through the air. It is transmitted when the person who is TB positive, smear positive coughs, sneezes or laughs in the air, the person who is negative ... the person next in the air can also get TB.” (Tran 12 Part 12 **Pg** 2, Enrolled Nurse)

Mycobacterium TB is transmitted from an infectious patient primarily through coughing and is inhaled by the contact (droplets transmission). The inhaled bacilli settle in the lung, and cause infection (primary infection). In most cases, the bacilli are contained by the body’s immune system and remain dormant for the rest of the person’s life without any further consequences. The majority of infected people with intact immunity (90-95%) will never develop TB. Individuals with compromised immune systems, such as in case of HIV infection, diabetes, or malnutrition, may develop the disease at any point in their lives (MoHSS 2012:10).

#### 4.3.2.1.5 Code 1.5: Treatment given

Participants were asked to describe the TB treatment according to the current Namibian TB guidelines in use. This question was necessitated in order to find out the knowledge of health care workers about the treatment and to identify gaps in their knowledge. Nurses had a better knowledge on the treatment to be given compared to that of TB health assistants and TB field promoters.

“Oh yeah RHE, which is a rifampicine, then izoniazid ethambutol... and yeah. How many I give you?” (Tran 2 Part 2 **Pg** 3, Health Assistant)

“Actually, because we are ... we are ... we are having this uh, first line of TB ... something like uh, six month. Yeah, some eight month. Those who are having pulmonary TB six month. Pulmonary TB can go to eight month. And other also MDR, XDR can be two, two years, one year, it depend.” (Tran 2 Part 2 **Pg**1, Health Assistant)

One of the health care workers struggled to respond to this question and was not sure about the treatment given to the patient.

“So we are having the ... I think we are having two to three regimens. Yeah. You are talking about mos the different treatments.” (Tran 2 Part 2 **Pg** 2, Health Assistant)

Namibia maintains the WHO-recommended standardised TB treatment regimens, which consist of a fixed dose combination of Rifampicin, Isoniazid, Pyrazinamide, and Ethambutol (RHZE). This first combination is given to all patients diagnosed with TB for the first time, in the initial phase, and this combination has a duration of 2 month. Streptomycin is added to the fixed dose to patients who come for re-treatment. The continuation phase consists of a combination of 3 drugs, Rifampicin, Isoniazide, and Ethambutol (RHE) for a period of 4 months. The MOHSS TB guidelines indicates that the recommended duration of treatment for uncomplicated TB is 6 months. (MOHSS 2012:31). In order to prevent drug resistance of TB, health care workers working at the DOTS services need to have a good knowledge on the treatment to be given to the patients, at different phases of treatment and the duration at each phase.

#### 4.3.2.1.6 Code 1.6: Professional development

To be able to properly manage patients at DOTS points, health care workers need to be well knowledgeable with the current TB guidelines in use in the country. To this effect, health care workers need to be trained. Although the majority of the participating health care workers indicated that they were trained on the current TB guidelines, one of them said she could not remember whether she was trained or not.

“I can’t really remember, maybe two years back?” (Tran 7 Part 7 **Pg** 3, Enrolled Nurse)

“We have been trained because we were trained last year November.” (Tran 10 Part 10 **Pg** 3, TB Field Promoter)

“Let me say last year...something like, the beginning of last year.” (Tran 2 Part 2 **Pg** 3, Health Assistant)

The literature review done on the knowledge of health care workers regarding TB treatment suggests that the ability of health care workers to educate, counsel and communicate well with patients depends on their knowledge of the disease as well as on the training they have received to manage these patients. Without training, health care workers will not be able to counsel and manage patients properly, and this will have negative effects on the patient’s adherence to treatment (Ibrahim et al 2014:4). Bristow et al (2013) found in their study that, when practitioners received training on DOTS within the previous 2 years, they were over 4 times more likely to have satisfactory knowledge on TB treatment. These findings underscore the critical need to ensure that all personnel involved with TB treatment and monitoring receive comprehensive training on TB care and treatment (Bristow et al 2013:6).

Dlwati et al (2017), in their study, found that nurses perceived themselves to be inadequately trained to manage TB. They identified gaps in their knowledge in terms of TB and HIV co-treatment. As a result of this, the participants of the study indicated that nurses who have not undergone TB management training perceived themselves to be inadequate to assess and diagnose patients that are suffering from TB. The participants identified a need for training on TB management (Dlwati et al 2017:11).



#### 4.3.2.1.7 Code 1.7: Barriers to DOTS

Health care workers were asked to describe their knowledge regarding what constituted barriers that could prevent some patients to go to the DOTS points. Each participating health care worker gave an account of barriers according to their own understandings. The descriptions differed according to the area where the health care worker was operating from. Most health care workers said that barriers to DOTS in Windhoek were distance to DOTS points, lack of food, and problems with working hours.

“If a patient is working and they are coming home late hours, they cannot really come to the clinic because we might be closed. Sometimes because they don’t want to be seen at a clinic taking medication.” (Tran 3 Part 3 **Pg 9**, Enrolled Nurse)

This participant said that patients had difficulties going to DOTS points due to distance and due to the fact that they have to go to work as well.

“The place where they stay is very far and patients don’t have transport. Sometimes, there is also the work problem. They need to be DOTed but they cant be out of work Sometimes, when they are on treatments they are only booked off for a few weeks then they have to resume duty at their work and for you to DOT them is a big difficulty.” (Tran 7 Part 7 **Pg 4**, Enrolled Nurse)

The descriptions by the health care workers on the barriers to DOTS in the Windhoek District of the Khomas Region are found to be similar to other studies conducted on similar topics. One of these studies, conducted by Tadesse et al (2013) in Ethiopia, found that patients faced challenges in accessing DOTS points due to financial constraints to them and their families. This constituted a barrier for them to attend to the DOTS points. Long distances to the DOTS points and the operating hours of the health facilities which collided with the working hours, making it difficult for the patient to come to DOTS, were also barriers (Tadesse et al 2013:3).

Staff shortage was found to be a barrier to DOTS as it is evidenced in the study done by Dlwati et al (2017). They found that the participants felt that staff shortage hindered the execution of their daily tasks in the management of the health services for TB patients. They also indicated that the shortage of staff resulted in increased workloads, rapid staff

turnover, workplace stress, and burnout, which had detrimental effects on service delivery. The participants further indicated that this situation was made worse by the fact that they were faced with other responsibilities in addition to their core responsibility of managing TB patients. They also indicated that the shortage of staff was compromising the quality of services that they render to TB patients who, on the other hand, were also increasing at the clinics (Dlwati et al 2017:11).

A study conducted by Yellappa et al (2016) in India found that patients from rural areas experienced more barriers to DOTS, compared to patients in urban areas. Such barriers included travelling long distances to DOTS points, inconveniences with the operating hours of the hospitals, and unfavourable attitudes of some staff at the hospital. On top of that, patients had to cope with stigmatization, fear, and financial hardships that surfaced from TB and DOTS (Yellappa et al 2016:8).

Poverty, relief from symptoms and food insecurity were found to be barriers to DOTS as it was found in a study conducted by Carlsson et al (2014) in Burundi in 2014. The study found that some patients were too poor to access treatment because they had to make a choice between providing for their families or use the resources to go to the health facility for their treatment. The relief from symptoms was also a cause for the patients to interrupt treatment. Some patients failed to continue treatment when they noticed improvement in their symptoms, especially when they felt no more discomfort. Food insecurity was also found as a reason for patients to interrupt treatment. It was found in this study that patients felt that taking medication increased their appetite and they needed to eat more, prompting some patients to interrupt treatment because they felt hungrier (Carlsson et al 2014:6).

#### ***4.3.2.2 Theme 2: The attitudes of health care workers towards patients on the DOTS strategy, which may affect the success of the treatment***

##### ***4.3.2.2.1 Code 2.1: Positive attitudes***

The health care workers who demonstrated a positive attitude towards the TB patients reported that they were like friends with the patients. As a result of this special relationship, patients could even confide in them about their social problems.

“For me, you literally just try to become friends. You develop a friendship. We talk as if we have been friends since way back but then we just became friends. We discuss things. They also come with problems not regarding TB. We discuss and then I help where I can.” (Tran 7 Part 7 **Pg** 7, Enrolled Nurse)

Others reported that a positive attitude becomes spontaneous when you like the patient. The respondents also indicated that they like to be DOTS supporters.

“I like also the patients, I like the DOTS, I like the way how I’m making it because I didn’t know I have to have this pressure to work in the TB room, but since I started. I started to like working here in the TB room.” (Tran 14 Part 14 **Pg** 4 Registered Nurse)

Health care workers still displayed positive attitudes even though some of the TB patients were difficult. They explained that a positive attitude was important to convince the TB patients to come to the clinic and to take the treatment.

“There are patients who are very difficult but the way we approach them. So if the patient is difficult and we approach them in a good way, he or she can still change. He can still calm down and agree.” (Tran 6 Part 6 **Pg** 4, Enrolled Nurse)

Patients on TB treatment are more likely to successfully finish their treatment if they are treated with respect and dignity. Patients who feel that they were treated rudely by health care workers are likely to default treatment in order to avoid another unpleasant encounter (Carlsson et al 2014:5).

The expressions of the health care workers on positive attitudes are supported by a qualitative study done by Carlsson et al (2014) on nurses’ roles and experiences with enhancing adherence to tuberculosis treatment among patients in Burundi. In this study, the participants expressed that a health care worker should treat all people in the same way regardless of whether they are rich or poor. A health worker should try to be close to the patient, be calm, and speak normally in every situation even if the patients are not serene. To love them and treat them with dignity is key to maintain a positive attitude and relationship with patients (Carlsson et al 2014:5-6).

#### 4.3.2.2.2 Code 2.2: Not scolding patients

Health care workers indicated that, although some patients did not adhere to the time of collecting the medication, this did not give permission to them to scold patients. This is because this could, later on, affect them or prevent them from coming back to the DOTS point. Participants gave their views on how to handle difficult situations with care so that patients did not feel guilty of being late to collect their medication.

“Me usually I don’t scold my patients I always try to talk to them giving them like ultimates like you should call me, I give them my cell phone number so that they can call me and I also tell them that I can send my field promoter to take their medicines to them. So you always try to work with them so that you can minimise problems.” (Tran 1 Part 1 **Pg** 3, Enrolled Nurse)

Some participants indicated that even when a patient appears angry, a health care worker should remain calm.

“You as a health worker, you have to calm down. You have to be good with that person so that the person calm down so that the two of you can be on the same level and agree on a time that the person must come next time.” (Tran 8 Part 8 **Pg** 5, TB Field Promoter)

“Not really, we just make them understand the importance of taking the medication.” (Tran 7 Part 7 **Pg** 6, Enrolled Nurse)

When patients are treated with dignity and respect, they feel welcomed. This can contribute to good adherence to treatment. Skinner and Claassens (2016:8) recommended that health care workers and programme managers address inhibitors that prevent patients from initiating and adhering to treatment, such as patients’ knowledge and beliefs, stigma, fear and the inability to access care due to poverty. Health care workers must be aware that their attitudes and practices influence the willingness of patients to initiate and adhere to treatment.

#### 4.3.2.2.3 Code 2.3: (Possible) negative attitude

Long treatments require caring health care workers who can understand the patient when they are in their low days to overcome his/her problems. From the other side, patients who are taking long-term treatments can easily give up when they experience negative attitudes from their health care providers. Health care workers expressed their feelings on what could be seen as a negative attitude towards patients when they reported late to collect their treatment from a DOTS point.

“It can affect the patient... like if a patient can give up to come take their medication because of the manners of the person.” (Tran 5 Part 5 **Pg** 3, TB Field Promoter)

Health care workers expressed that a negative attitude can make a patient change from one clinic to another, avoiding the worker who did not treat him/her well. And, in some instances, some patients could actually stop coming to get the treatment altogether.

“Most of them, they won’t come back. They will say, “no, the nurses are rude there. I won’t take the medication anymore”. Some go to other clinics.” (Tran 6 Part 6 **Pg** 3, Enrolled Nurse)

One health care worker said that sometimes health workers talk angrily to the patient in a way that this can make the patient not to come back to collect their treatment. This behaviour can contribute to a low success rate of the TB treatment.

“Sometimes if you tell the patient to take a tablet, and the patient doesn’t want, then even us, we are also having attitudes like, “yeah, if you don’t want to take your tablets, me I don’t care. You are not my family... that’s why your families think something about you.” (Tran 8 Part 8 **Pg** 3, TB Field Promoter)

The feelings expressed by health care workers in the study are supported by studies conducted on other countries, such as the study conducted by Skinner and Claassens (2016:4), which found that negative attitudes from staff members can create problems. Their findings revealed that, in some facilities where the study was conducted, some respondents felt that some staff did not care much about patients. While in some facilities

patients coming for treatment got seen quickly and efficiently, in other facilities, patients had to wait for a long time to be attended to.

DOT during the entire treatment course is the best method to ensure full adherence and treatment success. This process requires an empathetic attitude from the health care workers and the treatment supporters, who genuinely commit themselves to help the patient to complete the treatment with minimum unpleasant encounters when attending the DOTS points (MoHSS 2012:42).

A qualitative study on factors that contribute to treatment defaulting amongst tuberculosis patients in the Windhoek district of the Khomas region by Endjala, Mohamed and Ashipala (2017) support the expressions obtained from health care workers that the attitudes of the health care workers towards the TB patients were both positive and negative experiences. The negative attitudes contributed, in a way, that patients decided not to continue treatment because of the bad experience they had with the health care worker. In addition, the key informants to the study reported that some defaulters were reluctant to go to the clinic when they learnt that there was a new nurse at the TB DOTS room, as they preferred to be cared for by the nurses they knew. Therefore, once they saw new faces at the clinic, they stopped going there. It was also found that, indeed, there were patients who reported that health care workers were said to be rude and did not provide patients with enough time to ask questions during the visits to the clinics (Endjala et al 2017:18).

#### ***4.3.2.3 Theme 3: The experiences of health care workers when attending to patients on DOTS strategy***

##### ***4.3.2.3.1 Code 3.1: Barriers to DOTS support-negative experiences***

Although some patients are fortunate enough to find good support during their treatment, others are not so lucky. Health care workers, in their experiences working with patients on DOTS, expressed that there are some barriers encountered by patients to DOTS support. One of these barriers, which were commonly identified, was too much movement of patients from one location to another and, in most instances, without the patients' informing their health care workers about their intentions to do so.

“The patients movement in the Khomas region which is just too much even our percentage goes down because the patients are moving too much. It’s like there are too many patients and it looks like we are managing them but it’s just that a person will be diagnosed in Windhoek but then they go home to another city and wont come back any more.” (Tran 6 Part 6 **Pg** 7, Enrolled Nurse)

Other health workers experienced that insufficient personnel allocated at DOTS points in the community constituted a barrier. Such lack of personnel provokes that patients have to wait for long periods of time before they can be attended to, discouraging them from going to the clinic for treatment.

“Currently the problem is that patients are a lot and not everyone can come for DOT and sometimes the patients a lost because of that but...maybe more health workers can be there for DOT. Currently there is no point in the locations in the community so everyone comes to the clinic, and not everyone can come to the clinic.” (Tran 1 Part 1 **Pg** 2, Enrolled Nurse)

Nurses are particularly affected when there is a shortage of staff in the clinic they work at because, in those occasions, they are expected to help in other services that are also provided at the same clinic, leaving the DOTS point unattended. This situation constitutes a barrier to DOTS because, when patients come to the DOTS point and do not find the nurse there, they go back home thinking that there is no one to help them. This situation discourages the already exhausted patient to come back to the DOTS points to collect the treatment.

“There are difficulties like in this case in our work, it’s a bit difficult because you are forever not in the TB room, you are assisting in the clinic doing screenings ... so it will be a bit difficult to DOT your patients”. (Tran 7 Part 7 **Pg** 7, Enrolled Nurse)

The health care workers’ expressions on difficulties in rendering good services to patients and frustrations in doing so during the time they experience shortage of staff are supported by a study conducted in the North West Province, South Africa, by Serapelwane et al (2016). It was found that the shortage of staff was a major barrier to DOTS because, due to the increase in workloads, health workers had difficulties in executing their daily tasks in managing the health services for TB patients. This situation increased the level of stress on the health care workers, which consequently resulted in

burnout, with some staff taking decisions to resign. Consequently, this situation resulted in poor services rendered to the patients, and it was even worse because there was also an increase in the number of patients who needed the services (Serapelwane et al 2016:6).

#### 4.3.2.3.2 *Code 3.2: Health education of difficult patients*

Health care workers give health education to difficult patients in order to make them understand the importance of treatment adherence and the daily follow-up to take pills at the DOTS points. Health care workers said that they deal with a lot of patients who are difficult, but they usually make them understand the risks of not taking the medication. They also talk to family members of patients so that they too can help in making sure that the patients finish the course of their treatment.

“Yes we have a lot of difficult patients, but what we do we go to their houses and we have TB field promoters who go there. We go there and we give health education, continuous health education we talk to the family and the DOT supporter the family members so that they can understand what are the risks.” (Tran 1 Part 1 **Pg** 3, Enrolled Nurse)

Health workers try by all means to understand the patients’ reasons as to why they missed some days without coming to take their medication.

“Some of them are saying, “every day coming here, my legs are paining... the tablets are a lot ... I cannot take them” but as a field promoter, you have to do health education- ongoing health education so that the patient can understand why he or she has to come every day to take his DOTS.” (Tran 8 Part 8 **Pg** 3, TB Field Promoter)

Health education remains one of the most important and appropriate basic strategy through which to promote health and modify perceptions and attitudes to the disease, thereby reducing it at community level. Health education helps the community gain knowledge about specific diseases, the importance of taking the prescribed medication, the duration of the treatment , the side effects of medication, how to proceed if things go wrong during medication, and when to stop medication. It is the process of enabling people to increase control over, and to improve, their health. If all this is done correctly,



then the number of patients who are difficult can be minimised. Patients tend to do well when, at the start of treatment, they get good explanations of their disease and treatment (Zivavamwe 2016:58).

#### 4.3.2.3.3 *Code 3.3: Management of workload*

Health care workers find some difficulties in managing the DOTS points due to the workload. Whenever there is a shortage of staff, they are expected to help with other duties in the same clinic. In some cases, nurses and TB field promoters have arrangements whereby, when the nurse is busy in the clinic and a patient comes, the TB field promoter goes and calls the nurse to attend to the patient.

“There is always communication between the field promoter and the nurse. Sometimes you make appointments to meet them and discuss about the patients. Otherwise, you can just contact each other through mobile telephones.” (Tran 7 Part 7 **Pg** 7, Enrolled Nurse)

Despite these arrangements between nurses and TB field promoters in managing the workload, some nurses found it tiring to move up and down between the TB room and to the rest of the clinic.

“It is very difficult because you are removed from the room, you left there the patient while you are turning your back going to where you are going to help, there is a patient who is coming in and it irritates the patient when you tell them, please wait for a few minutes in about 30 minutes. That 30 minutes might turn into an hour or one and a half hours. You go back when you finish, help the patient and when you go back to help again another patient comes. It’s very difficult.” (Tran 11 Part 11 **Pg** 4, Registered Nurse)

Staff shortage was reported by most participants in this study to be a common occurrence at all health facilities in Windhoek, and they said that this was caused mainly by absenteeism due to illness, workshops, maternity leave, study leave and other reasons. When nurses are not enough in the main clinics, the nurses attending to TB patients are expected to help with other patients. This situation creates a burden on these nurses because they have to leave the TB room and, when TB patients come, they have to call the nurse to come help them. Many nurses have developed strategies to make this

process easier for them and the patients, such as letting patients know in advance that they will have to come early to be attended to or, if they come late, they need to keep in mind that they will have to wait a little longer. The TB patient may be frustrated when they have to wait for the nurse to help them because most of them need to go to work. TB treatment mostly last for 6 month and patients get booked off from work mainly the first month of treatment when they are infectious.

#### 4.3.2.3.4 Code 3.4.-Follow up of defaulters

When a patient does not come to the DOTS points for a certain period of time, health care workers follow up on them to find out what is the problem with the patient. Health care workers, especially the TB field promoters, go to the physical address of the patient and look for him/her. Sometimes they find them, but not always.

“I have to follow up and go to their house but there are things that are beyond our control. If I go and trace and I go there, I will only find the treatment supporter but the patient is not there. Sometimes the patient is there and we talk and try to solve the problem. If the patient is not there I will try to follow up.” (Tran 4 Part 4 **Pg 7**, TB Field Promoter)

Health workers also try to phone their patients, but some of them do not answer if they recognise that the number calling might be from the health care worker at the DOTS point.

“For the defaulter it’s difficult because some times when you go to the house, you find the house is closed and you try also the number like if he defaulted, when he see that number is calling, he can even not pick up the phone.” (Tran 13 Part 13 **Pg 6**, TB Field Promoter)

When a patient does not show up for his daily DOT appointment or collection of the weekly or 2-weekly medicine supply, the health care worker should put the TB treatment card aside as this patient is a potential defaulter. Efforts to trace the patients should start as soon as possible using the resources available. After one week without the patient or his DOTS supporter attending the facility, the health care worker should make an effort to trace the patient or his DOTS supporter. After the patient has been traced, the reasons

for the treatment interruption are established and treatment is continued as before (MoHSS 2012:41).

#### 4.3.2.3.5 Code 3.5: Follow up of defaulters/recommendation

In order to improve the treatment outcome of TB in the Windhoek district of the Khomas Region, health care workers involved on the treatment of TB patients need to put in extra efforts to make this journey as normal as possible, so that patients feel comfortable and free to express themselves on issues that affect their adherence to treatment. The following are some of the recommendations that health care workers made on what they think could assist in keeping patients on treatment without interruptions.

“Know your patients also. If you do not know your patients, a patient can be lost to follow up and you will not even notice because you don’t know them. So you should know very well your patients, know when they are supposed to come and record keeping is also very important.” (Tran 1 Part 1 **Pg** 5, Enrolled Nurse)

Health care workers also emphasised their recommendations on recognizing early enough that the patient did not come to take treatment, and not to wait until they become defaulters.

“If they don’t come today and tomorrow, then I have to start to react today. I have to wonder, what happened to my patient, why is this person not coming? It is possible to know where this patient is staying because I can even take tablets to the person and even find out why this person did not come and drink these tablets.” (Tran 8 Part 8 **Pg** 6, TB Field Promoter)

The MoHSS (2015b:3) of Namibia, in circular no. 23 with the subject of Updates to the Definitions and Reporting System for Tuberculosis, the Ministry describes a TB patient who did not start treatment or whose treatment was interrupted for 2 consecutive months or more as “lost to follow up” (previously known as “defaulters”). In an effort to minimise the default rate in the district, all health care workers involved in the care of TB patients need to be alert in recognizing early enough that a patient did not come after a few days, and not wait until a patient becomes defaulter.

Interrupting treatment may lead to drug resistance. Therefore, it is very important that TB field promoters, in collaboration with TB nurses, identify those patients who are lost to follow up and establish the barriers for taking the treatment. At this point, the dangers of interrupting treatment, must be explained to the patients and then, together with the DOT supporter, take all the necessary measures to overcome the above-mentioned barriers. Working out with the patient and his/her family members or DOT supporter is the best way to avoid interruption of the treatment after the visit (Zivavamwe 2016:78).

#### 4.3.2.3.6 Code 3.6: Language preferences

On their daily engagement with patients on DOTS, health care workers experienced that some patients prefer being spoken to in their mother languages for them to better understand what is being explained to them.

“Previously before I come in there was Mr...and he was Herero speaking, sometimes patients prefer him because of the language issue so that they can talk in Otjiherero.” (Tran 1 Part 1 Pg 5, Enrolled Nurse)

At times, when the health care worker needed to give health education and the patient did not understand the language; the health care worker had to arrange for someone to help translate the information the patient needed to get.

“Most of the time, us we focus, us field promoters, we focus on too much on health education. And then we can also check, sometime we are giving health education to someone who cannot understand the language. And then also, you have to be very much smart on that. So if you see that there is patient who is not very good in that language, you have to look for someone related to that person to come, or who knows that language.” (Tran 2 Part 2 Pg 6, Health Assistant)

Namibia is a multicultural country with different ethnic groups, each of them speaking their own mother language. In many occasions, health care workers treat patients who do not understand the official language and who might not speak same mother language. This creates a barrier in communication. In this situation, the best solution is to find someone to translate the information, which is being conveyed to the patient and vice versa.

#### 4.3.2.3.7 Code 3.7: Convenient place for DOTS/recommendation

Health care workers expressed their views on the convenient place for the patients to receive treatment under DOTS. For patients to successfully complete their treatment and be cured, some health care workers prefer that DOTS should be given at the clinic.

“Like, for the successfully cured, I want my patient to take the medication here, so I can observe when they are drinking because if I give them to take home, I don’t know if they are really swallowing it. They just say they are swallowing but they didn’t. Especially those who are staying alone.” (Tran 5 Part 5 Pg 5, TB Field Promoter)

Other health care workers think that the convenience of DOTS should be in the community, because community leaders can work together with the health workers who are at those DOTS points.

“Sometimes it’s convenient in the community. We can have the community leaders. The community leaders work together with us because as a community leader he knows that this patient of mine is taking TB treatment so I can even take the responsibility of my community TB patient so that we cannot have a lot of TB spreading in our community.” (Tran 8 Part 8 Pg 9, TB Field Promoter)

The Ministry of Health and Social Services of Namibia recommends that DOTS be provided at health facilities that are situated conveniently close to the patient’s home or on his way to work. The patient takes the medicines every day under observation by the health care worker, except on weekends when the patient will take his/her anti-TB medicines at home. Other options to DOTS are community-based DOT, workplace DOT, guardian-based DOT, and community health worker-assisted DOT (MoHSS 2012:44).

## 4.4 OVERVIEW OF THE RESEARCH FINDINGS

The objective of this study was to obtain information on the knowledge, attitudes and experiences of health care workers in public primary health care clinics situated in Windhoek who attend to TB patients on DOTS. The information was gathered through face-to-face interviews with a semi-structured guide. The general findings of the study are that DOTS services, provided by nurses, health assistants and TB field promoters, are

well implemented in the Windhoek district. Although the primary responsibility of the field promoters is to work in the field and to trace patients who missed their appointments, it was found by the study that they also assist in giving the medication to the patients when nurses are not available.

The study found that:

- (1) Nurses had adequate knowledge regarding the TB guidelines, but TB field promoters and health assistants had insufficient knowledge to properly manage the patients according to such guidelines.
- (2) The participants' attitudes towards the DOTS services were more on the positive side than on the negative side. In general, there are good relationships between patients and health care workers.
- (3) Participants shared their experiences on DOTS services and as result, shortage of staff, movements of patients from residential address, alcohol abuse and lack of enough food was repeatedly viewed as a barrier to DOTS services.

#### **4.5 CONCLUSIONS**

This chapter presented and discussed the themes and codes that emerged from the data analysis from the descriptions expressed by the 14 health care workers that participated in the study.

The next chapter will discuss the conclusions drawn from the study, the limitations that occurred during the study, and the recommendations made by the researcher to improve DOTS services and future research on the similar topic.

## **CHAPTER 5**

### **CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 INTRODUCTION**

In this chapter, a summary of the study and its findings are presented, followed by its conclusions, recommendations and limitations. Orientations for future research in the topic are also suggested.

#### **5.2 RESEARCH DESIGN AND METHOD**

The purpose of the study was to explore and describe the knowledge, attitudes, and experiences of health care workers with regard to DOTS services in the Windhoek district of the Khomas region. A qualitative, explorative, descriptive, and contextual design was used to reach the research objectives. The data was obtained through individual interviews with the participants. This data, which was analysed by means of content analysis, provided insight and understanding of health care workers' perspectives on DOTS services. From the analysis, three themes emerged which are discussed in the summary.

The researcher was the main instrument in collecting and interpreting the data.

#### **5.3 SUMMARY AND INTERPRETATION OF THE RESEARCH FINDINGS ACCORDING TO THE RESEARCH THEMES**

The research findings were obtained following the themes that emerged from the analysis, which are:

- The knowledge of health care workers regarding the implementation of DOTS strategy in the Windhoek district of the Khomas region.
- The attitudes of health care workers towards DOTS services when caring for TB patients.

- The experiences of health care workers on DOTS services and their role with TB patients.

### **5.3.1 Theme 1: The knowledge of health care workers regarding the implementation of DOTS strategy in the Windhoek district of the Khomas region**

The first objective was to explore the knowledge of health care workers on TB DOTS in the Windhoek District of the Khomas Region. In order to work in the DOTS room, the health care worker needs to have training on the TB guidelines currently in use in the country. In this sense, it was found in this study that nurses had a superior knowledge compared to that of the TB field promoters and health assistants. It was also observed in this study that some TB field promoters did not get adequate training to properly manage the patients on their own. However, due to shortage of nurses, the researcher found that health assistants and TB field promoters were taking care of patients without the supervision of nurses.

Training on the TB guidelines is a requirement for health care workers to be able to work at a DOTS point and to provide accurate and standardised services to the patients who are diagnosed with TB. Health care workers indicated that they were familiar with the TB guidelines and most of them were trained prior to their posting at a DOTS point. Health care workers also described that they obtained their knowledge on DOTS through trainings and workshops provided by different stakeholders such as: the Khomas Region Directorate or NGOs involved in the fight against TB in the region. Some said they get updates through meetings, feedback from colleagues and by personal interest in reading the annual TB reports.

### **5.3.2 Theme 2: The attitudes of health care workers towards DOTS services when caring for TB patients**

Health care workers' attitudes were found to be more of positive rather than negative towards the DOTS services. In the majority of cases, the expressions used by the health care workers were those of cordial relationships with patients, some of them even receiving phone calls from them at any time of the day, including weekends, whenever these patients found themselves in a troubling situation with regard to their treatment or



to any other issue. The health care workers did not mind being called by the patients and the former were happy to attend to the latter's queries. Health workers expressed that their ultimate goal was to satisfy their patients so that they could finish their treatment within the prescribed period.

It was found that health care workers' attitudes towards patients would determine how these patients progress with the treatment. When the patients' encounter with their health care worker is positive, they have a better adherence to the treatment. On the other hand, when patients are not treated with dignity, they tend to avoid the next unpleasant meeting and, therefore, are more likely to default on the treatment. Health care workers who participated in the study reported that they themselves did not have bad attitudes towards patients on DOTS because they understood the hardships of the patients in their long journey to finish the treatment. However, they reported that patients complained to them about being treated harshly when being seen by someone who was not their usual health care worker. Moreover, health care workers said that, although it could be true that there were some bad attitudes from those health care workers who relieved them when they were out of duty, the majority of TB patients create a bond with the first person who helps them and, then, they develop a negative predisposition towards the new health care worker. TB field promoters reported that sometimes they felt that their efforts were being wasted because, after they trace a defaulter patient and bring him/her to the clinic, the patient was scolded by the nurse on why they were missing their appointments. This situation would make the defaulting patient go missing again.

Health workers reported that there were difficult patients who give them some trouble. In order to deal with them, some health workers said that they had to talk to them frankly about their disease so that they understand that, should they not change their behaviour, they could develop resistance to the treatment which in the majority of cases results in death.

### **5.3.3 Theme 3: The experiences of health care workers on DOTS services and their role with TB patients**

With regard to this theme, health care workers reported that, in their experience in working with DOTS, they found that patients in Windhoek were very mobile. This means that patients changed home addresses very often according to the availability of work

opportunities. This was reported as one of the reasons why patients were defaulting treatment at one particular DOTS point, since they did not inform their health care workers in advance that they were moving out of that area. This gives the impression that patients are defaulting while, in reality, they are taking their medication at another DOTS point, near to their new residential place.

The health care workers reported that there are not enough DOTS points located in the communities. Therefore, DOTS points at the clinics are often overcrowded, and that this situation discourages some patients to go for their treatment as they believe that the locations of the DOTS points are far from their homes.

Record keeping was reported as a problem to the TB focal nurse: When the usual nurse is on vacation or off-duty, the relieving health care worker did not keep good records of what he/she had given and done to the patients. This created an impression that patients missed appointments while, in reality, it was just poor record-keeping on the part of the health care workers.

Most nurses felt that, in several occasions, their work was not up-to-date because they were always expected to go in the main clinic to help out with other patients due to shortage of staff at the clinics. This situation was reported as frustrating because, at the end of the day, they were still being blamed for not compiling their reports on time at the end of the month. The nurses also reported that walking up and down made them very tired. Health workers experienced that, when patients come to the clinic and find that there is no one in the DOTS room, they simply go back without getting their treatment as they think that there is no one to help while, in reality, the health care worker was just out to help at the main clinic.

Health workers experienced that, when giving information to patients on the different DOTS points where they can take their daily treatment, patients showed more interest in taking the medication at the points located in the community compared to the ones in the clinics.

#### **5.4 CONCLUSIONS OF THE STUDY**

Based on the findings, the following conclusions were reached:

- Health care workers working at DOTS points in the Windhoek District of the Khomas Region have good knowledge of the content of the TB guidelines used in the country, with the exception of a few TB field promoters who struggled to express themselves on some questions regarding knowledge.
- The attitude of health care workers towards DOTS was positive rather than negative. It was found that most of the health care workers had established a good relationship with their patients and that, for some of them, this relationship developed into a friendship.
- Some frustration was found among health care workers due to shortage of staff: The DOTS nurse was unable to remain all his/her working hours in the post that he/she has been assigned because there was a need to help out in the main clinic with other duties. This situation was attributed by health care workers as a contributing factor to the default rate of TB in the Windhoek District.
- Long distance to some DOTS points was also mentioned as a barrier to access of treatment; some patients preferred to go to distant DOTS points away from their area of residence in fear of being seen by other community members. They feared stigma by their community.
- Alcohol abuse was related by health care workers as a contributing factor for patients to default on the treatment in the District.
- The patients in Windhoek were found to be very mobile. They change their place of residence very often following possible employment opportunities. Health care workers experienced that in one month a patient could be seen in two or three different clinics collecting their medication.
- TB field promoters were satisfied, in general terms, with the work they are doing but expressed concern that most of them were being used in the clinics to do the work of the nurses, such as registration of patients, collecting sputum, and DOT patients, instead of being in the field tracing defaulters and TB contacts.

## **5.5 RECOMMENDATIONS FOR FURTHER STUDIES**

This study was conducted in the Windhoek District of the Khomas Region with the participation of health care workers of primary health care clinics who were working only in the DOTS rooms. The researcher recommends further studies:

- On factors contributing to mobility of patients during the time they are on TB treatment.
- On strategies to trace patients who left their DOTS site and moved to another site.
- On health care workers satisfaction on DOTS services and implementation.
- On patients' experiences with services rendered to them while on DOTS.
- On evaluating how TB field promoters and health assistants are trained regarding TB guidelines.
- On knowledge and attitudes attained by TB field promoters and health assistants regarding the use of TB guidelines in Windhoek District of Khomas Region.

## **5.6 RECOMMENDATIONS STEMMING FROM THE RESEARCH FINDINGS**

TB treatment outcomes in the Windhoek District of the Khomas Region continue to be among the lowest in the country according to the MoHSS TB report of 2015. In order to improve this situation, the study makes the following recommendations:

- Assess and evaluate the training of TB field promoters and health assistants concerning the implementation of the TB guidelines.
- TB field promoters should be allowed to do their work, which is tracing TB contacts and defaulters who did not show up to collect their treatment, spending more time in the field to this end.
- In collaboration with the community leaders, it is recommended that food parcels should be provided to the TB patients to help with adherence.

## **5.7 LIMITATIONS**

Although the qualitative approach used in this study provided rich and contextualised understanding of health care workers' knowledge, attitudes, and experiences of DOTS in Windhoek, the study will not be generalised to other parts of the country. The study was limited to health care workers who were working in TB DOTS rooms for 6 months or more at the time of the study, in the Windhoek District of the Khomas Region. However, the results can be transferable to other regions of the country that share the same characteristics with the Khomas Region, which is one region/one district (Khommas is one region and one district).

Time and availability of health care workers were also limitations to the study as not all participants could be found ready for the interviews, as they were busy with their daily duties at the clinics.

## **5.8 CLOSING REMARKS**

The aim of the research was to explore the knowledge, attitudes, and experiences of health care workers towards DOTS services in the Windhoek district of the Khomas region.

It is envisaged that the findings of the study will help health care workers and health authorities in the Windhoek district to produce more positive attitudes by health care workers working with TB patients on DOTS. It is also hoped that training will be extended to all health care workers in the district, so that everyone can assist in the DOTS room whenever the focal nurse is not on duty.

It also brings the attention to the relevant authorities about the need of the nurse who is allocated to work in the DOTS room to remain in the room at all times. This nurse should not be used for other duties in the clinic, in this way avoiding the disruption of the TB services.

All these could improve adherence to the treatment and reach the WHO target of cure and success of treatment of TB in the Windhoek district.

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## **ANNEXURES**

# ANNEXURE A

## ETHICAL CLEARANCE CERTIFICATE



### RESEARCH ETHICS COMMITTEE: DEPARTMENT OF HEALTH STUDIES REC-012714-039 (NHERC)

1 February 2017

Dear Mrs CDS Teixeira

**Decision: Ethics Approval**

**HS HDC/597/2017**

Mrs CDS Teixeira

Student: 4865-606-2

Supervisor: Dr MG Makua

Qualification: D Litt et Phil

Joint Supervisor: -

**Name:** Mrs CDS Teixeira

**Proposal:** Health care workers knowledge, attitudes and experiences of dots in the Windhoek District of the Khomas Region (Namibia).

**Qualification:** MPCHS94

Thank you for the application for research ethics approval from the Research Ethics Committee: Department of Health Studies, for the above mentioned research. Final approval is granted for the duration of the research period as indicated in your application.

*The application was reviewed in compliance with the Unisa Policy on Research Ethics by the Research Ethics Committee: Department of Health Studies on 1 February 2017.*

*The proposed research may now commence with the proviso that:*

- 1) The researcher/s will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.*
- 2) Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study, as well as changes in the methodology, should be communicated in writing to the Research Ethics Review Committee, Department of Health Studies. An amended application could be requested if there are substantial changes from the existing proposal, especially if those changes affect any of the study-related risks for the research participants.*



Open Rubric

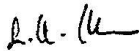
University of South Africa  
Preller Street, Muckleneuk Ridge, City of Tshwane  
PO Box 392 UNISA 0003 South Africa  
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150  
www.unisa.ac.za

- 3) *The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study.*
- 4) *[Stipulate any reporting requirements if applicable].*

*Note:*

*The reference numbers [top middle and right corner of this communiqué] should be clearly indicated on all forms of communication [e.g. Webmail, E-mail messages, letters] with the intended research participants, as well as with the Research Ethics Committee: Department of Health Studies.*

Kind regards,



Prof L Roets  
CHAIRPERSON  
[roetsl@unisa.ac.za](mailto:roetsl@unisa.ac.za)



Prof MM Moleki  
ACADEMIC CHAIRPERSON  
[molekmm@unisa.ac.za](mailto:molekmm@unisa.ac.za)



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**ANNEXURE B**  
**REQUEST FOR PERMISSION TO CONDUCT RESEARCH AT THE**  
**MINISTRY OF HEALTH AND SOCIAL SERVICES OF THE REPUBLIC**  
**OF NAMIBIA**

**HEALTH CARE WORKERS KNOWLEDGE, ATTITUDES AND EXPERIENCES OF**  
**DOTS IN THE WINDHOEK DISTRICT OF THE KHOMAS REGION (NAMIBIA)**

7<sup>th</sup> of January 2017

Carolina D S Teixeira  
Robert Mugabe Clinic  
Windhoek

Cell: 0812854067

E-mail: 48656062@mylife.unisa.ac.za

Dr Andreas Mwoombola  
Permanent Secretary  
Ministry of Health and Social Services  
Private Bag 13198  
Windhoek

Dear Permanent Secretary

My name is Carolina Dulce Songo Teixeira and I am doing research towards a Masters Degree with Dr M G Makua, a lecturer, in the Department of Health Studies at the University of South Africa. I am requesting for permission to conduct the research entitled "Health care workers knowledge, attitudes and experiences of Directly Observed Treatment Strategy of tuberculosis (DOTS) in the Windhoek District of the Khomas Region (Namibia)".

The aim of the study is to explore and describe the knowledge, attitudes and experiences of health care workers who care for patients who receive treatment under DOTS at public health facilities in the Windhoek District of the Khomas Region.

The study will entail collecting information from the abovementioned health care workers through semi-structured interviews and an audio recorder device will be used to record the interviews.

The benefits of this study are to find out information which could contribute to improve the treatment outcomes of TB under the DOTS strategies in the region.

There are not any potential risks to the participating health care workers.

Feedback procedure will entail requesting the findings of this study from the University of South Africa.

Yours sincerely

**Researcher's signature:**



Cell. 0812854067

E-mail: [carolinasongoteixeira@gmail.com](mailto:carolinasongoteixeira@gmail.com)

**ANNEXURE C**  
**LETTER OF APPROVAL FROM MINISTRY OF HEALTH AND SOCIAL  
SERVICES TO CONDUCT THE STUDY**



**REPUBLIC OF NAMIBIA**

*Ministry of Health and Social Services*

Private Bag 13198  
Windhoek  
Namibia

Ministerial Building  
Harvey Street  
Windhoek

Tel: 061 – 203 2562  
Fax: 061 – 222558  
E-mail: [hnangombe@gmail.com](mailto:hnangombe@gmail.com)

**OFFICE OF THE PERMANENT SECRETARY**

Ref: 17/3/3

Enquiries: Dr. H. Nangombe

Date: 16 May 2017

**Ms. Carolina D. S. Teixeira**  
University of South Africa (UNISA)  
PO Box 21811  
Windhoek  
Namibia

Dear Ms. Teixeira

**Re: Health care workers knowledge, attitudes and experiences of dots in the Windhoek District of the Khomas Region (Namibia)**

1. Reference is made to your application to conduct the above-mentioned study.
2. The proposal has been evaluated and found to have merit.
3. **Kindly be informed that permission to conduct the study has been granted under the following conditions:**
  - 3.1 The data to be collected must only be used for academic purpose;
  - 3.2 No other data should be collected other than the data stated in the proposal;
  - 3.3 Stipulated ethical considerations in the protocol related to the protection of Human Subjects should be observed and adhered to, any violation thereof will lead to termination of the study at any stage;

- 3.4 A quarterly report to be submitted to the Ministry's Research Unit;
- 3.5 Preliminary findings to be submitted upon completion of the study;
- 3.6 Final report to be submitted upon completion of the study;
- 3.7 Separate permission should be sought from the Ministry for the publication of the findings.

Yours sincerely,

  
**Andreas Mwoombola (Dr)**  
**Permanent Secretary**



*"Health for All"*

**ANNEXURE D**  
**REQUEST FOR PERMISSION TO CONDUCT A RESEARCH AT THE**  
**WINDHOEK DISTRICT OF THE KHOMAS REGION HEALTH**  
**DIRECTORATE**

**“HEALTH CARE WORKERS KNOWLEDGE, ATTITUDES AND EXPERIENCES OF  
DIRECTLY OBSERVED TREATMENT STRATEGY OF TUBERCULOSIS IN THE  
WINDHOEK DISTRICT OF THE KHOMAS REGION (NAMIBIA)**

7<sup>th</sup> November 2016

Carolina D S Teixeira  
Robert Mugabe Clinic  
Windhoek

Cell: 0812854067

E-mail: 48656062@mylife.unisa.ac.za

Director: Khomas Region  
Ms E Muremi

Dear Director

I, Carolina Dulce Songo Teixeira, currently doing a research with Dr M G Makua, a lecturer in the Department of Health Studies at the University of South Africa towards a Master Degree. We are inviting you to participate in a study entitled “Health care workers knowledge, attitudes and experiences of Directly Observed Treatment Strategy of tuberculosis in the Windhoek District of the Khomas Region (Namibia)”.

The aim of the study is to find information on health care workers attitudes, experiences and knowledge on DOTS in Windhoek District of Khomas region and how it contributes to the TB treatment outcomes.

Your clinic has been selected because it is located in the region where the study is taking place.

The study will entail collecting information through semi-structured interviews and an audio recorder device will be used to record the interviews.

The benefits of this study are to find out information which could contribute to improve the treatment outcomes of DOTS in the region.

This research does not anticipate any risks to participants as it does not involve any interventions.

Yours sincerely

**Researcher’s signature:**



Cell. 0812854067

E-mail: [carolinasongoteixeira@gmail.com](mailto:carolinasongoteixeira@gmail.com)

**ANNEXURE E**  
**LETTER OF APPROVAL FROM KHOMAS REGION TO CONDUCT THE**  
**STUDY**



9 - 0/0007

**REPUBLIC OF NAMIBIA**

**Ministry of Health and Social Services**

Private Bag 13322  
Windhoek  
Namibia  
Enq: HRM

Khomas Region Directorate  
Florence Nightingale Street  
Windhoek  
Ref: PF

Tel: 061 - 2035011  
Fax: 061 - 235997  
Date: 12 June 2017

**OFFICE OF THE DIRECTOR**

**STAFF MATTER: CONFIDENTIAL**


**MRS. CAROLINA D.S. TEIXEIRA**  
**ROBERT MUGABE CLINIC**  
**KHOMAS REGIONAL**  
**WINDHOEK**

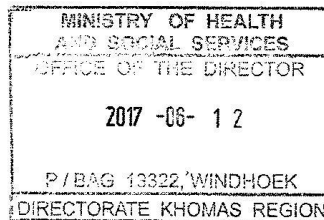
**Dear Mrs. Teixeira**

I have pleasure in informing you that approval has been granted for you to do research on Health Care Workers in the Tuberculosis (TB) Department for a period of two (2) weeks from 19 June until 30 June 2017, at all the Health facilities in the Directorate: Khomas Region.

The office wishes you success with your research.

Yours sincerely

  
**MS. ELIZABETH MUREMI**  
**DIRECTOR: KHOMAS REGION**



*"Health for All"*

## **ANNEXURE F**

### **PARTICIPANTS INFORMATION SHEET**

Date: .....

Title: **HEALTH CARE WORKERS KNOWLEDGE, ATTITUDES AND EXPERIENCES OF DIRECTLY OBSERVED TREATMENT STRATEGY OF TUBERCULOSIS IN THE WINDHOEK DISTRICT OF THE KHOMAS REGION (NAMIBIA)**

**Dear Prospective Participant**

My name is Carolina Dulce Songo Teixeira and I am doing research towards a Masters Degree with **Dr MG Makua**, a lecturer, in the Department of Health Studies at the University of South Africa. We are inviting you to participate in a study entitled "Health care workers knowledge, attitudes and experiences of Directly Observed Treatment Strategy of tuberculosis in the Windhoek District of the Khomas Region (Namibia)".

#### **WHAT IS THE PURPOSE OF THE STUDY?**

The purpose of the study is to explore and describe the knowledge, attitudes and experiences of health care workers who care for patients who receive treatment under DOTS at public health facilities in the Windhoek District of the Khomas Region.

#### **WHY AM I BEING INVITED TO PARTICIPATE?**

The study is targeting Health care workers who are currently working at health facilities which provide Directly Observed Treatment Strategy (DOTS) in Windhoek. You have been chosen through a purposive sampling process to participate in the study.

#### **WHAT IS THE NATURE OF MY PARTICIPATION IN THIS STUDY?**

The study involves collecting information from you as a participant through a semi-structured interview guide.

#### **CAN I WITHDRAW FROM THIS STUDY EVEN AFTER HAVING AGREED TO PARTICIPATE?**

You are under no obligation to consent to participation and there is no penalty or loss of benefit for non-participation. If you do decide to take part, you will be given this information sheet to keep and be asked to sign a written consent form. You are free to withdraw at any time and without giving a reason except if such withdrawal intent is after you have submitted the non-identifiable completed scale.

## **WHAT ARE THE POTENTIAL BENEFITS OF TAKING PART IN THIS STUDY?**

This study may not benefit you directly immediately but may have future implications on practice, since it will lead to the improvement of tuberculosis treatment outcomes.

## **ARE THERE ANY NEGATIVE CONSEQUENCES FOR ME IF I PARTICIPATE IN THE RESEARCH PROJECT?**

There are no foreseeable risks of harm or side-effects to the potential participants.

## **WILL THE INFORMATION THAT I CONVEY TO THE RESEARCHER AND MY IDENTITY BE KEPT CONFIDENTIAL?**

Anonymity will be ensured since your name will not be recorded anywhere and no one will be able to connect you to the answers you give. Your anonymous data may be used for other purposes, such as a research report, journal articles and/or conference proceedings. A report of the study may be submitted for publication, but individual participants will not be identifiable in such a report. Confidentiality is assured since no one apart from the researcher and identified members of the research team, will know about your involvement in this research. Your answers will be given a code number or a pseudonym and you will be referred to in this way in the data, any publications, or other research reporting methods such as conference proceedings.

Your answers may be reviewed by people responsible for making sure that research is done properly, including the transcriber, external coder, and members of the Research Ethics Review Committee. Otherwise, records that identify you will be available only to people working on the study, unless you give permission for other people to see the records.

## **HOW WILL THE RESEARCHER(S) PROTECT THE SECURITY OF DATA?**

Hard copies of your answers will be stored by the researcher for a period of five years in a locked cupboard/filing cabinet in the data storage strong room for future research or academic purposes. Electronic information will be stored on a password protected computer. Future use of the stored data will be subject to further Research Ethics Review and approval if applicable. The stored hard copies of information will be destroyed by shredding, whilst electronic copies will be permanently deleted from the hard drive of the computer through the use of a relevant software programme.

## **WILL I RECEIVE PAYMENT OR ANY INCENTIVES FOR PARTICIPATING IN THIS STUDY?**

Your participation in this study is totally voluntary with no forms of compensation.

## **HAS THE STUDY RECEIVED ETHICS APPROVAL**

This study has received written approval from the Ministry of Health and Social Services of Namibia. The researcher will avail a copy of the approval letter if you so wish.

## **HOW WILL I BE INFORMED OF THE FINDINGS/RESULTS OF THE RESEARCH?**

If you would like to be informed of the final research findings, please contact...., email address The findings will be accessible from midyear 2019. Should you require any further information or want to contact the researcher about any aspect of this study, please contact .....

Should you have concerns about the way in which the research has been conducted, you may contact Dr MG Makua, +27124296524, e-mail address [makuamg@unisa.ac.za](mailto:makuamg@unisa.ac.za).

Thank you for taking time to read this information sheet and for participating in this study.

Thank you.

**Signature**



**ANNEXURE G**  
**INFORMED CONSENT**

I, \_\_\_\_\_ (participant name), confirm that the person asking my consent to take part in this research has told me about the nature, procedure, potential benefits and anticipated inconvenience of participation.

I have read (or had explained to me) and understood the study as explained in the information sheet.

I have had sufficient opportunity to ask questions and am prepared to participate in the study.

I understand that my participation is voluntary and that I am free to withdraw at any time without penalty (if applicable).

I am aware that the findings of this study will be processed into a research report, journal publications and/or conference proceedings, but that my participation will be kept confidential unless otherwise specified.

I agree to the recording of the psychosocial scale.

I have received a signed copy of the informed consent agreement.

Participant Name & Surname..... (please print)

Participant Signature.....Date.....

Researcher's Name & Surname.....(please print)

Researcher's signature.....Date.....

## **ANNEXURE H**

### **INTERVIEW GUIDE FOR HEALTH CARE WORKERS ON KNOWLEDGE, ATTITUDES AND EXPERIENCES ON TB DOTS IN WINDHOEK DISTRICT OF KHOMAS REGION**

This exercise is a partial fulfilment of the academic requirement for the award of my Master degree in Nursing Science at the University of South Africa. I would like to ask you to participate and answer my questions to the best of your knowledge. Remember that the information is entirely confidential. I am not going to record your name, hence there will be no way to link your responses to your name. Your responses will be reported only as aggregate data with other respondents. However, your participation is voluntary and you are free to withdraw any time from the study without any negative effects to you. Your cooperation and assistance is highly appreciated. The interview will be approximately one hour.

3-Switch off the phones and sit at a comfortable place, where there are no disturbances.

1- Introduction: Greet the participant and introduce myself by my name surname and my work place. Explain the aim of the interview and explain that interview is voluntary. Obtain the written consent from the participant. Explain to the participant that the results of the study will be used only for the stated purposes

2- Find out the participant's professional categories (Registered Nurse, Enrolled Nurse, Health Assistant, and TB Field Promoter), place of work and how many years working at the DOTS clinic.

5- Ask health care workers about their knowledge regarding TB DOTS in Windhoek  
Prompt

- What is DOTS?
- What is a DOT supporter?
- Duration of TB treatment in Namibia.
- Different phases of TB treatment and their duration.

- How long does it take for patients to convert from smear positive to smear negative?
- How long does a smear positive patient who start treatment remains infectious?
- Names of the first line drugs of TB treatment in Namibia.
- What are the most common side effects of TB drugs?
- How TB is transmitted?
- Training on latest Namibian guidelines.
- In your opinion, how could DOTS services improve in Wndhoek?

4- Ask open ended questions on health workers attitudes.

- Would you please describe your attitude towards TB DOTS? And, if needed, prompt and probe concentrating on the objectives of the study.
- Would you please describe what are your feelings and reactions towards TB patients who are difficult to handle and those who report late to take their medication, when there is shortage of staff at the health facilities, when patient gets rude to the health care worker? And how do you go about defaulters reporting at the clinic after missing an appointment or two.

6- Ask health workers about their experience with TB patients on DOTS.

Prompt

- For how long health care worker works with TB patients on DOTS.
- Patient preferences.
- Convenience of DOTS to patient and health care worker.
- Build relationship between healthcare worker and patient.
- Difficulties with working on TB DOTS points.

Thank you for your participation

# ANNEXURE I

## UNCODED TRANSCRIPTS

### Participant 1

#### **Interview guide for health care workers on knowledge, attitudes and experiences on TB dots in Windhoek District of Khomas Region.**

This exercise is a partial fulfilment of the academic requirement for the award of my Master degree in Nursing Science by the University of South Africa. I would like to ask you to participate and answer my questions to the best of your knowledge. Remember that the information is entirely confidential. I am not going to record your name, hence there will be no way to link your responses to your name. Your responses will be reported only as aggregate data with other respondents. However, your participation is voluntary and you are free to withdraw at any time from the study without any negative effects to you. Your cooperation and assistance is highly appreciated. The interview will take 30 minutes, approximately.

1-Switch off the phones and sit at a comfortable place, where there are no disturbances.

2- Introduction: Greet the participant and introduce myself by my name, surname and work place. Explain the aim of the interview and explain that interview is voluntary. Obtain the written consent from the participant. Explain to the participant that the results of the study will be used only for the stated purposes which is for study purposes only.

3- Find out the following information about the participant:

- professional category: Enrolled Nurse.
- place of work: Otjomuise clinic
- years working at the DOTS clinic: 2 years
- gender: female

4- Ask health care workers about their knowledge regarding TB DOTS in Windhoek.

**Researcher (R):** What is DOTS?

**Participant (P):** DOTS is direct observation of TB treatment, you watch the patient drink the medication. Seeing the patient taking the tablets

**R:** What is a DOT supporter?

**P:** Is someone who help the patient and see him taking the tablets and someone support the patient. With treatment

**R:** For how long does a TB patient take medication in Namibia?

**P:** It takes about 6 month if it's a new patient and 8 month if is a re-treatment and its also depends on the doctor if it's a MDR patient it takes about 2 years.

**R:** Can you please tell me what are the different phases of TB treatment and the duration of each of them?

**P:** we have initial phase and continuation phase. Initial is just usually 2 month and then the rest of the 4 month is the continuation phase.

**R:** How long does it take for patients to convert from smear positive to smear negative?

**P:** It depends sometimes it just take one month and then on the second sputum it is already converted.

**R:** How long does a smear positive patient who start treatment remains infectious?

**P:** It takes about 2 weeks infectious.

**R:** Can you please tell me the names of the first line drugs of TB treatment in Namibia.

**P:** We have a combination which is RHZE which is a combination of Rifampicin, Pyrazinamide, Ethambutol, and Isoniazide.

**R:** What are the most common side effects of TB drugs?

**P:** usually its skin rashes, vomiting and nauseas what else? Those ones are common.

**R:** Would you tell me how TB is transmitted?

**P:** It's airborne, so any one can get it .you breath in the air and you get it.

**R:** What is your latest training on TB where you recently trained?

**P:** I was trained two years ago on TB guidelines on the latest one

**R:** In your opinion, how could DOTS services be improve in Wndhoek?

**P:** Currently the problem is that patients are a lot and not everyone can come for DOT and sometimes the patients a lost because of that but...maybe more health workers can be there for DOT. Currently there is no point in the locations in the community so everyone comes to the clinic, and not everyone can come to the clinic. Currently someone supposed to be at a DOT point in the community but there are some problems so everyone comes to the clinic. so they should open more DOT points in the community itself currently we only have the clinic as a DOT point.

## **5- Ask open-ended questions on health workers' attitudes.**

Now we are going to talk about health care workers' attitudes on DOTS.

**R:** Would you please tell me what is your attitude towards TB DOTS?

**P:** It's important to have positive attitudes towards patients for them to come. If you have negative attitudes towards the patient .this patients come everyday to drink their

medicines if you are bad to them they will not come. They will feel bad to come. So you should always have a good attitude towards your patients so that they can come complete their treatment. so if you have bad attitude patients will not come to drink their medication..

**R:** Would you please describe what are your feelings towards patients who are difficult to handle? Sometimes we all experience how some patients are difficult to handle. What is your experience on that?

**P:** Yes we have a lot of difficult patients, but what we do we go to their houses and we have TB field promoters who go there. We go there and we give health education, continuous health education we talk to the family and the DOT supporter the family members so that they can understand what are the risks but for now most of our patients are difficult mostly the ones who do not have food and are drinking alcohol but for us we are just talking a lot every time the patient come. But if the patient is difficult maybe just something just behind that. We usually sometimes we refer them to social workers. We refer them just for them to be talked to because someone cannot just be difficult just like that.

**R:** So what about those who come late to the clinic how do you receive them?

**P:** Me usually I don't scold my patients I always try to talk to them giving them like ultimates like you should call me, I give them my cell phone number so that they can call me . and I also tell them that I can send my field promoter to take their medicines to them. So you always try to work with them so that you can minimise problems.

**R:** Where there any example where by you had a very difficult patient and you had to lose your patience?

**P:** Ha, ha, ha, not yet.

**R:** And when there is a shortage of staff how do you handle the situation with all the pressure of work?

**P:** If we do, in the mornings we come to help the patients because the TB patients are more in the mornings because they have to go to work, so we are trying to help them and we are also starting 7 o'clock so when we finish then we go help others in the clinic. I don't feel too much pressure.

**R:** How do you go about the defaulters who report to the clinic after missing 2 to 3 appointments?

**P:** Usually before they become defaulters they are lost to follow up. so before the patient become a lost to follow up we are doing everything in our power. We are working with our DTLS to call the patient and if we have the address. Because we have a big

problem with the addresses they do not have erf numbers they don't have street numbers in this location, but we try to trace them before they are defaulters but they always come back.

**6- Ask health workers about their experience with TB patients on DOTS.**

**R:** Ok we are going to move to the next topic, but before that would you want to add more on attitudes? Did you see anyone among our own colleagues with bad attitudes towards patients?

**P:** No we are all really trying to do our best to help our patients because the burden of TB is becoming too much at our clinic so we really have to work hard to improve.

**R:** While we are still there do you have a lot of patients on DOTS?

**P:** No we don't have because many of them are working so we give them treatment for a week. mostly we have only new patients on DOT so when they start drinking their medicines nicely we give them for one week to see if they mess up we put them back on DOT.

**7- Health care workers' experiences with DOTS in Windhoek – Khomas Region.**

**R:** What about your experiences working with DOTS do you feel that you have more experience since you have been there for long time?

**P:** Yes I do. In the beginning it was difficult because you don't know the medications you don't know the patients but as you see them everyday you will know your patients because each one have a different problem, so the longer you work with the TB DOTS you gain more experience.

**R:** Do you think patients have preferences when it comes to health care worker who should assist them?

**P:** Yes they do. They really do. Previously before I come in there was Mr...and he was Herero speaking, sometimes patients prefer him because of the language issue so that they can talk in Otjiherero.

**R:** Oh I see so the preferences are due to language barrier?

**P:** Yes some of them prefer to talk in their language.

**R:** In your opinion what is the convenient place for DOTS to the patients

**P:** I think the convenient place will be in the location so in the community, because the clinic is a bit far from the community. so they prefer a DOT point inside the community.

**R:** How do you build a relationship with your patients looking at the time you spend with them?

**P:** You should try to conversate with the patients smile with the patient so that the patient becomes comfortable. Just reassure the patient, make the patient trust you. If the patients don't trust you he will not be open to you even if something bothers them they will not tell you. So you should always try to conversate with them

**R:** Oh I see. So if you are friendly to them they are more likely to finish their treatment.

**P:** Ya, you will also have less defaulters. Know your patients also. if you do not know your patients a patient can be lost to follow up and you will not even notice because you don't know them. So you should know very well your patients, know when they are supposed to come and record keeping is also very important.

**R:** In your opinion what do you think are the difficulties in working with DOTS?

**P:** Just like we said the difficult patients the patients not coming on time, sometimes we also have problems with record keeping also, because I am not working alone there if I don't record and the next person just give the medication without recording so record keeping is just a big problem there.

**R:** Oh I see so there are some colleagues who just issue medication without recording?

**P:** Ya, if I am not there people from the clinic will just dispense the medication without writing and they don't even know the all procedure. Because we have two places where we have to record you will not know whether the patient was given medication or not and this can come out as an argument between me and the patient. So this just becomes a problem. but we are putting things into place so that we can just work together.

Thank you for your participation



## Participant 2

### 4- Ask health care workers about their knowledge regarding TB DOTS in Windhoek.

**Researcher (R):** What do you understand by DOTS? What is DOTS?

**Participant (P):** DOTS, uh, direct observe treatment strategies.

**R:** Can you elaborate a little bit more on it?

**P:** It's humm, because, the reason why they established DOT, is important because, you know, patients have to come to the DOT point, the patient when he comes or she comes there, you give direct monitor that it's true that the patient is taking the treatment, she's putting in the mouth or she's drinking it or swallow it- so to avoid any complication because some patient, they chose some medications when they are alone at home. So they chose which one, sometimes the other medication gives them problems and they chose that this one's good, this one's not good. So we establish DOT so that the DOT can help now the patients or can help us- our work so that we can achieve our goal.

**R:** Okay, so what is the meaning of DOT supporter?

**P:** Yeah, a DOT supporter is someone who is working at the DOT point.

**R:** Okay, and that person, what characteristic the person has to have to work at a DOTS point?

**P:** It's suppose to be, uh... they're suppose to know about TB, the importance of treatment for TB and also suppose to, a person who can be able to communicate to people in community and who can be able to have good attitude to people. Yeah, and also knows background of people and also have love to people.

**R:** Mhmm, I see... That's very good. And about the duration of TB treatment in Namibia? Can you tell me how long a patient should stay on treatment?

**P:** Actually, because we are... we are... we are having this uh, first line of TB ... something like uh, six month.Yeah, some eight month.Those who are having pulmonary TB six month. Pulmonary TB can go to eight month. And other also MDR, XDR can be two, two years, one year, it depend.

**R:** Oh, okay, that's very good. Okay, can you please tell me the phases of TB treatment and their duration? What type of phases you have in TB.

**P:** It's just like I said, we are having the TB treatment.

**R:** Yes...

**P:** So we are having the... I think we are having two to three regimens. Yeah. You are talking about most the different treatments.

**R:** Yeah, the time frame from the... when they start and when they continue... what are the phases they go through?

**P:** Okay, the phases we are having is pulmonary TB, which is for six months. So the person, he can drink RZE from the beginning..for six months.

**R:** For RHZE?

**P:** Oh, for RHZE, is uh... let me say its two months.

**R:** Alright... and the other phase?

**P:** The other phase is four months. It's four to six months.

**R:** Okay, how do you call the other phase?

**P:** It's the...

**R:** The other phase, how is it called? The first phase is called initial and the other...

**P:** Oh, continuation phase.

**R:** Okay... continuation phase- which goes up to how long?

**P:** Continuation phase is two months... Its four months, sorry.

**R:** Four months, okay. So, do you know for how long does a patient take from a positive smear to a negative smear? Let's say, the patient start treatment today, the smear is positive, how long does it take while he's taking medication for it to be negative?

**P:** Oh yeah... it.. it's actually not the... it depends on how the TB was in the body but, if we are talking about... like that uh, a person can drink two month, on initial phase, so maybe one month and maybe one week there. Then the sputum can be negative.

**R:** Oh okay... so it take around a month for it to be negative. Alright. Okay, and how long does a smear positive patient who start treatment is infectious? How long does a person still giving the bacteria to persons around them. How long? How long while I start treatment today, does it take for a person...

**P:** Actually, it takes a week.

**R:** A week?

**P:** Yeah, if a person is drinking one week, then the person is no longer contagious to other people.

**R:** Oh okay. Um, would you please tell me the names of some first line drugs for TB in Namibia? The names of the medication we give at DOT.

**P:** Oh yeah RHE, which is a rifampicine, then izoniasid ethambutol... and yeah. How many I give you?

**R:** Three. Rifampicine, izonised, ethambutol.

**P:** Yeah, and pirazinamine.

**R:** Ok, do you know what are the common side effects of these drugs are?

**P:** The side effects of the drugs?

**R:** Yes, the TB medicines.

**P:** Yeah, sometimes it depends to the different people. Sometimes skin rashes.

**R:** Mhmm, depend to people.

**P:** Yeah, it's not.. we don't have the same side effect. Depend on the blood of the people. Sometime is the skin rash, the eye can change and the common one is the urine changes.

**R:** Alright, and um, how TB is transmitted? Could you please...

**P:** Yeah TB is... we talk about TB, we are talking about the airborne disease. So it's whereby TB can be transmitted when a person is coughing, is not on the treatment and it's an active TB and he is coughing without covering the mouth and it goes in the air where other people can be infected. That's how it goes.

**R:** Okay, so it's transmitted through air circulation. Okay, were you trained in the latest Namibian TB guidelines?

**P:** Yeah I have been trained.

**R:** And when was that?

**P:** Let me say last year...something like, the beginning of last year.

**R:** Okay, so you are trained in the new Namibian guide lines. Okay. And um, in your opinion, how could DOT services be improved in Namibia? If there is a problem. Let me start by saying; is there any problem currently with the DOTS services?

**P:** Yes. The ministry of health and social services does not help DOTS. That's the thing. DOTS, we depend on non-governmental organisations. Like COHENA in the Khomas region. They are doing all the things alone as DOTS...

**R:** So you are saying the government does not have established DOT points, only the NGO's.

**P:** So for example in Otjomuise we don't have DOT. Okay, we have DOT at the clinic, we don't DOT in the community whereby we call it a DOT point. People come there and spend time... drink their medication freely and without even being like "Okay, hurry up" if other people come and sit down or something like that, like a dog. A relationship with the clients at a DOT point. When they drink the medication, you

talk about anything else. That's the importance of DOT in the community. Currently, we are having DOT, but we are having DOT at a clinic so... they are not alone. They have to drink quickly and go.

**R:** Okay I see. Okay and then how in your opinion, this can be improved?

**P:** So actually, in my opinion, this to be improved, I think... yeah we must maybe ask a lot of uh... organisation, we must establish people to also... TB is not something that is complicated if you are trained. We have a lot of field promoters who can help for TB. We must establish DOT points in the community.

**R:** In your opinion, you think this field promoter should be employed by government?

**P:** Yes. Because sometime we... non governmental organisation does not have now, donors, money, they retrench. And then the community have a problem because when they will recruit again, TB has increased.

**R:** Yes, so when they close down because of funding, everything closes and stops.

**P:** Or sometime they do not close, but they stop. The people they are not getting food, so it's still a problem. People they don't come spend time at the DOT point because they are hungry. They need to go and hustle, whatever, zula their savings.

**R:** Okay, hahaha, I understand. I see.

**P:** Yeah, that's the problem.

**R:** Thank you very much for that, it was very comprehensive. So we can move to the other topic here. Is about healthcare worker's attitudes towards patients and DOTS services. Now, what attitude do you have towards this TB DOTS?

**P:** Yeah, you see, just like I said earlier that, TB work, you have to be dedicated and committed. And you have to be interested and love your work- love our people. Love the people that you are treating. You know, sometime the challenges to health workers is attitude. You understand? For an example, when I used to work at a... I don't whether I have to mention, or something... at the other health facilities here in Windhoek, so you can go and trace, because I'm talking about in the field now, I have to go and trace. And then I found the patients in the community. I convinced the patients, because the patients did not go to the clinic. I tell him the advantage of the medication, the disadvantages of stopping, and those types of things... the form of the resistance. Or sometimes they patients say, "I will only go if that nurse is not there".

**R:** Oh!

**P:** You see now? And so you ask, why? Because the attitude is not good. "I feel bad when I go there because the way that they treat me." Sometime you work hard to

trust a patient in the community, you take to the clinic, to the nurse and the nurse is maybe just welcoming a patient, they say... yeah, "where were you? you will die! Why did you run? Now you are feeling pain. Now you are coming". You see now? Those type of things. Then again the person default, then you tell him again- it don't feel also good. It's a respect. I bring a person, we all must treat the person accordingly. Welcome the person. People they are sick. People they are sensitive. We need to handle them carefully.

**R:** So you mean the way health workers treat patients, it determines their treatment?.

**P:** Yes! A person cannot come to a place where there is no love and respect or there is no caring too much most of the time.

**R:** Yes. And uh, would you please describe, what are your feelings and reactions toward TB patients who are maybe seen as difficult? What do you... what is your feelings when a person come, you see they missed the appointment, didn't take their medication... how do you go about that?

**P:** So most of the time, when a patient comes at the first time, the letter is not committed. It's lack of maybe health education. Most of the time, us we focus, us field promoters, we focus on too much on health education. And then we can also check, sometime we are giving health education to someone who cannot understand the language. And then also, you have to be very much smart on that. So if you see that there is patient who is not very good in that language, you have to look for someone related to that person to come, or who knows that language. So you have to put in the familiy member. Because if the patient is not active or not taking the medication, you know the outcome of that exactly. This person is not going to form up drug resistance and also maybe a person can lose his life. So it is bad. You feel bad. So we work hard to found what is the problem. Sometime the person is drinking alcohol, then you know exactly where a person is taking alcohol. You know that in the community, this person is taking alcohol somewhere . You have to go and talk to those people selling alcohol to please... "this person is on the treatment, do your best alsoto help this person to not drink alcohol and to come to the DOT point". It's what we do.

**R:** Yes, and if a patient is rude to you? How do you handle that situation?

**P:** Yeah people are having their favourite people. You cannot force yourself to someone who is rude. Maybe they do not like you. You understand? So if I found other means who can help that patient- your colleagues or someone you can train. That's why we are having good supporters. A supporter can be one of his family

members. So you can call that family member or a friend. You can train that friend like “Okay, this person is doing this medication because we are not on good terms with this patient. Do this and do this and do this”. So that person can also help.

**R:** SO you say you can ask another person to treat that patient. Okay, that’s very good. And how do you go about patients who miss their appointments? You are there, you did your best, this patient now doesn’t come. How do you go about it?

**P:** So we are having a DOT supporter at home, we are having DOT supporter at the health facility employed now. Employed by the government or by the Penuca TB programme or cohena. So if the person does not come to you or the DOTpoint. So because TB, you have to build a relationship with the family or a friend for that patient at home. So if a person is not coming, then you can just like I said, have someone in the community to be a DOT supporter at home. Someone who can have the medication at home.

**R:** So you mean the family member is the one who comes to the clinic?

**P:** Yes. And also there is a form. A DOT form when that family member give also a mark. When he come, he come with and information DOT form. We ask to see that, okay, they mark they indicate on the DOT form. So that we can also share whatever we share with that person.

**R:** Okay, that’s wonderful. Um, okay. W move now to the other topic here about the experience on DOTS. So we are just going to talk about like, for how long health worker works with TB DOTS? How long are you working with DOTS?

**P:** So you mean, you’re talking directly to me? For how long?

**R:** Yes, for how long are you’ve been working with these DOTS?

**P:** So me I’ve been working with these DOTS since the first of September 2006.

**R:** Oh! That’s very long.

**P:** Yes!

**R:** So you are very much experienced about these DOTS.

**P:** Yeah. It’s my work.

**R:** 2006 its now 11 years.

**P:** Yeah, but I used to work directly like based on TB for 5 years now. One day I went for training for HIV then I’m working both here and there now.

**R:** Okay, that’s very good. And um, I think we have touched this question about patient preferences. Due to your many years of experience, who do you think patients prefer to DOT them? Who do you think is their preferred health worker?

**P:** So I cannot really tell you who the person prefers to DOT them...

- R:** I mean, like since they maybe prefer a field promoter or a nurse? Or they prefer a family member to DOT them? Or they prefer mostly the treatment be given to them by an employer? with your experience all these years, who do you think they mostly choose as their DOT supporter?
- P:** So in my experience, they really need someone who listen to their problems, someone who is close to them, someone who talk to them be with them, listen to their problems and see their problems and those type of things. So it can be a family member, field promoter or a nurse, depending on the person. Sometime the family member is rude to the person. Some time a promoter is good.
- R:** Exactly.
- P:** So it depends. People need someone who loves them. Who cares. So it does not matter who... so long as that person cares.
- R:** Alright, that's a very good point. So in your opinion, what is the convenience of DOTS to patients? Where do patients prefer to take DOTS? Where is it more convenient to them?
- P:** What I see, I prefer DOT in the community.
- R:** Okay and that is the same feeling the patient have?
- P:** Yeah, DOT in the community is like I said, just focus on the community only. So they can come, they can sit, they can talk, you you can build that relationship. It's TB only.
- R:** They manage to build up good relationship and it becomes a family because it's a very long treatment.
- P:** It's very nice, because like also, other activities at DOT point like hand works... you can come up with activities like fundraising. People they are skilful. Small things. They used to tell it at Penduka. People that maybe work they maybe get N\$800 or N\$1000 after the six months according to how they work those beads. So yeah, you have to be creative at the DOTS. You cannot just work work work. Sometimes you need interest...
- R:** To maintain...
- P:** Yeah to maintain the person. But at the clinic they cannot do that.
- R:** Yes because there is other patients. Very good. Yeah, we talked about building relationships between health workers and the patient. I think we have covered it. That it should be... okay. Is there any difficulty working with TB DOT points? Any problems? You find any problems to be at the DOT points? What are the problems which you mostly find there?

- P:** Yeah, to... you know that TB is contagious. To work at the DOT point you have to know about how to work with people. How also to prevent yourself and teach them how to prevent you not to get TB. You know, the most important thing about working at the DOT point is, you have to teach the patients things which you know. So that they can also help you. For example, you teach them everything... how to give the medication, how to hold their mouth and the important of the window open... those type of things. Sometimes the people just come from the office, they just give you a dot point but they don't know what the DOT point need. You have to know what the DOT point need. The DOT point need the windows open, you need the door, you need an open space, the sun, ventilation. You need the sun to come in. Those are the things also. The interest of the DOT point, you must tell the person, the patient what you know. So that they can help you when you forget.
- R:** Exactly.
- P:** That is how it goes. Because, you have to tell them the date, the date of the sputum collection, you have to tell them the date of the way to take them... so sometime you forget because they are a lot. You work with TB, tell them what you know. That's why with TB, a patient will become a dot supporter because of you.
- R:** So the patient when they finish their treatment they can also become a DOT supporter, because they gain experience.
- P:** Because if you keep it to yourself...
- R:** Oh that's very good. I've learned a lot. Okay. Thank you very much for your participation. I really appreciate it.
- P:** Okay no problem.



# ANNEXURE J

## CODED TRANSCRIPTS

### Example

#### Participant 5

**Professional category:** TB field promoter

**Place of work:** Hakahana clinic

**Years of working at DOT point:** 7 months

**Gender:** Female

**Researcher (R):** So do you know what DOTS is? What is DOTS? Let's say DOT

**Participant (P):** DOT is... can I give the meaning of the abbreviation?

R: Yes, just the meaning of the abbreviation or you can explain further.

P: DOT is directly observed treatment. It means that like when a patient comes, me as a field promoter or a treatment supporter- those who are at home, they see the way the patient... they give medicine in the hand or in a tray then they see how the patient is swallowing.

Commented [GA1]: Knowledge, DOTS, TSPSP1

R: Okay, that's good. Do you know the other words in DOTS? One is a DOT without 's' and the other one has 's'.

P: Directly observed treatment...

R: ... yeah it's okay, maybe if you remember later you will tell me. No problem. So what is a DOT supporter? Who is a DOT supporter?

P: A DOT supporter can be a field promoter, it can be a guardian, it can be a friend, it can be a manager at work, it can be a family of the patient.

Commented [GA2]: Knowledge, Characteristics DOT supporter TSPSP1

R: Okay, so that is a TB DOT supporter. Alright. Can you tell me how long the treatment for TB take? How long is the treatment for a patient who got TB today, how long this person will be on TB treatment?

P: Like the one who are new, six months.

Commented [GA3]: Knowledge, DOT Duration of treatment TSPSP1

R: Okay, so that is for everyone?

P: Excuse me?

R: Does everyone get six month treatment? Is it all the patients?

P: Those with PTB, new one, is six months. The retreatment is eight month or nine months and MDR is two years.

Commented [GA4]: Knowledge, Treatment TSPSP1

R: MDR, what is MDR?

P: MDR is multidrug resistant.

R: Okay and do you know the different phases of TB? When you get a TB patient, he's starting the treatment today, how many phases the patient takes for treatment?

P: There is two phases. The initial and continuation.

R: And how long does the initial phase take?

P: Initial phase is two months and the continuation is four months.

R: That is now for the treatment of six months. Okay and do you know how long does a patient take... when a patient comes, he start taking medication, do you know how long a patient stay with the sputum positive? How long does it take for a person to stop being infectious to others?

P: After two months that person cannot infect others.

R: Okay. Okay, so if I get positive today, I got to the clinic, start getting my pills, how long should I be in the house for people to stop being afraid that I will give him TB... when I start my treatment.

P: ....

R: It's okay, if you don't remember it's okay. Do you know the names of the medication which we give to patients?

P: Yes.

R: Okay, can you please tell me the names?

P: We have RHZE, we have RHE.

R: Okay so the RHZE is for who?

P: For the initial and the other is for the continuation.

R: Okay, that's fine. What are the most common side effects which the person will have when they are taking medication? Do you know them? Can you tell me some of them?

P: Like there is loss of eyes. Loss of hearing.

R: Okay, loss of sight... okay and what else?

P: And skin itching., Vomiting.

R: Okay, and do you know how TB is transmitted?

P: Yes. TB can spread if person stay with close to the TB active person who is not on treatment.

R: Okay and were you trained on the TB guide lines? The guidelines which we currently use. Were you trained on it? Did you go for training on the TB guideline? How to use that guideline?

P: No.

R: The guideline which we use in clinics. Did you go for training?

P: Oh, yes, we have a veteran but then it's small. We trained.

Commented [GA5]: Knowledge Treatment.TSP5P2

Commented [GA6]: Knowledge, duration Treatment.TSP5P2

Commented [GA7]: Knowledge, TB treatment.TSP5P2

Commented [GA8]: Knowledge, Treatment side effects.TSP5P2

Commented [GA9]: Knowledge, Treatment side effects.TSP5P2

Commented [GA10]: Knowledge, TB Transmission.TSP5P2

## Example

### Participant 6

#### 3- Find out the following information about the participant:

- professional category: Enrolled nurse
- place of work: Hakahana clinic
- years working at the DOTS clinic: 1 year
- gender: female

#### 4- Ask health care workers about their knowledge regarding TB DOTS in Windhoek.

Researcher (R): What do you understand by DOTS? What is DOTS?

Participant (P): DOTS is an abbreviation which stands for direct observe therapy, meaning the patient who comes, drinks the tablet there in front of you while you are observing. It's a direct observe... you make sure the person is swallowing the medication.

Commented [GA1]: Knowledge, DOTS.T6P6/P1

R: Okay, and do you know the difference between DOT and DOTS?

P: Yes. DOT is a place where the patient can go and take the medication and then there is also a supporter. A person that is observing the patient.

R: Then what is a DOT supporter?

P: The person who is there observing the patient who is taking the medication and make sure the person is swallowing the medication. They are also helping the patient in many things in case the person needs anything, they can also provide.

Commented [GA2]: Knowledge, DOTS Supporte.T6P6/P1

R: So they are there also to support. Not only swallow the medication but also to support the patient throughout with other things.

P: Yes.

R: Okay. Do you know how long the treatment for TB is in Namibia? How many months or years?

P: Yes. The TB treatment for a new case- who are having it for the first time, they are treated for six months. Then we have the relapse case. Those ones will be treated for eight months. There are also extra pulmonary TB, so TB which is also in the lungs... like cardiac TB is treated for nine months even if it's a new case.

Commented [GA3]: Knowledge, Duration of Treatment.T6P6/P1

R: So the treatment duration depends on the type of TB the patient has?

- P: Yes, even with TB meningitis, even if it's the first time, they can go up to one year. Commented [GA4]: Knowledge,Duration of Treatment.T6P6P2
- R: And do you know what are the different phases of TB treatment?
- P: Yes. We are using two phases. The initial phase which consists of two months, and then the continuation phase which consists of four months in new patients. Then in relapse patients, it's still initial for two months and continuation for five months. Commented [GA5]: Knowledge,Duration of TB Treatment T6P6P2
- R: And how long does it take for a patient to turn from a positive smear to a negative smear?
- P: So it's actually taking one month and two weeks because most of them they are taking their sputum at one month and two weeks and most of them already become negative.
- R: Okay, that's fine and do you know the names of the drugs of TB treatment?
- P: Yes, we are using rifampicine which is a combination of rifampicine, izoniazide, pirazinamide and ethambutol. Commented [GA6]: Knowledge, TB treatment(T6P6P2
- R: Okay, and what are the most common side effects you can see with patients when they are taking these treatment?
- P: Most of them are developing rashes and itching and nausea and vomiting. That's what they complain about the most. Commented [GA7]: Knowledge, Side effects.T6P6P2
- R: Okay, and how is TB transmitted?
- P: TB is transmitted through droplets. So it's an airborne disease. When that micro bacteria gets into the air, then people get it through inhalation. Commented [GA8]: Knowledge,TB Transmisión.T6P6P2
- R: Okay, and were you trained in the latest Namibian guideline for TB?
- P: Yes.
- R: When was that?
- P: I was trained in 2012. Commented [GA9]: Professional development.T6P6P2
- R: Is it still the same guideline that we are using?
- P: Yes.
- R: Okay, in your opinion, is there a problem with DOTS?
- P: Not really, but then some patients prefer to get medication and DOT by their family. They don't want to come to the DOT... but then we cannot trust they are taking medication. Commented [GA10]: Experience DOTs Site.T6P6P6

**ANNEXURE K**  
**LANGUAGE EDITOR'S LETTER**

01 June 2018

**To: Whom it may concern**

Dear Sir/Madam

Re: Editor's report

This letter serves as an attestation that I, Theresia Nepolo, from the language and research academy mentioned above, did the language editing of the thesis of **Carolina Dulce Songo Teixeira** Student number: **48656062**.

Her thesis is titled: **HEALTH CARE WORKERS' KNOWLEDGE, ATTITUDES AND EXPERIENCES OF DOTS IN THE WINDHOEK DISTRICT OF THE KHOMAS REGION (NAMIBIA)**

The following linguistic components and features were focused on: The rule of concord; which is the agreement between subjects and verbs. Sentence constructions; at times one finds that some sentences may need rephrasing to make more meaningful sense or may need to be shortened or completed for the same effect. Consistency in the use of words, tenses and forms of language. Another area that I focused on is the use of punctuations, especially the omissions and or the over use of such essentials. I also suggested changes where words with same meaning were used but do not express the idea fully in the context they may be used.

In my edit, I set the computer English Language to UK and not to US. I also made use of track changes, so that the student, and if need be the supervisor, will be able to track the changes I suggested to accept or decline them as may be found appropriate.

I did not edit the references and annexure pages, as this was not requested of me. For additional questions and clarity, do not hesitate to contact me on: 08164 088 64 or e mail me at: [talamondjilahakalunga@gmail.com](mailto:talamondjilahakalunga@gmail.com).

Sincerely yours

**T Nepolo (Editor)**