

A STUDY ON THE KNOWLEDGE, BELIEFS AND PRACTICES
OF PATIENTS DIAGNOSED WITH TUBERCULOSIS IN KATUTURA,
KHOMAS REGION, NAMIBIA

A THESIS SUBMITTED IN PARTIAL FULFILMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
MASTERS OF PUBLIC HEALTH
OF
THE UNIVERSITY OF NAMIBIA
BY

MS ESTHER KAMENYE

MAY 2008

Main Supervisor: Prof. A. Van Dyk

Co-supervisor: Mrs D. Sumpi

DECLARATIONS

I declare that “A study on the knowledge, beliefs and practices of patients diagnosed with tuberculosis in Katutura, Khomas Region, Namibia” is my own work and it has not been submitted for any degree or examination to any other University. Furthermore all the sources that I have used, and quoted have been indicated and acknowledge by means of complete references.

I further declare that the content and/or the cover of this thesis may not be reproduced in any form without a written consent of the author or the University.

Signed: Esther Kamenye

Date: May 2008

Place: Windhoek

DEDICATION

I dedicate this work to my husband Fillemon Kamenye and my mother Mirjam, and in loving memory of my father, the late David Angwena. Their inspiration and wisdom made it possible for me to achieve what I have today.

ACKNOWLEDGEMENTS

I would like to convey my heartfelt gratitude and sincere thanks to the following:

- Almighty God, who made it possible for me to achieve what I have achieved today.
- Professor A. van Dyk, for her untiring patience and encouragement throughout this research project. Without her guidance and assistance, this research would not have been possible. I feel greatly honoured to have gone through her mould.
- The Ministry of Health and Social Services, and the Director of Khomas Region for granting me permission to conduct this study.
- Hedvig Fiske Amdal and Torunn Hasler, for helping me identify this research topic, which has allowed me to achieve my dream.
- Ane Haaland, for all her encouragement and for her tireless reading and corrections of the draft.
- Taimi Nauseb and Dr. Amos Kutwa, for being there when I was in trouble.
- Ms Sally Wood, for language editing.
- Lastly, I wish to thank my children; Lukas, Helen and Toivo, for making my life worth living.

LIST OF ABBREVIATIONS

AIDS	:	Acquired Immune-Deficiency Syndrome
CDS	:	Communicable Disease Section
DOT	:	Directly Observed Treatment
DOTS	:	Directly Observed Treatment Short-Course
EPTB	:	Extra Pulmonary Tuberculosis
IPT	:	Isoniazid Preventive Therapy
HIV	:	Human Immune-deficiency Virus
HTM	:	Health Teaching Methodology
MDR	:	Multi-Drug Resistant
MOHSS	:	Ministry of Health and Social Services
OPD	:	Out-Patient Department
PTB	:	Pulmonary Tuberculosis
TB	:	Tuberculosis
TB-MTP	:	Tuberculosis Medium Term Plan
TRD	:	Special Programme for Research and Training in Tropical Diseases
WHO	:	World Health Organization

TABLE OF CONTENTS	PAGE
DECLARATIONS	i
DEDICATION	ii
ACKNOWLEDGEMENTS	iii
LIST OF ABBREVIATIONS	iv
TABLE OF CONTENTS	v
ABSTRACT	ix

CHAPTER 1: INTRODUCTION TO AND RATIONALE OF THE STUDY

1.1	INTRODUCTION AND BACKGROUND	1
1.2	STATEMENT OF THE PROBLEM	4
1.3	PURPOSE AND OBJECTIVES OF THE STUDY	5
1.3.1	Purpose of the study	5
1.3.2	Specific objectives	5
1.4	STUDY SETTING	6
1.5	SIGNIFICANCE OF THE STUDY	6
1.6	ETHICAL CONSIDERATIONS	7
1.7	OPERATIONAL DEFINITIONS	7
1.8	SUMMARY	8

CHAPTER 2: RESEARCH METHODOLOGY AND DATA COLLECTION

2.1	INTRODUCTION	9
2.2	RESEARCH DESIGN	9
2.2.1	Explorative	11
2.2.2	Descriptive	11
2.2.3	Contextual	12
2.3	POPULATION AND SAMPLING	12
2.3.1	Population	12
2.3.2	Sampling and Sampling technique	13
2.4	INCLUSION AND EXCLUSION CRITERIA	14
2.5	PILOTING	16
2.6	TRUSTWORTHINESS OF THE STUDY	16
2.7	DATA COLLECTION	19
2.8	ETHICAL CONSIDERATIONS	21
2.8.1	Permission to conduct the study	22
2.8.2	Informed consent	22
2.8.3	Privacy and confidentiality	23
2.8.4	Anonymity	23
2.9	DATA ANALYSIS	24
2.10	SUMMARY	25

CHAPTER 3: ANALYSIS OF RESULTS AND LITERATURE CONTROL

3.1	INTRODUCTION	26
3.2	THE THEMES AND SUB THEMES OF THE STUDY	26
3.2.1	Need for improved health education on TB (PTB & EPTB)	27
3.2.1.1	Specific aspects of knowledge and beliefs that need attention in TB (PTB & EPTB)	29
3.2.2	Need for rectification of lifestyles	74
3.2.2.1	Specific aspects of lifestyle practices that need attention	76
3.3	SUMMARY	84

CHAPTER 4: CONCLUSION, RECOMMENDATIONS AND LIMITATIONS

4.1	INTRODUCTION	85
4.2	CONCLUSION	85
4.3	RECOMMENDATIONS	89
4.3.1	Revision of the current National Guidelines for the Management of Tuberculosis	89
4.3.2	Multi-sectoral approach	90

4.3.3	Strengthening of the outreach community-based health team	
		91
4.3.4	Peer counseling	
		91
4.3.5	Introduction of policy on cough hygiene in the whole region	
		92
4.3.6	Design culturally-appropriate messages and provide them to the community in leaflet form	
		93
4.3.7	Patients' charter	
		93
4.3.8	Communication training	
		94
4.3.9	The feasibility of involving traditional healers in a TB programme	
		94
4.4	LIMITATIONS OF THE STUDY	
		95
4.5	FINAL CONCLUSION	
		97
	REFERENCES	
		99
	ANNEXURE I	
		115
	ANNEXURE II	
		118
	ANNEXURE III	
		123

ABSTRACT

Tuberculosis is a preventable and curable disease. In spite of this, globally it is the main cause of human suffering and death through infection.

The World Health Organization has set the following targets for global tuberculosis control: a case detection rate of 70%, and treatment success rate of 85%. The Khomas region has attained only 52% treatment success rate, which is significantly below the global target.

A better understanding of TB patients' knowledge, beliefs and practices regarding tuberculosis is important for the improvement of public health education on tuberculosis. Therefore, a study was conducted to explore and describe the knowledge, beliefs and practices of patients diagnosed with TB, in order to provide helpful data for the improvement of public health education regarding tuberculosis.

An explorative, descriptive, contextual, and qualitative study design was conducted, using individual in-depth interviews to gather data from 60 tuberculosis patients in Katutura, of the Khomas region. A quota sampling technique by age was used to select the participants. Data analysis was done using Tesch's method for content analysis.

The results showed a significantly poor depth of knowledge among patients diagnosed with tuberculosis about the disease itself. Patients possess erroneous beliefs about modes

of transmission, and they practice unhealthy lifestyles while on treatment. Ineffective health education had contributed to the poor knowledge of patients. Some basic facts overlooked by the national tuberculosis guideline developers are also a contributing factor.

Recommendations based on this study's findings include: the revision of the current national guidelines for the management of tuberculosis, to include some important facts overlooked by the guidelines developers; the design of culturally-appropriate messages to be integrated with the existing beliefs and misconceptions and provided to the community in the form of leaflets; and an emphasis of the importance of patient charters among health workers.

CHAPTER 1

INTRODUCTION TO AND RATIONALE OF THE STUDY

1.1 INTRODUCTION AND BACKGROUND

The world is becoming ever smaller, and diseases whose geographical distribution had once been contained are in some cases spreading once more. A pertinent example is tuberculosis (TB).

Tuberculosis is an infectious disease caused, in most instances, by the micro-organism *Mycobacterium tuberculosis*. The micro-organisms enter the body through inhalation. Tuberculosis is transmitted by airborne droplets produced by a person suffering from pulmonary tuberculosis, through expectoration. Although anyone can develop tuberculosis, the disease usually afflicts adults in economically-disadvantaged populations (WHO/CDS/TB, 2000). A report released by the World Health Organization (WHO) indicated that 75% of those suffering from tuberculosis worldwide are between the ages of 15 and 54 years (WHO/CDS/TB, 2003b). In Southeast Asia and Sub-Saharan Africa, tuberculosis occurs to a greater degree in the economically productive years between 15 and 49 years (Rieder, 1999). In Namibia, 90% of smear positive patients reported in 2004 were between the ages of 15 and 54 years (Ministry of Health and Social Services [MOHSS], 2004).

Despite the fact that tuberculosis is a preventable and curable disease, globally it is the main cause of human suffering and death through infection, with two billion people infected with *Mycobacterium tuberculosis*. Nine million new cases are reported every year, and two million die every year from the disease (WHO/CDS/TB, 2003b).

It has been estimated that Africa reports 2.4 million new tuberculosis cases every year, of which 540,000 are fatal. In 2000, Sub-Saharan Africa had the highest incidence, with 290 per 100,000 of the population per year. Deaths caused by tuberculosis comprise 25% of all avoidable deaths in developing countries (WHO/HTM/TB, 2004). In 2004, Namibia reported a tuberculosis notification rate of 822 persons per 100,000 of the population. This is the highest incidence ever reported in the world. Among Namibia's regions, the Khomas region ranked the highest in 2004, with 3,102 cases reported (MOHSS, 2006b).

Globally, the incidence of tuberculosis has increased since the mid-1980s and continues to grow by one percent each year, despite the fact that it is treatable (WHO, 2006). In 1987 it was considered realistic to expect that tuberculosis would be eliminated by the year 2010. However, the rising incidence of the disease has produced renewed concern on the part of health care providers, consumers and policy makers (Singleton, 1999).

In Namibia the tuberculosis case notification rate has steadily increased from 652 per 100,000 in 1996, to 822 per 100,000 in 2004 (MOHSS, 2004). One of the major contributing factors to the spread of the disease is the HIV/AIDS pandemic, which has spread dramatically throughout Africa in recent decades. Another contributing factor is

poverty, with associated factors of overcrowding and poor ventilation, both of which enhance high transmission levels (MOHSS, 2006b).

The growing number of tuberculosis patients adversely affects the economy, since the disease primarily afflicts those who are of economically productive age. Lost income due to illness and discrimination, coupled with the relatively high cost of diagnosis and treatment in many parts of the world, only exacerbates poverty levels (WHO/CDS/TB, 2000). In Namibia, two factors compound the economic burden: heavy government spending on tuberculosis medication (which is not improving the overall situation) and the cost of caring for large numbers of children orphaned by the HIV/AIDS pandemic.

The magnitude and seriousness of the tuberculosis problem prompted the World Health Organisation (WHO) to set targets for global TB control which were ratified by the World Health Assembly in 1991, namely a case detection rate of 70%, and a treatment success rate of 85% of the detected cases (WHO, 2002; Xu, 2006). The tuberculosis treatment success rate is accepted as one indicator in the health system to monitor the TB control performance of all health facilities (WHO, 2007). The weight of the world burden led the WHO to recommend the treatment strategy of Directly Observed Therapy, Short course (DOTS). Following this recommendation, Namibia adopted the strategy in 1993 (MOHSS, 2006b). Today, more than 180 countries have adopted the DOT strategy (WHO, 2005).

Even though the Namibian government has pursued a vigorous tuberculosis programme, the country has failed to attain the global target for a treatment success rate of 85%, with the Khomas region only achieving 52%. Furthermore, the burden of tuberculosis has not been reduced in Namibia, as evidenced by a case notification rate in 2004 of 822 per 100,000 population, the highest ever reported in the world (MOHSS, 2006b).

1.2 STATEMENT OF THE PROBLEM

The focus of the problem in the Khomas region is the low treatment success rate – only 52% - which is significantly below the global target of 85% (MOHSS, 2006b). The implication of such statistics is that some contributing factors are probably being overlooked in the management of patients. A possible explanation could be the lack of knowledge amongst patients diagnosed with TB about the disease per se. It could also mean that patients do not understand the means of prevention, causes and treatment measures associated with tuberculosis. Lacking such knowledge, patients may fail to seek appropriate treatment or access the diagnostic services available. Furthermore, patients might hold erroneous beliefs, such as that tuberculosis is caused by dust, by witchcraft or that it is hereditary (MOHSS, 2006b).

Other debilitating factors may be present which make patients more susceptible to the disease. Lifestyle factors such as alcohol consumption or smoking could also diminish the effectiveness of treatment. Such habits would further weaken patients already affected by the bacteria.

A study conducted by Angala (2000) concentrated on the knowledge and management of tuberculosis among health workers and patients in the Otjiwarongo district. The author revealed that the knowledge of participants about causes and treatment was poor. What is lacking in Angala's study and in previous research published by the World Health Organisation (WHO, 2004) is qualitative information regarding the following three likely important areas: patients' understanding of causes, treatment and prevention; their beliefs regarding modes of transmission; and the effect of their lifestyle practices on treatment. There is a national guideline for the management of tuberculosis developed by the Ministry of Health and Social Services in 2006, but it is not clear whether all aspects concerning the management of tuberculosis are well covered.

1.3 PURPOSE AND OBJECTIVES OF THE STUDY

1.3.1 Purpose of the study

The purpose of this study is to explore and describe the knowledge, beliefs and practices of tuberculosis patients in order to provide helpful data for the improvement of public health education for the Katutura, Khomas region community, regarding tuberculosis.

1.3.2 Specific objectives

The specific objectives of the study are:

- To explore and describe the knowledge of tuberculosis patients regarding the causes, treatment and prevention of tuberculosis;

- To explore and describe the beliefs of tuberculosis patients regarding the mode of transmission of the disease;
- To explore and describe the lifestyle practices of tuberculosis patients during their period of treatment regarding alcohol consumption, smoking and nutrition;
- To describe recommendations to improve public health education of the Katutura, Khomas region community.

1.4 STUDY SETTING

The study was conducted in Katutura, a township in the Khomas region. According to the data obtained from the Windhoek municipality, the population of Katutura in 2004 was 146,830 (City of Windhoek, 2004). The population of the township is predominately black, and consists of people from different ethnic groups who in some instances have migrated from rural areas seeking a better standard of living. Residents of Katutura tend to be poor, with some exceptions. The residential area is plagued by overcrowding, poverty and housing shortages, and unemployment among the inhabitants is high.

1.5 SIGNIFICANCE OF THE STUDY

The significance of this study was to provide reliable data on parameters related to tuberculosis, which has heretofore been unavailable. Information about the knowledge, beliefs and practices of tuberculosis patients should assist policy makers, programme administrators and others in the development field to develop effective programmes of public health education to contain the spread of the disease.

The findings of this study may also contribute to interventions for improving patients' knowledge of the disease, and consequently improve the Khomas region's treatment success rate and eventually achieve global targets. Efforts to achieve those targets will be strengthened because the two ranks engaged in the battle against tuberculosis will be addressed simultaneously by the study: governmental agencies which direct resources from above, and the infected population which struggles with the disease at grassroots level.

1.6 ETHICAL CONSIDERATIONS

Participation in the research was voluntary. Consent for participation by minors was obtained from their parents. Confidentiality of information was guarded, and the privacy of all participants respected. Data will be used exclusively for the stated purposes of the research.

1.7 OPERATIONAL DEFINITIONS

Knowledge means awareness, familiarity gained by experience, or a person's range of information (Kindersley, 1998). In this study, knowledge refers to the state of knowing, possession of awareness or understanding by tuberculosis patients about the causes, treatment and prevention of tuberculosis.

Beliefs means an acceptance as fact or truth, or acceptance of a statement as convey of truth (Kindersley, 1998). In this study, beliefs refer to convictions held by tuberculosis patients or statement they make regarding tuberculosis. For instance, some people believe that tuberculosis is caused by dust or witchcraft; that it is hereditary, or can be cured by traditional medicine.

Practices mean an action, execution or habitual performance (Kindersley, 1998). In this study, practices refer to lifestyle actions or activities carried out by tuberculosis patients while under tuberculosis treatment. For instance, some tuberculosis patients consume alcohol or drugs while under treatment.

Tuberculosis is a chronic (sometimes acute, sometimes sub-acute) disease characterized by the formation of tubercles in any tissue or organ of the body, and is caused by *Mycobacterium tuberculosis*. The most susceptible organs are the lungs (Van den Berg & Viljoen, 1999). TB can also be referred to as a disease caused by germs (WHO/CDS/TB, 2003a). This study considers tuberculosis disease both in patients diagnosed with sputum smear positive (PTB) and those diagnosed with tuberculosis outside the lungs (EPTB).

Pulmonary Tuberculosis (PTB) involves cases where two or more sputum smear examinations tested positive for acid fast bacilli (MOHSS, 2006b). In this study, pulmonary tuberculosis refers to tuberculosis of the lungs.

Extra Pulmonary Tuberculosis (EPTB) involves organs other than the lungs, for example the lymph nodes, abdomen, pleura, genito-urinary tract, joints, mouth, tongue, tonsils, kidneys and meninges (Ellis, 1998; MOHSS, 2006b). In this study, EPTB refers to tuberculosis outside the lungs.

1.8 SUMMARY

An introduction and background to the problem concerning tuberculosis have been discussed. It has led to the formulation of the purpose and the objectives of the study. The study setting and the significance of the study have also been discussed. The operational definitions have been identified, defined and described.

CHAPTER 2

RESEARCH METHODOLOGY AND DATA COLLECTION

2.1 INTRODUCTION

This chapter provides information on how the problem was investigated and why particular methods and techniques were employed. All methodologies used will be analyzed. The method of data collection and data analysis on knowledge, beliefs and practices of patients diagnosed with tuberculosis in Katutura will be explained in more detail.

2.2 RESEARCH DESIGN

Burns and Grove (2001) referred to research design as a clearly defined structure within which the study is implemented. This study is qualitative in its approach and has followed an explorative, descriptive, and contextual design. This approach was selected in relation to the research objectives. The purpose of the study is to explore and describe the knowledge, beliefs and practices of patients diagnosed with TB, in order to provide helpful data for the improvement of public health education for the community regarding tuberculosis.

Morse and Field (1998) defined qualitative research as an inductive, holistic, subjective and process-orientated research method used to describe and develop theory pertaining to a phenomenon or setting. Qualitative research is an open, explorative way of conducting

research that encourages research participants to express their experiences, feelings and views in their own terms (Scheepers, Goldstein, Shabalala, & Shongue, 2003).

There follow herewith some characteristics of qualitative research:

- Qualitative research is explorative, elaborating the significance of defined phenomenon. It produces more in-depth, comprehensive information (Latimer, 2003);
- Qualitative research allows participants to give their own emphasis and meaning to their experiences (Scheepers et al., 2003);
- Qualitative research gives participants room to freely express themselves. In so doing, they provide the researcher with a good overview of the problem (Van de Snepscheut, 2003);
- Qualitative research is designed to help the researcher understand people and the social and cultural contexts in their lives (Myers, 2004).

The qualitative research method is recommended when examining previously unexploited areas (Van de Snepscheut, 2003). A study on the knowledge, beliefs and practices of patients diagnosed with TB had not yet been conducted in Khomas region; therefore the researcher decided to use this approach. According to Van de Snepscheut (2003), researchers who use a qualitative method will obtain a good overview of the problem from the participants. The problem of low treatment success rate, which is 52% and thus far below the global target of 85%, prompted the researcher to use the qualitative research method in order to get a good overview of the problem from patients diagnosed with TB.

The qualitative research method will also ensure the acquisition of in-depth information from the participants, since it solicits background on relevant knowledge and beliefs and will provide a description of lifestyle practices.

In this study, the researcher has used a qualitative research approach to assess and describe the knowledge, beliefs and practices of tuberculosis patients in Katutura, Khomas region.

2.2.1 Explorative

One of the characteristics of a qualitative research design is that it is explorative. Explorative research design forms the basis for subsequent, conducive research design methodology, namely descriptive design. The broad purpose of explorative research is the exploration of relatively unknown research areas, when the problem is unclear or the subject is new to the researcher (Van de Snepscheut, 2003). According to Sim and Wright (2000), the purpose of explorative design is to shed light upon a topic that has not yet been described in detail and is likely to be poorly understood at all the levels of theoretical framework.

This study adopted an explorative research design to gain insights into tuberculosis patients' knowledge, beliefs and practices regarding TB. The researcher therefore employed the individual in-depth interview approach, because it provides the participants with the opportunity to describe their experiences in their own words (Scheepers et al., 2003).

2.2.2 Descriptive

In qualitative research, one of the important tasks of researchers is to describe what they obtain and observe during the field work. Descriptive research is concerned with describing the existing condition, and it provides a useful initial overview of a problem (Enarson, Kennedy, Miller, & Bakke, 2001; McEwan & McEwan, 2003).

In the case of this study, the aim was to present an accurate description of the tuberculosis patients' knowledge, beliefs and practices concerning TB in Katutura, Khomas region.

2.2.3 Contextual

Burns and Grove (2001) referred to context as a philosophical element of qualitative research. It is the body, world and concern unique to each person, within which that person can be understood. Once the TB patients' knowledge, beliefs and practices have been described, it is important to contextualize the findings. One of the important aspects of qualitative research is its concern with context (Kincheloe, 2003).

In this study, the findings are understood only within the context of patients diagnosed with tuberculosis (PTB and EPTB), whose ages range from 15 to 54 and who reside in Katutura, Khomas region.

2.3 POPULATION AND SAMPLING

2.3.1 Population

Nieswiadomy (2002) defined population as a complete set of individuals or objects that possess same common characteristics of interest to the researcher. Mugo (n.d) and Garson (2006) referred to population as a group of individual persons or items from which the sample is taken for measurement.

In this study, patients diagnosed with tuberculosis (pulmonary tuberculosis and extra pulmonary tuberculosis), living in Katutura, constituted the population. The population studied included patients diagnosed with pulmonary tuberculosis and extra pulmonary tuberculosis, because the lungs are the most common port entry of TB infection, and many extra pulmonary tuberculosis patients also suffer from concomitant PTB (MOHSS, 2006b).

A total number of 2,440 tuberculosis patients from the Khomas region were registered between 01 January 2006 and 31 October 2006. Of that number, 2,045 are PTB and EPTB patients live in Katutura. 1,507 out of 2,045 patients are from the age group of 15 to 54 years (MOHSS, 2006a).

2.3.2 Sampling and sampling technique

Trochim (2006) referred to sampling as a process of selecting units (people, organizations) from a population of interest, so that by studying the sample the researchers may fairly generalize the findings back to the population from which they were chosen.

In this study the researcher used the quota sampling technique or method to select the participants from the population. Stat Pack (1997-2007) referred to quota sampling as an example of a non-probability sampling strategy that seeks to attain statistical representation.

In quota sampling, the general composition of the sample in terms of age, sex and social class is decided in advance. Quotas or required numbers are determined, for example for men and women of different ages and social classes, and the only requirement is that the requisite number of people be somehow found for these quotas. Although it is necessary to know the values of the quota control in the study population, no sampling frame is required, since participants are approached on an opportunistic basis. The researcher can enlist any available individual who satisfies the specification of an unfilled data (Abramson & Abramson, 1999).

In this study, a sample of sixty (60) participants was selected on the basis of quota sampling by age. Fifteen (15) participants were selected from each of the following age categories: 15-24, 25-34, 35-44, and 45-54. The age categories had been defined according to the quarterly report form (MOHSS, 2006c). Forty three (43) participants were male and seventeen (17) female, and among all the participants, nineteen (19) were employed.

2.4 INCLUSION AND EXLUSION CRITERIA

Burns and Glove (2001) referred to inclusion criteria as the sampling requirements identified by the researcher that must be present for the element, individual or subject to be included in the sample. According to Regional Spinal Cord Injury Centre of Delaware Valley (2004), inclusion criteria are the list of the individuals who would make ideal subjects for the trial.

Exclusion criteria is the sampling requirements identified by the researcher that eliminate or exclude an element, individuals or subject from being in a sample (Burns & Glove, 2001). The Regional Spinal Cord Injury Centre of Delaware Valley (2004) referred to exclusion criteria as the list of individuals who, because of some risks or other factors, are unable to participate in the study. Exclusion criteria are exceptions to the inclusion sampling criteria.

Inclusion and exclusion criteria are very important elements of a research study. They help to identify the most suitable participants, in order for the investigators to answer the research questions they wish to answer or to respond to the research objectives. Most importantly, inclusion and exclusion criteria are created to keep the participants safe (Regional Spinal Cord Injury Centre of the Delaware Valley, 2004).

Inclusion criteria: For this study, the participants must:

- Be patients (both male and female) diagnosed with tuberculosis (PTB and EPTB);
- Reside in Katutura, Khomas region;
- Be currently on anti-TB treatment;

- Be between 15 and 54 years old, as that is the most popular ages afflicted by TB in Namibia, and also worldwide. A report released by WHO indicated that 75% of those suffering from TB worldwide are between the ages of 15 and 54 (WHO/CDS/TB, 2003b);
- Give their voluntary verbal consent to participate.

Exclusion criteria: The following groups of patients diagnosed with TB were not included in the study, since the researcher focused only on the most-afflicted productive age groups, living in Katutura of the Khomas region.

- Children younger than 15 years of age;
- Adults older than 54 years of age;
- Tuberculosis patients on TB treatment, but not residing in Katutura, Khomas region.

2.5 PILOTING

Piloting is a small-scale methodology test, intended to ensure that proposed methods and procedures will work in practice before being applied in a large, expensive investigation. Piloting provides an opportunity to make adjustments and revisions before investing in and incurring the heavy costs associated with a large study (The Gale Group, 2002). Nieswiadomy (2002) referred to piloting as a primary prevention.

In this study, piloting was conducted at the tuberculosis out-patients department (TB OPD), Katutura State Hospital, interviewing sixteen (16) participants. Quota sampling

technique by age was employed and four (4) patients from each age category (15-24, 25-34, 35-44, and 45-54) were selected and interviewed. This was done by the researcher aiming to obtain information for improving the study, by discovering the strengths and weaknesses of the study and making any necessary corrections. In this study, it was found effective.

2.6 TRUSTWORTHINESS OF THE STUDY

For a study to be authentic, it must be trustworthy and valid. According to Lincoln and Guba, the aim of trustworthiness in a qualitative research is to support the argument that the inquiry's findings are worthy. In any qualitative research project, four issues or criteria of trustworthiness demand attention: credibility, transferability, dependability and confirmability (as cited in Fenton and Mazulewicz, 2006).

The trustworthiness of this study is assessed using the criteria of Lincoln and Guba; that is credibility, transferability, dependability and confirmability. These criteria were used according to its applicability in the context of the study.

Credibility: Hoskins (1998) referred to credibility as an assurance of plausible interpretations and conclusions. According to Schneider, Elliot, Biondo-Wood, and Haber (2003), credibility can be referred to as the truth of the findings, as judged by participants and others within the discipline. Credibility (true value) establishes how confident the researcher is with the truth of the findings based on the research design, informants and contents (Banningan, 2005).

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

- The researcher has 16 years' experience in the health facility where the study was conducted, as an indication of her knowledge in the field. The researcher has also two years' experience in the TB field, where she is currently working as a district TB coordinator. The researcher's experiences are important in establishing confidence in the data;
- The researcher conducted a pilot interview that equipped her for the eventualities of the field work;
- The researcher used individual in-depth interviews and field notes for data collection, and noted down all the responses and observations made during interviews;
- The researcher used qualitative, explorative, descriptive, and contextual design. This indicated that data of high quality were obtained from the participants;
- The researcher also explored relevant existing literature for the purposes of the current study.

Transferability: Hoskins (1998) stated that transferability permits someone else to decide if the findings of the inquiry are applicable in another setting. Banningan (2005) referred to transferability as the extent to which the study findings can be transferred to other settings or groups. According to Grenda (2004), transferability is the strategy employed to attain applicability and to enhance transferability.

In this study, the research was conducted at the Katutura Health Center, in a central part of Katutura with a pleasant garden which the participants were free to enjoy. It thus provided a setting which helped to ensure that the participants felt relatively relaxed. Furthermore, the data collected in the study will be described as accurately as possible and full descriptions of the perceptions of the participants will also be made available. All the above-mentioned factors contribute to the transferability of this study.

Dependability: Hoskins (1998) referred to dependability as a determination of the reliability of the findings that enables someone else to logically follow the process and procedures of the inquiry. According to Banningan (2005), dependability can be referred to as the stability of data over time and conditions. It involves using the same data by independent researchers to replicate the research findings.

In this study, detailed descriptions of the research methods used will be made available. All questions asked concentrated on causes, modes of transmission, treatment, prevention and lifestyle practices of TB patients whilst on treatment. In this study, the researcher was guided by the interview guide. Despite the interview guide, the researcher decides which questions to ask and in what order, what to observe and what to write down, because sometimes participants answer in their own sequences (Mertens, 2005).

Confirmability: Confirmability requires one to show the way in which interpretations have been arrived at via inquiry (Raffi, Oskouie, & Nicraves, 2004). Banningan (2005) referred to confirmability as the objectivity or neutrality of the data. Hoskins (1998) added

that confirmability is an affirmation that the findings, conclusion and recommendations are supported by or grounded in the data and there is concordance between the researcher's interpretation and the actual evidence.

In this study, confirmability was established because credibility, transferability and dependability were all achieved.

2.7 DATA COLLECTION

Burns and Grove (2001) referred to data collection as the process of selecting the participants and gathering the data from those participants. In qualitative research, the researcher is the instrument for collecting the data (Mertens, 2005).

In this study, the data were collected by the researcher herself through individual in-depth interview structured in accordance with the interview guide. The interview guide centered on the following aspects:

- Causes of tuberculosis;
- Modes of transmission;
- Treatment of tuberculosis;
- Prevention of tuberculosis;
- Practices (lifestyle) while on TB treatment.

See Annexure I, for interview guide.

In this study, the researcher employed individual in-depth interviews. Green and Thorogood (2004) defined an interview as a conversation that is directed, more or less towards the researchers' particular need for data. Interviews are the most widely-used method of producing data in qualitative health research. Green and Thorogood (2004) further added that in-depth interviews allow participants sufficient time to develop their own account on the issues important to them. It gives the participants the opportunity to describe their experience in their own words (Scheepers et al., 2003). In-depth interviews also enable the researcher to explore complex issues in detail and it provide the researcher with the opportunity to gain clarification, and to probe and prompt. A probe is a question used in an interview to gain further information and clarification, while prompt involves suggesting possible responses (Brown & Dowling, 1998).

In this study, the individual in-depth interview method of data collection was chosen and used by the researcher in order that the TB patients could freely give their own experiences on TB regarding their knowledge, beliefs and practices, rather than being forced by pre-established lines of thinking developed by the researcher.

The interview was conducted in the language of the participants' choice. Four languages were mostly used, that is Oshiwambo, Afrikaans, English and Otjiherero. No extra persons were involved in the interview process for interpretation purposes, because the researcher was able to speak and understand all four languages. The researcher used open-ended questions. Being open-ended questions, some aspects were either ignored as participants volunteered information or were elaborated with further probing. In this

study, the researcher used probing as a technique to elicit more information from the participants with phrases such as “tell me more; let us talk more about...”

The researcher used field note materials (writing pad and pen) to note the findings and observe the participants reactions. Morse and Field (1998) defined field notes as a written descriptive account of things that the researcher hears, sees, or experiences in the course of collecting the data in a qualitative research. In this study, the researcher had the major task of taking accurate and systematic notes regarding all the facts the TB patients provided concerning their knowledge on causes, treatment and prevention, modes of transmission and their lifestyle practices while on tuberculosis treatment. The researcher also had another task; that of encouraging the participants to talk freely about the topic.

See Annexure II, for transcribed interview with tuberculosis patient.

2.8 ETHICAL CONSIDERATIONS

Ethical considerations are concerned with the protection of human and animal subjects in research. The qualitative method always involves a direct relationship with participants and thus raises ethical concerns. It is very important for qualitative researchers to be aware of and sensitive to ethical issues. Researchers must take every precaution to protect the people being studied from physical or mental harm or discomfort. Codes of ethics in research serve as guidelines for researcher (Schneider et al., 2003; Sim & Wright, 2000).

2.8.1 Permission to conduct the study

Permission to conduct this study was obtained from:

- University of Namibia (UNAM) Post Graduate Studies Committee;
- The national level, approval was granted by the Permanent Secretary of the Ministry of Health and Social Services and the Ministry's research committee;
- The Directorate level, approval was granted by the Regional Director of Khomas Region.

See Annexure III, for permission letters to conduct study.

2.8.2 Informed consent

According to Munhall (2001), informed consent should include the title, purpose and the explanation of the research and the procedures to be followed. Risks and benefits are to be clearly spelled out. This means that the researcher should ensure that the participants understand the risks and the benefits of participating in the study.

In this study, participation was voluntary. A full explanation on the purpose of the study was given to the participants, and informed verbal consent was obtained from the participants themselves. All participants were informed of their right to withdraw from the study at any stage if they so desired. All the participants who were approached were willing to participate in the research, since it had been clearly explained that the findings would be used to aid the development of effective public health education on TB in Katutura, Khomas region. In this study, there was no harm towards or discomfort experienced by the participants observed.

2.8.3 Privacy and confidentiality

Burn and Grove (2001) referred to confidentiality as the researcher's management of the private information shared by the participants that must not be shared with others without the permission of the participants.

All the participants in this study were informed that the data from this study would be used exclusively for the stated purposes of the research. All information would be treated with the utmost confidentiality (Munhall, 2001). They were also informed that the researcher would maintain privacy in all personal matters arising from the participants during interview, whether this be information concerning beliefs, feelings or practices. The privacy of all the participants was respected.

2.8.4 Anonymity

Anonymity cannot be completely guaranteed in qualitative research, because it involves direct contact with the participants, but in this study the researcher assured the participants that their names would not be disclosed. Furthermore, even though there were face-to-face conversations, the participant's names were not required. This is an additional way of ensuring anonymity and protecting the names of the participants.

2.9 DATA ANALYSIS

Analysis is defined as the process of ordering and structuring research data so that patterns within the data can become clear, and data is referred to as the information

(Scheepers at al., 2003). Data analysis involves making sense of the data. Analysis of data is essentially analysis of the field notes and interviews. The notes themselves may be superficial. However, during the process of analysis the notes are clarified, extended and interpreted. The data are then formed into categories (Burns & Grove, 2001). According to Hitchcock and Hughes (2001), the task is initially one of sorting the data into manageable units. The researcher will seek to organize the data in such a way that will facilitate understanding of their meaning and significance.

Freebody (2003) added that an analysis of data provides the researcher with the opportunity to compare and contrast interpretations, expand unforeseen findings and interpretation.

According to Steve (2001), the most reliable and appropriate method of analysing the data in qualitative research is content analysis. Bell (1999) defined content analysis as a research technique for making replicable and valid inferences from data to their context. Steve (2001) referred to content analysis as a systematic, replicable technique for compressing many words of text into fewer content categories. According to Trace (2001), content analysis is an overall approach, a method, and an analytic strategy that entails the systematic examination of form of communication to document pattern objectively. It is used to examine how the researcher or the participants view and understand certain issues.

In this study, data analysis was done following Tesch's guidelines for content analysis, which encompass the following: each interview was analyzed for unit of meaning, and all units of meaning were clustered together to form themes and sub themes. Each theme was discussed with relevant quotations from the participants and relevant literature as a control to the findings (as cited in Poggenpoel & Myburg, 2006). Theme is defined as a conceptual category under which one classifies codes that have something in common (Scheepers et al., 2003).

2.10 SUMMARY

This chapter has described the methodology the researcher used throughout the study. It has further described the study conducted. It has explained how population and sampling were identified. It has also provided information on where the researcher obtained the permission to carry out the study. Data collection as well as data analysis has also been fully explained.

CHAPTER 3

ANALYSIS OF RESULTS AND LITERATURE CONTROL

3.1 INTRODUCTION

In this chapter, the researcher is making sense from the data collected. After content analysis, the information is organized into themes and sub themes. Each theme is discussed with the relevant quotations from the participants, and also with relevant literature as a control to the findings.

According to Taylor and Procter (2006), literature review is an account of what has happened on a topic by accredited scholars and researchers. In this study, literature control was used to compare the current study's results with the results of other research projects, and also to identify the similarities, differences and the unique contribution of the research. These referential checks also enhance the scientific trustworthiness of the research.

3.2 THE THEMES AND SUB THEMES OF THE STUDY

Two main themes and sub themes emerged following the process of data analysis. Each theme is discussed with relevant quotations from the participants. The relevant literature is also cited as a control to the findings of this study.

The two main themes and the sub themes of the study

Themes	Sub-themes
3.2.1 Need for improved health education on tuberculosis (PTB and EPTB)	3.2.1.1 Specific aspects of knowledge and beliefs that need attention in tuberculosis (PTB and EPTB): <ul style="list-style-type: none"> • Causes • Modes of transmission • Treatment • Prevention
3.2.2 Need for rectification of lifestyles	3.2.2.1 Specific aspects of lifestyle practices that need attention: <ul style="list-style-type: none"> • Alcohol consumption and smoking • Nutrition

3.2.1 Need for improved health education on tuberculosis (PTB & EPTB)

Health education is any combination of learning experiences designed to facilitate the voluntary actions conducive to health (Green & Kreuter, 2000). During the health education learning process, the health facts are translated into healthy behaviors, whereby the healthcare workers give effective information to patients and the community with the aim of influencing their knowledge, beliefs and practices related to their health, with the

objective in turn of improving health and preventing disease. Health education is given to tuberculosis patients in order to develop in them a sense of responsibility for their health condition as individuals, and as members of families and their communities. In short, health education is aimed primarily at the voluntary actions which people can take on their own, individually, or collectively; as individually looking after their own health, or as decision makers looking after the health of others and the common good of the whole community (Green & Kreuter, 2000).

MOHSS (2006b) further added that good patient health education is the foundation for achieving a higher tuberculosis treatment success rate, as it enables health workers to avoid treatment interruption and defaulting. Since patients have different beliefs and different cultural and educational backgrounds, patient health education can only be effective if each patient is approached as an individual, each with his/her own specific problems and background. Cambanis et al. (2005) suggested that health education should be tailored to suit local perceptions and beliefs, in order to have the maximum effect. This requires educators to have good skills and positive attitudes, and thus good communication skills are required. Halaand and Molyneux (2006) defined communication as a two way process, whereby one person gives information to another and gets feedback (adjusting the initial information if necessary) to ensure a shared understanding. MOHSS (2006b) further clarified that health education is a dialogue, and not a lecture.

Poor health education or lack of health education to tuberculosis patients in any region can lead to treatment interruption, defaulting, drug resistance, and ultimately higher mortality and morbidity rates, with the consequences of poor treatment success rate. Edginton, Sekatane, and Goldstein (2002) suggested that health workers should learn the local beliefs and practices that may influence the presentation and adherence of tuberculosis treatment, and for traditional and western health workers to collaborate. MOHSS (2006b, p.115) emphasized that “it is much more cost-effective to invest time in patient education and support than in tracing patients who have interrupted their treatment”.

Various people can and should provide effective tuberculosis health education: nurses, HIV/AIDS counselors, doctors, peer educators, DOTS supporters, volunteers, and others (MOHSS, 2006b). Care should be taken that the information is consistent in order to prevent confusion among patients or communities.

3.2.1.1 Specific aspects of knowledge and beliefs that need attention in tuberculosis (PTB and EPTB)

Causes of tuberculosis

Tuberculosis is a disease caused, in most cases, by the micro-organism *Mycobacterium tuberculosis*. *Mycobacterium tuberculosis* is the most widespread bacterium responsible for infection (WHO/TDR, 2004). This *Mycobacterium tuberculosis* can also be referred to as germs (WHO/CDS/TB, 2003a). In Namibia, tuberculosis is almost always caused

by the human strain of tubercle bacilli, *Mycobacterium tuberculosis*. Infections caused by other mycobacterium species are rare (MOHSS, 2006b).

It was evident from the results of this study that most participants do not know the causes of tuberculosis. Only very few participants said that TB is caused by bacteria. Most of the participants perceived alcohol and smoking to be the causes of tuberculosis. Some said TB is hereditary, and a few said it is caused by the following factors: dust, HIV/AIDS, cold, dirty places, paint, heavy work, drugs such as dagga (cannabis), dirty water, overcrowding, eating of the wrong foods, lack of vitamins, eating sweet things, a punishment from old people, dirty food, dirty eating utensils, injuries such as stabbing on the lung, and by the use of dirty blankets.

The following are responses from some of the participants:

“I was drinking lot of alcohol, like tombo, beer, and any drinks and I was also smoking, that’s why I got TB” [22 years old male].

“TB is caused by drinking too much alcohol or too much smoking. Smoking put dust on the lungs and alcohol burns the lungs and that is TB” [35 years female].

“TB is caused by alcohol, because me myself I was drinking a lot, that’s why I have TB now” [53 years male].

Some participants believe that TB is hereditary as expressed in the following statements:

“Tuberculosis is just in the blood of certain families. Like my TB, is a family TB, my mother has TB, now we are four in family, who have TB” [28 years male].

“If the parents have TB, definitely their children will also get TB” [46 years male].

Some believe it comes from dust as the following statements say:

“Children are getting TB from the dust, because they are playing in the dusty streets” [37 years female].

“I know that dust can cause TB especially for those who are sweeping. That too much dust will sit on their lungs and get sick of TB” [40 years male].

Some said that TB is caused by HIV, air, and cold.

“TB is caused by HIV, is true because I started with HIV, now I get also TB” [47 years male].

“There is old TB which is coming from air and strong TB which is coming from HIV. I have strong TB which is coming from HIV” [49 years male].

“Too much cold can cause TB, that cold go to your lungs and get TB” [41 years male].

“Too much cold cause disease of the lungs like Tuberculosis” [36 years male].

The findings in this study are similar to the following found in literature:

In Kenya, it was also found in a study conducted by Liefogh, Baliddawa, Kipruto, Vermeine, and Munyrick (1997) among tuberculosis patients that they do not know the causes of tuberculosis. Most participants perceived alcohol and smoking and some perceived hereditary factors to be the causes of tuberculosis.

In Limpopo province in South-Africa, a study conducted by Promtussananon and Peltzer (2005) found among the community that they possess poor knowledge about the causes of tuberculosis. The community perceived smoking and dust as the causes of tuberculosis.

A study in Mpwapwa district, central Tanzania conducted by Pangesho et al. (2007) among TB patients, had some concurring findings, and some that differ from the findings of this study. Findings that concur are smoking and hereditary factors, and findings that differ are witchcraft, the drinking of unboiled milk or milk contaminated with cows' hair.

Another study conducted by Citrin (2006) in Somalia also revealed some concurring and some different findings with this study. A concurring finding is that the community perceived hereditary factors as the cause of tuberculosis. Different findings are that participants said tuberculosis is caused by sorcery, witchcraft and as punishment for dishonest or bad deeds.

The following studies show that the participants perceived the causes of tuberculosis differently compared to this study, but commonly, the participants do not know the causes of tuberculosis:

The study conducted by Edginton, Sekatane, and Goldstein (2002) among TB patients in a rural district of South Africa revealed that the participants perceived the causes of TB

as the result of breaking certain cultural rules that demand abstinence from sex after the death of a family member and after a woman has had a spontaneous abortion.

Another study conducted by Bhattacharya (1998- 2003) among TB patients in Delhi, India found that the participants perceived tuberculosis to be caused by contaminated water one drinks, from filthy surroundings one lives in, from poor sanitation and from fumes from factories.

Yet another study conducted in Ethiopia among TB patients revealed that participants believed that TB is caused by working too hard, and by cold air (Cambanis et al., 2005).

According to Van den Berg and Viljoen (1999), TB is a chronic disease characterized by the formation of tubercles in any tissue of the body and is caused by *Mycobacterium tuberculosis*. Tuberculosis is caused by germs (WHO/CDS/TB, 2003a).

Caminero (2004) explained that tuberculosis is caused by *Mycobacterium tuberculosis* complex. This complex includes *Mycobacterium tuberculosis*, *Mycobacterium bovis*, *Mycobacterium macroti* and *Mycobacterium africanum*. *Mycobacterium tuberculosis* is the most widespread bacterium responsible for infection (WHO/TDR, 2004). These organisms are also known as tubercles (because they cause lesions called tubercles) or as acid-fast bacilli (WHO/HTM/TB, 2004).

Tuberculosis is caused by bacteria/bacilli that are passed from one person to another. TB is not caused by witchcraft or dust, and nor is it hereditary (MOHSS, 2006b). Pio and Chaulette (1998) recommended that it must be stressed that TB is not a hereditary disease; that it is always acquired through droplets infection after birth, and that it can be cured if the prescribed treatment is followed regularly.

Rieder (1999) listed environmental contributing factors of tuberculosis as follows: substance abuse, smoking, alcohol abuse and malnutrition. Alcohol is not the cause of TB, but it affects people's immune systems. Wang et al. (2007) further made the point clearly by stating that smoking only increases the risk of tuberculosis. According to Jajula (2007), smoking and alcohol consumption are only risk factors to TB. WHO/CDS/TB (2000) further added to the contributing factors of tuberculosis the following: overcrowded living conditions, poor nutrition, emotional stress and poverty. Another contributing factor according to MOHSS (2004-2009) is HIV/AIDS. HIV/AIDS fuels the TB epidemic, since it is the most powerful known risk factor for reactivation of latent TB infection to active tuberculosis (WHO, 2003).

The perception that alcohol can cause TB may originate in the fact that those who drink to excess frequently experience appetite-loss and become malnourished, thus appearing thin, similarly to TB patients who are also frequently thin. Smoking can cause lung diseases such as cancer and emphysema, a disease that slowly rots the lungs (Quit-Smoking Stop.Com, 2001-2007). Patients with cancer may also appear thin, and thus it is possible that participants assume that TB is caused by alcohol and smoking.

The other perception of heredity as the causes of tuberculosis may originate from the fact that because TB is contagious, and family members are often in close proximity, they can easily develop TB. Mama's Health.Com (2000-2007) made it clear that the reason why TB spreads between family members or close friends is simply because they are in close contact with each other for long periods of time.

Heredity as a perceived cause of tuberculosis by the participants in this and other studies may have both advantages and disadvantages. A disadvantage is that it can lead to the isolation of a whole family or clan, and an advantage is that it can limit the spread of the infection to the whole community by concentrating only on those infected, if they are far from the healthy community.

The perceptions that tuberculosis is caused by dust may originate from the fact that dust causes other lung diseases such as black lung disease, asbestosis and silicosis (Canadian Lung Association, 2006). Exposure to dust, for instance wood dust and substances used in wood processing, has been associated with a variety of health hazards, including upper and lower respiratory diseases such as bronchial asthma and hypersensitivity pneumonia (Bosan & Okpapi, 2004).

When a community identifies some members who work in a factory where they are exposed to dust, and have subsequently developed lung diseases, they may thence

associate tuberculosis with dust. According to MOHSS (2006b), tuberculosis is not caused by dust.

The perception of HIV/AIDS as the cause of tuberculosis may originate from the physical appearance of AIDS and TB patients, because both may appear thin. Moreover, AIDS and TB as diseases have many features in common, for instance fever, chronic cough, loss of appetite and swollen lymph glands. Distinguishing AIDS from TB in a patient can even be difficult for doctors, when the sputum smears of the patient are negative. It is therefore understandable that in the general community, TB and AIDS are synonymous, and for TB to be used as a convenient euphemism for AIDS (MOHSS, 2004 – 2009).

This perception of HIV/AIDS may also have originated from the fact that health workers have stressed that TB is an opportunistic disease for HIV/AIDS. This perception may also be associated with the way health workers offer HIV testing to all patients diagnosed with TB. According to MOHSS (2006b), all TB patients should be offered an HIV test, and if they agree, should undergo an HIV test in order to benefit from HIV/AIDS therapy (Co-trimoxazole preventive therapy and Highly Active Anti-Retroviral therapy). These practices may lead to tuberculosis patients thinking that HIV/AIDS is the cause of TB.

The perception of cold weather as a cause of tuberculosis may originate from the fact that other respiratory infections such as influenza and the common cold are more common in winter. People are sick more often in the winter, simply because they are exposed to each other more in winter than in the summer. Duda (2007) explained that when it is cold,

people tend to stay inside and are more likely to spread germs to one another. Flu and the common cold are caused by viruses.

In the case of other perceptions on the causes of TB, for example paint, heavy work, eating sweet things, punishment from old people, using dirty blankets, dirty food, injury (like stabbing on the lungs), and eating foods that have passed their expiry date, the researcher was unable to determine how these factors or misconceptions related to tuberculosis. The researcher is also unable to find evidence or literature to elucidate the findings.

An unexpected result on the causes of tuberculosis is that no single participant from the age category of 15-24 reported that tuberculosis is caused by bacteria or germs. This is the youngest age group in this study; they have either recently completed their secondary studies, or in some cases may still be at school. The researcher assumed that they should know that TB is due to germs, even if they do not know the microbiological name. This is indicative of the poor school health services on TB programmes provided by the school health teams (outreach teams) in Katutura, Khomas region.

This study has indicated clearly that the participants possess poor knowledge about the biomedical causes of tuberculosis. This could be attributed to the fact that the policy makers, programme administrators and all in the development field who have developed the national guidelines for the management of tuberculosis (MOHSS, 2006b) have failed to indicate that when health care workers give health education to TB patients, they should also inform them about the causes of tuberculosis, to ensure that patients are

aware of the causes of their disease, which could prevent misconceptions. The tuberculosis guideline developers indicated clearly the topics to be covered by health education on TB. They clearly describe what tuberculosis patients and their DOT supporters need to know during the initial phase, additional information for returning treatment defaulters, and include examples of verification questions to be asked of each patient, both during treatment and at the end of treatment (MOHSS, 2006b). It could be the case that health workers are giving health education based on the tips that appear in the guideline book and on the treatment card. This could contribute to the reasons why patients do not know the causes of tuberculosis.

The researcher could not establish the reason why police makers, programme administrators and others in the development field did not indicate in the messages given to patients and their DOT supporters that the health workers should tell them that TB is caused by bacilli or germs (MOHSS, 2006b). This could explain the dearth of knowledge on the causation of TB by patients. There is a need for greater clarification from them on this issue.

Poor knowledge about the causes of tuberculosis could also be attributed to a lack of initiative on the part of health workers in sharing knowledge about the disease per se at individual or at group level. Health workers need to inform patients about the causes of TB, even though this is not indicated in the national tuberculosis guidelines. They should reason that in the case of any person diagnosed with any type of disease, the first question must be what the causes are. There are some TB leaflets that indicate that tuberculosis is

caused by bacilli/germs. Health workers could have used these, and even the patients themselves who can read may also use them, since they are available at some of the health facilities in the region and are generally distributed to the public during World Tuberculosis Day. Unfortunately most of the leaflets are only available in English, and not all patients understand the official language in Namibia, namely English.

Poor knowledge could also be attributed to the poor understanding of health education efforts on the side of health workers, due possibly to lack of interest or to heavy workloads at health facilities.

The study in Limpopo, by Promtussananon and Peltzer (2005) and the one in Somalia, by Citrin (2006) were conducted amongst community members, while the current study was conducted among patients who are already on TB treatment. Moreover, all the participants in this study were, on a daily or weekly basis, in contact with their TB focal nurses, because they collected their TB pills and food supplies regularly at the Katutura Health facility. They should at least have adequate knowledge; if there was effective communication and proper patient health education in the region, compared with other studies where the participants were only the community members, but in fact both studies showed poor knowledge.

The researcher is a district TB coordinator and is aware that health education sessions are given to all TB patients in Khomas region, but it is possible that these are not based on local perceptions and beliefs of patients. Furthermore, education is usually done through

printed and electronic media and is the focus once a year on world TB day (MOHSS, 2006b). Good knowledge on the causes of TB among TB patients will contribute to an improvement in the treatment success rate in the Khomas region.

Very poor knowledge about the causes of tuberculosis among tuberculosis patients themselves can lead to the creation of many misconceptions; to delays in accessing or seeking treatment, and to poor adherence to treatment. It can also increase the potential for transmission of the disease. Finally, all of the above may contribute to a low tuberculosis treatment success rate.

Modes of transmission

Tuberculosis is almost always caused by the human strain of tubercle, *Mycobacterium tuberculosis*. The bacillus is transmitted from an infectious patient through coughing, sneezing, laughing or singing whereby droplets containing *Mycobacterium* are released and are inhaled by the contact. Tuberculosis is transmitted by airborne droplets produced by a person suffering from pulmonary tuberculosis through expectoration. This is known as droplet infection. The inhaled bacilli settle in the lung and cause infection (MOHSS, 2006b).

It is evident from the findings of this study that the participants have little understanding of the modes of transmission of tuberculosis, and moreover that they hold erroneous beliefs regarding the modes of transmission. Most of the participants said that tuberculosis is transmitted by droplets (some view droplets as TB, not bacteria in droplets) from a TB patient who coughs without covering the mouth. The same

participants may further state that tuberculosis is transmitted through sexual intercourse, and that tuberculosis is transmitted through saliva by kissing or sharing pipes or cigarettes. Some participants said that tuberculosis is transmitted by sharing the same eating utensils with tuberculosis patients. A few said that tuberculosis is transmitted through the following: by sharing a blanket with tuberculosis patient, through skin penetration, or by spit on the floor which another person then steps on.

The following are statements from some of the participants:

“If I cough and not covering my mouth, I can give TB to you now, because that small water comes out from the mouth is TB” [23 years male].

“TB can spread from one person to another through sexual intercourse. When I use the same plate with those who does not have TB, they will also get TB. If I cough and not covering my mouth that small drops coming from my mouth have TB” [28 years female].

“Through sexual intercourse, you will get TB and HIV/AIDS and also through drinking in one cup or sharing the same plate and if you are kissing with someone having TB, you will get it also” [49 years male].

‘If the TB person eats in the same plate or using the same cup with a healthy person, the other people will get TB.’ [31 years male].

“Saliva through kissing and also when sharing spoons and cups especially when you drink on the side where TB patient was also drinking you will get TB” [19 years male]

Sharing a cigarette or pipe is also a problem, that saliva on cigarette or pipe will be taken by another person and that person will get TB” [53 years female].

“Sexual intercourse with someone having tuberculosis, you will also get TB” [54 years male].

“People transmit TB through sexual intercourse, because my girlfriend gets TB from me” [35 years male].

“If you share the same blanket with a TB person, you will get TB of the bone, but if you share the same utensils you will get TB of the lungs” [27 years male].

“The other thing is when I spit on the floor and someone steps on it without shoes ,that germs or bacteria will pass through the skin and that person will get TB” [40 years male].

The findings concur with those of Promtussananon and Peltzer (2005), who found that the community in the Limpopo province of South Africa also believed that tuberculosis could be transmitted though contact by using the same utensils of some one afflicted with TB.

The findings are similar to those of a study conducted among TB patients in Kenya, where the patients believed that tuberculosis could be transmitted through sharing eating utensils with TB patients (Liefogh et al., 1997).

Again Pangesho et al. (2007) found the similar results among the TB patients in Mpwapwa District, Central of Tanzania. The patients believed that tuberculosis could be transmitted through sharing domestic utensils with the TB patients.

Another study conducted by Kaona, Tuba, Sizia, and Sikaona (2004) among TB patients in Ndola, Zambia, revealed that the participants believed that TB could be transmitted through sharing cups and having sexual intercourse with TB patients.

A study conducted in Kwa-Zulu Natal, South Africa among traditional healers revealed somewhat different results. The traditional healers believed that tuberculosis could be spread through smoking, mosquitoes and insect bites (Peltzer, Mngqundaniso, & Petros, 2006).

The study conducted among Somali by Citrin (2006) revealed that the participants believed that the modes of TB transmission include an infectious person coughing germs into the air, which results in others becoming infected after breathing in these germs.

According to Damani (2003), TB spreads through droplets when a person with TB coughs sneezes or laughs without covering the mouth and nose. Webber (2002) further added that only sputum smear positive cases transmit the disease. Rieder (1999) and Damani (2003) stated that covering the mouth and nose is likely to be highly effective in reducing the number of infectious droplets which can reach the air. Micro-organisms enter the body by inhalation (Pio & Chaulet, 1998).

Droplets spread from undiagnosed/confirmed infected persons during breathing, laughing and shouting are the means of transmission. EPTB other than laryngeal TB is less contagious than pulmonary tuberculosis, even in the presence of draining sinuses (Ziady & Small, 2004).

Transmission is most likely to occur when the concentration of bacilli in the air is high and exposure to that air is prolonged. This is where there is prolonged direct contact between infectious sources and susceptible individuals. A spread in TB will therefore be most common in communities and population groups in which the prevalence of infectious TB is high (Frieden, 2004).

According to Ait-Khaled and Enarson (2003), when patients with positive pulmonary tuberculosis speak, and in particular when they cough or sneeze, they produce an aerosol of droplets from the bronchial tree. These droplets contain a number of bacilli which cause the infection. When they become airborne, the droplets dry rapidly and become very light particles containing live bacilli, which remain suspended in the air. When someone lives close to a patient with PTB, they are at risk of inhaling these infectious particles. Upon inhaling the bacilli, they settle in the lungs causing inflammation with corresponding enlargement of the hilar nodes. Later the bacilli multiply and spread through the lymphatics leading to glandular enlargement and the infected person may develop PTB. Sometimes the bacilli spread through the bloodstream to other part of the body and produce EPTB such as TB spine, pleural effusion, and

milliary TB. In most cases, the multiplications of the bacilli are contained by the body's immune system and remain in a dormant state without further consequences.

Individuals with a weak immune system (for instance those infected with HIV), or people suffering from diabetes, malnutrition or other debilitating conditions may develop TB during the first year of infection. People with a healthy immune system will never develop tuberculosis (MOHSS, 2006).

Most participants in this study cited that the modes of transmission are only when coughing and not covering the mouth. However, according to Damani (2003), covering the nose is also important.

The participants seemed to have beliefs concerning the modes of TB transmission that do not relate the disease to the environment and the fact that tuberculosis can be transmitted through the air. They believe rather in physical contact with an object, for example the sharing of eating utensils with tuberculosis patients, saliva through kissing, having sexual intercourse with tuberculosis patients, stepping on the sputum of tuberculosis patient, and sharing a blanket with a tuberculosis patient.

The study revealed that the participants hold erroneous beliefs regarding the modes of transmission, or it could simply be said that they have little understanding of the modes of transmission. A participant may say for instance, that droplets from a TB patient transmit the disease through coughing without covering the mouth, and the same person may further state that TB is spread through sexual intercourse and through saliva. This

would appear to indicate that such participants had some knowledge that TB is a communicable disease and may be transmitted by either direct or indirect contact. However it is true to say that participants lack adequate and accurate knowledge on the modes of transmission.

TB cannot be transmitted through sharing dishes or eating utensils, shaking hands, or sitting on a toilet seat (Centers for Disease Control and Prevention, 1999). Tuberculosis is not transmitted through food and water or by sexual intercourse, blood transfusion, or mosquitoes (WHO/HTM/TB, 2004). Damani (2003) recommended that all TB patients be informed that their infection is spread to others by the respiratory route.

The belief that sexual intercourse can transmit tuberculosis may have originated from the way health workers advise HIV patients to use condoms. Health workers advise all HIV patients to use condoms because HIV fuels the tuberculosis epidemic, since it is the most powerful risk factor for re-activation of latent TB infection to active disease (WHO, 2003). Intense transmission of *Mycobacterium tuberculosis* increases the pool of HIV-infected people exposed to and subsequently infected with *Mycobacterium tuberculosis*. In a population with high HIV prevalence, many people infected with HIV develop tuberculosis and many tuberculosis patients are co-infected with HIV (WHO/HTM/TB, 2004).

The patients possess various beliefs regarding modes of transmission, which may be attributed by the content of health education health workers give them. The national tuberculosis guidelines fail to indicate that health workers should inform patients that

tuberculosis is transmitted through droplets produced by tuberculosis patients. The developers of the national tuberculosis guidelines give tips on what tuberculosis patients and their DOT supporters need to know, whereby they guide the health workers by saying that the patient should know that tuberculosis is an infectious disease that is transmitted from one person to another by coughing. They overlook the importance of mentioning droplets. New, untrained or uncommitted nurses may only concentrate on the tips given and fail to use their own initiative by adding what the guideline developers fail to mention. Committed, well-trained nurses can also make the same mistake if they only concentrate on the guideline tips, especially if they are overworked.

Patients may also possess various beliefs regarding modes of transmission if their cultural beliefs are not considered by the health workers during the conversation.

Treatment of tuberculosis

Worldwide, tuberculosis chemotherapy is the most significant intervention for the control of tuberculosis. Tuberculosis chemotherapy kills *Mycobacterium tuberculosis* bacilli in an infected patient, and it also stops the transmission in the community at large. The main goal of TB treatment is to ensure a relapse-free cure while preventing the emergence of drug resistance. *Mycobacterium tuberculosis* is a slow-growing aerobic organism that can remain dormant for a prolonged period. Consequently, prolonged treatment with multiple drugs is required to ensure a relapse-free cure and to prevent the emergence of resistance (Frieden, 2004).

Tuberculosis treatment is prescribed depending on the type of TB (diagnosis) and the category of TB patients. Tuberculosis treatment is available at any government or mission health facility. Evidence from good control programmes shows that high treatment success rates of between 85% and 90% can be achieved when the patient is well-informed about treatment, the patient is supported by relatives and health staff, treatment is provided at the patient's convenience, and when health staff adheres fully to national tuberculosis guidelines (MOHSS, 2006b).

It is evident from the results of this study that most participants possess poor knowledge about the treatment of tuberculosis. Although the participants generally preferred medical treatment from the hospitals or clinics, there were some who first had been to traditional healers, and a few who tried home (self) treatment before going to health facilities. Most participants knew the duration of their treatment courses, but some did not, and may even not have known the type of tuberculosis they were suffering from. None of the participants knew the names of their pills. Some participants said that they do not have DOT supporters, and those who had, said that they were not using them. Others said that they do not need DOT supporters. Some participants also said that their pills had been changed, but they were not informed of the reasons behind the change, and a few said that they do not know whether their treatment was going to be changed or not. However, there were a few who knew their diagnosis and the reasons behind changes in their medication. Most of the participants said that they take their treatment every day; but there are some who do not. Some developed side-effects to their TB treatment, and had not been informed in advance by their health care workers that this could occur.

Following are statements from some of the participants:

“Treatment of tuberculosis is only from the hospital or clinics. Me I was treated first by the traditional healer there at the farm. He gave me soup from the goat and sheep dung to drink and also alwyn soup from the field. I drink it for two to three months. I become very weak and he told me to come and see the doctor at the hospital” [47 years male].

“Tuberculosis is only treated in the hospitals or clinics. Like my case, my parents took me first to the sangoma for treatment and the sangoma gave me the roots and the leaves of the tree to boil and drink. I used it, but I become sicker and thin. Later my parents takes me to the clinic, is where I was told that I have TB” [33 years male].

“My mother gave me roots of the tree, boiled it and drink that water....., but it does not work until I come to the hospital” [19 years female].

The findings concur with those of Protussananon and Peltzer (2005) who also found that the majority of participants in the study conducted among the community in Limpopo province South Africa preferred medical treatment.

A study conducted by Pangesho et al. (2007) among tuberculosis patients in Central Tanzania revealed on the contrary that self-treatment and traditional healers were given priority among the study participants.

Again, a study in Somalia conducted among the community revealed that for many of the participants, treatment tends to combine traditional remedies, prayer as well as western allopathic medicine (Citrin, 2006).

Another study conducted among TB patients in a rural district of South Africa revealed that participants believed that TB is only treated by the traditional healers (Edginton et al., 2002).

A study conducted in Kenya among TB patients by Liefogh et al. (1997) revealed that traditional medicine is considered a valid alternative to modern medicine, and is believed to be more effective and much shorter. No one in this study admitted to seeking help first from traditional healers, while the current study showed that some participants had sought help first from traditional healers.

These results are contrary to the findings of a study conducted in the Philippines among Phillipino immigrants, who also believe in the effectiveness of traditional and popular treatment (Yamanda, Caballero, Matsunanga, Augustin, & Magena, 1999).

According to MOHSS (2006b), tuberculosis treatment is available, free of charge, at any government or mission health facilities. If patients go first to traditional healers, and moreover if their stay there is prolonged, (as for instance was the case with a participant in this study who stayed there for two to three months), then early diagnosis and

treatment will also be delayed. The consequences of this will be higher mortality and morbidity rates for TB patients.

Based on the findings, there is a need to assess the knowledge, beliefs and practices of traditional healers in Khomas region concerning tuberculosis for lay references.

Furthermore, according to Chetley, Hardon, Hodgkin, Haaland, and Fresle (2007), self treatment or self medication at home is a common form of therapy choice and in general, people treat symptoms and not the disease. This may be caused by the fact that people are not given a chance to understand how the disease works and how the drugs should be taken to treat the disease. If people start with self treatment at home, this may also delay early diagnosis and prompt treatment, and the consequence will be further TB transmission to other family members. The national tuberculosis guidelines make it clear that the community should know the signs and symptoms of tuberculosis. Individuals from the communities that are well informed about tuberculosis are more likely to report to health care providers as soon as they develop signs and symptoms of TB (MOHSS, 2006b). This indicates that health workers are giving inadequate health education to the communities. All this will contribute to poor treatment success rate in Khomas region.

Some participants did not know the type of TB they were suffering from (their diagnosis). The following are statements from some of the participants:

I don't know the type of TB I'm having, I was not told, but I think may be is alcohol TB"
[35 years male].

"I think I have TB of the liver, because the first time I was having the TB of the lung" [22 years male].

"I'm not sure if I have TB of the bones because I was drinking a lot or I have TB of the lung because I was smoking. I know I have one of the two or all two TB" [23years male].

Nguyen, Johansson, Diwan, and Winkinstan (2006) also found in their study among TB and non-TB patients in Vietnam, that the participants have poor knowledge about the types of tuberculosis. They perceived the types of TB as hereditary TB, physical TB, and mental TB.

In contrast, a study conducted by Angala (2000) among tuberculosis patients in the Otjiwarongo hospital revealed that very few participants did not know their diagnosis.

There are two major types of tuberculosis, namely pulmonary tuberculosis (PTB) and extra pulmonary tuberculosis (EPTB). Pulmonary tuberculosis is a case where two or more sputum smear examinations tested positive for acid-fast bacilli. This is TB of the lungs (Pio & Chaulet, 1998). Extra pulmonary tuberculosis involves organs other than the lungs, for instance lymph nodes, abdomen, pleura, genitor-urinary tract, skin, joints, kidneys, mouth, tongue, tonsils and meninges (Ellis, 1998; MOHSS, 2006b).

For tuberculosis chemotherapy to be successful, each tuberculosis patient must fully understand what it entails, including diagnosis, medication, duration of treatment,

possible side-effects, and the importance of completing the treatment and taking every drug as prescribed. The educator must verify that the patient has fully understood the message by asking the patient and the DOT supporter to provide this information in their own words. (MOHSS, 2006b).

According to MOHSS (1998), clients have the right to be given a clear explanation and advice on their condition, illness and its proposed treatment; to be given detailed information on prescribed treatment and possible interventions, and to be consulted when any choice exists.

The researcher assumed that the patients had been told their diagnosis by the health workers immediately upon diagnosis with TB, because according to MOHSS (2006b), prior to starting tuberculosis treatment, the health workers should take the time to discuss the diagnosis with the patient. If the participants do not know which type of TB they have, then this may contribute to transmission of disease to others. Patients who have sputum smear positive tuberculosis are more infectious than EPTB patients, and they need to take more precautions to prevent the spread of TB to others. If they are unaware of their diagnosis they can easily stop their treatment on their own. For instance, an EPTB patient with TB meningitis, whose treatment should take 9-12 months to complete, may compare himself with a new TB patient who has to complete his treatment within 6 months (MOHSS, 2006b) and thus discontinue the treatment too soon. The consequence of this would once again be a high TB rate and poor treatment success rate in the region.

Some participants said that they do not know how long their tuberculosis treatment should last. Following are statements from some of the participants:

“I don’t know for how long I am going to drink these pills” [53 years male].

“I understand that TB pills are only for six months. Me myself I did not ask for how long, but I think is only six months like other people” [28 years female].

The findings are similar to the study done by Angala (2000) among tuberculosis patients in Otjiwarongo hospital, where she found that participants did not always know the duration of their TB treatment.

Similarly, in studies conducted by Waisbord (2005) among TB patients in India, Swaziland, Thailand, and Zambia the results indicated that patients possess poor knowledge concerning the length of TB treatment.

Other studies conducted by Munro et al. (2007) among tuberculosis patients and communities in some countries in Africa, North America, South and East Asia and Latin America revealed that the participants do not understand the treatment period of TB.

On the other hand, a study conducted among the traditional healers in Kwa-Zulu Natal revealed that the participants possess good knowledge about the duration of TB treatment. Most of the traditional healers said that TB treatment takes 6 to 8 months (Peltzer, Mngqundaniso, & Petros, 2006).

It takes time to eliminate tuberculosis bacteria from the body. According to MOHSS (2006b), the duration of TB treatment regimens are as follows: patients in the category one regimen are given an initial phase of two months of RHZE (rifampicin, isoniazid, pyrazinamide and ethambutol) daily, followed by four months of RH (rifampicin and isoniazid) daily. The duration of treatment is determined primarily by the quantity of tuberculosis bacilli in the body that needs to be killed by the TB medicine and the penetration of the tuberculosis medicines in the tissue where the bacilli live. In severe forms of extra-pulmonary tuberculosis, treatment duration may be extended to nine months. Severe forms of EPTB are TB meningitis, neuro TB, abdominal TB, bilateral pleural effusion, pericardial effusion, and bone and joint TB involving more than one site. EPTB at other sites is deemed to be non-severe TB. For non-severe TB forms, the treatment duration of six months is more than adequate (MOHSS, 2006b).

All patients on the category two regimen get an initial phase of two months of RHZE daily, and streptomycin on weekdays (RHZES), followed by one month of RHZE daily, and followed by a continuation phase of five months of RHE daily. The duration of treatment on the category two regimen is longer than that for category one.

If the tuberculosis patient is not aware of the duration of his/her treatment, this then often discourages the patient from completing the treatment. He may compare himself with a fellow patient who is only taking a six-month course, while he may be suffering from severe EPTB which requires a longer treatment period. If he discontinues treatment

prematurely, this can lead to a relapse, and ultimately to multi-drug resistance. One of the consequences of this will be a poor treatment success rate in the region.

Some participants in the study indicated that they did not know why their tuberculosis pills had been changed – they may have been told they were to be changed, but did not understand the reasons behind this.

Following are comments from some of the participants:

“The pills were changed once, why I did not ask them, may be they have the same strong”
[24 years male].

“The nurse changed my pills from red box, now is from green box. I was not told why. I don’t know” [53 years male].

“They changed my pills once, maybe they saw that the pills are too weak for my TB” [54 years male].

My pills were changed....they just told me that the pills are finished, but how can those pills finished, if I saw them giving it to other people and they give me other type. I wanted to ask them but later I decided to kept quiet assuming that may be they are all for TB “
[40 years male].

The findings are similar to those of Angala (2000) who also found among tuberculosis patients in the Otjiwarongo hospital that some of the participants are not aware of the changes with their pills.

Similarly, in the study conducted by Citrin (2006) among a Somali community, participants considered such changes as experiments, or a trial in which the desired outcome was results for medical tests, and not the alleviation of sickness or suffering.

According to WHO/CDS/TB (2003b), TB regimens have an initial (or intensive) phase lasting for two months, and a continuous phase usually lasting for 4 to 6 months. During the initial phase, normally consisting of Isoniazid, Rifampicin, Pyrazinamide and Ethambutol, the tubercle bacilli are killed rapidly. During the continuous phase, fewer drugs are necessary, but they must be given for a longer time.

According to Enarson, Rieder, Annatoddir, and Treabuq (2000) and MOHSS (2006b), one form of treatment of tuberculosis is classified as category one regimen (2HRZE/4RH). This has an initial phase of two months of RHZE daily, followed by a continuous phase of four months of RH. Another form of treatment is the category two regimen (2RHZES/1RHZE/5RHE). This has an initial phase of two months of RHZES daily (Streptomycin on week days) followed by one month of RHZE daily, followed by a continuous phase of five months of RHE daily.

WHO/CDS/TB (2003b) stated that letters in parentheses indicate fixed dose combinations of the drugs. Each anti-tuberculosis drug has an abbreviation, for example Isoniazid (H), Rifampicin (R), Pyrazinamide (PZA) or (Z), Ethambutol (E) and Streptomycin (S). In severe forms of EPTB, treatment duration may be extended to a maximum of nine months (MOHSS, 2006b).

Sputum smears should be done for the category one regimen at six weeks of treatment and after five months of treatment. With the category two regimen, sputum should be collected at ten weeks of treatment, at five months, and again at seven months of treatment. If the sputum smear is negative at six or ten weeks, then the treatment has to be changed from the initial to the continuous phase. The pill dosage also needs to be adjusted, and this is done according to the weight of the patient (MOHSS, 2006b). If TB patients are aware of the importance of such changes in their drug regimens, they are much more likely to accept and appreciate the changes. They would also be more likely to understand why for example they are not given the same treatment as a category one regimen patient who is not getting injections, while those on the category two regimen are receiving them.

If patients do not know reasons why their pills are changed, it can frustrate them and may cause them to mistrust their health workers, especially if a health worker is new in the TB clinic. It can also discourage the patient from continuing to take their TB pills, particularly those who are gaining weight for instance, because the more the weight they gain, the greater the numbers of pills he/she has to take (MOHSS, 2006b). If patients know the reasoning behind the changes, then they will appreciate it and consider such changes as signs of improvement.

None of the participants knew the names of their pills, but only the colour. Following are responses from some of participants:

“I don’t know the pills name, but the colour I know” [33 years male].

“The names of pills are not clear on the sachets, the hand writing of the sisters are not readable” [19 years female].

Patients on the category one regimen are given 2RHZE/4RH, while those on category two regimen get 2RHZES/1RHZE/5RHE. Those who have developed serious and adverse effects to a drug in the fixed dose combination may need to be prescribed the single dose formulation, for instance Rifampicin, Isoniazid, Pyrazinamide, Ethambutol (MOHSS, 2006b).

According to Pio and Chaulet (1998), information about the drugs administered to a patient should be repeated at least once a month during the continuous phase; the types and the colour of drugs prescribed, the amount and the frequency of drugs.

The reasons patients do not know their pills could be attributed to the fact that health workers do not inform them, and thus patients try to decipher the writing on the pill packets themselves.

TB patients take their pills for a long period, and as argued above, they need to know the names as well as the colour. This would have the following advantage: if a patient traveled and forgot his/her treatment passport, knowing the name of pills he/she was taking would help the health worker to identify the pills easily and provide them without delay, so that the patient can continue with his/her regimen without interrupting the

treatment. This can promote the treatment succeed rate in the region. An interruption may lead to treatment failure.

Few participants said that they need the DOT (directly observed therapy) supporters, with the majority indicating that they do not. However, it would seem that those who have DOT supporters are not using them.

Following are responses from some of the participants:

“I don’t need a supporter, for what? Yes I brought my brother to be in their book, but I drink my pills on my own {46 years female}.

“I drink on my own. I don’t have a supporter. I don’t see the need, may be for children and very old people who can forget easily” [31 years female].

“I don, t need a supporter, the supporter is needed by those who are forgetting easily. My memory is ok “[34 years male].

These findings concur with those of Edginton et al. (2002), who also found among TB patients in South Africa that they referred to DOT supporters as ‘strangers’, and indicated they preferred self administration.

These results are similar to those of the study conducted in some countries in Africa, North America, South and East Asia, and Latin America among TB patients and communities, which revealed that the participants indicated that they do not need the DOT supporters and viewed them with distrust (Munro at al., 2007).

On the contrary, a study conducted by Wandwalo (2005) among tuberculosis patients in Tanzania revealed that the majority of participants were satisfied with the DOT option they were receiving, and were even willing to supervise other tuberculosis patients.

The most effective treatment for tuberculosis is Directly Observed Treatment Short-courses (Jackson, 2002). According to Jayula (2007), the taking of TB pills should be observed by a treatment supporter chosen by the person taking the pills for the entire period of treatment. The most reliable measure to ensure that tuberculosis patients are take their pills as prescribed is DOT. DOT entails a patient swallowing his/her drugs in the presence of another person, who ensures that all tablets are taken as prescribed. This person who is the observer is called a DOT supporter. The DOT supporter could be a health care service provider or any other person who has assumed co-responsibility for tuberculosis treatment for the entire treatment period. The TB treatment should be given at the patient's convenience and with their acceptance (MOHSS, 2006b).

The Directly Observed Treatment – Short course (DOTS) was launched in 1993 by the WHO and its international partners soon after tuberculosis was declared a global emergency. In Namibia the DOTS strategy was adopted in 1993. Implementation of the DOTS strategy started in one region, and all regions were covered by 1996. One of the essential elements of the DOTS strategy is the standardized short-course therapy for all cases of TB under proper case management conditions including direct observation of treatment (MOHSS, 2006b).

According to Ziady and Small (2004) and Gillespie (2003), DOT is the only really effective treatment option for containing the development of TB epidemic. WHO (2002) stated also that good management includes DOT during the initial phase for all new smear positive cases. TB treatment should be given under full supervision (Van den Berg & Viljoen, 1999). Administering chemotherapy through self-administration often gives poor results. DOT increase the chances for a successful treatment outcome and has been shown to reduce the chance of emergence of drug resistant population bacilli (Rieder, 2002).

Frieden (2004) added that as DOT treatment is carried out under a programme supervisor, no concealed irregularity can occur as it can in self-administered regimen. Equally important is the dramatic reduction in the development of drug resistance, because direct observed treatment eliminates the patient's ability to unintentionally discontinue one or more drugs, with the subsequent emergence of drug resistant organisms.

A study conducted among tuberculosis patients by Jasmer et al. (2004) in San Francisco showed that tuberculosis patients treated by DOT at the start of therapy had a significantly higher cure rate than those treated by self administration therapy at the start. Furthermore, patients treated by DOT at the start also had lower rate of TB-related mortality.

Another study conducted by Wandwalo (2005) revealed that the treatment outcomes of tuberculosis patients in Tanzania under DOT showed that a lower proportion of the patients under community DOT defaulted.

Taking a lengthy course of treatment is not straightforward, and frequently involves difficult decisions. A patient's behaviour may change during the long course of treatment. DOT supporters are needed to support these patients morally and physically; morally by encouraging them to continue and complete the course, and physically by providing food and other basic needs to that person where possible.

If participants know about DOT and accept its benefits, then the treatment success rate may improve, since the default rate would decrease on account of treatment given under direct supervision.

Most of the participants of this study did not develop anti-TB treatment side effects, although a few claimed they had, such as itchy skin and rashes. They stated that they had not been informed of the risks of side effects in advance, which made them worried or afraid. Following are responses from some of the participants:

"I developed rashes here (she shows healed scars on her right hip) maybe because of the pills and I was afraid, but they disappear on its own" [23 years female].

"I was itching than I see the doctor.....I was worried too much" [31years male].

A study conducted by Angala (2000) among tuberculosis patients at the Otjiwarongo hospital revealed that very few participants developed side effects from the treatment.

Other studies conducted by Munro et al. (2007) in some countries in Africa, North America, South and East Asia, and Latin America and Europe revealed that some participants had developed side effects and had not been advised on what to do to counter them.

The study conducted among Somali by Citrin (2006) also revealed that participants had developed anti-TB treatment side effects.

According to Enarson, Rieder, Annadottir, and Trebucq (2000), treatment of TB is prolonged over a number of months. During such a period of time in one's life, some events may occur which could then be assumed to have been caused by such medication. Particularly frequent events of this type include skin rashes and abdominal complaints. Skin rashes are most frequently due to INH, streptomycin or PZA. If the person is clinically well, it is the best to stop treatment and recommence them after the reaction has subsided. Many TB patients completed their treatment without any significant drug side effects. However, all TB patients must be monitored for side effects during treatment. It is the health workers' responsibility to teach their patients how to recognize symptoms of common side effects, and to instruct the patients to inform the health workers if they develop such symptoms. Health workers should also ask about any symptoms when patients report to collect or take their pills. If patients are not informed in advance, then

they can easily stop treatment on their own, which will affect the treatment outcome. No drug is without side effects or adverse drug events (Rieder, 2002).

Some participants consider injections as punishment for their behavior while on TB treatment.

Following are responses from some of the participants:

“I was told that I will get injection, because I quit taking the pills. If you quit, when you come back you will get injection” [38 years male].

“I understand that those who are not drinking their pills everyday, they are on injection for two months” [37 years male].

According to MOHSS (2006b), all TB patients on the category two regimen should get streptomycin injections during the initial phase of two months. Streptomycin injections should also be given to TB patients on the category one regimen, if they have been diagnosed with TB meningitis.

Most participants in this study were taking their treatment every day. However, there were some who interrupted their treatment. Following are responses from some of the participants:

“I skip two days not getting my injection, because my buttocks were very painful” [35 years female].

“I’m not drinking my pills every day, because in the weekend I use to drink alcohol and I forget them” [33 years male].

The findings are similar to those of Munro et al. (2007) who found in study conducted in some countries in Africa, North America, South and East Asia, Latin America and Europe that some participants interrupted their treatment, due to reasons such as fear of a painful injection.

MOHSS (2006b) state clearly that TB treatment should be taken seven days a week during the entire treatment period. This means that the TB patients need to take their pills every day. Interrupting TB treatment is a serious problem in Namibia. Disruption in treatment can result in a worsening of the disease and it can return with a vengeance. It is possible that medicines used initially may become ineffective. Newer and more costly drugs may be required for treatment at this point. The American Academy of Family Physicians (1996 – 2007) stated that for tuberculosis medication to work at curing the tuberculosis, the tuberculosis patients must not skip a single dose.

According to Frieden (2004), *Mycobacterium tuberculosis* is a slow-growing aerobic organism that can remain dormant for a prolonged period. Consequently, prolonged treatment with multiple drugs is required to ensure relapse-free cure and to prevent the emergence of resistance. The most important causes of poor treatment outcome are interruption of treatment and irregularity of drug intake. These are most commonly the result of the inevitable tendency of patients to forget during intake, and to stop treatment

when they are feeling better. This could also be attributed to the poor orientation done by health workers regarding the duration of TB treatment. This in turn could be the result of health workers merely instructing the patient instead of engaging in a dialogue about the duration of their treatment. A patient who does not understand all the requirements of TB treatment is more likely to default (Open Society Institute, 2006).

In order for tuberculosis treatment to be effective, health workers should inform their patients about the duration of treatment (MOHSS, 2006b). The lack of knowledge about the duration indicates that health workers are not giving effective health education to the patients.

Prevention of tuberculosis

The best way of preventing tuberculosis is early identification of people with pulmonary tuberculosis, and providing them with tuberculosis treatment. This is extremely important because it breaks the chain of transmission at once. There are three major areas of preventing tuberculosis in the community, namely prevention of tuberculosis infection, prevention of tuberculosis disease and prevention of morbidity and mortality (MOHSS, 2006b).

The results of this study show that most participants have inadequate knowledge about the prevention of tuberculosis. Suggested means of prevention of tuberculosis given by participants included the following: to stop drinking alcohol, followed by stopping smoking, or limiting alcohol or smoking; for TB patients to have their own eating

utensils; the cleaning of living places; that TB is hereditary and cannot be prevented because it is already in the blood; and for those who have TB to be isolated.

Other participants suggested the means of preventing or reducing tuberculosis as follows: wearing of thick, warm clothes during cold seasons; for children not to play in the dust; for TB patients to use condoms; by avoiding any relationship with TB patients; by use of clean utensils; by isolating the blankets of TB patients; by wearing shoes to prevent stepping on the mucus of TB patients; for government to tar the roads to prevent dust; for people to take adequate rest; children born of TB parents to be checked if coughing; avoidance of cigarette-sharing; for children not to pick up anything dirty; to eat good food and to open the windows of the houses.

Following are comments from some participants:

“People must stop drinking too much alcohol” [24 years female].

“We need to stop drinking alcohol and also to stop smoking” [23 years female].

“Those who have TB must stay far from those who do not have TB. Like me I have my own cups and eating utensils and I sleep alone in my bed” [30 years male].

“If a person has TB, she has to use her own utensils like spoon, cup and plate. If per accident uses the other people’s plate or cup, it must be putted in a jik to kill the germs” [46 years female].

“Family TB is not preventable. If it is in your family, it is just in the family and the family members will definitely get it” [34 years male].

“Family TB, that one, we cannot avoid it, it is already in the blood” [28 years male].

“We the big people, we must tell our children not to play in the dust, so that they will not get TB” [37 years female].

“Government needs also to make all the roads tarred “[24 years female].

“We need to wear strong clothes especially this cold time to prevent TB” [41 years male].

The findings concur with those of Protussananon and Peltzer (2005) who found among the community in Limpopo province, South Africa that the majority of the participants suggest the means of TB reduction as: to stop drinking alcohol or avoid smoking.

The findings are again similar with the study conducted in Malaysia. The participants suggested that people infected with TB should not mix with uninfected people (Koay, 2004).

Another study conducted among a Somali community by Citrin (2006), revealed that they believed in the total isolation of the TB patient, for instance of his cup, his plate and even a room if it is available – that he has to sleep alone. It was believed according to the study that this would help prevent others from catching TB.

According to MOHSS (2006b), there are three types of prevention, namely preventing TB infection (primary prevention), preventing the TB disease (secondary prevention) and preventing TB morbidity and mortality (tertiary prevention).

Primary prevention includes practices such as good cough hygiene, which is a very important measure for preventing tuberculosis. This is when a person with PTB holds a cloth or handkerchief over his or her mouth while coughing. It also means that TB patients should not spit on the floor or ground, but instead into a handkerchief or container, discarding the sputum in a safe place such as a toilet. This very simple measure greatly reduces the spread of infectious tuberculosis bacilli in the environment, and thus the risk of transmission of the infection. Very few participants in this study suggested good cough hygiene. It is a simple measure that should have been known by all the participants, simply because it is a good general hygienic practice which needs to be practiced by all members of any community. Since very few participants suggested this important measure, it leads to the concern that they might not be practicing it.

It was found in a study conducted by Bhattacharya (1998-2003) in Delhi, India that despite repeated awareness generation about using a cloth or handkerchief over the nose and mouth while talking, sneezing, and coughing, in fact hardly anybody was seen practicing it. It was only while entering the DOTS centers or in the presence of health personnel in the community that people were observed covering their nose and mouth, and otherwise in the broader community they omit to do so. It was also found that the practice of covering one's mouth and nose branded one as a TB patient, and such practices were considered a distinct identification for TB. Thus, despite knowing the logic behind using something to cover the nose and mouth, the tuberculosis patients remained apathetic towards this protective measure.

The other important measure of prevention of tuberculosis infection is that of adequate ventilation of houses, hospitals and prisons cells. This dilutes the load of infectious tuberculosis bacilli in the air. Another simple measure of reducing the load of living bacilli in the air is to allow natural light into buildings and rooms, through sufficiently large windows. Yet another measure is to reduce overcrowding, which is common in poor socio-economic settings such as prisons, and also among the police cells, slums and in army barracks. The provision of living quarters with sufficient space reduces the risk of tuberculosis transmission. The larger the physical distance between an infectious person and a susceptible one, the less the risk of tuberculosis infection (MOHSS, 2006b).

Another important prevention measure is Isoniazid Preventive Therapy (IPT) in infants of mothers with sputum smear positive tuberculosis. All newborn or breastfeeding babies of mothers with sputum smear positive TB should received IPT, aimed at preventing infection with TB. Under-5s in close contact with patients with infectious TB should also get TB-IPT (MOHSS, 2006b).

Some participants suggested a means of preventing tuberculosis as the isolating of tuberculosis patients and their eating utensils. However, this practice can have negative effects on the community; for instance a patient with signs and symptoms of tuberculosis may avoid seeking medical care, or if diagnosed as having tuberculosis he/she may deny the disease to themselves or others, simply from fear of such isolation. School children who have tuberculosis may be allowed by their parents to attend school, which will increase the transmission of tuberculosis to other children. Children can easily be advised

by their parents not to reveal any information concerning their tuberculosis status, and this may result in them not taking their treatment regularly. The consequence of this will once again be a poor treatment success rate in the region.

The belief that TB patients and their eating utensils should be isolated could be attributed to the way in which TB patients are treated in hospital. The TB OPD at the Katutura State Hospital in the Khomas region is constructed far from the other departments. The staff working there wear masks much of the time, and there are warnings concerning visiting hours written on the front door of the department. Visiting times are very restricted and no children are allowed to enter the department. Health practices and health education messages can in this way increase fear of the disease. Liefogh et al. (1997) emphasized that health education needs to inform the public without raising additional fears. They added further that it should be emphasized that TB is curable, and that patients once under treatment, become non-infectious within a few weeks. This is also what the TB guidelines of Namibia say. TB patients become non-infectious five days after being put on treatment (MOHSS, 2006b).

The isolation of TB patients has become less important since the introduction of powerful and fast-acting TB antibiotics. An infectious TB patient on first-line, short course chemotherapy TB drugs become non-infectious within a very short period of time (5 days). Patients on TB treatment do not need to be considered a significant source of infection for their families, and they must not be isolated or shunned. Instead, they need support and encouragement to complete their treatment (MOHSS, 2006b).

MOHSS (2006b) further added that there is no danger in sharing food and eating utensils with a TB patient on TB treatment, as long as the patient observes cough and basic household hygiene. It is the inhalation of *Mycobacterium tuberculosis* bacilli, not physical contact with the patient or sharing the same food utensils, that transmits TB infection.

In this study, some of the participants suggested means of risk reduction or TB prevention including healthy behavior such as eating fruit and vegetables, covering the mouth when coughing, those who are on TB pills finishing their treatment, getting enough rest, opening windows and building shebeens with doors facing the sunlight, and cutting out alcohol and smoking. That those who are coughing go to hospital for regular check-ups was also indicated as a means of TB prevention, which could reduce the severity of tuberculosis due to early investigation and the subsequent early treatment beneficial to health. These responses show positive attitudes towards healthy behaviors to prevent illness. According to Chetley et al. (2007), in many cases people's beliefs or behaviors correspond closely with modern medical ideas, and only certain aspects that are inappropriate or harmful may need to be pointed out. Strong and reliable evidence suggests that prevention is very important for TB control.

An unexpected finding in this study was that no participant suggested immunization as a means of risk reduction or prevention of TB, which is highly effective in the prevention of TB in children (MOHSS, 2006b). However, to the contrary, a study conducted in

Vietnam revealed that the participants believe that administration of the BCG (Bacillus Calmette-Guerrin) vaccination would protect them against TB infection (Association of Asian Pacific Community Health Organisation, 1995 - 2007).

According to Rieder (2002), and Pio and Chaulet (2000), the BCG (Bacillus Calmette-Guerrin, named after its French developers) vaccination is one major preventative measure against TB. It provides children with good protection against severe forms of TB, thus reducing mortality and morbidity. The BCG vaccination is part of the Namibian expanded programme on immunization (EPI) package and is recommended for all newborn babies (MOHSS, 2006b). This is why the researcher indicated that this result was unexpected, because in fact the entire Namibian population is supposed to be vaccinated against TB, and thus the researcher assumed that many Namibians would know this measure of TB prevention.

Another important measure in preventing the tuberculosis disease is the provision of tuberculosis-isoniazid preventive therapy (TB-IPT). TB-IPT is very effective in preventing tuberculosis disease in persons who have been infected with tuberculosis bacilli. According to MOHSS (2006b), health workers should motivate HIV patients regarding the benefits of TB-IPT. Six months of isoniazid reduces the risk of TB disease in HIV infected patients by at least 60%. Its efficacy lasts for about two years. No participant of this study said anything about TB-IPT as a preventative measure of tuberculosis disease – even those who first had HIV before being diagnosed with tuberculosis. This could be attributed to health workers failing to give proper health

education about the importance of IPT prevention therapy. It could also mean that many HIV patients are not getting the benefits of prophylactic therapy (Highly Active Anti-Retroviral Therapy and Co-trimoxazole Preventive Therapy) as they are supposed to. This may lead to an unnecessary increase in the tuberculosis incident rate in the region.

A further significant area is the prevention of mortality and morbidity. The results of the study indicate that few participants suggested as a means of preventing tuberculosis that those on treatment need to complete their treatment courses. This is a critical measure which should be known by all participants. The patients should be well informed by their health workers on the importance of completing treatment courses, which prevents transmission and the spread of tuberculosis multi-drug resistant (MDR) tuberculosis (MOHSS, 2006b).

The results of this study show that even though some participants suggested good measures of preventing TB, most possess inadequate knowledge concerning the prevention of tuberculosis. Inadequate knowledge may lead to an increase in exposure to TB. Some participants may continue to enforce unnecessary measures, such as the isolating of others who have TB, which can result in people concealing their status out of fear of being isolated. Such people may also omit to take their TB treatment regularly or they may even default altogether, and all this will negatively affect the tuberculosis treatment success rate in the Khomas region.

Based on these findings, the conclusion is that health workers are not giving proper health education to patients. One may assume that the health workers are using the

lecture method instead of dialogue during health education sessions. According to MOHSS (2006b), effective education is a dialogue, not a lecture. Inadequate knowledge among the participants could also be caused by health workers not understanding the difference between giving information or instruction, and communication. Information is a one-way method. When giving information to another person, directly or through the media, the sender does not know whether the receiver has understood the information or the idea in the way it was intended. Communication on the other hand is a two-way process. When the sender gets feedback from the receiver on the information being communicated, then the sender will know whether the receiver has understood the idea in the way it was intended (Halaand & Molyneux, 2006).

Thus there is a need to assess the knowledge of health workers on communication, and particularly whether they know the difference between communication and instruction.

Lack of knowledge among patients diagnosed with TB about the causes, modes of transmissions, treatment, and prevention of the disease can create an atmosphere of suspicion, fear and hostility towards themselves and towards the community at large. This can negatively influence the treatment success rate in the Khomas region.

3.2.2 Need for rectification of lifestyle

Lifestyle is the consciously chosen, personal behavior of individuals as it may relate to health (Green & Kreuter, 2000). People need a healthy lifestyle to remain in good physical condition. A healthy lifestyle encompasses many things, for instance eating

healthy food, avoiding excessive fats, sugar and alcohol, no nicotine, drinking plenty of water, getting plenty of exercise, and having regular health check-ups (Davis, 1998-2007). The importance of a healthy lifestyle is in the prevention of chronic diseases (Stoppler & Hecht, 2006).

There are people who maintain unhealthy lifestyles, for instance drinking alcohol, smoking and eating unbalanced meals and a generally poor diet. When people drink alcohol, it is absorbed in the bloodstream. From there it affects the central nervous system which controls virtually all bodily functions. Alcohol slows down the functions of the central nervous system, and actually blocks some of the messages trying to get to the brain. This alters a person's perceptions, emotions, movements, vision and hearing (Dowshen, 2006).

Some people believe that smoking gives them energy and stimulates their mental activity, but in reality smoking is recognized as a leading cause of death. Any smoker habits has an increased chance of lung cancer, cervical and other types of cancers, and respiratory diseases such as emphysema, asthma, and chronic bronchitis (Boughton, 2006).

Unhealthy lifestyle practices, especially among tuberculosis patients, need rectification in order to enhance recovery, prevent transmission and to promote treatment success rates, because for instance if a TB patient drinks alcohol, he may forget his pills. Behaviors/practices and beliefs are difficult to change and take time; therefore health

workers need skills in order to provide effective health education (Haaland & Molyneux, 2006).

Patients and communities need effective health education that will influence them to realize the need to change their unhealthy lifestyles. People will not change if they are pushed to change. Blaming or criticizing a person implies that you are better than she/he is, and makes the patient feel bad, which will incline him or her to be passive, without taking action (Haaland & Molyneux, 2006). Health workers may not provide effective health education concerning lifestyle practices if they are not aware of the unhealthy lifestyle practices that influence treatment adherence, and furthermore if they have poor communication skills.

All staff categories – nurses, doctors, HIV/AIDS counselors and all those involved in the education of patients and the community should share this activity of providing effective health education that may promote the rectification of unhealthy lifestyle practices.

There is a need for rectification of lifestyle practices, because a lifetime of simple, seemingly harmless acts such as eating high-fat foods, smoking a few cigarettes per day, going to work in heavy traffic without seat belts, or driving home after a few drinks account for most of society's diseases, injuries, disabilities and premature deaths (Green & Kreuter, 2000).

3.2.2.1 Specific aspects of lifestyle practices that need attention:

Alcohol consumption and smoking

Tuberculosis patients on treatment who drink alcohol may easily forget to take their pills regularly, since alcohol blocks some messages trying to get to brain. Alcohol can also increase side effects and toxicity, because both alcohol and tuberculosis drugs affect the liver (American Academic of Family Physicians, 1996-2007). Smoking reduces local immunity within the lungs (Van Rooyen, 2004)

It was evident from the results of this study that many participants practice unhealthy lifestyles, even though they are on tuberculosis treatment. Some participants said that they still drink alcohol and smoke whilst on tuberculosis treatment. Moreover, some plan to resume alcohol consumption and smoking after they complete their tuberculosis treatment. Other participants are using snuff whilst on treatment.

Following are statements from some of the participants:

“I’m still drinking alcohol and I smoke also, but not too much. I don’t have TB of the chest, I do not have chest pain or coughing, that’s why I continue with smoke and drink”

[22 years male].

“I’m still drinking and smoking but not always. I don’t know why, but I just like drinking”

[27 years male].

“I can not stop totally honest. I am still drinking, but not too much” [37 years male].

“I stop smoking, because I’m now sick, but I will smoke when the TB is gone. I cannot stay without smoking or drinking; my friends will laugh at me” [22 years male].

“If I become ok I will drink and smoke, but not so much. I cannot stay without it” [38 years male].

“The cold beer is nice, I hope I will drink one day” [46 years female].

“I’m snuffing. I cannot stay without snuffing... It reduces lots of thoughts” [49 years male}.

This finding are similar to those of a study conducted in a rural district of South Africa among TB patients, which revealed that some patients were also drinking alcohol while on TB treatment (Edginton et al., 2002).

A study conducted by Stoppler and Hecht (2006) conducted in America about healthy lifestyles revealed that despite the best intentions of health care providers and public health agencies, relatively few people practice the four aspects of healthy lifestyles, which are not smoking, eating healthily, exercising and maintaining a fit body.

According to Matsunanga, Yamanda, and Makabeo (1998), some TB patients who use alcohol or drugs fear the side effects that may results from taking TB treatment while taking other substances. Therefore, there are significant chances of treatment interruption among TB patients who drink, smoke and use snuff.

According to Van Rooyen (2004), alcohol should be avoided because it lowers the immune system. The immune mechanisms affected by alcohol are also those which are essential for resistance to tuberculosis (Rieder, 1999). According to the American

Academy of Family Physicians (1996-2007), Centers for Disease Control and Prevention (2007), and MOHSS (2006b), tuberculosis patients should avoid alcohol while on tuberculosis treatment. Alcohol can increase drug side effects and toxicity, because both alcohol and TB medicine can affect the liver. Furthermore, all anti TB medicine may cause damage to the liver (MOHSS, 2006b). If tuberculosis patients are alcohol users and at the same time they are on anti-TB medicine, then the problem of liver damage is more likely and will be more serious.

It might be opined in some sectors that tuberculosis patients may drink because alcohol has calories, forgetting that there are no other nutrients. Tuberculosis patients who drink alcohol while on treatment stand a significant chance of forgetting the treatment. In some instances, patients do not forget, but simply fear mixing the tuberculosis pills with other substances (Matsunanga et al., 1998). This can lead to treatment failure because of interruption, and the consequence will be low treatment success rate in the region. People who drink excessively may lose their appetites and appear thin, and one of the sign and symptoms of tuberculosis is also appetite-loss and weight-loss. For patients' safety, alcohol consumption while on tuberculosis treatment is clearly to be firmly discouraged, on account of these various disadvantages. The researcher is unable to find any literature indicating that the tuberculosis patient may drink a little alcohol while on tuberculosis treatment.

Smoking should also be avoided because it does further damage to lungs that are already damaged by the bacteria, and furthermore it cause heart disease and lung cancer.

Smoking reduces local immunity within the lungs. Several studies have confirmed that smokers have a worse prognosis (Van Rooyen, 2004; Wang et al., 2007), which is a bad sign for TB control.

Tuberculosis patients on treatment who drink alcohol and also smoke could do so due to inadequate knowledge about the importance of positive lifestyle practices. According to Chetley et al. (2007), although improved knowledge is essential for behavior change to occur, there is increasing evidence to show that knowledge by itself may not be sufficient. For behaviour change to take place, several aspects are important, which the health workers may overlook when giving health education. The patient must understand why the change is needed, and the reason must make sense from his/her point of view (not only from the health workers' or doctors' point of view). Moreover, the reasons need to be connected to their belief systems and be channeled through credible people. Sometimes an emotional event, for instance the death of a TB patient who drank or smoked while on tuberculosis treatment is often a starting point for change.

This study fits within the theoretical framework of change theory; a health beliefs model which says that there are perceived barriers to behavior change. The participants know the consequences of smoking, drinking and using snuff, but because they are afraid for instance of being laughed at by friends, they decide to continue with that unhealthy lifestyle. Other participants decide not to drink or smoke anymore. Those participants knew the benefit of not drinking or smoking (perceived benefits). They have confidence

(self efficacy) in themselves that they are not going to continue with that behavior any more (Grizzel, 2007).

Life challenges such as tuberculosis can be the one thing that shakes tuberculosis patients up and helps them consider life as a gift. If tuberculosis patients listen carefully to the messages, they might change from unhealthy to healthy lifestyle practices. Patients are unlikely to change their unhealthy lifestyles if they are not receiving effective health education from health care workers.

Nutrition

A well-balanced diet is very important during tuberculosis treatment for the recovery of the patient (MOHSS, 2006b). The results of this study show that participants possess poor knowledge regarding nutrition. Most participants said that they had not been advised by their health workers on the types of food they should eat whilst on tuberculosis treatment. Some do not eat well-balanced meals, for a variety of reasons, and may possess various misconceptions regarding certain foods, such as milk, for instance.

Following are responses from some of the participants:

“I eat all food, I was never told what to eat from the nurses. I just eat all. I drink milk I heard milk clean the lungs from the germs” [24 years male].

“The nurses never told me what to eat and my mother said that I just need to eat” [23 years female].

“I am not eating the pork and meat according to my religious” [31 years male].

“I am not eaten chicken and liver; I just don’t like it “[40 years female].

These findings concur with those of Bhattacharya (1998-2003) who also found among the community and TB patients in Delhi, India that there are certain types of food they are not eating, for instance rice and curds. They believed that rice creates water in the body which produces a cough, and the sourness of curds increase coughs and causes deterioration in the health of TB patients.

Infectious diseases such as tuberculosis are accompanied by a variety of nutritional and metabolic responses within the body. The response to infection is associated with an increase in energy expenditure of the patient, and various degrees of tissue breakdown. In turn for body to fight against infection more energy is expended, therefore a TB patient needs an increase in energy-generating foods. Patients characteristically present with loss of appetite and loss of weight. Complex changes occur in the metabolism of all macro nutrients, especially proteins, carbohydrates and fats. The increase in protein breakdown leads to muscle-wasting in tuberculosis patients. Tuberculosis patients are also known to have high losses of protein, which may result in mal-absorption due to loss of fluids, and other nutritional reserves. The breakdown of protein and other reserve due to fever may also worsen and may further impair resistance against infection (Nutrition Information Centre University of Stellenbosch [NICUS], n.d).

According to Van Rooyen (2004), tuberculosis patients need to be on a proper and well balanced diet while being treated, because TB in particular thrives where the immune

system is compromised. According to Rieder (1999), a vegetarian diet has been identified as a risk factor to a TB. Malnutrition impairs immune function on many different levels, not only in the case of too little food, but also too little of the right foods (fresh fruits and vegetables) which compromises the functioning of the immune system.

MOHSS (2006b) made it clear that the health workers should inform TB patients that a balanced diet during TB treatment is important for the patient's recovery, and this is crucial when the patient also has HIV/AIDS. Such patients should eat a higher protein diet. TB patients with AIDS also need special care if they have gastro-intestinal problems such as diarrhoea or candidiasis.

Based on the findings of this study, health workers have failed to advise tuberculosis patients on what to eat, even though it is clearly indicated in the national tuberculosis guidelines that they must advise patients on nutrition. This could be because tuberculosis mostly afflicts the poor, and health workers may therefore assume that all tuberculosis patients are poor. They may find it inappropriate to advise a poor person on the importance of eating a balanced meal. In Namibia, tuberculosis is an old disease, traditionally mostly affecting the poor, as anywhere in the world (MOHSS, 2004-2009). According to MOHSS (2006b), tuberculosis can afflict anyone, especially when the body's immunity is compromised by other factors such as infectious diseases, diabetes, malnutrition, neuroplasm or HIV infection. Health workers should know that since tuberculosis may afflict anyone, rich or poor, than there is no need to discriminate when giving health education.

It could also be the case that, since health workers know that some tuberculosis patients are getting food from the DOT points, they feel it is not necessary to inform them about the importance of eating balanced meals during tuberculosis treatment. Pulmonary disease including tuberculosis often adversely affects nutritional intake due to poor appetite. This puts patients at risk of malnutrition. Some patients do not eat certain foods due to poor knowledge concerning nutrition. Again, some religious leaders also prohibit patients from eating certain foods such as meat, or pork in particular. Religion and health are still intertwined, as illustrated by the prohibition of certain foods by prominent religions of the world. Christians are commanded to be temperate in all things (Breckon, Harvey, & Lancaster, 1998). Well- balanced meals are required for the speedy recovery of tuberculosis patient (MOHSS, 2006b).

All tuberculosis patients are given multivitamin supplements and vitamin B6 (pyridoxine) daily to prevent peripheral neuropathy (MOHSS, 2006b). This information can only reach patients and communities if health workers are giving proper and effective health education concerning nutrition to all tuberculosis patients and communities regardless of social class.

The participants of this study were found to possess inadequate knowledge regarding nutrition and this may affect the treatment success rate in the region.

3.3 SUMMARY

This chapter has presented the data categories, themes and sub themes that emerged from data analysis. Relevant literature was also presented as a control to the research findings. Constraints that may prevent the region from achieving global targets have been identified and discussed. Gaps were also identified.

CHAPTER 4

CONCLUSION, RECOMMENDATIONS AND LIMITATIONS

4.1 INTRODUCTION

This chapter focuses on the conclusions and recommendations of a study on the knowledge, beliefs and practices of patients diagnosed with TB (PTB and EPTB) in Katutura, Khomas region, Namibia. The limitations identified will also be highlighted. The conclusions will be stated based on the study's objectives. Recommendations will be developed, for the study to achieve its main purpose.

4.2 CONCLUSION

Three objectives were looked at and evaluated according to the data and literature collected. The conclusion presented is based on the objectives as described by the researcher at the outset.

The first objective

To explore and describe the knowledge of tuberculosis patients regarding the causes, treatment and prevention of tuberculosis.

Causes of tuberculosis

The findings showed that patients diagnosed with tuberculosis in Katutura have inadequate knowledge about the biomedical causes of tuberculosis. Very few patients

said that TB is caused by bacteria. Most participants in this study perceived alcohol and smoking to be the causes of tuberculosis. However, some said that TB is hereditary, and others said that tuberculosis is caused by the following factors: dust, dirty places, HIV/AIDS, and cold weather.

Various misconceptions about the causes of TB among TB patients may lead to an increase in TB incidence in the Khomas region, with the consequence of a low treatment success rate, and mortality and morbidity of patients diagnosed with TB. This is simply because the patients will delay seeking medical help.

Treatment of tuberculosis:

The study revealed that participants possess inadequate knowledge regarding tuberculosis treatment. Some participants in this study first seek treatment from traditional healers, or had practiced self-treatment, before coming to health facilities and this may have delayed early diagnosis and prompt treatment. Although there were those who had been first to traditional healers, most of the participants had opted for medical treatment as their first option. This is indicative of positive knowledge concerning the best place where treatment can be obtained.

No participant in this study knew the name of the treatment he/she was taking. Most participants did not know the type of TB they were suffering from, which in turn makes it difficult for them to understand the duration of their treatment. Most participants had not understood why their TB treatment had been changed. Again, most participants in this

study do not have the DOT supporters and those who have, are not using them. The participants who developed tuberculosis drug side effects were worried, because they had not been informed of the risk of side effects at the outset.

The TB patients of this study thus have poor levels of knowledge about their own treatment. Poor knowledge about TB treatment among TB patients themselves is a serious problem, which can lead to patients not completing their own treatment. One consequence of this is a low treatment success rate in Khomas.

Prevention of tuberculosis:

The information obtained from the participants showed that they possess inadequate biomedical knowledge about the prevention of tuberculosis. Most participants said that tuberculosis could be prevented by stopping or limiting alcohol consumption and smoking. Some said that TB cannot be prevented, because it is hereditary. Others mentioned the ways of preventing TB as follows: tuberculosis patients to have their own eating utensils; by having cleaner living places; for those who have tuberculosis to be isolated; by wearing warmer clothes during the cold season; for children not to play in the dust; by avoiding relationships with tuberculosis patients, and by wearing shoes to prevent stepping on the mucus of tuberculosis patients.

It was concluded that the participants possess inadequate knowledge concerning the causes, treatment and prevention of TB. More efforts are required on this issue.

The second objective

To explore and describe the beliefs of TB patients regarding the mode of transmission.

It was concluded that the participants hold erroneous beliefs regarding the mode of transmission of tuberculosis. Although most participants said that tuberculosis is transmitted through droplets from TB patients, some viewed droplets as TB. The same participants may also believe that tuberculosis can be transmitted through sex and saliva. Other said TB is transmitted by using the same eating utensils with TB patients, and through skin penetration by stepping on the sputum of a TB patient.

These beliefs can lead to the unnecessary isolation of patients. This can cause those who have TB to feel stigmatized, and thus to want to hide themselves among healthy people. The consequences of this will be defaulting on treatment, which will adversely affect the treatment success rate of the region.

The third objective

To explore and describe the lifestyle practices of TB patients during their period of treatment with regard to alcohol consumption, smoking and nutrition.

Alcohol consumption and smoking: The information obtained from the participants showed that most participants practice unhealthy lifestyles that may negatively affect or hinder their treatment. Although most participants perceived alcohol and smoking to be the causes of tuberculosis, they continue to drink alcohol, smoke and to use snuff while on tuberculosis treatment.

These are serious negative lifestyle practices which could lead to treatment interruption of some patients, or to a higher default rate in the region. This problem merits the attention of health workers and all stakeholders involved in TB control in the Khomas region.

Nutrition: The study revealed that most participants do not eat balanced meals, for a variety of reasons such as: that they had not been informed by their health workers on the types of food they should be eating whilst on treatment; their religious faith, and also an element of personal choice. The question of adequate nutrition is another problem that requires urgent attention, because the eating of balanced meals is very important for the recovery of TB patients (MOHSS, 2006b). Health workers need to ensure that their patients are aware of the relationship between healthy, balanced meals and TB treatment.

It was concluded that participants do not lead healthy lifestyles.

4.3 RECOMMENDATIONS

With reference to the findings and conclusions arrived at recommendations are made for the Ministry of Health and Social Services - Division of Special Programmes (DSP).

4.3.1 Revision of the current National Guidelines for the Management of Tuberculosis

The current National Guidelines for the Management of Tuberculosis (MOHSS, 2006b) need to be revised in order for some significant omissions to be included. The researcher recommends that the causes of tuberculosis (bacteria/germs) should be one of the most important facts the TB patients and their DOT supporters need to know, which was one area overlooked by the national guideline developers.

Another important omission concerns the mode of transmission of tuberculosis. The TB guidelines mention that tuberculosis is transmitted from one person to another through coughing, but without mention of the words “through droplets”, which is critical.

Furthermore, on the verification of questions that may be asked of tuberculosis patients on which there is a section in the current national tuberculosis guidelines and on the tuberculosis treatment cards of patients, these should also include questions on the causes of tuberculosis.

The researcher firmly believes that by including these important facts, the knowledge of both tuberculosis patients and their DOT supporters would be increased, through minimizing the need for them to guess and formulate various beliefs and misconceptions by the provision of accurate facts. On the side of the health workers, even new TB focal nurses and overworked nurses could provide effective health education with all the important facts clearly and comprehensively covered.

4.3.2 Multi-sectoral approach

A multi-sectoral approach involving all health care workers (nurse managers), community leaders, religious leaders, and counselors is recommended to ensure a greater impact, continuity and wide acceptance of the intended health messages. If all nurse managers were involved in the tuberculosis programme, then they would be more likely to assign dedicated nurses to work in tuberculosis departments. Since some patients avoid some important foods because on account of their religion, it is important to help church leaders understand the importance of balanced meals and good nutrition for TB patients whilst on treatment. Community leaders spend much of their time holding meetings with members of their communities and they could play a vital role in assisting with TB education, such as the causes, treatment, prevention, transmission, and the importance of healthy lifestyle. Since they are often influential and respected members of the community, their message would be heard and accepted with respect. This task could be taken on by TB programme officers in the region. If all stakeholders are involved in the TB programme and play a role in disseminating the message on TB, then the knowledge of tuberculosis patients could increase, and various erroneous beliefs and unhealthy practices could also decrease.

4.3.3. Strengthening of the outreach community-based health team

There is an outreach community-based health team in the Khomas region that conducts home visits and school visits. The team should be advised by the TB programme officers to include topics on TB per se in their program and they have to disseminate the message to school children on their visits. This would increase the knowledge of children and the whole community concerning tuberculosis. From such a point, children would also

disseminate the information to their families and friends. This recommendation is based on the fact no participant from the young age group category in this study knew the causes of tuberculosis.

4.3.4 Peer counseling

The researcher recommends that more former TB patients be trained to disseminate TB information, as TB patients are likely to be encouraged if advised by people with first-hand experience who are also living in the same communities. This will enhance knowledge of the TB patients. This could be done by the TB programme officers in cooperation with Penduka TB programme. Former TB patients could be allocated to each health facility to assist the nurses in giving health education, particularly since a shortage of health workers could be one reason for their failure to give proper health education.

4.3.5 Introduction of policy on cough hygiene in the whole region

It was found in Delhi, India that the community labeled those who cough and cover their mouth as TB patients, and that cough hygiene is only practiced when the health workers are present (Bhattacharya, 1998-2003). There is a need to encourage all community members in Katutura, Khomas region, whether or not they have TB, to practice cough hygiene, in order that it would be viewed as routine by all. This could be made possible by all health workers becoming role models to the nation. TB programme officers should conduct workshops wherein all health workers are reminded of this important issue. From there, the entire community could be educated on it. Messages could be disseminated in

churches, schools, at community meetings, through the media, in all public and private health facilities, banks and in fact everywhere.

By implementing these simple practices, various erroneous beliefs on modes of transmission would noticeably decrease. The TB incidence rate would decrease in Katutura, Khomas region, because the transmission route would be blocked. If it functioned well in Katutura, then policy makers could develop a simple policy on cough hygiene to be implemented throughout the country in order to control and limit TB incidence and multi-drug resistant tuberculosis (MDR- TB) in the country.

Furthermore, the researcher would like to recommend to the developers of national tuberculosis guidelines to include the words “through droplets” as a mode of transmission of TB in the message on what TB patients and their DOT supporters need know. This will minimize the various erroneous beliefs on mode of transmission of TB.

4.3.6 Design culturally-appropriate messages and provide them to the community in leaflet form

The researcher believes that cultural beliefs and misconceptions are difficult to dispel and to change. Therefore, it is important to integrate the facts about the causes of tuberculosis, prevention, treatment, modes of transmissions, and lifestyle practices into the existing belief system. The messages could be developed by TB programme officers based on the findings of this study. The challenging task would be distinguishing between appropriate traditional beliefs and misconceptions, and integrating them with modern (biomedical) facts. Leaflets with such information should be developed and translated

into local languages, in order to be easily understood by everyone. This approach could make communities feel more involved in the TB programme because their cultural beliefs and perceptions have also been considered and respected.

4.3.7 Patients' charter

It would be useful to sensitize health workers on the contents of a patients' charter so that they could be aware that patients have the right to access to information concerning their disease. This study revealed that most participants do not even know the type of TB they have, and this is an obstacle to their understanding of their TB treatment. Through the charter, the patients would know the pills they were taking, the names and even the dosage. The charter would also go a long way towards dissuading patients from indulging in alcohol and or smoking while on treatment. It would advise patients to eat a balanced and nutritious diet while on treatment. This task could be carried out by nurse managers of all the health facilities, ensuring that all nurses have the patients' charter; and that it is understood and used.

4.3.8 Communication trainings

The researcher recommends also that nurses be trained in communication skills. A communications' course would assist health workers to understand better the difference between communication and instruction. This study shows that the TB patients lack basic knowledge of TB facts and they practice unhealthy lifestyles, although they are in contact with nurses on a daily basis, supposedly being provided with all the necessary information. Communication skills will assist health workers to know more about how to

provide effective health education to the patients and also how to assist patients to realize the need to change their unhealthy lifestyles. The organizing of training workshops on communication could be arranged by TB programme officers.

4.3.9 The feasibility of involving traditional healers in a TB programme

This study revealed that some of the participants had gone first to traditional healers before presenting at a health facility. For this reason, the researcher recommends that the feasibility and acceptability of involving traditional healers should be explored to encourage lay referrals. TB programme officers need to hold training workshops with traditional healers and train them on the signs and symptoms of TB, in order for them to recognize TB and refer patients as early as possible. Furthermore, they could even be encouraged to be DOT supporters, since the community trusts and respects them.

A further recommendation is that more extensive research is required to assess the knowledge, beliefs and practices of traditional healers in the Khomas region on TB, in order to conduct trainings based on findings, to encourage lay referrals and also to strengthen co-operation between them and health workers. It is moreover recommended that further study is needed to assess the knowledge base of the community on TB, so that health workers can share the responsibility of disseminating health education with the community in which tuberculosis patients live.

4.4 LIMITATIONS OF THE STUDY

According to Nieswiadomy (2002), limitations are the uncontrolled variables that may affect study results and limit the generalizability of the study. Burns and Grove (2001) referred to limitations as theoretical and methodological restrictions in a study that may decrease the generalizability of the findings.

Limitation applications to this study are:

Population effect:

The population studied was relatively small, and limited to Katutura. The scope of a contextual study should be made sufficiently large – for example covering the whole Khomas region – to make the generalization of the results fair.

The sample was based on the quota sampling technique, and the participants were approached on an opportunistic basis according to age category.

Data collection and data analysis:

Since the study was qualitative in nature, using in-depth interviews, the analysis of data was time consuming and difficult (Munhall, 2000).

Apart from English, other languages used to collect the data were Afrikaans, Oshiwambo and Otjiherero, and these were translated thereafter into English. There is always a possibility of losing some of original ideas of the participants during the process of translation.

Participants' effect:

Although the researcher assumed that the participants would respond to all questions honestly and with integrity, participants may have answered questions in a manner which they perceived as being more polite, and not necessarily as they truly believe or perceive them. The likelihood of this could have been even greater owing to the fact that the researcher is the district TB coordinator, and accustomed to making regular visits to clinics, including the Katutura health centre where the study takes place. Most of the participants know her well. This may have affected their responses, and caused them to give answers designed to please the researcher.

The other participants' effect concerns traditional healers. The researcher strongly suspects that there is a possibility that the participants hide information that they had been to traditional healers, because many of the studies conducted worldwide revealed (as shown in chapter three) that participants had been treated by traditional healers. In this study, the researcher felt that participants were afraid to tell the researcher the truth since they knew that the researcher is a health worker and people are accustomed to being scolded by health workers if they say that they have been to see traditional healers. This unwanted effect that may skew the results is referred to as the Hawthorne effect (Polit & Hungler, 1999; Trevor Mendham, 2005-2007).

4.5 FINAL CONCLUSION

Globally, tuberculosis remains the main cause of human suffering and death, despite the fact that it is caused by a well-identified germ, is preventable, and is fully treatable with efficient and affordable drugs. Despite concerted efforts, progress seems to be elusive, because Namibia is still counted as one of the highest burdens of TB in the world (MOHSS, 2006b).

The current study indicates that knowledge, beliefs and practices of TB patients in Katutura, Khomas region is poor. Furthermore, it provides reliable and valuable information about the knowledge, beliefs and practices of patients diagnosed with TB in Katutura. Constraints that prevent the programme from achieving the global target were identified. Recommendations were proposed for improvement.

The researcher hopes that the information provided by this study will guide and assist policy makers, programme administrators and all in the development field to develop an effective programme of public health education, to contain the spread of the disease. Improvement in knowledge among patients diagnosed with tuberculosis will also help to increase the treatment success rate in Katutura, Khomas region.

REFERENCES

Abrahamson, J.H., & Abrahamson, Z.H. (1999). *Survey Methods in Community Medicine: Epidemiological Research, Programme Evaluation Clinical Trials*. Livingstone: Churchill.

Ait-Khaled, N., & Enarson, D. A. (2003). *Tuberculosis: A Manual for Medical Students*. Paris: Boulevard Saint-Michael.

American Academy of Family Physicians. (1996-2007). *Tuberculosis: Treatment of Tuberculosis Infection*. Retrieved November 18, 2007 from <http://familydoctor.org/online/famdocen/home/common/infections/common/bacterial/120.html>

Angala, S.P. (2000). *The Knowledge and Management of TB among Patients and Health Workers at Otjiwarongo Hospital, Otjozondjupa region*. Unpublished Masters thesis, Windhoek: University of Namibia.

Association of Asian Pacific Community Health Organisation. (1995-2007). *Vietnamese TB Cultural Profile*. Retrieved August 05, 2007 from <http://ethomed.org/ethnomed/clin-topics/tb/viet-tb.html>

Banningan, K. (2005). *Critical Appraisal*. Retrieved September 01, 2007 from <http://www.daidex.co.uk/page.cfm/link=138>

Bosan, I.B., & Okpapi, J.U. (2004). Respiratory Symptoms and Ventilatory Function Impairment among Wood Workers in the Savannal Belt of Northern Nigeria. *Annals of African Medicine*, 3(1), 22-27. Retrieved September 15, 2007 from <http://www.bioline.org.br/request?am04007>

Bell, J. (1999). *Doing your research Project: A Guide for First time Researchers in Education ND Social Science* (3rd ed.). Buckingham: Open University Press.

Boughton, B. (2006). Smoking. *Health Atoz*. Retrieved December 9, 2007 from <http://www.healthatoz.com/healthatoz/Atoz/common/standard/transform.jsp?requestURI=/healthatoz/Atoz/ency/smoking.jsp>

Bhattachrya, A. (1998-2003). *Tuberculosis in Urban Slums of Delhi: Factors affecting the occurrence, transmission and treatment*. Retrieved August 15, 2007 from http://11globalforumhealth.org/filesup/dforum10/10final_document/posters/BhattacharyaAruna.pdf

Breckon, D.J., Harvey, J.R., & Lancaster, R.B. (1998). *Community Health Education: Settings, Roles, and Skills for the 21st Century* (4th ed.). Gaithersburg: Aspen Publication.

Brown, A.J., & Dowling, P.C. (1998). *Doing Research/Reading Research: A Mode of Interrogation for Education*. London: Falmer Press.

Burns, N., & Grove, S.K. (2001). *The Practical of Nursing Research: Conduct, Critique and Utilization* (4th ed.). Philadelphia: W.B. Saunders Company.

Cambanis, A., Mohammend, A., Yassin, A.R., Squire, S.B., Arbide, I., & Cuevas, L.E.C. (2005). Rural Poverty and Delayed Presentation for TB services in Ethiopia. *Tropical Medicine & International Health*, 10 (4), 330-335. Retrieved August 22, 2007 from <http://www.blackwell-synergy.com/doi/pdf/10.1111/j.1365-3156.2005.01393Cool-ciessct=1>

Caminero, J.A. (2004). *A Tuberculosis Guide for Special Physicians*. Paris: Boulevard Saint-Michael.

Canadian Lung Association. (2006). *Dust Diseases*. Retrieved December 22, 2007 from <http://www.lung.ca/diseases-maladies/a-/asbestosis-asbestose/index-e.php>

City of Windhoek. (2004). *Municipality Survey*. Windhoek: Municipality.

Citrin, D. (2006). *Somali Tuberculosis Cultural Profile*. Retrieved June 10, 2007 from <http://ethnomed.org/clin-topics/tb/cultural/soma-tb-profile.htm>

Centers for Disease Control and Prevention. (1999). *Tuberculosis: A Guide for Adults and Adolescents with HIV*. Retrieved August 27, 2007 from <http://www.cdc.gov/hiv/pubs/brochure/oi-tb.htm>

Centers for Disease Control and Prevention. (2007). Tuberculosis: Treatment Information for Patients. *Infectious Diseases Epidemiology and Surveillance*. Retrieved December 22, 2007 from <http://www.health.vic.au/ideas/diseases/tb-treatment>

Chetley, A., Hardon, A., Hodgkin, C. Haaland., & Fresle, D. (2007). *How to Improve the use of Medicine by Consumers*. Geneva: WHO Press.

Damani, N. N. (2003). *Manual of Infection Control Procedures*. London: Greenwich Medical Media Limited.

Davis, R. (1998 – 2007). *A Health Lifestyle Encompasses Many Things*. Retrieved November 18, 2007 from <http://www.esl-lab.com/health/healrd1.htm>

Dowsnhen, S. (2006). *Alcohol Teens Health 1995-2007*. Retrieved December 07, 2007 from <http://www.kidshealth.org/teen/drug-alcohol/alcohol/alcohol.html>

Duda, C. (2007). Weather and Cold: Weather makes you sick. *The New York Time Company*. Retrieved September 10, 2007 from <http://coldflu.about.com/od/cold/f/coldandweather.htm>

Edginton, M.S., Sekatane, S.C., & Goldstein, S.T. (2002). Patients, Beliefs: Do they affect Tuberculosis Control? A Study in Rural District of South Africa. *International Journal of Tuberculosis and Lung Disease*, 6 (12), 1075-1082 (8). Retrieved September 09, 2007 from <http://www.integentaconnect.com/content/iatd/ijtld/2002/00000006/00000000/2/art00008>.

Ellis, M. (1998). *Infectious Diseases of the Respiratory Tract*. Cambridge: University Press.

Enarson, D.A., Kennedy, S.M., Miller, D.L., & Bakke, P. (2001). *Research Methods for Promotion of Lung and Health: A Guide to Protocol Development for Low Income Countries*. Paris: Boulevard Saint- Michael.

Enarson, D.A., Rieder, H.L., Annadottir, T., & Trebucq, A. (2000). *Management of TB: a Guide for Low Income Countries* (5th ed.). Paris: Boulevard Saint-Michael.

Fenton, B., & Mazulewicz, J. (2006). *Trustworthiness*. Retrieved November 20, 2007 from <http://www.omnivise.com/research/trustworthiness.htm>

Freebody, P. (2003). *Qualitative Research in Education: Interaction and Practice*. London: Sage.

Frieden, T. (2004). *Toman,s Tuberculosis: Case Detection, Treatment, and Monitoring- Questions and Answers* (2nd ed.). Geneva: WHO.

Garson, D.G. (2006). *Sampling: Survey Research*. Retrieved August 25, 2007 from <http://www2.chass.ncsu.edu/garson/pat765/sampling.htm>

Gillespie, B. (2003). Combating Tuberculosis Worldwide: Red Cross Partners for Progress. *The American National Red Cross*. Retrieved August 30, 2007 from <http://www.redcross.org/org/article/0,107210-440-1744,00.html>

Green, J.E., & Thorogood, N. (2004). *Qualitative Methods for Health Research*. London: Sage.

Green, L.W., & Kreuter, M.W. (2000). *Health Promotion Planning: An Educational and Environmental Approach*. London: Mayfield Publishing Company.

Grenda, M.O.S.S. (2004). Provision of Trustworthiness in a Critical Narrative Research: Bridging Inter subjectively and Fidelity. *The Qualitative Report*, 9 (2), 359-374. Retrieved August 18, 2007 from <http://www.nova.edu/sss/QR/QR9-2/moss.pdf>

Grizzel, J. (2007). *Behavior Change Theories and Models*. Retrieved October 28, 2007 from <http://www.csupomona.edu/~jvgrizzell/best-practices/bcttheory.html>

Halaand, A., & Molyneux, S. (2006). *Quality Information in Field Research: Training Manual on Practical Communication Skills for Field Researchers and Project Personnel*. Geneva: WHO.

Hitchcock, G., & Hughes, D. (2001). *Research and the Teacher: A Qualitative Introduction to School-based Research* (2nd ed.). London: Cornwall.

Hoskin, C.N. (1998). *Developing Research in Nursing and Health: Qualitative and Quantitative Methods*. New York: Springer Publishing Company.

Jackson, H. (2002). *AIDS Africa: Continent in Crisis*. Harare: Avondale.

Jajula, M.E.C. (2007). Diseases and Conditions. *Health, 24*. Retrieved September 9, 2007 from <http://www.health24.com/medical/condition-centre/777-792-805-1866,26760.asp>

Jasmer, R.M., Christopher, B., Seaman, C., Leah, C., Gonzalez, L., Kawamura, M., et al. (2004). Tuberculosis Treatment Outcomes: Directly Observed Therapy compared with Self Administered Therapy. *American Journal of Respiratory Critical Care Medicine*, 170 (5) 561-566. Retrieved November 29, 2007 from <http://ajrccm.atsjournal.org/cgi/content/full/175/5/561>

Kaona, F.A.D., Tuba, M., Sizia, S., & Sikaona, L. (2004). An Assessment of Factors Contributing to Treatment Adherence and Knowledge of Transmission among Patients on Tuberculosis Treatment. *Medical Central Public Health*, 4 (68). Retrieved August 23, 2007 from <http://www.pubmedcentral.nih.gov/article.fcgi?articl=545081>

Kindersley, D. (1998). *Illustrated Oxford Dictionary*. London: Oxford University Press.

Kincheloe, J.L. (2003). *Teachers as Researchers: Qualitative Inquire as a Path to Empowerment* (2nd ed.). London: Routled Falmer.

Koay, T .K. (2004). Knowledge and attitudes towards TB among People Living in Kudat Sabah Malaysia: *Medical Journal of Malaysia*, 59 (4), 502 - 511. Retrieved August 23, 2007 from <http://www.cabastractspul.org/googl/abstract.asp?>

Latimer, J. (2003). *Advanced Qualitative Research for Nursing*. London: Blackwell.

Liefooghe, R., Baliddawa, J.B., Kiprito, E.M., Vermeine, C., & De Munynck, A.O. (1997). A Kenyan Community's perception of Tuberculosis: *Tropical Medicine & International Health*, 2 (8) 809-821. Retrieved August 20, 2007 from <http://www.blackwell-syneregy.com/links/doi/10,1046%2fj.1365-3156.1997.d01-380>.

times.x

Mama's Health Com. (2000-2007). *Tuberculosis*. Retrieved August 26, 2007 from <http://www.mamashealth.com/infect/tuber.asp>

Matsunanga, D.S., Yamada, S., & Makabeo, A. (1998). *Cross – Cultural TB Manual: Cultural Influences on TB related Beliefs and Practices of Fillipinos, Vietnames, Chinese & Koreans*. Retrieved September 7, 2007 from [http://www.ethnomed.org/ethnomed/cli-topics/TB/TB manual pdf](http://www.ethnomed.org/ethnomed/cli-topics/TB/TB%20manual.pdf)

McEwan, E.K., & McEwan, P.J. (2003). *Making sense of Research: What is Good, What is not, and how tell the differences*. California: Sage.

Mertens, D.M. (2005). *Research and Evaluation in Education and Psychology: Integrated Diversity with Quantitative, Qualitative and Mixed Methods* (2nd ed.). London: Sage.

Morse, J.M., Field, P.A. (1998). *Nursing Research. The Application of Qualitative Approaches* (2nd ed.). London: Cornwall.

Myers, M.D. (2004). *Qualitative Research in Information System*. Retrieved August 20, 2007 from <http://www.qual.auckland.ac.nz>

Mugo, F.W. (n.d). *Sampling in Research*. Retrieved August 25, 2007 from <http://www.socialresearchmethods.net/tutorial/mugo/tutorial.htm>

Munhall, P.L. (2001). *Nursing Research: A Qualitative Perspective* (3rd ed.). London: Jones and Bartlett.

Munro, S.A., Lewin, A.L., Smith, H.J., Engel, M.E., Fretheim, A., & Volmick. (2007). Patient Adherence to Tuberculosis Treatment: A Systematic Review of Qualitative Research. *Plos Medicine*, 4 (7). Retrieved June 10, 2007 from <http://www.pubmedcentral.nih.gov/articlerender.fcgi?i=1925126>

Ministry of Health and Social Services. (1998). *The Patients Charter*. Windhoek: MOHSS.

Ministry of Health and Social Services. (2004). *Annual Report: The National Tuberculosis and Leprosy Control Program*. Windhoek: MOHSS.

Ministry of Health and Social Services. (2006a). *District Tuberculosis Register: Khomas region/Windhoek District*. Windhoek: MOHSS.

Ministry of Health and Social Services. (2006b). *National Guidelines for the Management of Tuberculosis* (2nd ed.). Windhoek: MOHSS.

Ministry of Health and Social Services. (2006c). *Quarterly Report form: Namibia National Tuberculosis Control Program*. Windhoek: MOHSS.

Ministry of Health and Social Services. (2004-2009). *The National Strategy Plan on Tuberculosis: Medium Term Plan I (TB-MTP1)*. Windhoek: MOHSS.

Nieswadomy, R.M. (2002). *Foundations of Nursing Research* (4th ed.). New Jersey: Prentice Hall.

Nutrition Information Centre University of Stellenbosch. (n.d). *Tuberculosis and Nutrition*. Cape Town: University of Stellenbosch.

Nguyen, H.L., Johansson, E., Diwan, V.K., & Winkinstan, A. (2006). *Different Tuberculosis in men and women: Beliefs from focus groups in Vietnam*. Retrieved August 19, 2007 from <http://fr/?amodel=affiche&cpeidt=1880705>

Open Society Institute. (2006). *TB Policy in Tanzania: A Civil Society Perspective*. New York: Createch LTD.

Pangesho, P.E., Shayo, E., Makunde, W.H., Keto, G.B.S., Mandara, M.L., Kamungisha, M.L., et al. (2007). Community Knowledge, Attitudes and Practices towards TB and its Treatment in Mpwapwa District Central Tanzania. *Tanzania Health Research Bulletin* ISSN 0856-6496, 9 (1), 38-43. Retrieved August 13, 2007 from <http://www.bioline.org.br/request?th07006>

Peltzer, K., Mngqundaniso, N., & Petros, G. (2006). HIV/AIDS/STI/TB Knowledge, Beliefs and Practices of Traditional Healers in KwaZulu-Natal, South Africa. *AIDS Care*, 18, (6). Retrieved August 18,2007 from <http://www.secureth>

Pio, A., & Chaulet, P. (1998). *Tuberculosis Handbook: Global Tuberculosis Programme*. Geneva: WHO.

Poggenpoel, M., & Myburg, C. (2006). Mental Health Challenges of Educators concerning the Experience of Violence in the Secondary School Settings. *International Journal on Violence and Schools*, 2. University of Johannesburg: Johannesburg.

Polit, D., & Hungler, B.P. (1999). *Nursing Research: Principles and Methodology*. Philadelphia : Lippicott.

Promptussananon, S., & Peltzer, K. (2005). Perception of Tuberculosis: Attributions of Cause, Suggested Means of Risk Reduction, and Preferred Treatment in the Limpopo Province, South Africa. *Journal of Health, Population and Nutrition*, 23, (1) 74-81. Retrieved August 22, 2007 from <http://www.org.br/request?hn05009>

Quit-Smoking Stop. Com. (2001-2007). *Harmful Effects of Smoking*. Retrieved September 15, 2007 from <http://www.quit.smoking.stop.com/harmful-smoking-effects-html>

Rafii, F., Oskouie, F., & Nicravesh, M. (2004). *Factors involved in Crisis Responses to Burnout: A Grounded Theory Study*. Retrieved August 18, 2007 from <http://www.pubmedcentral.nihgov/articlerender.fcgi?artid=534790>

Regional Spinal Cord Injury Centre of the Delaware Valley. (2004). *Inclusion and Exclusion*. Retrieved September 01, 2007 from <http://www.spinalcordcentre.org/research/clinical/criteria.html>

Rieder, H.L. (1999). *Epidemiologic Basis of Tuberculosis Control* (1st Ed.). Frans: Boulevard Saint-Michael.

Rieder, H.L. (2002). *Intervention for Tuberculosis Control and Elimination*. France: Boulevard Saint-Michael.

Scheepers, E., Goldstein, S., Shabalala, A., & Shongue, T. (2003). *Qualitative Target Audience Formative Research for Health and Development Communication*. Johannesburg: Soul City.

Singleton, J. K. (1999). *Primary Care*. New York: Courier Westford.

Sim, J., & Wrigh, C. (2000). *Research in Health Care: Concepts, Designs and Methods*. London: Stanley Thornes.

Scheider, Z., Elliott, D., Biondo-Wood, G.L., & Haber, J. (2003). *Nursing Research: Methods, Critical Appraisal and Utilization* (2nd ed.). New York: Mosby.

Stat Pac. (1997-2007). *Survey Software Sampling Methods*. Retrieved August 20, 2007 from <http://www.statpac.com/survey/sampling.htm>

Steve, S. (2001). *An Overview of Content Analysis: Practical Assessment, Research and Evaluation*. 7 (17). Retrieved August 25, 2007 from <http://pareonline.net/getvn.asp?v=7&n=17>

Stopler, M., & Hecht, B. K. (2006, July 20). *Are You Living a "Healthy Lifestyle?"* Retrieved November 18, 2007 from <http://www.medicinnet.com/script/main/art.asp?articlekey=46947>

Taylor, D. & Procter, M. (2005). *The Literature Review: A Tip on Conducting It*. Retrieved August 18, 2007 from <http://www.utoronto.ca/writing/litrec.html>

The Gale Group. (2002). Answers Com. Health. *Encyclopedia of Public Health*. Retrieved August 25, 2007 from <http://www.answers.com/topic/pilt?cat=b13-fin>

Trace, C. (2001). *Applying Content Analysis to Case Study Data: A Preliminary Report*. Retrieved August 26, 2007 from <http://www.gseis.ucla.edu/usinter pares/pdf/inter pares.contentanalysis>

Trevor Mendham. (2005-2007). *Horology – Stuff*. Retrieved December 12, 2007 from <http://horology-stuff.com/more/hawthorne.html>

Trochim, M.K. (2006). *Research Methods*. Retrieved August 20, 2007 from <http://www.socialresearchmethods.net/kb/sampling.php>

Van den Berg, R.H., & Viljoen, M.J. (1999). *Communicable Diseases: A Nursing Perspective*. Cape Town: Maskew Miller Longman.

Van De Snepscheut, J.L.A. (2003). *A Glance at the Future: Methodology and Data Collection*. Retrieved August 26, 2007 from <http://www.dye.no/articles/a-glance-at-the-future/methodology-and-data-collection/html>

Van Rooyen, C. (2004). Tuberculosis: Anyone can get it. *Health*, 24. Retrieved September 09, 2007 from <http://www.health24.com/medical/condition-centre/777-792-805-1866,267>

0.asp

Waisbord, S. (2005). *What Poverty Means in Terms of Causes of Tuberculosis: The Change Project / Academic for Educational Development*. Retrieved August 13, 2007 from <http://www.aed.org/ToolssoundPublicationupload/Behavioural%20barriers%20tb%20control%20lit%20review.pdf>

Wandwalo, E. (2005). *Community Care in Tanzania: The role of the Direct Observation of Tuberculosis and Collaborative TB and HIV/AIDS Intervention*. Bergen: University of Bergen.

Wang, J, Y., Hsueh, P.R., Jan, I.S., Lee, L.N., Liaw, Y.S., Yang, P.C., & et al. (2007). The Effect of Smoking on Tuberculosis: Different Patterns and Poorer Outcomes. *The International Journal of Tuberculosis and Lung Disease*, 11 (2), 143-149 (7). Retrieved November 03, 2007 from <http://www.ingentaconnect.com/content/iatld/2007/00000011/00000002/art00006>

Webber, R. (2002). *Communicable Diseases: Epidemiology and Control*. New York: Cabi Publishing.

WHO/CDS/TB. (2000). *Tuberculosis Control in Prisons: A Manual for Programme Manager*. Geneva: WHO.

WHO/CDS/TB. (2003a). *Community Contribution to TB Care: Practice and Policy*. Geneva: WHO.

WHO/CDS/TB. (2003b). *Treatment of Tuberculosis: Guidelines for National Programme* (3rd ed.). Geneva: WHO.

WHO/HTM/TB. (2004). *TB/HIV: A clinical Manual*. Geneva: WHO.

WHO. 2002. *Stop TB Communicable Diseases*. Geneva: WHO.

WHO. (2003). *Guidelines for Implementing Collaborative TB and HIV Programme Activities*. Geneva: WHO.

WHO. (2004). WHO Report: *Global Tuberculosis Control: Surveillance, Planning, Financing*. Geneva: WHO.

WHO. (2005). *Global Tuberculosis Control: Surveillance, Planning, Financing*. Geneva: WHO.

WHO. (2006). *The Global Plan to Stop TB. 2005-2010*. Geneva: WHO.

WHO. (2007). *Global Tuberculosis Control: Surveillance, Planning, Financing*. Geneva: WHO.

WHO/TRD. (2004). *Tuberculosis: Disease Information*. Retrieved August 27, 2007 from <http://www.who.int/tdr/diseases/tb/diseaseinfo.htm>

Xu, B. (2006). *Access to TB Cure in Rural Africa: Comparing the Impact of Alternative Control Project*. Stockholm: Karolinska University Press.

Yamanda, S., Caballero, J., Matsunaga, D.S., Augustin, G., & Magana, M. (1999). Attitudes Regarding Tuberculosis in Immigrants from the Philippines to the United States: Clinical Research and Methods. *Family Medicine Journal*, 31 (7), 47. Retrieved September 01, 2007 from <http://www.stfm.org/fmhub/fullpdf/july99/cram/pdf>

Ziady, L., & Small, N. (2004). *Prevent and Control Infection*. Cape Town: Juta.

ANNEXURE I: Interview Guide

Title: A study on the knowledge, beliefs and practices of patients diagnosed with tuberculosis in Katutura, Khomas region, Namibia

Items required:

- Research Proposal
- Pens (blue or black)
- Writing Pads
- Interview guide form
- Comfortable place

1. Introduction:

- Greet the participant and introduce myself;
- My name and surname
- My work place
- Explain the aim of interview and that the interview is voluntary.
- Obtain the verbal consent from the participant him/herself, or from parents in the case of minors.
- Explain to the participant that the results of the study will be used only for the stated purposes.

2. Find out the age of the participant (age category) and the address.

3. Sit at the comfortable place, where there are no disturbances.

Switch cell phones off.

From 4 to 6 – Ask open-ended questions and if necessary prompt and probe concentrating on the objectives of the study.

4. Ask open-ended questions (if needed prompt and probe) about the participant's knowledge regarding the followings:

- Causes of tuberculosis
- Treatment of tuberculosis:
 - place where TB can be treated
 - types of TB the participant has
 - duration of treatment
 - changing between treatment phases
 - DOT supporter
 - side effect of treatment
 - any interruption of treatment
 - knowledge about injection
- Prevention of tuberculosis

5. Ask open-ended questions (if needed prompt and probe) about the participant's beliefs regarding the following:

- Modes of transmission of tuberculosis

6. Ask open-ended questions (if needed prompt and probe) about the participant's lifestyles regarding the following:

- Alcohol consumption
- Smoking
- Nutrition

ANNEXURE II: Transcribed interview with tuberculosis patient

Keywords:

I. Interviewer

P. Participant

I: Good afternoon, sir.

P: Good afternoon.

I: I would like to thank you for keeping our appointment, and let me also thank you for allowing me to discuss tuberculosis disease with you today. Are you ready to do this interview with me?

P: Yes, madam.

I: All right. Let us talk about the cause of tuberculosis. What do you think is the cause of tuberculosis?

P: Tuberculosis is caused by many things, like alcohol and smoking.

I: Ok. What makes you think that alcohol and smoking are the causes of tuberculosis?

P: Because me, myself, I was drinking a lot, that's why I have TB now. Alcohol burns the lungs and smoking puts dust on the lungs and that is TB.

I: Mm.

P: The other thing is the family. There are some families who just have TB blood. Those families are in problem of TB. I heard also people said that this new disease is also causing TB.

I: What do you mean by new disease?

P: AIDS. All those who have TB they have also AIDS.

I: I see. Let us talk about the spread of tuberculosis. How does tuberculosis spread?

P: That is an easy question madam. If I cough now and not covering my mouth, those small drops that come from my mouth is TB. If it comes to you, then you will also get TB.

I: Mm.

P: Another thing is sex. If I make sex with my wife and my be she has no TB, she will also get TB. My wife got TB from me.

I: I'm sorry to hear that. Is she also on TB treatment?

P: Yes, but she is now staying with her family at Otjinene.

I: All right.

P: Like me, I have my own cup and plate, because I am afraid to give TB to my children. If I eat from the same plate with my children, they will get TB also, because of saliva.

I: Could you please tell me more about how saliva spreads TB?

P: Yes, the saliva is dangerous, even when kissing because if a healthy person swallows that saliva, then she will get TB.

I: I see. Let us talk about the treatment of tuberculosis. Where do you think TB can be treated?

P: At hospital madam.

I: Where else do you think TB can be treated?

P: I just know the hospital or the clinics.

I: I'm glad to hear that. What type of TB do you have?

P: I don't know.

I: What did the health workers tell you?

P: I was told that I have TB. They told me that I must stop drinking alcohol and smoking.

I: Ok, could you please tell me what did they say about the reasons why you need to stop taking alcohol and smoking?

P: They just told me that I must stop alcohol and smoking if I don't want to die.

I: I see. For how long are you going to drink your TB pills?

P: I don't know for how long I'm going to drink these pills.

I: What did they say regarding how long are you going to drink your TB pills?

P: I was upset that day because they were talking too much about alcohol, so I can't remember.

I: I see. Could you please tell me the names of the TB pills you are taken?

P: Woo!! That is difficult madam. I just know the colour.

I: I'm glad to hear that. Tell me more about the pills. Are you still drinking the same pills you have started with?

P: No, the nurses changed my pills, it was from a red box, and now it is from a green box.

I: What do you think made the nurses change your pills?

P: I don't know. I think they are the same.

I: Mm. Let us talk about the supporter. What do you understand about the treatment supporters?

P: Yes, I was told always to bring someone to see me when I swallow my pills.

I: Who did you bring?

P: I brought my brother, but there inside I wanted to tell them that I am a responsible man, married and have children. Why do I need to be watched like a small child?

I: Could you please tell me about your opinion about the supporter?

P: My opinion is that the supporter is needed by old people, who will forget easily, and for the children, not for each and every one.

I: All right. Let me take you back to pills once more. How do you cope with the pills?

P: The pills are ok. I don't have any problem with them. I drink them everyday. I never skip a day. Let me ask you a question. Is that true what I heard that those who are not drinking their pills everyday are getting injection?

I: No, injections are given to those who have developed TB for the second time, or according to the type of TB the person has.

P: Oh!

I: Let us continue with our discussion. How can you prevent tuberculosis in your home, or at your location?

P: The people should stop drinking alcohol and also stop smoking. About the family TB no one can prevent it, because that one is already in the blood.

I: I see. Let me take you back to alcohol and smoking. What is your relationship with alcohol and smoking at this present moment?

P: I do not want to lie to you. I have stopped smoking, but alcohol I'm still drinking. I just drink light alcohol now like tombo, maheu, and beer, no more strong wine.

I: Mm. What type of food are you eating?

P: I eat all type of food I get madam. We the poor people we eat all foods like pigs.

I: Mm. What did the health workers tell you about food?

P: Nothing. All they said is only to stop alcohol.

I: Culturally, are there any foods you are not supposed to eat?

P: No, we eat all food.

I: Mm. In terms of your religion, what types of food you are not supposed to eat?

P: We eat almost all foods, except pork.

I: All right. Do you have anything else to say about TB?

P: Yes. I just want to ask the government to give us money to support our children, because this TB makes us weak and we can not work nicely anymore.

I: Mm. What else do you want to say?

P: That's all.

I: We have come to the end of our lovely discussion. Thank you so much for your time.

P: Thank you too, and have a nice day.

I: Thanks. Have a nice day too.

ANNEXURE III: Permission letters to conduct study

E. Kamenye
P.O. Box 23883
Windhoek
02 August 2007

Ministry of Health and Social Services
Permanent Secretary
(P.S.) Kahijoro Kahuure
Private Bag 13198
Windhoek

Dear Sir:

Re: Application for permission to carry out a research project for academic reasons

I am currently a student at the University of Namibia: Faculty of Medical and Health Science, enrolled for MPH. It is required from me to write a research proposal and thereafter carry out a research project. My topic is: The knowledge, beliefs and practices of patients diagnosed with tuberculosis in Katutura, Khomas region.

Therefore I hereby wish to ask permission to carry out a pilot study of about 16 tuberculosis patients at TB OPD, Katutura Hospital and thereafter interview about 60 tuberculosis patients at Katutura Health Centre.

Enclosed find a copy of my research proposal and the letter of permission from UNAM.

Your co-operation will be highly appreciated.

Your faithfully

E. Kamenye

E. Kamenye
02/8/07

UNIVERSITY OF NAMIBIA

Private Bag 13301, 340 Mandume Ndemufayo Avenue, Pionierspark, Windhoek, Namibia



FACULTY OF MEDICAL AND HEALTH SCIENCES

Letter of permission:
Post graduate students



Date: 2.8.2007

Dear Student: E Kamenye

The post graduate studies committee has approved your research proposal.

Title: The knowledge beliefs and practices of patients diagnosed with Tuberculosis in Katutura Windhoek

You may now proceed with your study and data collection.

It may be required that you need to apply for additional permission to utilize your target population. If so, please submit this letter to the relevant organizations involved. It is stressed that you should not proceed with data collection and fieldwork before you have received this letter and got permission from the other institutions to conduct the study. It may also be expected that these organizations may require additional information from you.

Please contact your supervisors on a regular basis.

Faculty representative on Post graduate committee

A van Dyk
Prof A van Dyk





9-0/0001

REPUBLIC OF NAMIBIA

Ministry of Health and Social Services

Private Bag 13322
Windhoek
Namibia

Khomas Regional Office

Telephone: (061) 203 5001
Telefax: (061) 235997
(International 264-61-235997)

Enquiries: Dr. T. Ithindi-Shipanga

Ref. No. :

Date: 23.10.2007

OFFICE OF THE DIRECTOR

**Mrs E Kamenye
P.O.BOX 23883
Windhoek**

Dear Mrs Kamenye

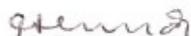
RE: THE KNOWLEDGE; BELIEFS AND PRACTICES OF PATIENTS DIAGNOSED WITH TUBERCULOSIS IN KATUTURA, KHOMAS REGION

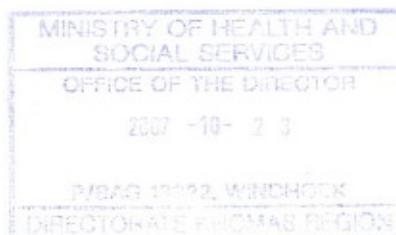
Your application to conduct the above study bears reference. Permission is granted for you to conduct this study for academic purposes only. It is required that you submit a copy of the final report to the regional office.

As per the rules of the MoHSS a separate permission is to be sought for the publication of the findings of the study.

I wish you all the best with your study.

Sincerely yours


Dr T Ithindi-Shipanga
Director: Khomas region



"Health for All"

