

**HEALTH WORKERS' KNOWLEDGE, ATTITUDES AND PRACTICES OF
TUBERCULOSIS-DIRECTLY OBSERVED TREATMENT (TB-DOT) IN THE
GROOTFONTEIN DISTRICT OF OTJOZONDJUPA REGION IN NAMIBIA**

A thesis submitted in partial fulfilment of the requirement for the degree of

MASTER OF PUBLIC HEALTH

AT

THE UNIVERSITY OF NAMIBIA

BY

WILBARD KAPWEYA

STUDENT NUMBER: 9523553

Main supervisor: Dr K HOFNIE-//HOËBES (UNAM)

Co-supervisor: PROFESSOR A VAN DYK (UNAM)

JANUARY 2010

DEDICATIONS

I dedicate this work to my late father, K V Kapweya (1940–1994) who brought me up in a decent manner and who provided me with a chance in life. I also dedicate it to my mother, K N Kapweya, for her parental guidance in the absence of my father and whose love, support and encouragement gave meaning to my life.

DECLARATION

I, Wilbard Kapweya, declare that “Health workers’ knowledge, attitudes and practices of Tuberculosis-Directly Observed Treatment (TB-DOT) in the Grootfontein district of Otjozondjupa region in Namibia” is my own work and that all the sources used have been acknowledged by means of a complete reference list.

I also declare that this work or part thereof has not been submitted for a degree in any other institution of higher education. No part of this thesis should be reproduced, stored in any retrieval system, or transmitted in any form or by means (e.g. electronic, mechanical, photocopying, recording or otherwise) without the prior written permission of the author, or the University of Namibia on his behalf.

I, Wilbard Kapweya, grant the University of Namibia the right to reproduce this thesis in whole or in part, in any manner or format, that the University of Namibia may deem fit, for any person or institution requiring it for study and research, providing that the University of Namibia shall waive this right if the whole thesis has been or is being published in a manner satisfactory to the University.

Signature..... Date

WILBARD KAPWEYA

ACKNOWLEDGEMENTS

It would have been impossible to complete this study alone and a number of people have assisted me and have contributed meaningfully to it in one way or another. Their contribution is of great value, thus this is an opportunity to extend my gratitude to all of them.

- Firstly, I would like to thank the Almighty God who gave me the courage and wisdom to pursue my studies to this level.
- I am greatly indebted to Dr Käthe Hofnie-//Hoëbes and Professor Agnes van Dyk of the University of Namibia, my main and co-supervisors respectively, for their dedication and tireless efforts in guiding, supporting and encouraging me throughout the study.
- The Ministry of Health and Social Services for granting me permission to conduct the research study in its health facilities.
- Major General Peter Nambundunga, the army commander, for allowing me to conduct the study at Grootfontein Military hospital.
- Dr FS Zam, the Principal Medical Officer (PMO) of Grootfontein district hospital for giving me permission to carry out this study in his district and for supporting my research.
- Mr S Salomo, the Primary Health Care (PHC) Supervisor for Grootfontein district for supporting me through the data collection process.

- Dr Indongo Nelago of the University of Namibia for assisting me with the statistical analysis.
- All the health workers in the Grootfontein district – a special thanks to you for using your valuable time to participate in my study.
- Ms Gerhild Kolling, librarian at UNICEF in Windhoek, for her exceptional assistance in obtaining literature and her constant support.
- Ms Alexa Barnby of university of South Africa (UNISA) for language assistance and editing of my thesis.
- My colleagues and friends locally and abroad for their continuous support and encouragement.
- Mr R Nandjila, Mr J Aipanda and Mr N Shapumba, my great friends, who motivated and supported me with professional inspiration.
- My wife, Alletha Kapweya, for her unique personal support and Nefundja, my daughter, for her patience while I diverted many hours of family time to my studies.
- Last but not least, I also wish to thank all those who contributed to my study directly or indirectly and whose names do not appear here.

ABSTRACT

In the Grootfontein health district, directly observed treatment (DOT) services, a component of directly observed treatment short-course (DOTS) strategy (whereby tuberculosis (TB) patients take medicine under proper supervision and support) is available at all public health facilities. Yet the TB defaulter rate in Grootfontein is very high at 28%, and treatment success rate remains at 56%, far below the international target of 85%. Although many factors such as poverty, HIV/AIDS, late diagnosis, non-adherence and so forth are identified as contributing to the low success rate, little was known in Namibia about whether health workers' knowledge, attitudes and practices in using DOT could play a contributing role to the low treatment success rate. Therefore, this study aimed to explore and describe health workers' knowledge, attitudes and practices with regard to DOT. The specific objectives were to obtain socio-demographic information of health workers in the Grootfontein health district and to ascertain the knowledge, attitudes and practices of health workers in terms of TB-DOT services.

A quantitative, descriptive approach to the study was used. Owing to the small size of the population, all 110 nurses dealing with TB patients and working in public health facilities in the Grootfontein health district were targeted. Data were collected using a self-administered questionnaire and were analysed using descriptive statistics. The chi-square and p-values were used to test the significance of the relationship between the variables.

The demographic data revealed that the majority (65%) of the respondents were sub-professional nurses, against 35% who were professional nurses. More female health workers (78%) than male participated in this study and their ages ranged between 20 to 59 years with those in the age group 50 to 59 years being in the majority (35%). The majority (70%) of respondents were working in a hospital at the time of the study; of these 26% had working experience of more than twenty years, while only 9% had working experience of less than a year. However, no statistically significant difference was found regarding the demographic data of respondents.

In terms of the research objective of ascertaining knowledge, attitudes and practices, 57% of respondents had not been trained in TB management. Despite a lack of training in TB-DOT, 70% of all respondents demonstrated an understanding of the meaning of TB-DOT, while 76% indicated an understanding of the meaning of DOT supporter. However, no statistically significant difference was found between health workers' training and TB management.

Some negative attitudes were also observed. Thirty-five percent of the respondents agreed that there was no time to practise DOT because of the shortage of health workers, while 17% stated that if TB patients did not want to take their medicine it was their own choice. On the other hand, 12% argued that DOT is a waste of time, while 8% argued that DOT creates dependency. No statistically significant difference was found. In terms of the actual practice, the majority (81%) of respondents indicated that they have the new national guidelines for TB management and this was verified by the researcher. Of all respondents who indicated

having new guidelines, 98% of them indicated giving health education on TB DOT according to the guidelines to patients.

It is recommended that in-service training in TB-DOT be strengthened and conducted not only for health workers who deal directly with TB patients, but also for the general population of health workers in the Grootfontein health district. This may enable the health workers to be effective while rotation services are being put into practice in this health district. Sufficient knowledge of TB-DOT may also challenge the negative attitudes held by some health workers regarding the management of TB patients. Moreover, community involvement and community participation should be encouraged. All health workers involved in TB control should take advantage of existing community own resources persons (CORPs) to enhance community knowledge of TB.

ABBREVIATIONS AND ACRONYMS

AIDS	Acquired immuno-deficiency syndrome
APA	American Paediatric Academy
AU	African Union
CBO	Community-based organisation
CDC	Center for Disease Control
CHPA	Chief Health Programme Administrator
CORPs	Community own resource persons
DCC	District Coordinating Committee
DOT	Directly observed treatment
DOTS	Directly observed treatment short-course
DSP	Directorate of Special Programme
FDC	Fixed dosage combination
HIV	Human immunodeficiency virus
IUATLD	International Union against Tuberculosis and Lung Diseases
KAP	Knowledge, attitudes, practices
MDR	Multi-drug resistant
MOHSS	Ministry of Health and Social Services
MOD	Ministry of Defence
MTP 1	Medium-term plan 1
NGO	Non-governmental organisation
NPC	National Planning Commission
NTCP	National Tuberculosis Control Programme

PMO	Principal Medical officer
PTB	Pulmonary tuberculosis
RMT	Regional Management Team
SHPA	Senior Health Programme Administrator
SPSS	Statistical Package for the Social Sciences
TB	Tuberculosis
WHO	World Health Organization
XDR	Extensively drug resistant

TABLE OF CONTENTS

Dedication.....	i
Declaration.....	ii
Acknowledgement.....	iii
Abstract.....	v
Abbreviations and acronyms	viii
Table of content.....	x
List of tables.....	xvi
List of figures.....	xvii

Chapter 1

Introduction.....	1
1.1. Background and rationale of the study.....	1
1.2. Problem statement.....	8
1.3. Purpose and objective.....	10
1.3.1. Purpose of the study.....	10
1.3.2. Objective of the study.....	10
1.4. Context of the study.....	11
1.5. Significance of the study.....	11
1.6. Operational definitions.....	12
1.6.1. Directly observed treatment (DOT).....	12

1.6.2. Directly observed treatment short-course (DOTS).....	12
1.6.3. Health workers.....	13
1.6.4. Knowledge.....	13
1.6.5. Attitudes.....	14
1.6.6. Patient.....	15
1.6.7. Practice.....	15
1.6.8. Tuberculosis (TB).....	15
1.7. Summary.....	15

Chapter 2

Literature review.....	16
2.1. Introduction.....	16
2.2. Activities of National TB Control Programme of Namibia.....	17
2.3. Promotion of adherence to TB treatment.....	19
2.4. DOT service and the patient support system.....	25
2.5. Communication role of health workers in DOT services.....	29
2.6. Summary.....	31

Chapter 3

Research methodology.....	32
3.1. Introduction.....	32
3.2. Purpose and objective.....	32

3.2.1. Purpose of the study.....	32
3.2.2. Objectives of the study.....	32
3.3. Research design.....	33
3.4. Population description and sampling	33
3.5. Development of research instrument(questionnaire).....	34
3.5.1. Validity.....	34
3.5.2. Reliability.....	35
3.6. Data collection procedure.....	36
3.7. Data analysis.....	37
3.8. Ethical considerations	38
3.9. Summary.....	40

Chapter 4

Data presentation, analysis and discussion	41
4.1 Introduction.....	41
4.2. Sociodemographic information of respondents.....	42
4.2.1. Category of respondents.....	44
4.2.2. Gender.....	44
4.2.3. Age.....	45
4.2.4. Respondents by health facility.....	46
4.2.5. Respondents' years of experience.....	46
4.3. Knowledge of TB-DOT.....	47

4.3.1. Health workers trained in TB management.....	47
4.3.2. Type of training received by respondents.....	50
4.3.3. The duration of training received by respondents.....	51
4.3.4. Definition and understanding of DOT by respondents.....	52
4.3.5. Knowledge of respondents of DOT supporters.....	55
4.3.6. Knowledge of respondents on who could be chosen as a DOT supporter.....	56
4.3.7. Knowledge of respondents about the task of a DOT supporter.....	57
4.3.8. Knowledge of respondents on support given by family members to TB patients.....	58
4.4. Attitudes of health workers on TB-DOT.....	60
4.4.1. Attitudes regarding the importance of DOT services.....	60
4.4.2. Barriers to using DOT services.....	61
4.4.3. Attitude questions on TB-DOT services.....	64
4.4.4. Discussions of results from attitude scale.....	66
4.4.4.1. No time to practise TB-DOT service due to shortage of staff.....	66
4.4.4.2. DOT can create dependency.....	66
4.4.4.3. No interest in managing TB patients.....	67
4.4.4.4. Poor motivation and inadequate team work result in poor treatment outcomes.....	67
4.4.4.5. Rotation of health workers has an influence on TB treatment.....	68
4.4.4.6. DOT can be practised anywhere.....	68
4.4.4.7. DOT may imply that patients are incapable and irresponsible in taking care of self.....	69
4.4.4.8. Unfriendly health workers discourage TB patients from coming for treatment.....	69
4.4.4.9. DOT may be seen as a punishment by the patient.....	70
4.4.4.10. Nothing can be done about TB unless poverty is addressed.....	70

4.4.4.11. If TB patients do not want to take their medicine, it is their own choice.....	71
4.4.4.12. It is a waste of time to observe patients take medicine every day; they must accept responsibility for their own health.....	71
4.4.4.13. DOT is the best method to ensure full adherence and treatment success.....	72
4.4.4.14. DOT supporters must be acceptable to the patient and understand patient needs.....	72
4.5. Practice of TB-DOT.....	74
4.5.1. Availability of new national TB guidelines.....	74
4.5.2. Health education given by respondents.....	76
4.5.3. Information covered by respondents during health education.....	78
4.5.4. Methods of health education used by respondents.....	79
4.5.5. How often health education is given by respondents.....	80
4.5.6. Problems associated with non-adherence.....	82
4.5.7. Methods for encouraging TB patients to complete their treatment.....	84
4.5.8. Major challenges facing the implementation and practice of DOT.....	85
4.5.9. Comments on and suggestions for improving TB management.....	88
4.6. Summary.....	91

Chapter 5

Conclusions, limitations and recommendations.....	92
5.1. Introduction.....	92
5.2. Conclusions.....	93
5.2.1. Objective 1: Obtain socio-demographic information of health workers in the Grootfontein health district.....	93

5.2.2. Objective 2: Describe the knowledge, attitudes and practices of health workers regarding TB-DOT services.....	93
5.3.Limitations of the study.....	96
5.4. Recommendations.....	97
5.4.1.Training of health workers.....	97
5.4.2.TB policy implementation.....	98
5.4.3.Community involvement.....	98
5.4.4.Revitalization of outreach services.....	99
5.5.5.Further research.....	99
5.5. Summary.....	99
References.....	100
Annexure A: Data collection instrument.....	108
Annexure B: Permission from the Permanent Secretary of the Ministry of Health and Social Services.....	117
Annexure C: Permission Letter from the Otjozondjupa Health Director.....	118
Annexure D: Permission from the Principal Medical officer of Grootfontein District Hospital.....	119
Annexure E: Permission letter from the Namibian Army Commander.....	120
Annexure F: Map of Namibia showing Otjozondjupa region and Grootfontein district.....	121

LIST OF TABLES

TABLE	PAGE
Table 4.1: Reasons for non-participation (n = 110)	42
Table 4.2: Socio-demographic information (n = 88).....	43
Table 4.3: Training in TB management by category of respondent.....	49
Table 4.4: Training of respondents in TB management by age (n = 88).....	49
Table 4.5: Duration of training received by respondents (n = 38).....	52
Table 4.6: Definition of TB-DOT by respondents (n = 88).....	53
Table 4.7: Definition of DOT by category of respondents (n = 88).....	54
Table 4.8: Definition of DOT by gender.....	54
Table 4.9: Knowledge of respondents of DOT supporters.....	55
Table 4.10: Knowledge on who could be chosen as a DOT supporter.....	56
Table 4.11: The tasks of the DOT supporter.....	57
Table 4.12: Attitudes regarding the importance of DOT services.....	61
Table 4.13: Attitude scale responses.....	65
Table 4.14: Availability of new national TB guidelines by health facility.....	76
Table 4.15: Information covered by respondents during health education.....	78
Table 4.16: Methods of health education by respondents.....	80
Table 4.17: Problems associated with non-adherence.....	82
Table 4.18: Method used to encourage TB patients to complete their treatment.....	84
Table 4.19: Major challenges encountered by respondents in implementing DOT.....	86
Table 4.20: Comments on and suggestions for improving TB management.....	89

LIST OF FIGURES

Figure	Page
Figure 4.1: Training of respondents in TB management (n = 88).....	47
Figure 4.2: Type of training received by respondents (n = 38).....	50
Figure 4.3: Support given to TB patients by family members	58
Figure 4.4: Barriers to using DOT services (n = 88).....	62
Figure 4.5: Availability of new national TB guidelines.....	75
Figure 4.6: Number of respondents who give health education (n = 88).....	77
Figure 4.7: How often health education is given by respondents.....	81

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND AND RATIONALE OF THE STUDY

Tuberculosis (TB) remains a serious public health problem and one of the leading causes of death from infectious but curable diseases worldwide, despite efforts to bring it under control by the availability of effective treatment. The World Health Organization (WHO) estimates that 1.7 billion people, one third of the world's population carry the bacillus, while about 8 million new cases and 2 million deaths occur as a result of TB worldwide each year. The Africa region accounts for 25% of incidences of TB and this has increased dramatically. The fragile health system in most of African countries is struggling to cope with the disease with various factors complicating the problem, such as poverty, high population growth rate, failure to diagnose TB in time and poor treatment strategies, which allow patients to remain uncured, living in their communities as continual sources of infection (WHO, 1996, p. 2).

In the WHO Global Tuberculosis Report 2004, Namibia is recorded as having the highest notification rate in the world. From 1996 this rate increased to 822 cases per 100 000 of the population in 2004. The region with the highest notification rate in Namibia is Erongo with 1 177 and the lowest is Kunene with 306 per 100 000 (MOHSS, 2004, p. 21). However, the Grootfontein district of the Otjozondjupa region is one of the areas most threatened by TB and has reported a high number (8 eight confirmed cases) of multi-drug resistant (MDR) tuberculosis (MOHSS, 2005, p. 16). The most common reason for the increasing prevalence of TB is poverty, which is associated with overcrowding and poor ventilation as well as HIV/AIDS infection,

whose relationship with TB is now well established (MOHSS, 2006a). Both conditions are believed to lower individual's immunity making them vulnerable to TB, and HIV infection is the main known individual risk factor for the development of TB. Jackson (2002, p. 51) confirms that the risk of dying from TB is at least double among those who are also infected with HIV. In addition, approximately 50 to 60% of people with HIV/AIDS infection will develop active TB at some stage of their disease (Evian, 2000, p. 233).

Interestingly, TB is one of the oldest diseases known to humankind and has been traumatising humans for centuries. It is a well-defined disease caused by well-identified germs, fully treatable with efficient and affordable medicine and supported by effective control programmes; nevertheless, it still causes human suffering and death. Tuberculosis is one of the most funded diseases in developing countries ever, yet there is no sign of a breakthrough or a subsequent elimination of the disease. The reasons for this state of affairs need to be properly investigated.

Tuberculosis is an infectious disease caused by microorganisms or the human strain of tubercle bacilli called *Mycobacterium tuberculosis*. The mycobacterium usually enters the body by inhalation through the lungs and can also spread to the other parts of the body via the blood stream or lymphatic system. The bacillus is transmitted from the infectious patient by coughing, sneezing and laughing, and is inhaled by the contact. The inhaled bacilli settle in the lung and cause infection. In most cases, the bacilli are contained by the body's immune system and remain in a dormant state for the rest of the person's life. However, individuals with weak immune systems may develop TB in the first year of infection. Otherwise, TB may develop later in life when the body's immunity is compromised by other factors such as HIV, diabetes and poor nutrition. It has been reported that the most important risk factors for becoming infected with TB are the length of contact with an infected source and the number of bacilli in the air (Rieder,

1999). Adult patients with sputum smear-positive TB of the lungs are the main source of infection. Therefore, curing such patients is a top priority from a public health perspective. The most common signs and symptoms of pulmonary tuberculosis (PTB) include a persistent cough for three weeks or more, coughing up blood, chest pain, night sweating, shortness of breath, loss of appetite and loss of weight (MOHSS, 2006a, p.18).

One of the most challenging aspects of controlling TB is to identify and treat the disease in its early stages in order to prevent the spread of the disease. If a patient is diagnosed and started on treatment earlier, the shorter the time they will remain infectious. This will then benefit the patient physically in reducing the probability of organ damage. The most important and reliable investigation method for diagnosing pulmonary TB is direct microscopy (DM), done on the sputum of a person who is suspected of having TB. DM provides reliable evidence of the presence of mycobacterium bacilli in the lungs and thus sputum-smear microscopy is the cornerstone of the directly observed treatment-short course (DOTS) strategy (MOHSS, 2006, p.19).

As soon the patient has been successfully diagnosed with TB, treatment must be commenced promptly. Chemotherapy is the most significant intervention for the control of TB in any population in the world; tuberculosis medicines kill the bacilli in an infectious patient and thus stop the transmission of infection in the community. The treatment is taken for a minimum of six months in new uncomplicated TB cases and can last for more than twenty-four months in complicated TB cases. This is indeed a long treatment, especially for someone who has never been on a long treatment before, hence the need for proper intervention through education and support for patients, which include directly observed treatment (DOT). The main goals for DOT are to cure the individual with the disease and minimise the transmission of *Mycobacterium tuberculosis*

tubercle bacilli to others in the community. Good supervision and support are the most important forms of prevention because they render infectious patients non-infectious and this reduces the passing on of infection to others in the community (Crofton, Horne & Miller, 1999, p. 1).

However, treatment can be challenging because some patients feel overwhelmed by the number of tablets that have to be taken, coupled with the lengthy duration of the TB treatment regimen. In some cases patients who fail to respond to TB treatment may become discouraged and stop treatment. In addition, anti-TB medication has many side effects, such as nausea and vomiting, yellowish skin and eyes (jaundice), tingling and numbness in the hands and feet and skin rashes among others. Despite this, patients with active TB (show tubercle bacilli in their sputum) must be cured to avoid transmission and re-infection.

When effective chemotherapy for TB first became available, all patients were treated under close supervision during closely monitored in-patient care. With the advent of ambulatory care for TB patients, self-administered therapy emerged as the standard method for TB treatment. In the 1990s, after decades of experience with self-administered therapy, it became clear that ensuring completion of treatment using self-administered therapy had proven to be extremely difficult and unreliable. Thus, DOT, during which patients are observed ingesting each dose of anti-tuberculosis medicine, was recommended. The direct observation is done either by health workers or by someone nominated by the patient with the help of health workers for this purpose. This method has become the best way of ensuring that treatment will be completed, and has been recommended as the standard of care for treatment of PTB by several leading international organisations. DOT is the cornerstone of a patient-centred approach to treatment that maximises the likelihood of completion of therapy (Romulo, Villena & Mesina, n.d., p. 1).

Directly observed treatment short-course (DOTS) strategy, in which DOT is included, has been promoted widely and implemented globally and consists of the following elements:

- Political will and government commitment to sustain TB control activities
- Case detection of TB through sputum smear microscopy among symptomatic patients reporting to health facilities
- Regular and uninterrupted supply of high-quality anti-TB medicine
- Six to eight months of regular supervised treatment and support (including DOT – direct observation of medicine-taking for at least the first two months)
- Standardised recording and reporting systems that allow assessment of treatment results and progress for each patient and of the TB control programme performance overall

The above measures require governments to make resources available for training health workers, sustaining uninterrupted medicine supply and ensuring that clinic and laboratory services are available to patients. Once patients with infectious TB (bacilli visible in a sputum smear) have been diagnosed, the treatment will then be instituted and health and community workers or trained volunteers will observe patients swallowing the full course of the correct dosage of anti-TB medicines. The Government of Namibia shows commitment to TB control by, among other things, ensuring an uninterrupted supply of anti-TB medicine, purchasing fixed dosage combinations (FDC) of anti-TB medicine and by providing free TB treatment (MOHSS, 2007, p. 6). Yet there is little sign that the international target of an 85% treatment success rate and subsequent elimination of TB in Namibia will be successfully achieved.

The following factors are regarded as being among those that contribute to the failure to reach the international target of an 85% TB treatment success rate:

- Too many patients stop taking their medication before they have successfully completed their treatment.
- Failure to ensure accessible diagnosis and treatment services including DOT.
- Some patients die of infection during TB treatment because of late diagnosis and HIV/AIDS.
- Lack of supervision and an information management system for the rigorous evaluation of TB treatment outcomes.
- Some patients develop MDR TB, as well as extensive drug resistant (XDR) TB, which are essentially manmade problems that occur when patients receive inappropriate or ineffective treatment that allows naturally occurring resistant TB bacilli to survive and multiply (MOHSS, 2004; WHO, 1999, p. 10; Weyer, Van der Walt & Kantor, 2006).

There is little doubt that these factors have a negative impact on the management of TB and the success of DOT implementation. However, it is the researcher's observation that health workers are directly or indirectly involved in all of these factors. They (health workers) might be poorly trained and have limited knowledge which contributes to improper treatment with regard to TB patients. Kaumbi (2004) confirms that these factors result in the poor management of TB and the delay in reaching the WHO treatment target success rate of 85%. Various studies have indicated that, the reasons for the failure to reach the treatment outcome target include poor quality care resulting from rigid clinic routines, poorly motivated staff, inadequate provider-patient relations, among others, and these all contribute to poor adherence to treatment (WHO, 2005a).

It has been observed that some health workers are unwilling to work at TB facilities owing to the poor working conditions and the perceived risk of infection. Complaints about the negative attitude of staff in the Grootfontein TB ward, coupled with overcrowding, poor hygiene and the

poor treatment of patients have been reported. Some health workers mistreat their patients by insulting them, especially if they miss their treatment. MDR patients have not had their condition properly explained to them, especially when they have to be isolated. It has also been noted that they are not properly supervised, for example MDR TB patients have been allowed to move about freely in town and return to the ward under the influence of alcohol (Isaacs, 2009).

The negative attitudes of health workers have a serious effect on the provider-patient relationship and seriously impair treatment outcomes. It is very important that patients receive a friendly service, as this will make them more open to understanding what health workers are telling them and they will be more likely to adhere to their treatment. Positive attitudes promote understanding and cooperation between patients and health workers and enable patients to participate fully in programmes such as health education. Increasing community education on issues of TB and HIV/AIDS is also crucial in this regard. If reinforced, health education will help patients adhere to treatment and contribute to the successful achievement of the international target of 85%.

It has also been reported that one of the major reasons for failing to bring about a more rapid reduction in the incidence of tuberculosis worldwide and to achieve the 85% treatment success rate are a lack of effective training for all practitioners involved in the provision of high quality tuberculosis care (Hopewell, Pai, Maher, Uplekar & Ravglione, 2006). One of the fundamental tasks of TB control programmes is continuous supervision and training, as this is the only way to ensure that personnel participating in treatment are well trained and that their skills remain up to date. Training that is properly focused, directed and managed is therefore an essential component of a comprehensive TB control strategy.

Thus, the long-term goal for human resource development for TB control is to reach and sustain a situation where all staff at different levels of the health system have the skills, knowledge and attitudes (competences) necessary to successfully implement and sustain TB control activities. This includes the implementation of new and revised strategies and tools in relation to TB and HIV/AIDS management. Therefore, without reaching and maintaining that goal, it will not be possible to reach and sustain the 85% global target for TB control (WHO, 2002, p. 6).

1.2 PROBLEM STATEMENT

The HO's target for TB treatment is to detect 70% of new infectious TB cases and to cure 85% of those detected. However, despite the availability of tools and measures to control TB, this has not been achieved in many countries in the World. Namibia, as one of the countries that have adopted the DOTS strategy, has been performing well but is still struggling to reach the international target. According to Namibia's National Tuberculosis Control Programme Report for 2006/2007, the treatment success rate for Namibia was 75%. Although this was a significant achievement compared to the 70% reported in 2004 cohort, the treatment success rate is still far below the global and national target of 85% (MOHSS 2007, p. 13).

According to the report of the National TB and Leprosy Control Programme for 2006/2007, the Grootfontein district reported a high defaulter rate of 28% and a low treatment success rate of 56% among smear-positive PTB cases (MOHSS, 2007, p. 54). Owing to its high defaulter rate, this district is probably one of the areas most threatened by high cases of MDR TB. In 2004, eight confirmed cases of MDR in the Tsumkwe area of the Grootfontein district were reported (MOHSS, 2005, p. 16).

The researcher learnt that there are certain factors that are hampering the achievement of the success rate stipulated by the WHO. The most crucial factor is non-adherence to the treatment regimen, which contributes to multi-drug resistance in the Grootfontein district. Such non-adherence could be due to a lack of supervision by health workers and/or a lack of understanding by patients. This non-adherence is assumed to be most common among the San community, perhaps because of the difficulty experienced in accessing health services, as the area is sparsely populated and there is a lack of transport for tracing patients who have missed their treatment. The language barrier and the rotation of health workers could also be contributory factors. Many nurses cannot communicate with the majority of TB patients as they do not speak the San language and this has potentially detrimental effects on health education and possibly treatment adherence.

The Ministry of Health and Social Services (MOHSS) has also identified the high turnover of nurses at TB clinics, as well as the poor quality care given to TB patients, as two of the factors that make it difficult to achieve the national and international outcome targets. In Namibia, another factor that is important is the fact that there are foreign doctors and nurses of different nationalities, some of whom want to manage TB in the same way as they have done in their country of origin, without adhering to the technical policy of the National Tuberculosis Control Programme of Namibia (MOHSS, 2004, p. 1; National Planning Commission (NPC), 2004). In view of the abovementioned observation, the researcher sought to understand whether health workers have the relevant knowledge needed to implement DOT services.

By far the greatest constraint on reaching the target for case detection and cure is the lack of trained and qualified human resources.

The human resources that facilitate the implementation of DOT might lack an understanding of the concept of DOT and they would seem not to have a positive attitude to TB patients. Health workers in Namibia have been criticised for their negative attitude towards TB patients and poor quality care they provide for these patients (Isaacs, 2009). It might be that these negative and prejudicial attitudes have resulted from limited knowledge and lack of information.

The underlying assumption of this study is that the creation of adequate knowledge and skills, positive attitudes, beliefs, understanding and practices in health workers with regard to DOT and TB management in general, would influence the service rendered to patients by health workers. In the same way, it is probable that an improvement of attitude on the side of the patients and their families would influence their use of treatment facilities.

1.3 PURPOSE AND OBJECTIVES

1.3.1 Purpose of the study

The purpose of the study is to explore and describe the knowledge, attitudes and practices of health workers working with TB-DOT services in public health facilities in the Grootfontein district in the Otjozondjupa region.

1.3.2. Objectives of the study

The objectives of the study are to

- Obtain the socio-demographic information on health workers in the Grootfontein health district
- describe the knowledge, attitudes and practices of health workers with regard to TB-DOT services

1.4 CONTEXT OF THE STUDY

In order to have a clear understanding of the problem, it is important to have some background information of the area in which the study was conducted. The study took place in the Grootfontein health district, one of four health districts in the Otjozondjupa region, and is situated to the north east of Otjozondjupa (see Annexure F). According to the MOHSS annual report for 2005, the district has a population of 33 860 and covers an area of 39 443 kilometres. The health services in this region are provided by one district hospital, one health centre, six clinics and a number outreach points. There is also a military hospital, but this is responsible for military personnel only. TB patients, who are also soldiers (military), are registered in the district TB register at the TB clinic of the MOHSS, but they attend their own DOT services at the military hospital in the army base.

This district was chosen for the study because of its high MDR TB and high defaulter rate (28%), as well as its low (56%) treatment success rate of smear-positive PTB cases (MOHSS, 2007, p. 54). Furthermore, the district's health facilities are sparsely located and there are still practices of relief duty at remote clinics on a regular basis, apparently because there is shortage of permanent staff at remote health facilities.

1.5 SIGNIFICANCE OF THE STUDY

The study is intended to provide data that will contribute to a more realistic approach to service provision and better management of TB patients. The researcher believes that the findings of this study could significantly contribute to the improvement of TB care service delivery by health workers in the Grootfontein health district.

Furthermore, the findings on the knowledge, attitudes and practices of health workers on TB-DOT could be useful to policy makers and programme administrators in developing effective strategies to assist TB management. After the implementation of the recommendations of this study it is expected that the treatment success rate in the Grootfontein district will improve and the defaulter rate will be reduced.

1.6 OPERATIONAL DEFINITIONS

For the purpose of this study a number of key terms are used and are defined below.

1.6.1 Directly observed treatment (DOT)

Directly observed treatment (DOT) is one element of the DOTS strategy and is the most reliable measure for ensuring that patients take their medicine as prescribed. This strategy directs that a TB patient swallows his medicine in the presence of another person who ensures that all the tablets have been taken. At the same time, this person provides supervision and encouragement, as well as the psychological and moral support necessary for patient adherence to treatment and follow-up as prescribed (MOHSS, 2006a). With DOT, patients do not bear sole responsibility for adhering to treatment. Health workers, public officials and community members all share responsibility for providing the support services that patients may require (WHO, 1999, p. 15).

1.6.2 Directly observed treatment short-course (DOTS)

Directly observed treatment short-course (DOTS) is the brand name for the WHO recommended TB control strategy and framework for effective TB control. Health workers around the world use this comprehensive strategy to cure TB patients.

DOTS has the following five elements:

- Sustained political will and government commitment to TB control expressed in terms of adequate human and financial resources to sustain TB control.
- Access to a quality-assured network of sputum-smear microscopy to detect infectious cases.
- Standardised short-course chemotherapy for all cases of TB under proper case management conditions, including directly observed treatment (DOT).
- A regular uninterrupted supply of quality-assured anti-TB medicine.
- A recording and reporting system enabling treatment outcomes assessment of all patients and assessment of overall programme performance (MOHSS, 2006a, p.12; WHO, 1998, p. 4).

1.6.3 Health workers

Health workers are employed in health institutions or in the community to provide health care services, such as preventive, curative and rehabilitative services. Health workers play a crucial role in implementing the DOT programme and therefore in the management of TB. For the purpose of this study, health workers are registered nurses, enrolled nurses, nursing assistants and nursing students who deal with patients, including TB patients on a daily basis.

1.6.4 Knowledge

Knowledge refers to the knowhow, facts, skills, information and understanding that one has gained through learning and/or experience. Knowledge itself is not the same as information or facts but it is an awareness or perception of reality acquired through

learning or investigation (Meyer, 2002, p.23). The knowledge possessed by health workers refers to their understanding of TB-DOT.

For the purposes of this study, all health workers dealing with TB should have sound knowledge of

- all the facts on TB
- all the facts on TB treatment and control
- DOTS and DOT
- the importance of DOT
- the importance of practising DOT and adhering to treatment
- health education regarding TB.

1.6.5 Attitudes

Attitudes refer to the relatively stable emotional tendency to react in a certain way towards a specific object, person or group of people (Robbins, Odendaal & Roodt, 2003, P, 72). Attitudes can be positive or negative and can reflect the behaviour of the individual person. For the purposes of this study, attitudes refer to the health workers' feelings and reactions towards TB and DOT in particular, as well as any preconceived ideas that they may have towards them.

1.6.6 Patient

A patient is any person who is ill and receives medical attention or treatment from health workers. For the purposes of this study, a patient is a person who is diagnosed and confirmed as suffering from tuberculosis.

1.6.7. Practice

Practice can be described as the actual doing of something. In this study, practice relates to the health workers way of demonstrating their knowledge and attitudes through their actions when performing and implementing DOT and TB management.

1.6.8. Tuberculosis (TB)

Tuberculosis is an infectious, chronic, acute or sub-acute notifiable disease characterised by lesion formation in the tissues and organs of the body, by far the most frequent being in the lungs, which are the only source of communal spread (Nzimande, 2003, p. 153; Van der Berg & Viljoen, 2007, pp.266-280).

1.7. SUMMARY

The introduction and background to the problem concerning the practice of the TB-DOT service in TB management were discussed, which led to the formulation of the purpose and objective of the study. The significance of this study and the key concepts were also discussed. In the next chapter, the relevant literature reviewed on the topic will be discussed.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

In the previous chapter the researcher discussed the background and rationale of this study. In this chapter relevant literature from various books, articles, journals and Internet websites was studied in order to provide more insight into the research problem. Certain aspects of tuberculosis (TB) and directly observed treatment (DOT) were discussed, as well as studies conducted by various researchers pertaining to the research problem in order to learn from them. This literature review identifies some key issues that need to be addressed in order to achieve the required treatment success rate. Brink (1999) defines a literature review as a process that involves finding, reading, understanding and forming conclusions about the published research and theory on a particular topic.

The literature review was done to enhance the focus on the research topic, to study the research approaches used by other researchers that could be useful to this study; to provide important facts and background information on TB and DOT services; to get an idea on how to proceed with the research project; and to search for information about the conceptual basis of the study.

The literature review is discussed according to the following headings:

- The activities of the National TB Control Programme in Namibia
- Promoting adherence to TB treatment
- DOT service and patient support systems
- Communication role of health workers in DOT service

2.2 The activities of the National TB Control Programme in Namibia

In order for readers to better appreciate and to have a clearer view of the problem in question, the researcher will endeavour to explain firstly the health care system in which patients with TB are managed and treated. The National Tuberculosis Control Programme (NTCP) was started in 1991 after a MOHSS and a WHO review revealed that TB was a serious public health problem in Namibia and that the control activities at the time were inadequate and did not meet the required standard. The aim of the NTCP was to cure the individual person's disease, restore their capacity for their activities of daily living quickly and restore them to their position in the family and community to which they belong. For the community, NTCP was intended to decrease the spread of TB infection and force the disappearance of the disease from society (International Union against Tuberculosis and Lung Diseases, 2000, p. 1). In Namibia, TB programme activities are fully integrated at the service level: nurses and doctors undertake the activities for diagnosis and treatment and TB care services are available free of charge in the public sector. The NTCP's activities are implemented through a decentralised system at national, regional, district and community levels.

At national level, the NTCP as part of Directorate of Special Programmes is responsible for the overall coordination, implementation, monitoring and evaluation of TB control. NTCP staffs at national level comprise a chief medical officer, a chief programme administrator and two senior health programme administrators. The national referral unit, which is situated at Katutura state hospital in Windhoek, provides specialised TB care. Patients are admitted to this unit from throughout the entire country if case management becomes too complicated to be managed at regional level. The unit is also responsible for the orientation and in-service training of medical doctors and nurses in the clinical management of TB (MOHSS, 2006a, p.5).

At regional level, Namibia is divided into 13 political regions. Each region has a chief health programme administrator and a senior health programme administrator who fall under the Directorate of Special Diseases Programme for HIV/AIDS, TB and Malaria. These people form part of the Regional Management Team (RMT) and are responsible for coordinating and supporting TB control activities in the region. The regional referral hospital admits and manages patients with complications resulting from TB, drug resistant TB and TB/HIV co-infection. Because of the danger of MDR and the emergence of a more dangerous form of resistance, XDR, the NTCP is establishing treatment centres for the management of MDR at some regional hospitals. The aim is to ensure maximum isolation of these patients until smear conversion. Ideally, medical doctors and nurses who have received special training in the management of drug resistant TB should care for these patients.

At the district level, the District Coordinating Committee (DCC) is responsible for overall health planning, coordination, management and implementation of TB care and control activities. The coordination and implementation of TB control activities are the responsibility of the principal medical officer (PMO), the primary health care supervisor and two registered nurses for special programmes responsible for HIV/AIDS, malaria and TB. Medical doctors and nurses at district hospitals diagnose, treat and admit TB patients where necessary. These officers must have undergone training in the management of TB cases, including TB/HIV (MOHSS, 2006a, p .6).

All peripheral health units (health centres, clinics and mobile services) are involved in TB control and care. Health workers working at this level have received training in TB management and are expected to identify most TB suspects seeking care. They should be able to provide initial and follow-up care, treatment and proper supervision; where possible they screen patients for HIV and provide counselling.

They also have a major role to play in defaulter tracing and in educating patients and the community at large. Other stakeholders, such as TB activists in both the public and the private sectors, non-governmental organisations (NGOs) and community-based organisations (CBOs) are partners in TB control.

At the community level, community health workers are actively involved in TB prevention and control. They assist the health services in providing health education and creating awareness among community members. They help as DOT supporters and assist in tracing patients who have interrupted their treatment. Health workers play a leading role in ensuring that all stakeholders and the community are given proper information. This is possible only if health workers are also well trained and motivated and have the required knowledge and a positive attitude.

2.3 PROMOTION OF ADHERENCE TO TB TREATMENT

Tuberculosis makes a major contribution to the disease burden of developing countries, including Namibia, where it is exacerbated by the human immunodeficiency virus (HIV) epidemic. The implementation of DOTS in Namibia since 1996 has improved the availability of anti-TB medicine, bacteriological diagnosis, political commitment and programme monitoring and reporting. TB medicines are taken for a minimum of six months (and 8 months for re-treatment) and are taken under the direct observation of another person, such as a health care provider or a lay volunteer. Treatment for TB in the public sector is available even in the remotest areas and is provided free of charge. Yet, the cure rate in Namibia remains at 75%, far below the WHO target of 85%.

Directly Observed Treatment Short-course (DOTS) has been proven to be effective in diverse parts of the world because it was developed from the collective best practices, clinical trials and programmatic operations of TB control over decades (WHO, 1998, p. 4). In 1996, the Namibian government also adopted the DOTS strategies with the aim of detecting 70% of new infectious TB cases and treating and successfully curing 85% of detected cases by 2005. One of the elements of the DOTS strategy is standardised short-course chemotherapy for all cases of TB under proper case management conditions, including directly observed treatment (DOT). DOT is reported to be the most effective and reliable measure for TB treatment because patients take and swallow the anti-TB medicine in the presence of an observer (MOHSS, 2006a, p. 11). This makes it most likely that the patient will be cured and is the most likely intervention that prevents the transmission of the bacillus. If DOT is strengthened, and all smear-positive TB patients have taken their full courses of treatment, the possibility of further infection, defaulter cases, and drug resistance will be reduced and will therefore increase the cure rate (Angala, 2000, p. 2). Similarly, Ait-Khaled and Enarson (2003) confirm that curing smear-positive patients is currently the best available means of preventing tuberculosis. If applied perfectly, DOT can achieve cure rates of up to 95% even in the poorest countries; prevent new infections by curing infectious patients and prevent the development of drug resistance by ensuring that the full course of TB treatment is adhered to (WHO, 1998).

However, the researcher has observed that the concept of DOT is not understood and accepted by some health workers. They do not understand why TB patients need to be observed when taking medicine, when patients with different medical conditions are able to take medicine by themselves. This attitude may be as a result of a lack of knowledge that could be attributed to a lack of training in TB care.

In the Namibian context, while health care workers who are part of the national tuberculosis programme have been trained and are expected to be aware of proper diagnosis and treatment, the same is not likely for those who do not deal with the TB programme directly. This means that some categories of health worker working in different departments, especially those who are not believed to be involved in TB management, are not considered for training in TB-related activities. This might cause problems, especially in the Grootfontein district where nurses rotate frequently between health services.

Another crucial issue is relief duty, a system still commonly in use in the Grootfontein district. In terms of this system, nurses are deployed to work at remote clinics on regular basis. The reasons for this include lack of permanent staff or a shortage of staff at some of the health facilities. When it comes to the relief duty, all nurses, regardless of whether or not they are trained in providing TB care, are expected to participate. The concern here is that a health worker who has, say, spent much of his/her time in maternity or surgical wards will probably lack knowledge of the national TB treatment guidelines because they have not been trained and this could lead to improper care for TB patients when this health worker goes on relief duty. It is believed that such poorly trained health workers contribute very little to TB management. Therefore, the objective for the training and human resource development component of TB control is to ensure the availability of sufficient staff at all levels to implement the TB treatment plan, and to ensure that all staff are competent and have the knowledge, skills, attitudes and motivation required to implement the TB programme. The annual TB report for 2006/2007 states that the International Training Education Centre for HIV (I-TECH) has developed a training curriculum based on the revised National TB Control Programme guidelines in 2005.

Since the guidelines inception, fifteen training sessions have been conducted, nine by I-TECH and six by the regions with the support of the NTCP. In total, 498 health workers, including doctors, pharmacists and nurses, have been trained (MOHSS, 2007, P. 35). This figure is very small compared to the total number of key health workers registered with their respective health professional councils in Namibia, believed to be 6199 (MOHSS, 2006b, p. 11). This figure further demonstrate that a large number of health workers have not been trained in TB management and consequently lack knowledge of TB-DOT services.

In addition to the inadequate training of health workers in TB-DOT, the WHO (2006a, p. 106) reports that there are some other human resource constraints that prevent the proper understanding and implementation of DOT. These are:

- Inadequate skills of existing staff; this means that most of the personnel involved in TB control in general are not trained, in-service training lacks specific measurable learning objectives, there is a lack of training material, length of training is inadequate, and there is poor use of adequate training methodologies and a lack of learning evaluation.
- There is a shortage of trained health workers for TB control specifically at the district level.
- Increased demands on existing staff made by the impact of HIV/AIDS, low staff retention, low staff motivation, poor work environment, lack of supervision, increased brain drain and high staff turnover, among others.

These factors further suggest that poor quality care is common among health workers and this affects proper supervision of TB treatment. The basic principles of care for people with or suspected of having tuberculosis are the same worldwide.

Diagnosis should be made promptly; a standardised treatment regimen should be used with appropriate treatment support and supervision; response to treatment should be monitored; and essential public health responsibility should be carried out. All providers who undertake the evaluation and treatment of patients with TB should recognise that they are not only delivering care to individual patients, but also assuming an important public health function. To fulfil this responsibility, the practitioner should not only prescribe an appropriate regimen, but also be capable of assessing the adherence of the patient to the regimen and addressing reasons for poor adherence when it occurs.

In some areas health workers do not give appropriate, relevant health education to TB patients and their family members in order to help them to understand the features of the disease and the nature of treatment (Isaacs, 2009). In the researcher's personal experience as a professional nurse he has observed that many registered nurses are not willing to work at TB clinics or with TB patients because of the perceived risk of infection. Instead, enrolled and/or assistant nurses manage most TB clinics, which could indicate that the health system gives TB a low priority, since this category of nurses is regarded as sub-professional and is supposed to be supervised by registered nurses. Consequently, many TB patients in the region receive improper or inadequate treatment that does not provide a complete cure for their disease, and they then continue to infect others before they die, further increasing the burden of disease (WHO, 1999, p.2; Weyer *et al.*, 2006, p.1). Failure to treat TB on time and poor treatment strategies allow patients to remain uncured and to remain in their communities as continuing sources of infection to others. It is likely that these are some of the reasons why the global cure rate cannot be achieved.

Unfriendly service providers and the prescription of inadequate regimens are other important reasons for poor treatment outcome (Frieden, 2004), and may be why many TB patients find health facility services patient-unfriendly. This may also be one of the reasons why patients do not come to the health services for TB treatment. As an empathetic and caring attitude plays a leading role in the improvement of TB treatment success, it is important for health workers to change their attitudes to their patients.

While rotation is an established practice in the Namibian health sector, the National Strategic Plan for TB emphasises that for reasons of efficiency in competence building and maintenance, staff would need to stay in the same function for a number of years in order to become productive and competent in the job. Thus, if rotation of nurses in TB clinics is not halted, and staff at other levels not retained for a good number of years, the investment in human resource development will be forfeited and only a small fraction of staff working in TB control will be sufficiently competent (MOHSS, 2004, p. 56).

Despite these experiences, there is a saying that knowledge is power and people who lack knowledge are powerless and therefore cannot give the correct information and necessary motivation to patients. Thus, managing TB is not a task just any health worker can do well. He/she must be knowledgeable about all aspects of TB and HIV/AIDS management, be able to discuss issues around TB and HIV/AIDS confidently with any patient, and be patient, compassionate, empathetic and creative in finding solutions to the patient's problems (MOHSS, 2006a, p. 65). The end result of poor management will be TB treatment failure, increasing

defaulter rate, MDR TB and consequently extensively drug resistance (XDR) TB, an emerging danger and a serious problem in the management of TB in the world today.

If non-compliance and drug resistance continue, the WHO target of 85% will never be reached. Therefore, the crucial role that the health workers play in DOT implementation is in terms of their knowledge, positive attitudes and practices. Knowledge and attitudes are considered to be the key to any effective programme efforts in the area of TB management. A health worker, who is knowledgeable and well equipped with the skills needed for the management of tuberculosis, will contribute meaningfully to TB management.

2.4 DOT SERVICE AND THE PATIENT SUPPORT SYSTEM

The main goal for tuberculosis treatment is to cure the individual with the disease successfully and minimise the transmission of TB bacilli to others in the community. Treatment is always demanding on the patient and health workers, because it requires taking multiple drugs for a relatively long period of time under proper supervision. The major problem hampering 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. To improve adherence, DOT is regarded as the best method to ensure full adherence and treatment success. In a broader perspective, DOT can be seen as providing continuous psychological and moral support to the patient as he or she endeavours to complete the TB treatment successfully (MOHSS 2000, p. 61; American Academy of Pediatrics , 2000).

DOT is not only about observing the patient swallowing TB medicine, but also about playing a major role in reacting promptly to the patient's problem in the course of treatment that may prevent him or her from completing the treatment successfully.

A study conducted in San Francisco in 2004, revealed that patients treated under DOT had significantly higher cure rates compared to those treated by self-administered therapy (SAT) and that patients treated by DOT also had lower rates of TB-related mortality (Jasmer, Seaman, Gonzalez, Kawamura, Osmond, & Daley, 2004, p. 7). In contrast to the above, a study done in Thailand on similar topic could not find a statistically significant effect of DOT on TB treatment success (Pungrassami, Johnsen, Chongsuvivantwong & Olsen, 2002, p. 276).

However, the main advantage of DOT is that treatment is carried out entirely under the close supervision of a treatment supporter and this provides an accurate assessment of the degree of adherence and greater assurance that the medication has actually been taken, thus resulting in high cure rates and a reduction in the risk of drug resistance. DOT is the cornerstone of a patient-centred treatment delivery system that is accessible to the patients whether geographically, culturally or financially, in order to maximise the likelihood of TB treatment completion. DOT can be delivered anywhere and by anybody provided that he or she has been given proper orientation and good advice on how to do so.

The individual responsible for the direct observation of treatment should be acceptable to the patient, should express willingness to undertake the task, should be responsible and caring, and should be able to respect confidentiality, show dedication to a task, be prepared to broaden their knowledge by attending training and refresher courses and should understand the nature of the

work (International Union Against Tuberculosis and Lung Diseases, 2007, p. 32). However, the researcher has observed that these attributes are lacking among some health workers. With the favourable environment and necessary human and financial resources available, the first choice for providing DOT delivery is health workers, provided that they have the required attitude and a personal interest in TB.

Additionally, trained community members can also serve as effective DOT supporters. If community health workers are given appropriate training, ongoing supervision and support by health workers, they can visit patients in their homes and at workplaces. It is presumed that receiving DOT from a community member chosen by the patient him or herself is a convenient alternative to a health centre and can result in excellent TB treatment adherence. Community participation will increase the cure rates and make this method of DOT more accountable, affordable, acceptable and sustainable.

Similarly, treatment supporters must be accepted and understood by the TB patients, and also be capable of providing emotional, and sometimes material, support to the patient during the journey towards cure (Macq, Theobald, Dick & Dembele, 2002, p. 107). It is important that at the outset of treatment, the service provider should discuss with the patient how DOT can be best assured at the patient's convenience. Various DOT options are available, such as at the health facility and in the workplace, as well as guardian-based and community-based DOT among others. DOT that is provided at a health facility situated close to the patient's home or on the patient's way to work has proved to be most successful. This is because the patients take TB medicine every day in the presence of the health worker, except on weekends and public holidays when patients will take medicine home from the clinic. When a patient fails to attend his or her DOT appointment, a system should be in place that allows for prompt patient tracing.

This involves finding out why the patient has defaulted and ensuring that treatment is resumed promptly and effectively. The situation should be addressed in a sympathetic, friendly and non-judgemental manner and every effort should be made to listen to the reason for the patient missing a dose(s) and to work with the patient and his or her family to ensure that treatment continues.

If the patient is working, DOT service can also be provided at workplace. Employers generally aim for high productivity and an employee who is sick with TB will be less productive. However, while being treated at work, he or she does not need to stay at home during this time and can take the medicine when it is convenient. The employer should assign other workers to support the patient or do so him- or herself. The workplace DOT supporter comes to the clinic with the patient where both receive instructions on the TB treatment, emphasising the importance of daily DOT. The employer should then allow the patient to go to the clinic to collect his or her medicine, make sure that the patient takes the treatment everyday and perhaps assist him financially and emotionally (WHO, 2006a; MOHSS, 2006a; Macq et al., 2002).

The Medium Term Plan 1 (MTP-1) for TB advocates a countrywide expansion of community-based DOT programmes, using a successful model developed in the Omaheke region of Namibia and elsewhere in the world. The Omaheke region is the only region that has consistently reached good treatment outcomes over the last decade and the national target of 85%. This can be attributed to the community-based DOT approach. Similarly, a study conducted in Guguletu (Johannesburg-South Africa) in 2002 revealed that a community-based DOT service contributed to better TB control programme performance compared to an approach based exclusively on health facilities. Treatment success rates were 81% among new smear-positive patients who

chose community DOT and 53% among those who chose clinic-based DOT. Thus community involvement also improves the affordability and cost-effectiveness of TB treatment (WHO, 2003, p. 4).

2.5 COMMUNICATION ROLE OF HEALTH WORKERS IN DOT SERVICES

The successful treatment of the TB patients requires that patients understand what is happening.

When the patients understand the nature of the disease and the treatment, they are more likely to follow the treatment. It has already been mentioned that the major challenge in the fight against TB is to ensure that patients take the prescribed medicine correctly and adhere to treatment. Therefore, health workers have the important task of informing the patient of the importance of completing the treatment and of motivating him or her to do so. For motivational purposes, it is important for the patient to realise that TB is a curable disease. Without this knowledge, it is difficult for the patient to aim at regaining his or her health, which makes it even more difficult for health workers to encourage patient's motivation to complete treatment.

The basic principle of DOT is that patients are in contact with health personnel or trained community members, and where contact occurs so too does communication. Health workers have a very important role in combating TB, as they are responsible for monitoring all patients through DOT, for supporting and encouraging patients to finish their treatment, tracing defaulters and disseminating information through health education. In order to accomplish these tasks successfully health workers need to have good communication skills: health workers' ability to communicate with patients influences their relationships and therefore patients' motivation to complete the treatment. In addition, good communication skills are useful for informing patients and families about TB and DOT at the first meeting (WHO, 1999, p.3).

Having TB is an emotionally devastating experience for patients and their families. Considerable stigma is attached to the disease, owing to the link between TB and HIV infection.

This stigmatisation is often one of the problems preventing TB patients from completing their treatment and needs to be solved through communication. In many cultures the social stigma of TB contributes to abandonment of treatment and also discourages patients from seeking professional care (Hurting, Porter & Ogden, 1999, p. 556). The reason for this stigma is a lack of knowledge and information about the disease in the community. Some patients and community members believe that TB and AIDS are the same and that both cannot be cured. It is here that health workers have to correct the misinformation, as stigma can lead to failure to cope and feelings of inferiority and exclusion, and this can weaken the chances of treatment adherence. Thus, lack of communication and understanding between health workers and patients may often lead to lower participation in treatment programmes. Good communication is therefore vital in efforts to motivate patients to adhere to and complete treatment.

Lack of information can lead to misconceptions and stigma. Tutu (1999), when addressing the 30th Conference on Lung Health in Madrid in 1999, claimed that the majority of TB patients throughout the world do not receive the care they deserve. This is because of the social stigma attached to the disease which makes patients feel that they should hide their condition. The association between TB and HIV/AIDS results in a double stigma and if not handled well through education, it may have a negative effect on health-seeking behaviour as well as completion of treatment. It is the health workers' responsibility to give patients correct and relevant information about the disease so as to allay fear and discontent.

DOT also has its critics. The critics of DOT say that it affects the TB patient's private life and should therefore be conducted with sensitivity. If treatment takes place at home, the privacy of the patient and his family is jeopardised, whereas if treatment takes place at a clinic or a hospital there may be stigma or discrimination (Hurting et al., 1999, p. 556).

Many TB patients hide their illness from their employers, friends and family members; some interpret supervised treatment as the system's mistrust of them. These feelings are compounded by the manner in which health professionals inform them of their diagnoses. A lack of empathetic attitude exhibited by members of health care team appears to have a negative impact on the patient's subsequent relationship with the clinical staff (Hurting et al., 1999, p. 556).

2.6 SUMMARY

This chapter covered the relevant literature studied to provide an overview of the research problem. The role of health workers in TB management through DOT, as well as the importance of DOT, was discussed. Factors that may influence health workers to practise or not to practice DOT were also discussed. The next chapter covers the research design used during the study.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

In the previous chapter, literature relevant to the topic under study was discussed. This chapter deals with the research method and design chosen by the researcher in order to attain the objectives of the study. The chapter deals mainly with the planning, structuring and execution of the research. Aspects of the study population, sampling, pilot testing, data collection, data analysis, strategies for ensuring the validity and reliability of the instrument, as well as the ethical considerations are discussed in detail.

3.2 PURPOSE AND OBJECTIVES

3.2.1 Purpose of the study

The purpose of the study is to explore and describe the knowledge, attitudes and practices of health workers working with TB-DOT services in public health facilities in the Grootfontein district in the Otjozondjupa region.

3.2.2. Objectives of the study

The objectives of the study are to

- Obtain the socio-demographic information on health workers in the Grootfontein health district
- describe the knowledge, attitudes and practices of health workers with regard to TB-DOT services

3.3 RESEARCH DESIGN

A research design is the complete strategy for approaching the central research problem. It provides the overall structure of the procedures followed, and discusses the data collected and the data analysis conducted (Leedy & Ormrod, 2001, p. 91; Walliman, 2006; Silverman, 2005, p. 109). This study was quantitative in nature, using an exploratory and descriptive design. The study focuses on exploring and describing information about the knowledge, attitudes and practices of health workers with regard to TB-DOT in the Grootfontein district. Quantitative research is suitable for this study because it involves the use of figures, statistics and percentages in analysing the data. A descriptive design generally describes characteristics, opinions, attitudes and/or behaviours as they currently exist in the population (Polit, Beck & Hungler, 2001, p. 167; Nieswiadomy 2000, p. 245; Yegidis & Weinbach, 2002; Brink, 1999, pp. 108-110; Welman, Kruger & Mitchell, 2005).

3.4 POPULATION DESCRIPTION AND SAMPLING

The population comprised the entire group of health workers in the Grootfontein district that the researcher was interested in studying (Brink, 1999, p.132; Nieswiadomy, 2002, p. 169). For the purpose of this study, nurses dealing with TB patients and working in public health facilities in the Grootfontein district were targeted. These numbered about 110 health workers (nurses), all of whom formed part of the study as the number was relatively small. These nurses were all directly involved with TB patients because of the rotation and relief duties they were doing at remote clinics. Because the targeted population was small, the sample and the population were the same in this study. The health facilities studied included the Grootfontein military hospital, the Grootfontein district state hospital, the Polyclinic, the Gam clinic, the Mangetti Dune health centre, and the Tsumkwe, Kombat and Otjituwo clinics.

3.5 DEVELOPMENT OF THE RESEARCH INSTRUMENT (QUESTIONNAIRE)

The questionnaire was compiled following a comprehensive literature study by the researcher and consisted of closed- and open-ended questions. Closed-ended questions offer respondents a number of alternative responses from which they have to choose the one that most closely matches their situation, while open-ended questions allow respondents to express their opinions without being influenced by the researcher.

The questionnaire comprised four sections:

1. Section A: Demographic information
2. Section B: Knowledge of TB-DOT
3. Section C: Attitude towards DOT
4. Section D: Practice of TB-DOT

The research instrument (questionnaire) was discussed with the study supervisors on a number of occasions and then evaluated by a statistician for content validity. Amendments were made on an ongoing basis to ensure effectiveness and quality.

A good data-collection instrument should show both reliability and validity. These concepts are crucial to the integrity of a research project and the conclusions that can be drawn from it.

3.5.1 Validity

Validity refers to the degree to which the research techniques measure what they purport to measure (Sim & Wright, 2000; Young, Taylor & Renpenning, 2001, p. 31; Silverman, 2005, p. 210). Validity can further be seen as the ability of the research instrument to measure what it is designed to measure, that is, the accuracy and trustfulness of scientific findings. For example, the research instrument (questionnaire) generated information on the knowledge, attitudes and

practices of health workers with regard to DOT. In order to ensure that the research instrument is indeed valid, the following was done: a literature review was carried out; information was gathered from various sources; the research instrument was reviewed by the research supervisors and TB experts from the national TB control programme, as well as colleagues, in order to ensure content validity. The researcher analysed the data with assistance from the study supervisors and a statistician. This verification added to the validity of the results.

3.5.2 Reliability

Reliability refers to the consistency and stability of the measuring instrument over time (Abrahamson & Abrahamson, 1999, p.171; Silverman, 2005, p. 210; Brink 1999, p. 171).

This means that similar results that are accurate, stable and homogeneous should be obtained if the same instruments were to be used on one or more occasions under the same conditions. The data-collection instrument was pilot tested to investigate the feasibility of the proposed study and to detect possible flaws in the instrument (Brink, 1999, p. 174). A pilot study aims at eliminating possible ambiguity and assesses the relevance, appropriateness and comprehensiveness of the research instrument.

In this study, reliability was ascertained through the use of a pilot study of health workers with similar attributes to the sample subjects on whom the study was to be conducted. The research instrument was pre-tested by submitting the questionnaire to ten randomly selected health workers, who did not participate actively in the study but met the same requirements as those required by the study. The subjects who participated in the pilot testing were nurses working in the TB ward and at the TB clinic in the Walvis Bay health district. This district is situated in the Erongo region, one of regions with the highest TB notification rate in Namibia. The outcome of

the pilot testing was that the questions were understood well and no major amendments were necessary. However, a few issues were identified and rectified. The first issue concerned the length of time (15 minutes) that the researcher proposed for completing the questionnaire. It was felt that this was not sufficient as most of the respondents were unable to finish it within that time. On the basis of this result, the length of time for responding to the questionnaire was extended to 25 to 30 minutes.

The second issue involved leaving questionnaires with the respondents for them to answer on their own, which resulted in collective responses. A decision was therefore made that the questionnaire would be answered in the presence of the researcher.

3.6. DATA COLLECTION PROCEDURE

Data collection is the process during which information relevant to the population is gathered and obtained in a systematic manner (Burns & Groves 2001, p. 44). The data were collected by means of a self-reporting technique using a self-administered questionnaire. The self-administered questionnaire was used because the researcher believes that all eligible health workers are able to read, write and understand English. A self-administered questionnaire also offers the possibility of complete anonymity, which may be crucial when obtaining information about illegal, immoral and deviant behaviours and about embarrassing characteristics (Munhall, 2001, p. 543). In addition, self-administered questionnaires are suitable for Knowledge, Attitude and Practice (KAP) studies to ensure reliability in cases where the same questionnaire is administered to the same respondent at a later stage.

At the time of data collection, an appointment was made and respondents were notified of the date and time of data collection by their Primary Health Care (PHC) supervisors and matrons.

During the data collection periods, in order to obtain informed consent, the researcher visited the specific health facility, and explained the nature and aim of the study to the individual respondents and what was expected from them. The researcher personally delivered and distributed the questionnaires by hand and these were answered in the researcher's presence to enable him to clarify any questions that might arise, and to ensure that respondents answered the questionnaire themselves and that all the questionnaires were returned. Respondents were informed that participation in the study was voluntary and that they could withdraw from the study at any stage if they so wished.

3.7 DATA ANALYSIS

Data analysis means the categorising, ordering, manipulating and summarising of data to meet the objectives of the study. The purpose of analysis is to reduce data to a form that can be easily understood and interpreted so that the relationships in the research problem can be studied and tested and conclusions drawn (De Vos, Strydom, Fouchè & Delpont, 2005, p. 218; Dunn, 2009, p. 281; Mouton, 2001, p.108). When data collection was completed, the researcher and his study supervisors discussed the questionnaires before analysing the data. Each questionnaire was coded and thoroughly checked for consistency. The researcher, with the assistance of the statistician, entered the data in the computer for analysis using Microsoft Excel and Statistical Package for the Social Sciences (SPSS) version 15.0. Data were analysed by means of descriptive statistics, which is the most important tool available for describing, organising and summarising quantitative data (Brink, 1999, p. 179). This technique allows the use of statistics, number figures and percentages for organising and summarising purposes. Analysis of data provides researchers with facts and figures that allow them to interpret results in the context of the community and to make statements about the significant of the findings for the individual and

the society (Sarantakos, 2003, p. 328). Tables, figures, graphs and charts were also used to identify, understand and present distributions, trends and relationships in the data.

Cross tabulation was used to summarise and analyse the data. After frequency distributions and different types of cross tabulation had been made, a statistical analysis was carried out to determine whether the differences or associations found were significant or not. Additionally, chi square analysis and χ^2 values were used to test the significance of the relationships between variables and categories.

3.8 ETHICAL CONSIDERATIONS

Ethics are rules of conducts in research that guides the researcher to distinguish between what is right and wrong in order to protect researchers, colleagues, respondents and their interests (Waliman, 2006, p. 148; Miller & Brewer, 2003).

The following ethical considerations were observed by the researcher. Obtaining permission to conduct the study, privacy, confidentiality and anonymity, fair treatment and protection from discomfort and harm as well as obtaining informed consent

Permission to collect data: Prior to data collection, the Permanent Secretary of the Ministry of Health and Social Service (Annexure B) was approached for permission to conduct this study and to access health workers employed by the Ministry. On the basis of the official letter thus obtained, permission was also obtained from the Otjozondjupa Regional Health Director (Annexure C), as well as from the Principal Medical Officer (PMO) of the Grootfontein district hospital (Annexure D). Permission was also obtained from the Army Commander for access to

health workers employed by the Ministry of Defence (MOD) at Grootfontein Military Hospital (Annexure E).

Privacy: Privacy is the freedom the individual has to determine the time, extent and general circumstances under which private information will be shared with or withheld from others (Mouton, 2001, p. 244). It involves the obligation of the researcher to protect information from respondents from undesirable or unnecessary interaction or sharing. Respondents privacy was protected in such a way that they were informed that data gathered was for academic purposes and would only be shared with those involved in the research.

Confidentiality and anonymity: Protection of respondents' identity is the most important aspect in social research (Miller & Brewer, 2003, p. 93). In this study respondents were informed that their identity would be protected and any information they furnished would remain anonymous because their names would not be recorded. The respondents were also informed that the data would be used for academic purposes and that no unauthorised person would have access to it.

Protection from discomfort and harm: Social research should aimed at causing no harm to people being studied (Walliman, 2006, p. 155). In this study respondents were given assurance that there will be no physical and emotional harm resulting from participating in the study.

Informed consent: Informed consent was obtained from the individual health workers after they had been thoroughly and truthfully informed about the purpose of the study. Refusal to participate was respected as participation was on a voluntarily basis.

3.9. SUMMARY

This chapter covered the research methodology used during this study. It included the research design, the population of the study, the data collection procedure and the ethical considerations. The development of the data collection instrument as well as the methods for ensuring validity and reliability were also discussed. The next chapter deals with the results of the research.

CHAPTER 4

DATA PRESENTATION AND DISCUSSION

4.1 INTRODUCTION

The previous chapter focused on the research design and data collection methods used in this study. This chapter deals with the presentation, analysis, interpretation and discussion of research findings. Data analysis was done using the Statistical Package of Social Science (SPSS) version 15.0, as well as Microsoft Excel to generate figures, table, pie charts and graphs.

Descriptive statistical analysis was used, which allows the researcher to summarise and organise data in ways that give meaning and facilitate insight when examining a phenomenon from a variety of angles in order to understand more clearly what is being observed (Burns & Groves, 2005, p. 461). Data were analysed according to the objectives of the study in the following four sections: section 1 deals with the socio-demographic information of respondents, section 2 with respondents' knowledge, section 3 with respondents' attitudes and section 4 with respondents' practices with regard to DOT.

Although the initial target population was 110, only 80% (n = 88) of the respondents actively participated in the study. This was, however, considered a good response rate. Table 4.1 shows the reasons why some respondents did not take part in the study.

Table 4.1: Reasons for non-participation (n = 110)

Reasons	Frequency	Percentage
Respondents were on leave	11	10
Attending courses and workshops elsewhere	7	6
Declined participation	4	4
Total	22	20

Twenty-two respondents (20%) out of the study population (n = 110) did not take part in the study. Of these, the majority (16%) were not on duty during the period of data collection owing to leave of absence (10%) and some were attending workshops (6%). In addition, a small proportion (4%) exercised their right to refuse to participate. It is important to note that all percentages were rounded off to the nearest whole number.

4.2 SOCIO-DEMOGRAPHIC INFORMATION OF ON RESPONDENTS

Demographic information was gathered to determine the background of each respondent in relation to knowledge, attitudes and practice of TB-DOT. This data included the category of respondents, gender, age, health facility where they work and years of experience as health workers. The following table, table 4.2, gives the socio-demographic information of the respondents.

Variables	Frequency	Percentage
1. Category of respondents		
Registered nurses	31	35
Enrolled nurses	51	58
Nursing assistants	5	6
Others (student nurse)	1	1
Total	88	100%
2. Gender		
Female	69	78
Male	19	22
Total	88	100%
3. Age		
20–29	14	16
30–39	20	23
40–49	31	35
50–59	23	26
Total	88	100%
4. Respondent by health facility		
Clinic	22	25
Health centre	4	5
Hospital	62	70
Total	88	100%
5. Years of experience as a health worker		
<1	8	9
1–4	7	8
5–9	10	11
10–14	12	14
15–19	11	13
20–24	17	19
25 >	23	26
TOTAL	88	100%

Table 4.2: Socio-demographic information (n = 88)

4.2.1 Category of respondents

As can be seen from table 4.2, the majority of the respondents (65%) were sub-professional nurses, while only 35% were registered nurses. These data indicate that there are more sub-professional nurses than registered nurses in the Grootfontein district. There were very few nursing assistants (6%), which could indicate that the upgrading programme for nursing assistants to qualify as enrolled nurses is gaining momentum, as more nursing assistants are upgrading. This particular programme is aimed at improving the quality of care provided for the patients. However, this has not improved service delivery in terms of TB treatment, as the defaulter rate in the Grootfontein district remains high at 28% and the treatment success rate is very low at 56%, if compared to the success rate of 85% required by the WHO (MOHSS, 2007). Besides, TB service does not have to be carried out by registered nurses; it could be also managed very effectively by sub-professional nurses in the absence of registered nurses, provided that they are empowered through training in TB management.

4.2.2 Gender

More female health workers participated in the study than male health workers. This implies that there are more female than male health workers in the Grootfontein health district. In Namibia, it is the trend that there are more female than male health workers. This is probably because health care and nursing in particular has been viewed historically as a female-dominated profession. However, the study done in Taiwan on the professional career development for male nurses in 2004 indicated that health care and nursing was a profession suitable for both male and female (Yang, Gau, Shiau, Hu, & Shih, 2004, p. 649). In this study therefore 78% (n = 69) were females and 22% (n = 19) were males. However, in the male-dominant culture of some communities in this region, especially the San people, the involvement of male health workers is

sometimes required for the programme. For example, the researcher observed that patients are more likely to abscond from hospital when female nurses are in the charge than when there are male nurses. This is probably because they feel that where there is a man there is authority.

4.2.3 Age

The respondents were asked their age in order to ascertain whether there is any relationship between their age and knowledge, attitudes and practices with regard to TB-DOT. The youngest respondent in the sample was 20 and the oldest was 59 years. The majority of the respondents (36% – n = 32) fell into the age category 40 to 49 years. Twenty-five percent (n = 22) were between 50 and 59 years, while 23% (n = 20) were between 30 and 39 years of age. There were no respondents younger than 20 or older than 60 years of age.

There are certain age categories that may influence a person's ability to concentrate fully on the public health programme. Nowadays, it appears that many young health workers are aware of better working conditions and attractive salaries elsewhere. According to Iiping, Hofnie, van der Westhuizen and Pendukeni (2006, p. 3) it is significant that young nurses are leaving the service and the country for greener pastures overseas. According to this study, the majority of health workers in Grootfontein district are mature adults. The researcher believes that the senior health workers in the age group 40 to 59 are also more settled in towns with their families. Owing to family commitments they are not prepared to leave their homes to work at remote clinics and this could further affect the TB management. The reintroduction of financial and non-financial incentives such as awards and trophies for health workers at remote clinics might help to alleviate and improve the problems of staff turnover and the brain drain.

4.2.4 Respondents by health facility

The study also shows that a large number of respondents (70% – n = 62) were hospital based (in medical wards, TB wards or outpatient departments where TB patients are treated), while the remainder (30% – n = 26) were clinic and health centre based. This figure indicates fewer respondents at the community level (clinic and health centre) than in curative services. It was expected that more respondents would be at the hospital level because of the nature of the curative health services in the country. There are not enough nurses at the community level (clinics and health centres), although they could be complemented by the involvement of community members. Community involvement is useful, as it creates collaboration between general health services and the community. There is therefore a need to introduce and intensify community-based DOT in the Grootfontein health district, a form of service used successfully in the Omaheke region (African Union, 2006, p. 11).

4.2.5 Respondents' years of experience

The respondents were asked their years of experience as health workers in order to determine whether there is a relationship between years of experience and the knowledge of respondents about TB-DOT. The study reveals that 72% (n = 63) of the respondents had worked for more than ten years as health workers, while 9% (n = 10) had experience of less than a year. The data indicates that large numbers of respondents had experience in health care because of their long service as health workers. In contrast, if in-service training on TB is not strengthened and done regularly, senior and long-serving members tend to lack adequate knowledge that is required to deal with the current issues concerning TB, because of possible revisions and updating in aspects of TB management. Hence in-service training should be strengthened if the goal for TB treatment is to be achieved (MOHSS,2006a).

4.3 KNOWLEDGE OF TB-DOT

This section of the results discusses the basic findings on the knowledge of health workers with regard to TB-DOT. Health workers' knowledge was examined by looking at their training on TB; this includes the type of training and duration of training.

4.3.1 Health workers trained in TB management

The aim of training in TB management is to offer health workers a chance to acquire the necessary theoretical knowledge and practical skills, so that they will be able to provide quality TB management and care. It can be assumed that well-trained health workers will contribute meaningfully to the achievement of the 85% international treatment success rate. Figure 4.1 shows training of health workers in TB management.

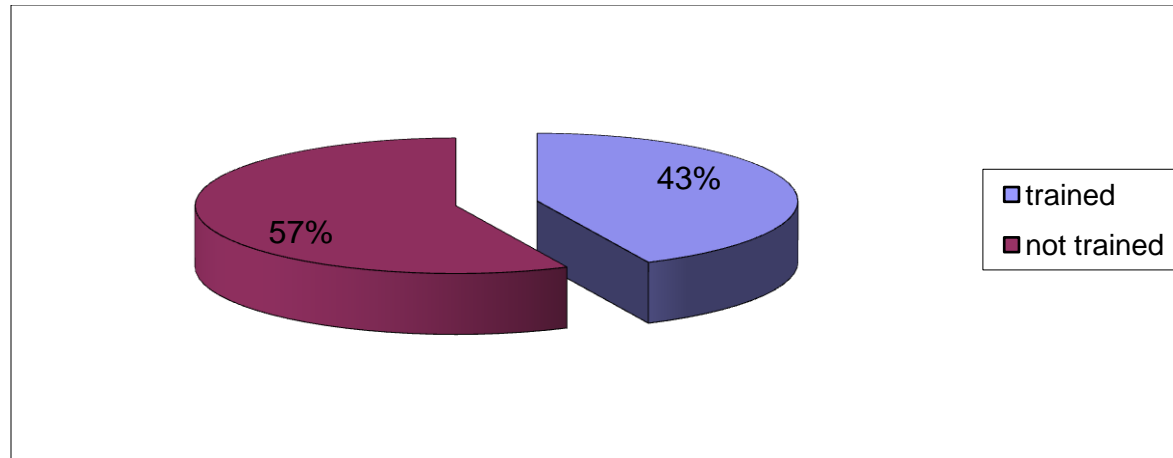


Figure 4.1: Training of respondents in TB management (n = 88)

Forty-three percent (n = 38) of respondents have been trained in TB management. However, this number is small compared to the 57% (n = 50) who indicated not having received training in TB management. This is clear testimony to the large numbers of health workers who might lack knowledge of TB management because they have not been trained.

This also confirms the findings reported by the MHOSS in its National Tuberculosis Control Programme review in 2000. According to this review more than half of the health workers interviewed in that study denied having received any training in TB management (MOHSS, 2000, p. 16). The same results were found by Angala (2000) in her study about knowledge and management of TB among patients and health workers at the Otjiwarongo hospital. This situation suggests that a lot needs to be done in terms of training if proper supervision through DOT services and an increase in the TB success rate is to be achieved. Other factors relating to poor training might be that some district nurses responsible for TB are too junior and possibly find it difficult to conduct training for those who are more senior. Equally, those few who have received training might not have found time to conduct training sessions, because of the workload resulting from a shortage of staff in hospitals and clinics, or simply because of their inability to conduct such training. It was also reported that health workers are on the front line of TB efforts but often feel unprepared to deal with the prevention, diagnosis and treatment owing to inadequate training (MOHSS, 2007, p. 7). Thus, a lack of training in health workers is one of the main challenges to the implementation of DOT services. Increased knowledge of TB and DOT services will enable health workers to adopt a more positive attitude towards TB patients and show greater willingness to provide quality care. Table 4.3 shows the training of health workers in TB management per category of respondent.

Table 4.3: Training in TB management by category of respondent

Category	Trained	Frequency	Percentage
Registered nurses	Yes	15	17
	No	16	18
Enrolled nurses	Yes	22	25
	No	29	33
Nursing assistants	Yes	0	0
	No	5	6
Others (student)	Yes	1	1
	No	0	0
Total		88	100%

From the table above it is evident that the majority, 40% (n = 35), of all sub-professional personnel had not been trained in TB management. It has to be remembered that they are the backbone of the health services in the remote areas, due to the shortage of registered nurses. Hence, the fact that they are less likely to be trained might affect TB treatment negatively. However, no statistical significance was found between training in TB management and category of health worker. Table 4.4 shows respondents' training in TB management by age.

Table 4.4: Training of respondents in TB management by age (n = 88)

Age category	Trained	Frequency	Percentage
20–29	Yes	7	8
	No	7	8
30–39	Yes	12	14
	No	8	9
40–49	Yes	10	11
	No	21	24
50–59	Yes	9	10
	No	14	16
Total		88	100%

The results from Table 4.4 indicate that the majority 40% of respondents in the age groups 40 to 49 and 50 to 59 had not been trained in TB management and thus they might not be expected to have enough knowledge on TB-DOT. This finding may support the assumption that some district nurses responsible for TB management are junior staff and possibly find it difficult to conduct

training for more senior staff. However, no statistical significance was found between training in TB management and the age of respondents.

4.3.2 Type of training received by respondents

The respondents were asked to state the type of TB training they had received in order to find out whether the manner in which training had been given had an effect on the knowledge of health workers about TB-DOT. The type of training was ranked as workshop training, on-the-job training, conferences and seminars, as well as formal courses. Figure 4.2 shows the form of training received by respondents.

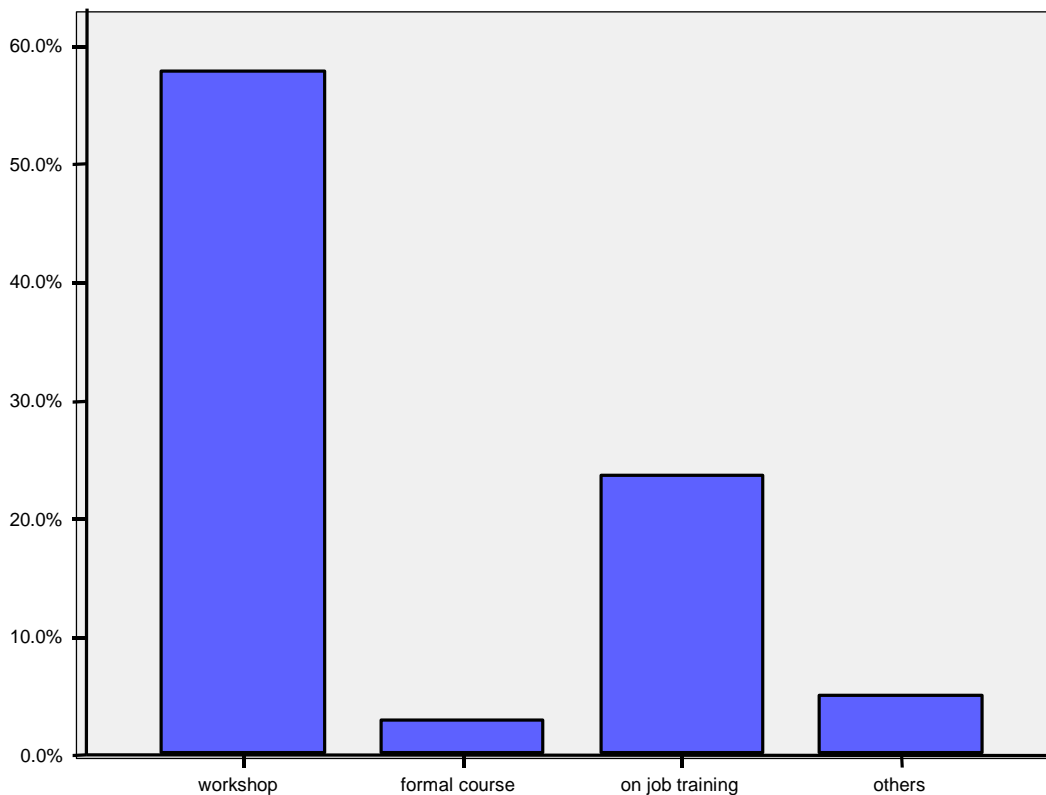


Figure 4.2: Type of training received by respondents (n = 38)

Forty-three percent (n = 38) of the respondents had undergone training on TB management, and 58% (n = 22) had received training through workshops. This might be because some health workers believe that they are only trained if they attend workshops whereby training occurs in the classroom or in an instructor-controlled setting. Although some health workers are trained, it was clear that they did not provide feedback training to others, the reasons for which are unclear. The lack of feedback after attending training could be also be indicative of the fact that only 24% (n = 9) of respondents received their training through in-service (on-the-job) training. If feedback training had been given, the number of health workers who received training through in-service training could have been far higher. In-service training involves educating an employee while he/she is rendering the service. This implies updating, educating and informing the employee about the present requirements of the job. Since the nature of the job in the health care services is dynamic and is subject to rapid change, there is a need for continuous in-service training for health workers (Booyens, 1999, p. 384; Meyer, 2002).

4.3.3 The duration of training received by respondents

Inadequate training and insufficient length of training is regarded as a challenge to the implementation of DOT services and the achievement of the international treatment success rate of 85% (WHO, 2006a, p. 106). Similarly, lack of time often means that training is being done in a compressed manner that prevents learning from taking place. This means that, owing to time constraints, a one-week training course will often be compressed into a day or two and its content finally becomes a mini lecture with handouts, the end result being that very little learning takes place because very few health workers will read those handouts back home on their own (Meyer, 2002). Table 4.5 shows the duration of training received by respondents.

Table 4.5: Duration of training received by respondents (n = 38)

Period of time	Frequency	Percentage
Less than a week	14	37
1 week	10	26
2 weeks	4	11
3 weeks and more	10	26
Total	38	100

The data reveals that all 38 respondents had received training in TB management, the majority, 37% (n = 14), of them had received their training in a period of less than a week, 26% (n = 10) within a week, whereas 26 (n = 10) had received their training for at least three weeks and more. Training of less than a week, which is what the majority of the respondents had received, might not be enough to accommodate all aspects of TB management unless it is done regularly. Owing to financial constraints, many TB training sessions are limited to a shorter duration. Although the literature indicates that there is a relationship between training and health workers' knowledge, in this study no significant statistical difference was found.

4.3.3 Definition and understanding of DOT by respondents

DOT is regarded as the best method to ensure that the patient adheres fully to the treatment. Every dose of TB medicine taken is observed and recorded and the TB patient is monitored continuously until treatment has been completed. For health workers to practise DOT effectively, they must have an in-depth understanding of the concept and what it entails. Table 4.6 shows the definition and understanding of TB-DOT from the respondents' perspectives.

Table 4.6: Definition of TB-DOT by respondents (n = 88)

Meaning of TB-DOT	Frequency	Percentage
It is when TB treatment is taken under direct supervision and support	62	70
It is directly observed treatment	13	15
No answer	13	15
Total	88	100

A high percentage of health workers representing 70% (n = 62) of respondents correctly defined TB-DOT as when TB treatment is taken under direct supervision and support. This is an indication that the majority of health workers have an understanding of DOT. This means that respondents were aware that TB patients need to be supported and assisted during the treatment because the treatment is long and involves taking multiple medicines. Macq *et al.* (2002, p. 104) conclude that patients need to be supported all the time even when they no longer feel ill. However, the 30% who did not answer the question or did not answer correctly is a big concern. This may display a lack of knowledge and this may contribute to the high defaulter rate in the Grootfontein district. This implies that lack of knowledge on TB is prevalent among health workers. Table 4.7 shows the definition of TB-DOT by category of respondents.

Table 4.7: Definition of DOT by category of respondents (n = 88)

Definition	REGISTERED	ENROLLED	ASSISTANT	OTHER	TOTAL
When TB treatment taken under direct supervision and support.	26% (n = 23)	42% (n = 37)	2% (n = 2)	0% (n = 0)	70% (n = 62)
Directly observed treatment	9% (n = 8)	5% (n = 4)	0% (n = 0)	1% (n = 1)	15% (n = 13)
No response	0% (n = 0)	10% (n = 10)	5% (n = 3)	0% (n = 0)	15% (n = 13)
TOTAL	35% (N = 31)	58% (N = 51)	6% (N = 5)	1% (N = 1)	100% (N = 88)

From table 4.7 it is clear that 42% (n = 37) of the enrolled nurses who participated in the study correctly defined DOT as being when TB treatment is taken under the direct supervision and support, which means that they are more likely to have a better understanding of DOT than the 26% (n = 23) of registered nurses. A statistical significance was found between the category of health worker and the understanding of DOT. The Pearson chi-square test shows a χ^2 value of 0.001. Table 4.8 shows the definition of TB-DOT by gender.

Table 4.8: Definition of DOT by gender

Definition	Male	Female	Total
When TB treatment taken under direct supervision and support	9% (n = 8)	61% (n = 54)	70% (n = 62)
Directly observed treatment	8% (n = 7)	7% (n = 6)	15% (n = 13)
No response	5% (n = 4)	10% (n = 9)	15% (n = 13)
Total	22% (n = 19)	78% (n = 69)	100% (n = 88)

Table 4.8 indicates that, of all the respondents, 61% (n = 54) of females defined DOT as when TB treatment is taken under direct supervision and support. This means that they were

significantly more likely to have better understanding of DOT compared to the 9% of their male counterparts who define it correctly. There is a significant association/relationship between the definition of DOT and gender, χ^2 value 0.001.

4.3.5 Knowledge of respondents of DOT supporters

Respondents were asked to state the way in which they understood a DOT supporter. Health workers are expected to encourage the TB patients to involve DOT supporters in their treatment. It is therefore important that health workers have a good understanding and knowledge of their role and why the TB patient needs to be supported during TB treatment. The DOT supporter is anybody who chosen by the patient to facilitate the treatment and he or she plays an important role in TB management by ensuring that the TB patient adheres to the treatment. Table 4.9 shows the knowledge of respondents in terms of who a DOT supporter is.

Table 4.9: Knowledge of respondents of DOT supporters

Knowledge on DOT supporter	Frequency	Percentage
Someone who observes, supports and encourages TB patients to complete their treatment successfully	67	76
Someone who take care of TB patients	11	13
Someone who has knowledge on TB	1	1
No response	9	10
Total	88	100

Table 4.9 reveals that 76% (n = 67) of the respondents described a DOT supporter as anybody who observes, supports and encourages TB patients on their way to completing their treatment.

Similarly, in the literature, a DOT supporter is described by the WHO as anyone who is willing, trained and responsible, acceptable to the patient and accountable to the health system (Macq *a*, 2003, p. 103).

However, despite their knowledge of TB-DOT and DOT supporters, the treatment success rate in the Grootfontein district remains low at 56% and defaulter rate is very high at 28% (MOHSS, 2005). Moreover, the 24% of respondents who did not demonstrate the correct responses is of grave concern, as they could derail efforts by others who have the correct knowledge and attitudes towards DOT support and might contribute to the high defaulter rate.

4.3.6 Knowledge of respondents on who could be chosen as a DOT supporter

A DOT supporter can be any person who, preferably, can read and write and who is willing to volunteer to support the TB patient in completing their treatment. Table 4.10 shows the knowledge of respondents on who could be chosen as a DOT supporter.

Table 4.10: Knowledge on who could be chosen as a DOT supporter (n = 88)

Responses describing a DOT supporter	Frequency	Percentage
Family member or friends	72	82
Neighbour or supervisor at work	7	8
Trusted community member	6	7
Colleagues	3	3
Total	88	100

Family member or friends were mentioned most frequently by 82% (n = 72) of respondents as a good treatment supporter. However, family members as treatment supporters could be subjected

to subtle manipulation by the patient. To illustrate this, a study done in India suggests that DOT supporters should never be a family member. This is because the patients may not listen to their wives or husbands and/or close family members (WHO, 2006a). However, the data in above table (table 4.10) indicate that almost anyone can take responsibility for supporting a TB patient throughout the treatment programme. Whoever is chosen, it is very important that the patient is involved in choosing the DOT supporter and that he or she is acceptable to him/her.

4.3.7 Knowledge of respondents about the task of a DOT supporter

Respondents were asked to state the task of a DOT supporter. This was an open-ended question and, as the tasks of a DOT supporter are many, each respondent supplied more than one response. The total number of responses, therefore, is more than the respondents. Almost all the responses given by respondents are correct. However, for discussion purposes, only tasks which were mentioned by many respondents are highlighted. Table 4.11 shows the task of the DOT supporter.

Table 4.11: The tasks of the DOT supporter (n = 88)

Tasks	Frequency	Percentage
To ensure that medicine are taken and swallowed	80	91
To record in patient's treatment card after medicine intake	78	89
To trace patient if he/she fails to come for treatment	69	78
To encourage patient to complete treatment	66	75
To remind and take patient to follow-up visits	53	60
To report patient problems to health facilities	52	59
To monitor patient's progress	46	52
To give health education	40	45
To be available all the time to help the patient	20	23

According to table 4.11, ensuring that TB medicine is taken and swallowed by the patient (91% – n = 80) and recorded afterwards (89% – n = 78) were the tasks most mentioned by the respondents. This is an indication that the respondents have knowledge of the required standard for the role of DOT supporter. Despite this knowledge, the TB treatment success rate in Namibia remains below required standards. This means that knowledge alone is not enough to raise the treatment success rate, but also positive attitudes and practices as well.

4.3.8 Knowledge of respondents on support given by family members to TB patients

Respondents were asked to mention the form of support families needs to be given to TB patients during treatment. It was reported that without strong and on-going support from close relatives and communities, many patients are tempted to stop or will actually stop their TB treatment when they start feeling better (MOHSS, 2006a). Figure 4.3 shows the support given by family members to TB patients.

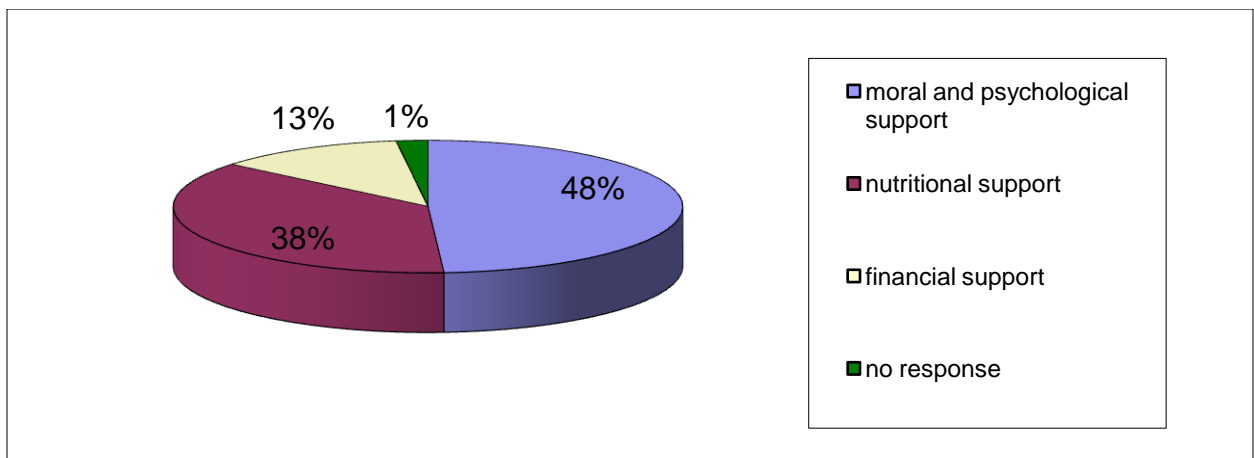


Figure 4.3: Support given by family members to TB patients

The majority of the respondents (48% – n = 42) suggest that TB patients need to be given psychological and moral support.

It is reported in the literature that any type of support is needed, because having TB can be an emotionally devastating experience for the patients and their families. The lengthy nature of therapy may contribute to depression, anxiety and further difficulty with treatment adherence. The provision of emotional and other types of support for TB patients may increase the likelihood of adherence to therapy (MOHSS, 2000).

For these reasons, patients need to be supported and not blamed if, for instance, they miss their treatment. Of the respondents, 38% (n = 33) indicated that TB patients need to be given nutritional support. The national guidelines indicate that TB patients should eat a balanced, high protein diet while on TB treatment, but many patients experienced difficulties in obtaining any food at all (MOHSS, 2006a, p. 63). Similarly, the researcher assumed that taking TB drugs without food could make the patient feel sick and cause them to stop treatment. As a result of non-adherence, patients may develop MDR and, possibly, the more severe form of resistance, XDR (MOHSS,2006a). Thus family members are encouraged to provide TB patients with all the support they need so that they are able to adhere to treatment. Therefore, family members and the general community have the responsibility for ensuring that patients who start TB treatment take all their medicine until they have completed their TB treatment.

4.4 ATTITUDES OF HEALTH WORKERS TOWARDS TB-DOT

This section offers information on the findings regarding the attitudes of respondents towards TB-DOT. It was clear from the previous data on knowledge of TB-DOT that knowledge was reasonably high. This is, however, in direct contrast to the fact that the WHO treatment success rate remains low. It is, therefore, worth exploring the attitudes of health workers to TB-DOT. The questions on attitudes were structured so as to determine the attitudes of health workers towards DOT and TB management in general. A response to an item was regarded as correct when the respondent answered in accordance with established facts and findings, as well as the predominant opinions in the literature. For instance, one opinion stated: “If TB patients do not want to drink medicine, it is their own choice.” This statement is not correct in the sense that most authorities would not agree with this statement even if it was the patient’s right to refuse to take medicine. Therefore, respondents who indicated agreement with such statements would be giving an incorrect response.

4.4.1 Attitudes regarding the importance of DOT services

Respondents were asked whether they thought that DOT is helpful for ensuring that TB patients complete their treatment successfully. All of them agreed with that statement. When asked to motivate their responses regarding the importance of DOT, the following reasons were provided as shown in table 4.12.

Table 4.12: Attitudes regarding the importance of DOT services (n = 88)

Importance of DOT	Frequency	Percentage
With DOT, there is no doubt about cure	51	58
DOT reduces defaulting	15	17
DOT involves other people in treatment	6	7
DOT avoids missing of treatment	5	6
DOT prevents new infections	3	3
No response	8	9
Total	88	100

The table shows that 58% (n = 51) of respondents indicated that if TB treatment is taken under observation, supervision and support there is no doubt about treatment adherence and cure. According to the literature, DOT is recommended for the treatment of pulmonary tuberculosis in order to improve adherence and cure rates (Jasmer *et al* 2004, p. 2). The results of this study revealed that respondents have some understanding of TB-DOT. Good understanding influences behaviours and therefore brings about changes in practice. However, despite health workers' understanding, the defaulter rate and treatment success rate in the Grootfontein district has not been influenced positively.

4.4.2 Barriers to using DOT services

Respondents were asked whether there was anything that prevented them from practising DOT. All respondents agreed that there were a number of barriers facing health workers in the practice of DOT. Most of these barriers present grave consequences for the patient, family and the community, as well as the health care services. Knowledge of these barriers will help health

workers to take appropriate steps to improve TB management. Barriers to using DOT are shown in figure 4.4.

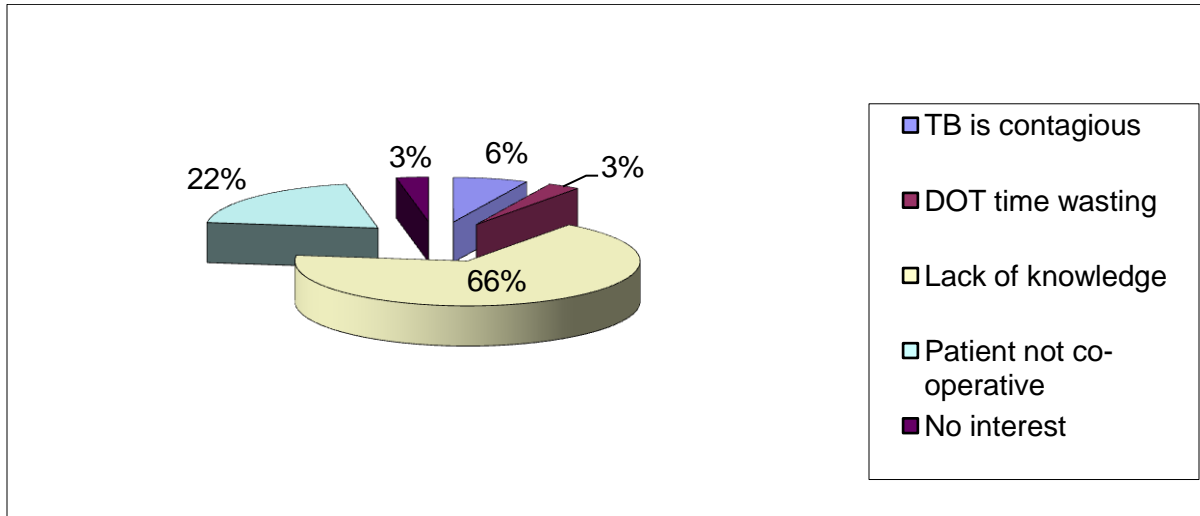


Figure 4.4: Barriers to using DOT services (n = 88)

Among the respondents, 66% (n = 58) reported that lack of knowledge by health workers hampered the implementation and practice of DOT service. This confirms earlier reports that health workers are not well motivated to deal with TB, because they are not trained (MOHSS, 2000, p. 16). This supports earlier findings in this study that only 43% of respondents are trained in TB management. The report of the American Thoracic Society and Center of Disease Control and prevention (CDC) indicates that there is a lack of clinical knowledge and practice on the part of TB control staff, which means there is a broad need for training and education throughout the TB control system. That is why new guidelines and recommendations for TB management are only effective if supplemented with education and training for everybody involved in TB management (CDC, 2005, p. 18). It is for this reason that the ongoing training and education of health workers are an integral part of the strategies for the TB control and prevention

programme. For this reason it is important to know what information about the disease is relevant to and useful for controlling infection in the community.

Furthermore, 22% (n = 19) of respondents indicated that DOT is failing because patients are not cooperative. This was confirmed by Sister Asteria Evard, the Chief Health Programme Administrator for the special programme in the Kunene region, when addressing audiences during TB commemoration day. She states that patients are generally uncooperative during TB treatment for various reasons including the abuse of alcohol while on treatment, interrupted treatment, sometimes for days, as well as defaulting (New Era, 2008). Even though patients are accused of being uncooperative, this might also be because they might not have been given enough information on what is expected from them as TB patients. Patients have the right to access medical information relating to their medical condition and treatment (World Care Council, 2006, p. 1; MOHSS, 1998), but health workers might not give patients information because they might also lack that information as they have not been trained. Meanwhile, 3% (n = 3) reported that they have no interest in TB and DOT services. Although this figure appears insignificant, it might have great impact if, for example, those respondents have to be deployed or rotated to work at TB clinics, as is very likely. Thus, it is very important that the selection of nurses to work at TB clinics is done carefully to ensure that only those who have the required attitudes and personal interest in TB management are selected. It is, therefore, important that all the barriers that prevent health workers from performing their duties effectively should be recognised and innovative measures put in place to remove those barriers.

4.4.3 Attitude questions on TB-DOT services

A series of questions on health workers' attitudes towards TB-DOT were asked (see table 4.13). Respondents were asked to state whether they agreed or disagreed with the statements, and the extent to which they agreed or disagreed.

Levels of agreement and disagreement are indicated in the following table as: (A) Agree; (SA) Strongly agree D) Disagree SD) Strongly disagree DK) Don't know.

Table 4.13: Attitude scale responses

	STATEMENTS	SA	A	D	SD	DK
1	No time to practise DOT due to shortage of staff	10 (n = 9)	25 (n = 22)	36 (n = 32)	28 (n = 25)	0 (n = 0)
2	DOT is not acceptable because it can create dependency	3 (n = 3)	5 (n = 4)	57 (n = 50)	34 (n = 30)	1 (n = 1)
3	I am not interested in managing TB patients	3 (n = 3)	5 (n = 4)	40 (n = 35)	51 (n = 45)	1 (n = 1)
4	Poorly motivated staff and inadequate teamwork result in poor TB treatment outcome	42 (n = 37)	45 (n = 40)	5 (n = 4)	7 (n = 6)	1 (n = 1)
5	The rotation of health workers at TB clinics does have an influence on TB treatment outcomes	44 (n = 39)	20 (n = 18)	8 (n = 7)	19 (n = 17)	8 (n = 7)
6	DOT can be practised anywhere	66 (n = 58)	32 (n = 28)	0 (n = 0)	0 (n = 0)	2 (n = 2)
7	DOT might imply that the patient is incapable and irresponsible in taking care of self	8 (n = 7)	33 (n = 29)	33 (n = 29)	20 (n = 18)	6 (n = 5)
8	Unfriendly health workers discourage TB patients from coming for treatment	14 (n = 12)	39 (n = 34)	23 (n = 20)	16 (n = 14)	9 (n = 8)
9	DOT may be seen as a punishment by the patient	5 (n = 4)	11 (n = 10)	42 (n = 37)	37 (n = 33)	5 (n = 4)
10	Nothing can be done about TB unless poverty is addressed	12 (n = 11)	35 (n = 31)	30 (n = 26)	22 (n = 19)	1 (n = 1)
11	If TB patients do not want to take their medicine, it is their own choice	1 (n = 1)	18 (n = 16)	36 (n = 32)	43 (n = 38)	1 (n = 1)
12	It is a waste of time to observe patients taking medicine every day; they must accept responsibility for their own health	5 (n = 4)	7 (n = 6)	49 (n = 43)	37 (n = 33)	2 (n = 2)
13	DOT is the best method to ensure full adherence and treatment success	66 (n = 58)	30 (n = 26)	2 (n = 2)	0 (n = 0)	2 (n = 2)
14	The DOT supporter must be acceptable to the patient and understand the patient's needs	56 (n = 49)	40 (n = 35)	2 (n = 2)	0 (n = 0)	2 (n = 2)

NB. Percentage may not sum up to 100 due to rounding off

4.4.4. Discussion of results from the attitude scale

For the purpose of descriptive analysis in this study, the five-point attitudinal scale was converted into a two-point scale, that is, agree disagree. This means that “Agree and strongly agree” were combined to form agreement with the statement, while the strongly disagree and disagree were combined to form disagreement. The category of “Don’t know” was omitted from agree/disagree combination and will not be discussed separately.

4.4.4.1. No time to practise TB-DOT service due to shortage of staff

Respondents were asked whether they agreed with the statement that there was no time to practise DOT because of the shortage of health workers. The majority (65% – n = 57) disagreed with the statement. This is probably because they know that DOT can be practised by community members in any place, and not necessarily at health facilities; however, there was no provision for community-based DOT in the Grootfontein district at the time of this study. In contrast, 35% (n = 31) of respondents agreed that the shortage of health workers impairs the practice of DOT. This agreement was probably due to their experience of the shortage of health workers in the Grootfontein district. The shortage of health workers forces management to institute relief duty, which is presumed to affect TB management negatively. Thus, the quality of TB care at clinics is not adequate because of the constant rotation of health workers, which undermines the bonding between health worker and patient (MOHSS, 2004, p. 18).

4.4.4.2. DOT can create dependency

Ninety-one percent (n = 80) disagreed that DOT can create dependency, as compared to 8% (n = 8) who stated that DOT can create dependency. The researcher believes that the health workers who believe that DOT creates dependency have a negative attitude to DOT and would

not be likely to practise and implement a DOT service effectively. Therefore, he/she might impair efforts by others who contribute positively to the management of TB. However, 1% was indecisive.

4.4.4.3. No interest in managing TB patients

Regarding their interest in managing TB patients, 91% (n = 80) of respondents indicated that they were interested in managing TB patients as compared to 8% (n = 8) who indicated that they were not interested, while 1% (n = 1) remained indecisive. This means that, although not trained, the majority of health workers in the Grootfontein district are interested in managing TB patients, and if they received proper training and orientation, they would probably be efficient. In contrast, the above response might have been made because the respondents knew or thought that the researcher would be pleased with it, even if it was not their true opinion. However it requires interest, compassionate attitude and very good interpersonal communication skills to be able to work with TB patients effectively(MOHSS,2006a, p.12).

4.4.4.4. Poor motivation and inadequate team work result in poor treatment outcomes

The majority (88% – n = 77) of the respondents agreed that poorly motivated staff and inadequate teamwork result in poor treatment outcomes. This confirms reports that the failure of the TB control programme in southern Africa is a result of poor quality care due to rigid clinic routines, poorly motivated staff and inadequate health worker and patient relationships (WHO, 2005b, p. 251).

This situation may imply that patients who receive poor treatment (not according to the NTCP guidelines) and will never be cured of their disease. If the situation is allowed to continue by the

NTCP and other stakeholders, the treatment success rate of 85% will not be reached as the defaulter rate will increase. Meanwhile 12% (n = 10) disagreed with the statement.

4.4.4.5. Rotation of health workers has an influence on TB treatment

Respondents were asked whether the rotation of health workers at TB clinics influences TB treatment. Twenty-seven percent (n = 24) disagreed with the above statement. However, the majority (64% – n = 57) agreed that the rotation of health workers does influence TB treatment. Moreover, 8% (n = 7) of respondents were undecided about this issue. The reason why they were unsure was probably due to limited information on TB treatment. Nevertheless, according to the majority (64%), it is important that health workers should be trained and encouraged to work in TB clinics for long periods, as this would enhance patient attendance and follow-up, lower the interruption rate and raise the treatment success rate (MOHSS, 2006a, p. 12).

4.4.4.6. DOT can be practised anywhere

When asked whether it is true that DOT can be carried out anywhere, a significant percentage (98% – n = 86) agreed with the statement, while 2% remained undecided.

This means that respondents were aware that DOT services can be carried out at any place that is convenient for the patient, including the workplace, health facilities and patients' homes to mention but a few. The community-based DOT services piloted in the Omaheke region are a good example of improved TB management, and are one of the best practices for TB treatment countrywide (African Union, 2006).

4.4.4.7. DOT may imply that patients are incapable and irresponsible in taking care of self

When asked for their view on whether DOT implies that patients are irresponsible and incapable of taking care of themselves, more than half of the respondents, 53% (n = 47), disagreed. Their disagreement correctly indicates that they are aware that patients need to be supported and encouraged through TB treatment. However, 6% (n = 5) of the respondents were undecided about the statement and 41% (n = 36) agreed with it. This agreement means respondents feel that DOT is carried out because patients are irresponsible and incapable of taking their medication. The 41% remains an issue of serious concern because it may imply that attitudes of health workers towards DOT might not be conducive to its effective use, even though they might be well informed about it. This shows that the training of health workers regarding TB needs to include a drastic change in attitudes; hence, the national guidelines for the management of TB identify health workers' lack of knowledge of and correct attitude to TB management as the main factor leading to poor treatment outcomes (MOHSS, 2006a).

4.4.4.8. Unfriendly health workers discourage TB patients from coming for treatment

When asked about the relationship between health workers and TB patients, 53% (n = 46) of the respondents agreed that some health workers are not friendly towards TB patients and they discourage patients from coming to health facilities for treatment. In support of this finding, it was reported that maltreatment of TB patients by health care providers such as scolding TB patients for missing treatment or failing to make appointments is common and results in non-adherence to treatment (Munro Lewin, Smith, Engel, Fretheim & Volmik, 2007, p. 22). However, probably due to a lack of knowledge of this type of behaviour, 39% disagreed with this statement.

4.4.4.9. DOT may be seen as a punishment by the patient

A high proportion of the sample (79% – n = 70) disagreed that DOT services could be seen as a punishment by the patient and 16% (n = 14) agreed, while 5% (n = 4) remained indecisive. This means that a large number of respondents were aware that DOT is not a way of punishing TB patients, but a method of helping them to share responsibility with other members of the community so as to successfully complete their treatment and subsequently be cured.

The 16% of respondents who indicated that DOT is a punishment for the patient may not enforce DOT effectively and this would probably contribute to a low success rate. Therefore, it is important that such an attitude should be addressed through education that fosters attitude change.

4.4.4.10. Nothing can be done about TB unless poverty is addressed

Regarding the relationship between poverty and TB, 52% of respondents disagreed that nothing could be done about TB until something is done about poverty. This indicates that there is a relationship between poverty and TB. Poverty is one of the main factors that contribute to the development of TB because it can lead to malnutrition, alcohol abuse and HIV infection. These factors lower the body's immune system and cause people to be vulnerable to diseases like TB. However, 47% of health workers who believe that nothing can be done about TB might have a negative attitude and contribute little to TB management. Eradication of poverty is the aim, but it cannot be achieved easily, as eradication of poverty is complex, particularly in developing countries. Therefore, continuous education should be provided to communities on the spread of TB; its signs and symptoms; its prevention and the importance of adherence to treatment regime, as well as to avoid destructive behaviours such as alcohol and drug abuse and to protect

themselves against HIV infection. Therefore, it is not correct to say that TB is a disease of the poor and that nothing can be done until poverty is eradicated.

4.4.4.11. If TB patients do not want to take their medicine, it is their own choice

Although the majority (79%) of the respondents correctly disagreed with the statement, 2% remained undecided and 19% agreed that if patients do not want to take their medicine it is their choice, as it is their right to refuse to take the treatment. Health workers with this destructive attitude contribute little to DOT services. Because of this negative attitude, MDR-TB patients in the Grootfontein hospital were allowed to move about freely in town and come back to the ward under the influence of alcohol (Isaacs, 2009). This is probably because health workers believe it is the patient's choice whether or not to take their medication. Therefore, from a DOT service point of view, health workers and the general community have a joint responsibility to ensure that patients who start treatment take all their prescribed medicine until the course is completed (MOHSS, 2006a).

4.4.4.12. It is a waste of time to observe patients take medicine every day; they must accept responsibility for their own health

Twelve percent of respondents agreed that it was a waste of time to observe TB patients taking their medicine. This might be an indication that these respondents have no interest in TB management and contribute little to DOT services. However, 86% disagree with the statement and their disagreement implies that they understand that TB patients need to be supervised and supported during their treatment. It is for this reason that without strong ongoing psychological support from health workers and community, many patients are tempted to stop or actually do stop their treatment (MOHSS, 2006a, p. 58). Meanwhile 2% remained undecided.

4.4.4.13. DOT is the best method to ensure full adherence and treatment success

Asked whether DOT is the best method to ensure adherence to treatment, 96% (n = 84) agreed that DOT is the best method to ensure full adherence and treatment success. Meanwhile, 2% disagreed and another 2% was undecided. In the study comparing DOT and self-administered therapy (SAT), it was found that patients treated with DOT at the start of therapy had a significantly higher cure rate of 97.8%, compared to 88.6% treated with SAT. It is further argued that patients who are treated by DOT have a lower TB-related mortality rate, although it was not certain whether DOT alone was the major factor contributing to the reduced mortality. DOT is the most reliable measure to ensure that patients take their drugs as prescribed (Jasmer et al., 2004, p. 9). However, the key challenges of DOT are how to implement it well while maximising convenience and respectful interaction with the patients. Therefore, the treatment plans that emphasise DOT from the outset have the greatest success in improving TB treatment outcomes.

4.4.4.14. DOT supporters must be acceptable to the patient and understand patient needs

Of the respondents, 96% (n = 84) agreed that DOT supporters must be acceptable to the patient and understand patient needs. This correlates with the literature that treatment supporters need to be accepted and understood by the TB patient, and need to be capable of providing emotional and sometimes material support for the patient during the journey towards cure. Hence, family members are the obvious choices where they exist, accept the situation and are capable of supporting the patient effectively (Macq et al., 2003). Therefore, DOT should not only be performed by a person who is accessible and acceptable to the patient, but also accountable to the health system. DOT is a process of negotiation and not a standardised strategy applied to all TB patients. It is an ongoing process that incorporates the patient's characteristics and choices

because some patients may not find it difficult to come for treatment daily while others may. The patient's relationship with the treatment supporter influences adherence and therefore a successful outcome (Frieden & Shabaro, 2007).

In conclusion, some negative attitudes were displayed, for example some respondents felt that DOT was a waste of time and some indicated that they were not interested in caring for TB patients. This is perhaps as a result of the lack of knowledge that may be attributed to inadequate training. However, an average level of knowledge and positive attitudes, as well as a willingness to provide care for TB patients through DOT services, was reported.

4.5 PRACTICE OF TB-DOT

This section offers information on the findings regarding the practice of TB-DOT. Tables and figures were used to summarise the data and their interpretation.

4.5.1 Availability of new national TB guidelines

Respondents were asked to state whether they have the national TB guidelines available in their health facilities in order to find out whether there is a relationship between the availability of TB guidelines and TB-DOT practice. The national TB guidelines comprise a policy document that regulates the management of TB in Namibia. This was first released in 1995 by the Ministry of Health and Social Services and was revised in 2006. Every health facility should be in possession of this document and every health worker who manages TB patients should adhere to it. Technical staff at national and regional level should ensure that all health workers follow the guidelines through orientation, training and strict supervision. Whether new national TB guidelines are available in various health facilities in the Grootfontein district is shown in figure 4.5.

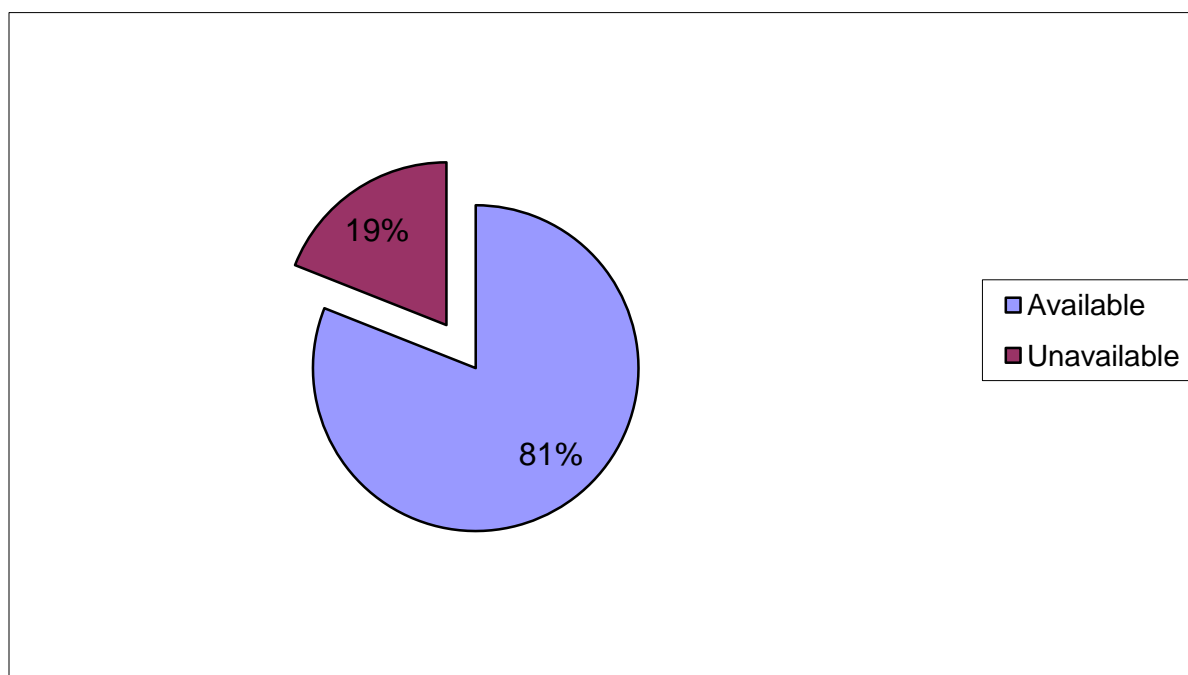


Figure 4.5: Availability of new national TB guidelines

The results indicate that 81% ($n = 71$) of respondents reported that they have the new national guidelines for TB management in their health facilities and this was verified by the researcher. However, 19% ($n = 17$) of the respondents indicated that they did not have the guidelines. The unavailability of TB guidelines implies that the new national TB guidelines are not available or not readily available at some health facilities. This also gives the impression that TB is not managed according to the national guidelines, which is believed to be the golden standard for clinical practice for managing TB in Namibia. This situation supports the claims that some health workers, especially foreign doctors, are treating TB in the same way as they did in their countries of origin thus ignoring the national guidelines of Namibia (MOHSS, 2004). Lack of adherence to national guidelines can lead to poor management and follow-up of cases and thus further decrease the chances of achieving the international target of an 85% treatment success rate.

Table 4.14: Availability of new national TB guidelines by health facility

Health facilities	TB guidelines available	Percentage
Clinics	Yes – 21	24
	No – 1	1
Heath centres	Yes – 4	5
	No – 0	0
Hospitals	Yes – 46	52
	No – 16	18
TOTAL	88	100

Overall, 52% (n = 46) of respondents who reported that they were in possession of national TB guidelines in their facilities were hospital based, 24% (n = 21) were from clinics, and 5% (n = 4) were from health centres. Literatures indicates that there are some health workers especially foreign doctors who ignoring the national guidelines and treat TB the same way as they did in their countries of origin (MOHSS,2004). However, there is no statistical significance between the availability of the new national TB guidelines and the health facilities where respondents are working.

4.5.2 Health education given by respondents

Health education and information help people to change their behaviours to enable them to make the best use of health services. Thus, in order for TB treatment to be successful, each patient must fully understand what it entails and the information must be given in a language that the

patient speaks and understands well. It is therefore much more cost-effective and more important to invest time in patient education and support than in tracing patients who have interrupted their treatment (MOHSS, 2006a, p. 115). All health workers are expected to invest time in health education when managing TB patients, and to ensure that TB treatment is given through DOT. Figure 4.6 shows the percentage of respondents who give health education.

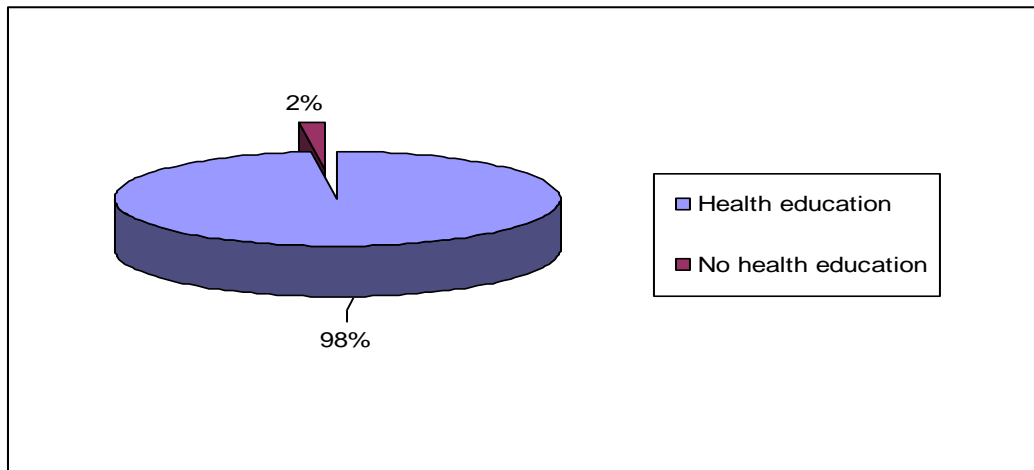


Figure 4.6: Number of respondents who give health education (n = 88)

According to the figure 4.6, the majority 98% (n = 86) of the respondents indicated that they gave health education to TB patients, whereas 2% (n = 2) of the respondents indicated that they do not give health education. The reasons for not giving health education to TB patients were not explored here; however, the majority of respondents did give health education as part of the management of TB patients. According to Lucas and Gilles (2003, p. 354) health education should form an integral part of health services and all health workers should accept responsibility for providing health education. Health education and information is very important because patients who fully understand the disease (TB) and its treatment is more likely to complete the treatment. However, it is not known whether all relevant information and facts were given to TB patients during health education.

4.5.3 Information covered by respondents during health education

This question allowed room for multiple answers and each respondent supplied more than one answer. All respondents who gave health education indicated that there was much important information that needs to be given to TB patients during health education. The information given to TB patients by respondents is shown in Table 4.15.

Table 4.15: Information covered by respondents during health education

Information covered during health education	Frequency	Percentage
To explain the importance of treatment adherence	52	59
To inform patients that TB is curable	48	55
To tell patients about the duration of treatment	44	50
To inform them not to stop treatment by themselves	40	45
To explain the relationship between TB and HIV	38	43
To inform them of the importance of follow-up visits	36	41
To tell them about the side effects of TB medication	30	34
To inform them about the importance of eating nutritious food	25	28
To tell them about the importance of knowing their HIV status	23	26
To tell them to avoid alcohol and smoking	15	17
To tell them how to prevent TB	9	10

The most important information given by respondents was to explain the importance of treatment adherence to the patient (59% – n = 52); to inform them that TB is curable (55% – n = 48) and to

inform them of the duration of treatment (50% – n = 44) of respondents. However, the relationship between HIV/AIDS and TB was mentioned by 43% (n = 38).

Based on the results of this study, it would seem that the amount of health education given to TB patients is minimal. The majority of the respondents indicated information below 50%. However, it was only the importance of treatment adherence (59%), information that TB is curable (55%) and duration of TB treatment that were above 50%. Good patient education is the foundation for achieving high treatment success, as it enables patients to avoid treatment interruption and default (MOHSS, 2006a, p. 114). Therefore, if all health workers were to be empowered to give proper information to TB patients and the community at large, the TB treatment success rate might improve.

4.5.4 Methods of health education used by respondents

Respondents were asked to indicate the methods of health education they used in order to find out whether there is any method that is more effective for disseminating information to TB patients. Some respondents indicated more than one method, which is why the total number of responses exceeds 88. Health education can be done on a personal level, such as in the relationship between a health worker and a patient, on a group level or by reaching large audiences through the mass media, exhibitions or health days (Angala, 2000, p. 25). Table 4.16 shows the methods of health education used by respondents.

Table 4.16: Methods of health education by respondents

Method	Frequency	Percentage
Talking to individual patients	58	66
Group discussions	34	39
Lecturing	10	11
Giving patients pamphlets and posters	44	50
Others (radio and TV show, dramas and TB day activities)	3	3

Of the 98% (n = 86) of respondents who indicated that they give health education, the majority, 66% (n = 58), of them talk to individual patients at the outset of treatment. It was reported that patients' health education will only be effective if each patient is approached as an individual with his/her own specific problems and background (MOHSS, 2006a, p. 114). Thus, talking to the individual patient is very important because it gives him/her confidence to express them/herself and tell the health workers some of the problems he/she regards as personal. However, any other type of health education can also be used, depending on the patient's needs and educational background.

4.5.4 How often health education is given by respondents

Respondents were asked to state how often they provided health education. To maximise the effectiveness of patient education, information must be repeated several times. Therefore, it is very important for health workers to use several approaches to health education, repeating the same message frequently and verifying that the patients have understood the message by asking questions (MOHSS, 2006a, p. 115). Figure 4.7 shows how often health education is given by respondents.

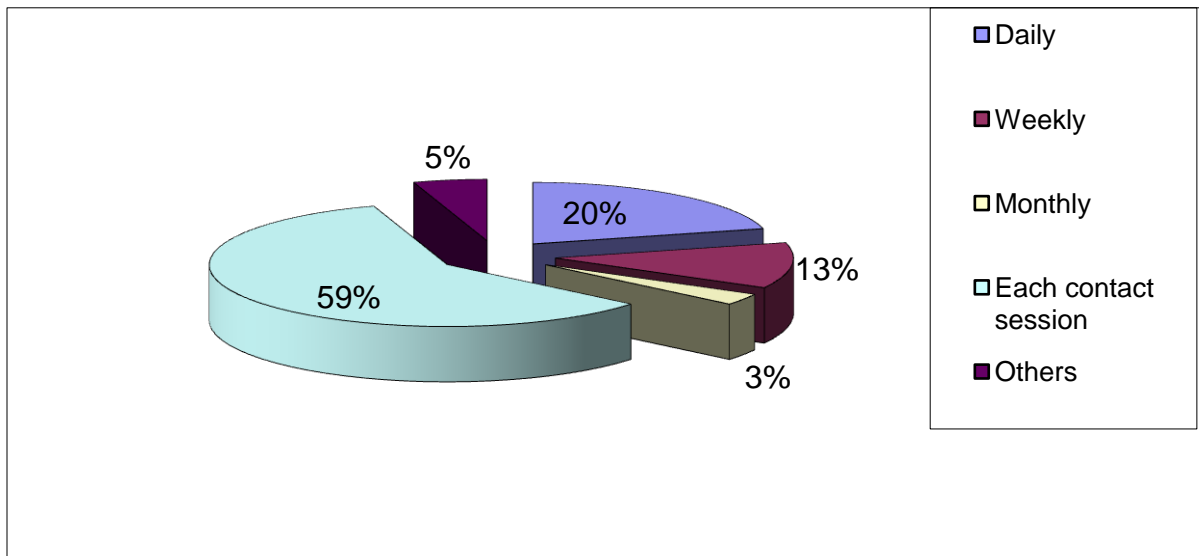


Figure 4.7: How often health education is given by respondents

Of the respondents who give health education, 59% (n = 52) indicated that they give health education at any time as the need arises for individual patients, whereas 20% (n = 18) give health education on a daily basis, according to a scheduled programme at health facilities. Meanwhile 5% give health education on special occasions, such as outreach visits, school visits, after church services and so forth. Health education tends to yield good results if the health worker or volunteers talk to patients each time in order to reinforce and emphasise the information. Health education is a useful tool in TB management because patients will have a better understanding of their illness and may change their behaviour thus influencing the success of the treatment. The data indicate that the majority of health workers give health education and understand why it is important. However, lack of knowledge on TB, a lack of communication skills, a lack of teaching skills and a negative attitude towards TB patients by labelling patients as also suffering from HIV, among other things, may impair treatment outcomes. Therefore it is very important and cost-effective to invest more on patient education and support than in tracing patients who have interrupted treatment (MOHSS, 2006a, p. 115).

4.5.5 Problems associated with non-adherence

Respondents were asked to give possible reasons why patients miss their treatment. It is a known fact that non-adherence is a serious problem in TB management in Namibia. It has been reported that 13% of patients who started treatment in 2003 failed to adhere to their treatment (MOHSS, 2006a). This can result in the development of MDR and XDR with serious consequences for the patient, his or her family, community and country at large. Some respondents supplied more than one problem, thus the total number will not sum up to the total number of respondents (n = 88). Table 4.17 shows the problems associated with non-adherence.

Table 4.17: Problems associated with non-adherence

Problems of non-adherence	Frequency	Percentage
Long distances to health facility	56	64
Treatment is too long	28	32
Do not feel sick anymore	29	33
Forgot to come for treatment	19	22
Feel they are cured	39	44
Work-related reasons	15	17
Other reasons (stigma, no food, too many pills)	21	24

From table 4.17 above it is evident that 64% (n = 56) of respondents indicated that long distances to health facilities was the main reason for TB patients' non-adherence. This confirms the information contained in the Grootfontein district annual report 2004/2005 that long distances to health facilities and lack of transport for tracing TB patients hamper efforts to control TB (MOHSS, 2005, p.16). Indongo (1997) assessed TB-related services in the Rundu district of the

Kavango region and found that long distances to the place of treatment was the main reason for non-adherence. Similarly, a study conducted in Ethiopia reveals that 45% of the participants indicated that the main reason for non-adherence was because the clinic was too far from their homes and they could not afford the transport (Shargie & Lindtjom, 2007, p. 3). Long distances increase the need for community-based DOT. Forty-four percent (n = 39) of the respondents reported that patients fail to adhere to treatment because they feel that they have been cured because the signs and symptoms have disappeared. This could be due to the fact that the patients do not have enough information on TB treatment; possibly that they were not given that information as health workers may also lack such information.

Thirty-two percent (n = 28) indicated that some patients stop their treatment because the treatment is too long. A similar study which was done in Zambia in 2006 reported that some patients feel overwhelmed by the number of tablets to be swallowed, and by the long duration of TB treatment protocol, which is why they decide to stop treatment (Chanda & Gosnell, 2006, p. 10). This situation requires that patients should be given proper information and education so that they understand why the treatment takes so long. In reality, TB treatment is not as long as the lifelong treatment for diseases such as hypertension and diabetes, amongst others. It is therefore very important to consider the socioeconomic conditions that frame the patient's life when emphasising DOT. A TB programme that simply focuses on the act of observing the patient taking medication without taking into account the economic and social factors associated with the treatment is likely to fail. Patients may be forced to stop treatment because they cannot travel to the clinic every day for DOT, either because they lack resources or because the family has refused to support them. Moreover, it happens that patients sometimes may not be able to tell

the family that they have TB, because of the social stigma and therefore cannot ask for support (Hurting *et al.*, 1999, p. 555).

4.5.6 Methods for encouraging TB patients to complete their treatment

Having TB is an emotionally devastating experience, especially in the era of HIV/AIDS when many people link these two diseases. TB treatment takes a long time and it also has side effects; hence, there is a need to encourage and support TB patients to complete their treatment. Respondents mentioned various methods they used to encourage TB patients, and these appear in Table 4.18.

Table 4.18: Methods used to encourage TB patients to complete their treatment

Methods	Frequency	Percentage
Provide good patient support and health education	62	70
Assign a DOT supporter	47	53
Intensify DOT during the entire course of TB treatment	32	36
Monitor patients' treatment closely	27	31
The use of fixed dose combination drugs	14	16
Other methods	4	5

NB: Some respondents indicated more than one method, thus the numbers will not add up to 88

The most important method respondents used to encourage TB patients to complete their treatment is by providing good patient support and health education, which was mentioned by the majority of respondents (70% – n = 62).

Patients should be properly informed and should fully understand the implications of TB and its treatment. A well-trained health worker would be able to provide good patient education and information. Therefore, good patient education is the foundation for achieving high treatment success, as it enables us to avoid treatment interruption and defaulting (MOHSS, 2006a, p. 114).

4.5.7 Major challenges facing the implementation and practice of DOT

Respondents indicated that the challenges encountered in the implementation of DOT services and TB management in the Grootfontein district are many and most respondents gave more than one challenge. For the analysis of this study, the challenges are categorised as health facility related, health worker related, patient related and access related challenges. Table 4.19 summarises the challenges facing the implementation and practice of DOT.

Table 4.19: Major challenges encountered by respondents in implementing DOT

Challenges in implementation of DOT	Frequency	Percentage
1. Health facility-related challenges (n = 52)		
• Shortage of health workers	30	58
• Rotation of health workers	22	42
2. Health worker-related challenges (n = 108)		
• Language barrier	13	12
• Inadequate health education	17	16
• Lack of knowledge on TB-DOT	67	62
• Lack of interest in TB-DOT	11	10
3. Patient-related challenges (n = 51)		
• The use of alcohol	11	22
• Poverty	18	35
• Mobility of soldiers and nomadic San people	15	29
• Lack of cooperation and defaulting	7	14
4. Access-related challenges (n = 52)		
• Long distances to health facilities	22	42
• Lack of public transport	30	58

The table indicates that in the category, health facility-related challenges, the shortage of health workers was mentioned most frequently, that is, by 58% (n = 30), followed by the rotation of health workers at 42%. The shortage of health workers is a known trend not only in Namibia but also worldwide and it affects the implementation not only of TB programmes, but also a number of other health projects.

The WHO has found that the challenge to human resources for TB programme implementation includes the fact that large numbers of staff involved in TB management in general are not trained, there is a lack of in-service training, the length of training is inadequate, there is a lack of measurable learning outcomes and a shortage of human resource for TB control (WHO, 2006b, p. 106).

Meanwhile, with regard to health worker-related challenges, 62% (n = 67) reported a lack of knowledge of TB-DOT by health workers. Inadequate health education given to TB patients was mentioned second, that is, by 16% (n = 17), while language barriers were mentioned by 13% (n = 12). Most of the TB patients in the Grootfontein district are from the San communities and, as there are very few health workers who can speak the San language, it is difficult for them to communicate with the majority of TB patients. This makes health education difficult and results in poor adherence to treatment.

Regarding the patient-related challenges, poverty was mentioned most frequently, that is, 35% (n = 18). The mobility of soldiers and the nomadic nature of the San people were indicated as the second challenge (29% – n = 15). Owing to their nomadic lifestyle, the San communities are highly mobile. They do not build permanent structures and do not live in the same place for long periods. This makes it difficult for health workers to trace them and supervise their treatment, especially when there is no transport available (Dr M Boshart, personal communication, September 4, 2007).

The researcher also observed that some soldiers at the Grootfontein Army Base pose a serious challenge because of their movement from one base to another without informing the district clinic for a proper transfer arrangement. Such movement complicates the treatment outcomes.

Furthermore, the researcher believes that, as a result of poverty, some TB patients may lack food to eat after taking medication. Taking TB medication without food could make the patients feel nauseous and this causes them to default on treatment. Defaulting and treatment failure are major threats to TB management in the Grootfontein district.

On the access-related challenges, the lack of public transport for health workers to carry out their TB work was mentioned most frequently by 58% (n = 30). Long travelling distances to the nearest health facility providing care for TB patients was indicated by 42% (n = 22). The sparsely populated Grootfontein district, spread out over vast distances without proper roads and reliable transport poses challenges in tracing TB defaulters in the rural areas. Similarly, the MTP 1 for Tuberculosis indicates that geographical access to DOT services is limited. This limitation of access is due to the inability of many patients to come to the clinic daily because of the distances that have to be travelled. The best way to alleviate transport and distance problems is to introduce community-based DOT and to train community volunteers to do the work. However, there was no provision for a community-based DOT service in the Grootfontein district during the time of this study. In addition, long distances and lack of transport contribute to insufficient tracing of treatment interrupters (MOHSS, 2004, p. 18).

4.5.8 Comments on and suggestions for improving TB management

Respondents believe that there are a number of factors that hamper the practice of DOT in the Grootfontein district and probably in Namibia as a whole. Hence, they presented various comments on and suggestions for strengthening DOT services in order to improve TB management (see table 4.20). Some respondents made more than one suggestion; therefore, there are more responses than the total respondents (88).

Table 4.20: Comments on and suggestions for improving TB management

Suggestions for improving TB management	Frequency	Percentage
Regular training of all health workers in TB management	50	57
Introduce feeding programme to provide meals for TB patients	15	17
Provide transport for mobile outreach and patient follow up	10	11
Strengthen health education for TB patients and communities	29	33
Train community members on the importance of DOT	22	25
Recruit competent TB nurses in every health facility	15	17
Increase the number of health workers	5	6
Eradicate poverty	8	9
Assign a DOT supporter to every TB patient	26	30
Minimise rotation of health workers to clinics	14	16
Encourage attitude change in health workers	10	11
TB education to be emphasised as is the case with HIV/AIDS	12	14
More research to be done on TB	6	7

Regular training of all health workers in TB management was suggested by the majority of respondents (57% – n = 50). Various literature sources suggest regular training of health workers who deal with tuberculosis or suspected tuberculosis patients in the clinical and public health aspects of TB to enable them to demonstrate proficiency (Angala, 2000; CDC, 2005, p. 24).

Thirty-three percent (n = 29) of respondents suggested that health education and information for patients and the community should be maximised. This is because patients who fully understand the disease and its treatment are more likely to complete the treatment.

Good patient education is the foundation for achieving a high treatment success rate and avoiding treatment interruption and defaulting (MOHSS, 2006a, p. 114). Thirty percent (n = 26) believes that every TB patients should be assigned a DOT supporter. With a DOT supporter it is more likely that all doses will be taken and the patient will be cured and this may solve the problem of non-adherence. Meanwhile, 25% (n = 22) of the respondents believe that training of community members in TB-DOT may have a positive effect on TB management. This finding coincides with the community-based TB care project in the Omaheke region which is known to be successful because of the good collaboration between health services, the TB control programme and the community (AU, 2006, p. 10). Seventeen percent of the respondents suggested the introduction of a feeding programme whereby TB patients would be provided with a meal on receiving their treatment. This could be crucial, especially in case of the San communities, who very often have no food and are not willing to take drugs on an empty stomach. Indeed, poverty is believed to be one of the main challenges to the management of TB. Thus, providing patients with food may serve as an incentive for them to come for treatment. Poverty and poor nutrition are not only predisposing factors for TB; it is also important to have a high protein diet when being treated for TB. Therefore, TB patients need to eat a balanced meal before the daily drugs are taken, in order to enhance recovery (De Villiers, Van der Westhuizen & Ashtone, 2006, p. 10).

Sixteen percent of the respondents suggested that the rotation of health workers to clinics should be minimised. Literature also suggests that for reasons of efficiency in competence building and maintenance, staff would need to stay in the same function for a number of years in order to become productive and competent in their jobs.

If the rotation of health workers in TB clinics is not halted, and staff at other levels not retained for a good number of years, the investment in human resource development will be forfeited, and only a small fraction of staff working in TB control will be sufficiently competent (MOHSS, 2004, p. 56).

4.6 SUMMARY

This chapter presented an analysis and interpretation of the data. Raw data collected from respondents were analysed and presented as descriptive statistics in a frequency distribution. Tables, pies and bar charts were used to present the data statistically. The chi square and χ^2 value were used to test the significance of the relationship between variables. The focus was on the knowledge, attitudes and practices of health workers with regard to TB-DOT services in the Grootfontein health district in Otjozondjupa region of Namibia. What transpires from the findings is that, although health workers have fairly good knowledge on TB-DOT, some of them still lack adequate knowledge and positive attitudes. TB-DOT services were not effective, as some of the health facilities still do not have the required TB guidelines. The following chapter concentrates on the conclusions, recommendations and limitations of the study.

CHAPTER 5

CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

The previous chapter focused on the presentation and discussion of the findings regarding health workers' knowledge, attitudes and practices with regard to TB-DOT services in the Grootfontein district. This chapter focuses on the conclusions, limitations and recommendations with reference to health workers' knowledge, attitudes and practices regarding TB-DOT services in the Grootfontein district.

The conclusions were drawn and recommendations made on the basis of the aims and objectives of this study. The purpose of the study was to explore and describe the health workers' knowledge, attitudes and practices towards DOT services in public health facilities in the Grootfontein district of Otjozondjupa region. To attain the overall purpose, the following objectives were formulated:

- to obtain socio-demographic information of health workers in the Grootfontein health district
- to describe the knowledge, attitudes and practices of health workers regarding TB-DOT services

5.2 CONCLUSIONS

5.2.1 Objective 1: Obtain socio-demographic information of health workers in the Grootfontein health district

The first objective was met. Socio-demographic information on the health workers was obtained to determine the background of each respondent. The demographic information was necessary to guide the understanding of the knowledge, attitudes and practices of the respondents in terms of the practice of TB-DOT. The findings were contextualised within the existing literature to validate the findings. The data included in the demographic information were the category of health worker, gender, age, place of work and years of experience as health workers. The data revealed that the majority (65%) of the respondents were sub-professional nurses, against 35% of professional nurses. More female health workers (78%) than males participated in the study; ages ranged from 20 to 59 years, with the 50 to 59 age group being in the majority (35%). The study further revealed that the majority of respondents (70%) were working in a hospital at the time of the study. Of them, 26% have working experience of more than twenty years, while only 9% had working experience of less than a year. However, there was no significant statistical differences found between demographic data variables of respondents.

5.2.2 Objective 2: Describe the knowledge, attitudes and practices of health workers regarding TB-DOT services

The second objective deals with the knowledge, attitudes and practices of health workers regarding TB-DOT.

- **Knowledge** of the respondents was examined in terms of the training of health workers in TB management, knowledge of the definition of and an understanding of TB-DOT, and knowledge and understanding of TB-DOT supporters. The study reveals that 57% respondents were not trained in TB management. Despite a lack of training in TB-DOT, 70% of all respondents demonstrated an understanding of the meaning of TB-DOT, while 76% of the respondents demonstrated an understanding of the meaning of a DOT supporter. However, this is probably due to their long years of experience as stated previously, as 26% of respondents had working experience of 20 years, while only 9% had working experience of less than a year. However there was no statistically significant difference was found between health workers' training and TB management.
- **Attitude:** This section offers information on the attitudes of respondents towards TB-DOT. A series of statements on health workers' attitudes towards TB-DOT were rated on an attitudinal five-point scale. The attitudes of health workers were demonstrated by the extent to which they agreed or disagreed with selected statements about DOT. Thirty-five percent of the respondents believed that there was no time to practise DOT because of the shortage of health workers; 53% disagreed that DOT implies that TB patients are irresponsible and therefore need DOT; 88% agreed that poor motivation and inadequate team work result in poor treatment outcomes; 65% agreed that the rotation of health workers has an effect on TB treatment; 17% stated that if TB patients do not want to take their medication it is their own choice to do so.

On the other hand, 12% argued that DOT is a waste of time, while 8% argued that DOT creates dependency. These feelings characterise health workers' negative attitudes and their lack of support, and if these issues are not handled well through training, treatment may be negatively affected. By implication, health workers who feel that it is the patient's choice whether or not to take the TB medication contribute less to the treatment and have no time to observe a patient taking medicine every day.

- **Practices:** This section presents information on the practice of TB-DOT. Practice was measured by the availability and adherence to national TB guidelines, as well as the provision of health education for TB patients. The majority (81%) of respondents indicated that they have the new national guidelines for TB management and this was verified by the researcher. In addition, 98% of the respondents indicated giving health education to patients on TB-DOT. This could show that health workers understand the importance of health education in TB management. Although the TB guidelines were available at most health facilities, it is not known whether they were well understood by all health workers. Therefore the availability of the guidelines does not guarantee proper practice if training has not been conducted.

It was concluded however that there are many challenges to the implementation and practice of DOT services in Namibia, particularly Grootfontein district. A significant number of respondents, 62%, indicated that inadequate health worker's knowledge on TB is the biggest challenge facing the implementation of DOT.

In addition, 58% of respondents reported the shortage of health workers as also being a contributory factor. This means that health workers are implicated in most of the challenges that affect the implementation of DOT. Thus, patients often take their medicine under difficult conditions, and these need immediate attention if the 85% TB treatment success rate in Namibia is to be attained.

5.3 LIMITATIONS OF THE STUDY

The following limitations were experienced by the researcher and may have contributed to some shortfalls in the study and the reported findings:

- The study population was very small and was limited to health workers/nurses in one district only, that is, the Grootfontein health district. Therefore, the findings reported in this study cannot be generalised to all health workers working in other parts of Namibia or in other countries.
- Although it was expected that participants would answer questions honestly, the presence of the researcher might have influenced them in such a way that they might have answered in a manner that they perceived as correct. Some respondents might give the answers that they thought the researcher was looking for and thus was not their true response. This participant effect, where the participants give the answer that they think the researcher wants, is commonly referred to as the Hawthorne effect (Polit & Beck, 2004, p. 180).

5.4. RECOMMENDATIONS

On the basis of this study, the following recommendations seem appropriate in deepening the understanding of DOT services and contributing to the development of programmes and guidelines for ensuring the successful implementation of DOT services.

5.4.1 Training of health workers

It was clear from the findings that not all health workers have relevant information about TB management and DOT services because of inadequate training. Therefore in-service training should be strengthened and conducted not only for health workers who deal directly with TB patients, but for the general population of health workers as well. This is very important in ensuring that all health workers have standardised knowledge and information to help them recognise and manage patients suffering from TB. In addition, new staff should receive training in the management of TB, as well as regular refresher courses to maintain and improve their competencies.

The rotation and relief duties at various clinics in the Grootfontein district were seen as being a problem in the proper management of TB, because they impair continuity of care. Therefore, the Grootfontein health district's District Coordinating Committee (DCC) should consider implementing a policy that aims at reducing the rotation and or relief duty of nurses at the remote clinics.

Encouraging local youth to join the health profession and training them as permanent health workers at those health facilities could solve this problem. If it is impossible to recruit new staff,

MOHSS could train and refresh a pool of nurses from time to time, specifically for relief duty. This could result in more effective care being given to TB patients

The Primary Health Care PHC supervisor should assess training needs, especially on aspects of TB during supervision visits, and should include in-service training sessions as part of the supervision schedule.

5.4.2. TB policy implementation

There is a serious need to ensure that TB guidelines are available at all health facilities, both private and public, and to strengthen the existing training programmes on the new TB guidelines for all health workers.

All TB patients should be given treatment with DOT and treatment supporters, in order to ensure that all doses are taken. Provision should be made for various types of DOT that suit the patient, for example workplace-based and community-based DOT and so forth.

The Ministry of Health and Social Services should consider the reintroduction of financial and non-financial incentives (awards and trophies) for health workers particularly at remote clinics.

5.4.3. Community involvement

Community involvement and community participation are two important ways of bringing community members closer to the health services. All health workers involved in TB control should take advantage of existing community own resources persons (CORPs) to enhance community knowledge of TB. Various community members, including village leaders, school

teachers, religious leaders, trade unions workers and women's organisations have the potential, if mobilised, to successfully raise awareness of signs and symptoms of TB and the availability and benefits of its treatment, as well as acting as treatment supporters. In other words, the community can offer many opportunities for the improvement of health services.

5.4.4. Revitalisation of outreach services.

Outreach services will help health workers to reach patients who live far away from health facilities. These should be organised and conducted at least twice a month or as resources permit.

5.4.5. Further research

The researcher recommends that similar studies to be conducted countrywide to determine the knowledge, attitudes and practices of health workers in DOT service in particular and TB in general, so as to improve the quality of service provided to TB patients.

5.5 SUMMARY

This chapter has provided conclusions and recommendations that could possibly be used by service providers to improve TB management in the Grootfontein district as well as in the entire country. It is therefore important that all health workers in clinics and in management positions understand the factors that prevent the country from achieving and maintaining the required treatment success rate of 85%.

LIST OF REFERENCES

- Abrahamson, J. H., & Abrahamson, Z. H. (1999). *Practical methods in community medicine and epidemiology: A textbook for health care professionals* (5th edition). London: Churchill Livingstone.
- African Union (AU). (2006). *Guidelines for the implementation of the African Union Strategy on HIV/AIDS and TB (SP/PRC/ATM/6 (1))*.
- Ait-Khaled, N., & Enarson, D. (2003). *Tuberculosis: A manual for health care workers*. Geneva: WHO. (WHO/CDC/TB/99.272)
- American Academy of Pediatrics (AAP). (2000). *Textbook of pediatrics*. 25th edition. Elk Grove Village: Pickering.
- Angala, S. P. (2000). *Tuberculosis and malaria in the community: A study in the north-western region of Namibia*. Unpublished master's thesis. University of Namibia, Windhoek.
- Booyens, S. W. (1999). *Health care services in the north-western region of Namibia*. Landsdowne: Juta Education.
- Brink, H. I. (1999). *Health care services in the north-western region of Namibia*. Cape Town: Juta.
- Burns, N., & Groves, S. K. (2001). *Textbook of epidemiology and prevention*. Philadelphia: WB Saunders.
- Burns, N., & Groves, S. K. (2005). *Textbook of epidemiology and prevention*. Philadelphia: WB Saunders.
- Center for Disease Control and Prevention (CDC). (2005). *Global tuberculosis control: Epidemiology, prevention, diagnosis, and treatment*.

Centers for Disease Control and Prevention. (2005). Morbidity and Mortality Weekly Report (MMWR) 2005; 54 (No RR.12)

Chanda, D., & Gosnell, D. J. (2006). The impact of tuberculosis on Zambia and the Zambian nursing workforce. *International Nursing Review* 3(3). [online] Available from: <<http://www.nursingworld.org/ojin>> Retrieved on 02/02/2008.

Crofton, J., Horne, N., & Miller, F. (1999). *Nursing Research*. Paris: Macmillan.

De Villiers, J. E., Van der Westhuizen, L., & Ashtone, D. (2006). *Community Health and Family Planning: A Practical Approach*. Windhoek: University of Namibia.

De Vos, A. S., Strydom, H., Fouché, C.B., & Delport, C. S. L. (2005). *South African Grassroots for Health and Human Services: A Practical Approach*. 3rd edition. Pretoria: Van Schaik.

Dunn, S. D. (2009) *South African Methods for Social Research*. Hong Kong: Blackwell Publishing.

Evian, C. (2000). *Research Methods for Health and Human Services: A Practical Approach*. 3rd edition. Johannesburg: Jacana Education.

Frieden, T. R. (2004). *Toman's Research Methods in Health and Human Services*. 2nd edition. New Delhi: Butterworth-Heinemann

Frieden, T. R., & Sharbaro, A.J. (2007). *Research Methods in Health and Human Services: A Practical Approach*. 3rd edition. May.

Hopewell, P. C., Pai, M., Maher, D., Uplekar, M., & Ravglione. E (2006). International standard for tuberculosis care. *Morbidity and Mortality Weekly Report* 55(28) March, p. 6–27.

Hurting, K. A., Porter, J. D. H., & Ogden, J. A. (1999). *Tuberculosis control and development strategies from the perspective of a human resources manager*. *Journal of Tuberculosis and Lung Diseases*, *7*(7), 553–560.

Ipinge, S. N., Hofnie, K., Van der Westhuizen, L., & Pendukeni, M. (2006). *Research on the impact of the economic conditions on the development of Namibia*. Windhoek: University of Namibia.

Indongo, R. (1997). *Tuberculosis and its control: a review of the situation in Namibia and the role of the health sector*. Windhoek: MOHSS.

International Union against Tuberculosis and Lung Diseases (IUATLD). (2000). *Manual for the control of tuberculosis*. 5th edition. Paris: IUATLD.

International Union against Tuberculosis and Lung Diseases (IUATLD). (2007). *Strategy for the control of tuberculosis*. Paris: IUATLD.

Isaacs, D. (2009, July). Hospital 'unhealthy'. *The Namibian* (123).

Jackson, H. (2002). *Healthcare in Namibia*. Harare: Safaids.

Jasmer, R. M., Seaman, C. B., Gonzalez, L. C., Kawamura, L. M., Osmond, D. H., & Daley, C. L. (2004). *Tuberculosis transmission in a community: a case-control study of household contacts*. Available online from: <http://ajrccm.atsjournals.org/cgi/content/full/170/5/56>. Accessed on 12/5/2007.

Kaumbi, V. K. (2004). *Healthcare in Namibia: a review of the situation and development of the health sector*. Unpublished master's thesis. University of Namibia, Windhoek.

- Leedy, P., & Ormrod, J. E. (2001). *Qualitative research methods and data analysis* 7th edition. New Jersey: Merrill Prentice Hall.
- Lucas, A. O. & Gilles, H. M. (2003). *Qualitative research methods*. 4th edition. London: Oxford University Press.
- Macq, J. C. Theobald, S., Dick, J., & Dembele, M. (2002). *In the era of information technology: the impact of information technology on the development of the health sector in Africa*. Available online from: <<http://docstore.ingenta.com/cgi-bin/ds>>. Accessed on 12/12/2007.
- Meyer, M. (2002). *Managing research and development in the pharmaceutical industry* 2nd edition. Durban: LexisNexis Butterworths.
- Miller, L. R., & Brewer. J.(2003) *Qualitative research* London: Sage publications
- Ministry of Health and Social Services (MOHSS). (1998). *The national health research strategy*. Windhoek: MOHSS.
- Ministry of Health and Social Services (MOHSS). (2000). *Annual report 2000*. Windhoek: MOHSS.
- Ministry of Health and Social Services (MOHSS). (2004). *The national health research strategy (TB-MTP 1 2004–2009)*. Windhoek: MOHSS.
- Ministry of Health and Social Services (MOHSS). (2005). *Annual report 2005*. Windhoek: MOHSS.
- Ministry of Health and Social Services (MOHSS). (2006a). *Annual report 2006*. Windhoek: MOHSS.

Ministry of Health and Social Services (MOHSS). (2006b). *nnaror*. Windhoek: MOHSS.

Ministry of Health and Social Services (MOHSS). (2007). *anaTros and ros onroorammaror*. Windhoek: MOHSS.

Mouton, J. (2001). *os d n or mas's and doras d os o rran d and rso ro*. Pretoria: Van Schaik.

Munhall, P. L. (2001). *rs n r sar a a a rs*. 3rd edition. London: Jones and Bartlett.

Munro, S. A., Lewin, S. A., Smith, H. J., Engel. M. E., Fretheim, A., & Volmik, J. (2007). *an ad r n o rros r m n s s ma r o a a r sar*. Available online from: <<http://medicine.plosjournals.org/perlserv/doi:10.1371>>. Accessed on 14/12/2007.

National Planning Commission (NPC). (2004). *M n m d o m n oa*. NPC: Windhoek.

New Era (2008). Patient uncooperative in TB treatment. *ra*, (161), 4.

Nieswiadomy, R. M. (2000). *onda on on rs n r sar*. 4th edition. London: Pearson Education.

Nzimande, N. N. (2003). *omm n a d s as n rran on n n*. 2nd edition. Durban: Alberts.

Polit, D. F., & Beck, C. T. (2004). *rs n r sar r n and m ods*. 7th edition. Philadelphia: Lippincott Williams & Wilkins.

Polit, D. F., Beck, C. T., & Hungler, B. P. (2001). *ss n a s on rs n r sar M ods a ra sa and a on*. 5th edition. New York: Lippincott.

Pungrassami, P., Johnsen, P. S., Chongsuvivatwong, V., & Olsen, J. (2002). *Das d* *o s r d r a m n m r o d o m s o r a n s r o s s n T a a n d* *Tropical Medicine and International Health*, *3*(3), 271–279.

Rieder, H. L. (1999). *d m o o a s s o r o s s o n r o*. Paris: IUATLD.

Robbins, S. P., Odendaal, A., & Roodt, G. (2003). *r a n s a o n a a o r o a a n d o o r n* *r a r s*. Cape Town: Pearson education south Africa.

Romulo, L. C. R., Villena, M., & Mesina, A. S. (n.d.). *r o s r d r a o r r o s s* *n o a n s r m n a r r n a a r n r m n* *r a m n r m n* Available online from: <<http://www.psmid.org.ph/vol.26/>> Accessed on 05/12/2007.

Sarantakos, S. (2003) *o a r s a r* 2nd edition. Australia: Macmillan Publishers

Shargie, B. E., & Lindtjorn, B. (2007). *r m n a n s o r a m n a d r n a m o n s m a r* *o s m o n a r r o s s n o o r n o a M d* e37.doi:10.1371/journal.pmed.0040037.

Silverman, D. (2005). *o n a a r s a r* 2nd edition. New Delhi: Sage publications

Sim, J., & Wright, C. (2000). *s a r n a a r o n s d s n a n d m o d s* United Kingdom: Stanley Thorne.

Tutu, D. (2000). *T r a m n o r a a o r r s o m a n r s* SANTA TB and Health News, *6*(6).

Van der Berg, R. H., & Viljoen, M. J. (2007). *o m m n a d s a s n r s n r s* Cape Town: Maskew Miller Longman.

Walliman, N. (2006). *Co-articulation methods*. London: Sage publications

Welman, C., Kruger, F., & Mitchell, B. (2005). *Co-articulation methods* 3rd edition. Cape Town: Oxford University Press.

Weyer, K., Van der Walt, M., & Kantor, P. (2006). *Managing multidirectional communication systems*. MRC Policy Brief. No. 1 January.

World Care Council (WCC). (2006). *Tackling the burden of TB in Africa: A strategy for TB care in Africa's rural and remote areas*. San Francisco, CA: Francis Curt National TB Center.

World Health Organization (WHO). (1996). *Tuberculosis in rural areas: A strategy for TB care in rural areas*. Geneva: WHO African Regional Office.

World Health Organization (WHO). (1998). *Tackling the crossroads of rural TB care in Africa*. Geneva: WHO.

World Health Organization (WHO). (1999). *Tackling the crossroads of rural TB care in Africa: A strategy for TB care in rural areas*. GENEVA: WHO.

World Health Organization (WHO). (2002). *Tackling the crossroads of rural TB care in Africa: A strategy for TB care in rural areas*. GENEVA: WHO.

World Health Organization (WHO). (2003). *Communication strategy for TB care in rural areas and community-based TB care in rural areas*. Geneva: WHO.

World Health Organization (WHO). (2005a). *Tackling the crossroads of rural TB care in Africa: A strategy for TB care in rural areas*. Geneva: WHO.

ANNEXURE A**Questionnaire**

A STUDY ON KNOWLEDGE, ATTITUDE AND PRACTICES OF HEALTH WORKERS ON TB-DOT IN GROOTFONTEIN DISTRICT IN NAMIBIA.

This exercise is a partial fulfillment of the academic requirement for the award of my Master degree in Public Health at the University of Namibia.

I would like to ask you for your assistance to answer the questions correctly and honestly as possible and 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.

Your cooperation and assistance is highly appreciated.

Mr. Wilbard Kapweya

Tel: +264 64-2017601

Fax: +264 64-2017660

Cell: +264 (0) 812844457

PO BOX 1765

WALVIS BAY

NAMIBIA

Please answer all the questions correctly and honestly. Remember that the information you give is entirely confidential and may help improve TB management.

A. SOCIO-DEMOGRAPHIC INFORMATION

Select the appropriate answer to you by ticking the corresponding column

1. Category of health workers

- a) Registered nurse
- b) Enrolled nurse
- c) Nursing assistant
- d) Others specify).....

2. Gender

- a) Male
- b) Female

3. Age

- a) Less than 20
- b) 20-29
- c) 30-39
- d) 40-49
- e) 50-59
- f) 60 and above

4. Type of health facility

- a) Clinic
- b) Health center
- c) Hospital

5. Years of experience as a health worker

- a) Less than 1
- b) 1-4
- c) 5-9
- d) 10-14
- e) 15-19
- f) 20-24
- g) 25 and above

B. KNOWLEDGE OF TB-DOT

6. (i) Have you ever been trained in TB management?

- a) Yes
- b) No

(ii) If yes in which form did you receive your training?

- a) Workshop
- b) Formal course
- c) On job training
- d) Others specify).....

(iii) The duration of the training

- a) Less than a week
- b) 1 week
- c) 2 weeks
- d) 3 weeks
- e) Others specify).....

7. Would you explain in your own words, what DOT means?

8. Why is it important to observe a patient drinking and swallowing TB medicine?

9. What do you understand by DOT supporter?

10. Apart from a TB clinic nurse, who else could be a DOT supporter?
(List as much as you can)

11. What do you think are the tasks of DOT supporter?
(List as much as you can)

12. What support does you advice families to offer to TB patients?

ATTITUDES

13 i) Do you think DOT is helpful for ensuring that TB patients complete their treatment successfully?

a) Yes

b) No

(ii) Motivate your answer.

14. (i) Is there anything that may prevents you from practicing DOT?

a) Yes

b) No

(ii) If yes, what are these?

(Tick not more than three items)

- a) TB is contagious
- b) Lack of knowledge on TB
- c) TB patients are not often cooperative
- d) No interest
- e) Lack of training
- f) DOT is time consuming

Tick the most appropriate answer to you

SA=strongly agree; A=agree; D=disagree; S=strongly disagree; DK=don't know

	STATEMENTS	SA	A	D	SD	DK
1	No time to practise DOT due to shortage of staff	10 (n = 9)	25 (n = 22)	36 (n = 32)	28 (n = 25)	0 (n = 0)
2	DOT is not acceptable because it can create dependency	3 (n = 3)	5 (n = 4)	57 (n = 50)	34 (n = 30)	1 (n = 1)
3	I am not interested in managing TB patients	3 (n = 3)	5 (n = 4)	40 (n = 35)	51 (n = 45)	1 (n = 1)
4	Poorly motivated staff and inadequate teamwork result in poor TB treatment outcome	42 (n = 37)	45 (n = 40)	5 (n = 4)	7 (n = 6)	1 (n = 1)
5	The rotation of health workers at TB clinics does have an influence on TB treatment outcomes	44 (n = 39)	20 (n = 18)	8 (n = 7)	19 (n = 17)	8 (n = 7)
6	DOT can be practised anywhere	66 (n = 58)	32 (n = 28)	0 (n = 0)	0 (n = 0)	2 (n = 2)
7	DOT might imply that the patient is incapable and irresponsible in taking care of self	8 (n = 7)	33 (n = 29)	33 (n = 29)	20 (n = 18)	6 (n = 5)
8	Unfriendly health workers discourage TB patients from coming for treatment	14 (n = 12)	39 (n = 34)	23 (n = 20)	16 (n = 14)	9 (n = 8)
9	DOT may be seen as a punishment by the patient	5 (n = 4)	11 (n = 10)	42 (n = 37)	37 (n = 33)	5 (n = 4)
10	Nothing can be done about TB unless poverty is addressed	12 (n = 11)	35 (n = 31)	30 (n = 26)	22 (n = 19)	1 (n = 1)
11	If TB patients do not want to take their medicine, it is their own choice	1 (n = 1)	18 (n = 16)	36 (n = 32)	43 (n = 38)	1 (n = 1)
12	It is a waste of time to observe patients taking medicine every day; they must accept responsibility for their own health	5 (n = 4)	7 (n = 6)	49 (n = 43)	37 (n = 33)	2 (n = 2)
13	DOT is the best method to ensure full adherence and treatment success	66 (n = 58)	30 (n = 26)	2 (n = 2)	0 (n = 0)	2 (n = 2)
14	The DOT supporter must be acceptable to the patient and understand the patient's needs	56 (n = 49)	40 (n = 35)	2 (n = 2)	0 (n = 0)	2 (n = 2)

						(n = 2)
--	--	--	--	--	--	---------

PRACTICES

35. (i) Do you have the national guideline for the management of TB in your facility?

a) Yes

b) No

(ii) If yes may I see it?

a) Verified

b)..........Not verified

(Not verified go to question 39).....

36. Do you use/refer to the national guidelines in your daily activities for TB management?

a) Yes

b) No

37 (i) Do you give health education to TB patients?

a) Yes

b) No

(ii) If yes, what is the most important information you gives to TB patients?

(iii) What method of health education do you use?

(Tick not more than three items)

a) Talking to individual patient at onset of treatment

b) Group discussions

c) Hire a specialists to educate TB patients everyday

- d) Lecturing
- e) Give patients pamphlets and posters to read
- f) Others.....

(iv) How often do you provide health education?
(Tick only the most appropriate three)

- a) Daily
- b) Weekly
- c) Monthly
- d) At any contact sessions
- Others

(v) In your opinion, is health education useful in TB management?

- a) Yes
- b) No

Motivate your answer in (v)

38. Do you encourage and advice TB patients to have DOT supporter?

- a) Yes
- b) No

39. (i) Do you experience any problem in TB patients not adhering to treatment?

- a) Yes
- b) No

(ii) If yes, what are the reasons that patients give for missing their treatment?
(Tick not more than three items)

- a) Long distance to clinic
- b) Treatment is too long
- c) Do not feel sick any more
-

- d) Forgot to come for treatment
- e) Think they are cured
- f) Work related reasons
- g) Other reasons.....

40. What do you do to prevent patients from missing their treatments?

(Tick no more than three items)

- a) Set up feeding program
- b) Intensify health education
- c) Admission at health facility
- d) Give all medicine to take home
- e) Assign DOT supporter
- f) Others

41. What method do you use to encourage TB patients to complete their treatment?

(Tick not more than three items)

- a) Intensify DOT during the entire TB treatment course
- b) Provide good patient support and health education
- c) Use of fixed-dose combination drugs
- d) Monitor closely all patients under treatment
- e) Assign DOT supporter
- f) Others

42. What do you see as a major challenge facing the implementation of DOT program in all health facilities in Namibia?

43. What comments do you have which will help to improve DOT in Namibia?

Thank you for your time and your co-operation

ANNEXURE B

9-0/0001



REPUBLIC OF NAMIBIA

Ministry of Health and Social Services

Private Bag 13198
Windhoek
Namibia

Ministerial Building
Harvey Street
Windhoek

Tel: (061) 2032562
Fax: (061) 272286
E-mail: hilmanangombe@yahoo.com

Enquiries: Ms. H.Nangombe Ref.: 17/3/5

Date: 25 October 2006

OFFICE OF THE PERMANENT SECRETARY

Mr. W. Kapweya
P.O. Box 1765
Walvis Bay

Dear Mr. Kapweya

Re: Application for permission to conduct a research project in Grootfontein health District.

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 approval has been granted under the following conditions:
 - 3.1 The data collected is only to be used for your degree;
 - 3.2 A quarterly progress report is to be submitted to the Ministry's Research Unit;
 - 3.3 Preliminary findings are to be submitted to the Ministry before the final report;
 - 3.4 Final report to be submitted upon completion of the study;
 - 3.5 Separate permission to be sought from the Ministry for the publication of the findings.

Yours sincerely,


DR. K. SHANGULA
PERMANENT SECRETARY



ANNEXURE C

26. Jun. 2007 16:25

No. 0175 P. 1

Republic of Namibia
Ministry of Health and Social Services
OFFICE OF THE DIRECTOR, OTJOZONDJUPA REGION
 Private Bag 2612, Otjiwarongo
 Enq: Mr. V. Tanya; SHPA Tel: 067-3009000, fax: 067-302878, email: hisrgnotjo@healthnet.org.na

22 June 2007

To: Mr. W. Kapweya

Re: Request for permission to do research study in our region

1. Reference is made to your request dated 19 June 2007 to conduct the research study in our region.
2. Your request has been evaluated and this office has granted you permission to carry out this study in our region.
3. Kindly be informed that you are also requested to provide a summary of findings (including recommendations) to our office at the end of your research.

Wishing you success with your studies

Thank you,


 Dr. E. Namwandi
 Acting Regional Director
 Directorate: Otjozondjupa Region



ANNEXURE D

REPUBLIC OF NAMIBIA
Ministry of Health and Social Services
Office of the PMO, Grootfontein State Hospital
Private Bag 2052, Grootfontein.
Enquiries, S. Salomo F.Tel: 067248173, Fax. 067248174

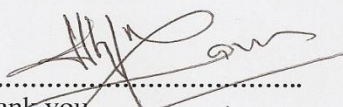
Mr. W. Kapweya
P O.B0x.1765
Walvis Bay

Dear Mr. Kapweya

Re: Request for permission to do research in Grootfontein District

1. Reference in made to your application to conduct a research in our district.
2. Your request has been evaluated, and this office has granted you permission to carry out this research in our district
3. Please be informed that, you are being requested to provide our office with summary of your research findings.

Wishing you all the best with your studies


.....
Thank you
Dr. Zam F. S.
Grootfontein St. Hosp.



ANNEXURE E

TO 0642017660

P. 02/02

RESTRICTED



AC/300/3/4/3

Telephone : 2491111
 Extension : 1259

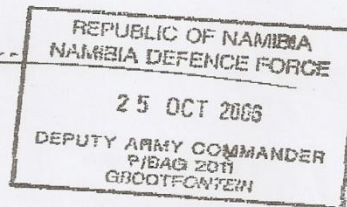
Army Headquarters
 Private Bag 2011
 Grootfontein
 25 October 2006

Capt (N) SNB Nghipandwa
 NAVAL Base Commander
 Private Bag 5015
 Walvis Bay

**RE: APPLICATION FOR PERMISSION TO CONDUCT A RESEARCH
 PROJECT AT MILITARY HOSPITAL -GROOTFONTEIN**

1. Your letter dated 15 Sep 06 refers.
2. Approval is hereby granted for 17224034 Lt (N) W Kapweya to conduct a Research Project at Military Hospital towards a Master's Degree in Public Health (MPH) as requested.
3. Regards

P NAMBUNDUNGA
 ARMY COMMANDER: MAJ GEN



RESTRICTED

TOTAL P. 02

ANNEXURE F:

