KNOWLEDGE, ATTITUDES AND PRACTICES OF PATIENTS DIAGNOSED WITH TUBERCULOSIS RELATED TO TUBERCULOSIS TREATMENT ADHERENCE IN KEETMANSHOOP DISTRICT, NAMIBIA

A THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF PUBLIC HEALTH OF THE UNIVERSITY OF NAMIBIA BY ELIZABETH KATETA

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APRIL 2018

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Abstract

Ensuring that patients in chronic care and treatment such as tuberculosis adhere to medications has implications for their quality of life, health care costs and society at large. The purpose of this study was to assess and describe the knowledge, attitudes and practices of patients diagnosed with tuberculosis (TB) related to their treatments in Keetmanshoop district in //Karas region, Namibia. A quantitative, cross sectional study was done among 76 patients who were receiving their TB treatment at various treatment centres in the district and systematically selected to participate in the study. Data was collected using a structured questionnaire, which was administered by trained interviewers. Data was analyzed using Epi-info software version 7. Analysis was done by means of a univariate and bi-variate analysis and association were explored using chi-squared test. In this study the respondents were 18 to 60 years old of which 57.89 % were male and 42.11% were female. The findings of the study revealed that the respondents had a good knowledge on tuberculosis with regards to signs and symptoms of diseases. There was poor knowledge and misperceptions exist on the risk factors associated with transmission of tuberculosis such as shaking hands, drinking from the same cup with others and working on road construction exposed to dust or cement. The study found significant association between knowledge of risk factor and age group of the respondents with p-value of 0.02. Those aged 40-60 appeared to have more knowledge of risk factors for tuberculosis than those aged 18-39 years. Most of the respondents had a good knowledge about the outcome when tuberculosis treatment is interrupted which refers to treatment failure (94.74%), drug resistance (89%) and death (93.42%). This knowledge did not seem to correlate with patients’ decision to miss the doses of the medication. The main reasons given for interrupting the medication were forgetting to take the pills, long distance to health facility and not enough food to eat before taking pills. Treatment adherence is a big challenge in management and control of tuberculosis. Therefore, community and patient education and material support to patients remain important to ensure adherence to tuberculosis treatment. Stakeholder contributions and support are required to stem the scourge of TB in Namibia and globally.
Table of Content

Abstract ............................................................................................................................................ i
List of tables .................................................................................................................................. v
List of figures ................................................................................................................................. viii
ACKNOWLEDGEMENTS .............................................................................................................. ix
DEDICATION ............................................................................................................................... x
DECLARATIONS .......................................................................................................................... xi
LIST OF ABBREVIATIONS ........................................................................................................... xii
CHAPTER 1 ................................................................................................................................. 1
INTRODUCTION .......................................................................................................................... 1
1.1 Introduction and Orientation to the study .............................................................................. 1
1.2 Problem statement ............................................................................................................... 4
1.3 Purpose of the study ............................................................................................................ 5
1.4 Objective ........................................................................................................................... 5
1.5 Significance of the study .................................................................................................... 6
1.6 Definition of concepts ......................................................................................................... 6
1.7 Summary ............................................................................................................................ 8
CHAPTER 2 .................................................................................................................................. 9
LITERATURE REVIEW .................................................................................................................. 9
2.1 Introduction ......................................................................................................................... 9
2.2 Global tuberculosis burden ............................................................................................... 9
2.3 TB situation in Namibia ..................................................................................................... 10
2.4 The strategy to respond to TB in Namibia ....................................................................... 11
2.5 Tuberculosis cause, transmission, risks factors and signs and symptoms ....................... 15
2.6 Knowledge of patients about Tuberculosis ....................................................................... 16
2.7 Attitudes and practices relate to TB treatments adherence .............................................. 19
2.8 Summary ............................................................................................................................ 21
CHAPTER 3 .................................................................................................................................. 23
RESEARCH METHODOLOGY ..................................................................................................... 23
3.1 Introduction ......................................................................................................................... 23
3.2 Research design ................................................................................................................ 23
3.2.1 Quantitative study ........................................................................................................ 24
3.2.2 Cross-sectional study .................................................................................................. 24
3.3 Study settings and population .......................................................................................... 25
3.4 Sampling ............................................................................................................................. 26
3.5 Data collection Research Instruments .............................................................................. 28
3.6 Validity and reliability ....................................................................................................... 28
3.7 Pilot test .............................................................................................................................. 29
3.8 Data collection procedure ............................................................................................... 30
3.9 Data analysis ...................................................................................................................... 30
3.10 Ethical consideration ....................................................................................................... 31
3.11 Summary ........................................................................................................................... 32
CHAPTER 4 .................................................................................................................................. 33
PRESENTATION OF RESULTS .................................................................................................... 33
4.1 Introduction ......................................................................................................................... 33
4.2 Section A: Socio-demographic Data ................................................................................. 33
4.2.1 Age of respondents ..................................................................................................... 35
4.2.2 Gender of respondents ............................................................................................... 35
4.2.3 School attendance and level of education .................................................................. 35
4.2.4 Marital status .............................................................................................................. 36
4.2.5 Respondents’ place of residential .............................................................................. 37
4.2.6 Employments status .................................................................................................... 37
4.2.7 Occupation ........................................................................................................................................ 37
4.2.8 Duration on treatment ....................................................................................................................... 38
4.3 Knowledge of respondents about TB disease and its treatment (Section B) ........................................ 38
   4.3.1 Respondents knowledge of tuberculosis signs and symptoms ................................................... 38
   4.3.2 Respondents knowledge of risk factors for tuberculosis transmission ........................................ 41
   4.3.3 Knowledge of Outcome if TB treatment is interrupted ............................................................... 43
   4.3.4 Is tuberculosis disease curable? ...................................................................................................... 44
4.4 Attitudes and practice of patients who were on tuberculosis treatment in Keetmanshoop district (Section C) .................................................................................................................. 45
   Attitudes of patients who were on tuberculosis treatment in Keetmanshoop district .................................................. 45
   4.4.1 Respondents’ reactions when she/he was diagnosed with tuberculosis ........................................ 45
   4.4.2 Did you tell your family members about your TB treatment? ..................................................... 47
   4.4.3 What were your family reactions when you informed them that you were on tuberculosis treatment? .................................................................................................................. 48
   4.4.4 Smoking and drinking alcohol ....................................................................................................... 50
   4.4.5 How do you take your TB Medicines? .............................................................................................. 50
   4.4.6 Have you experienced any side effects of the medicines? .............................................................. 51
   4.4.7 How did you manage the side effects? .............................................................................................. 51
   4.4.8 Have you ever missed your TB treatment? ....................................................................................... 51
   4.4.9 Number of times TB treatment missed .......................................................................................... 52
   4.4.10 The following reasons for missing doses were indicated ............................................................. 53
   4.4.11 What can be done for patients not to interrupt treatment? ........................................................... 56
4.5 Exploring relationships and significance testing (Correlations) ......................................................... 57
   4.5.1 The relationship between demographic variables and knowledge of signs and symptoms of TB .................................................................................................................. 57
4.6 The relationship between the demographic variables of the respondents and knowledge of risk factors for TB transmission ......................................................................................... 61
   4.6.1 The association between the age group of the respondents and knowledge of the risk factors for TB .................................................................................................................. 61
   4.6.2 Relationship between the sex of the respondents and knowledge of the risk factors for TB .................................................................................................................. 62
   4.6.3 The relationship between education of the respondents and knowledge of the risk factors for TB .................................................................................................................. 63
   4.6.4 The relationship between the place of residence of the respondents and knowledge of risk factors for TB .................................................................................................................. 63
   4.6.5 The relationship between the employment status of the respondents and knowledge of the risk factors of TB .................................................................................................................. 64
   4.6.6 Respondents’ marital status relationship to knowledge of the risk factors for TB .................................................................................................................. 65
4.7 Attitudes and practice .......................................................................................................................... 66
   4.7.1 Relationship between duration on treatment and respondents’ experience of side effects of the medicines .................................................................................................................. 66
   4.7.2 The relationship between the duration on treatment and missing the medicines .................................................................................................................................................................................. 67
   4.7.3 The relationship between the duration on treatment and number of times the respondents missed taking their treatment .................................................................................................. 67
4.8 The relationship between the experience of side effects and the respondents’ ever missing treatment .......................................................................................................................... 68
   4.9 Relationship between demographic variables and the respondents having ever missed treatment .................................................................................................................................................. 69
   4.10 The relationship between drinking alcohol and having ever missed TB treatment ........................................................................................................................................................................ 72
4.11 Summary ............................................................................................................................................... 74
CHAPTER 5 .................................................................................................................. 76
DISCUSSIONS OF THE STUDY FINDINGS ..................................................................... 76
5.1 Introduction .................................................................................................................. 76
5.2 Demographic characteristics ....................................................................................... 76
5.3 Knowledge of respondents about signs and symptoms ............................................. 78
5.3.1 Respondents knowledge of risk factors for tuberculosis transmission .................. 78
5.3.2 Knowledge of the outcome if tuberculosis treatment is interrupted ...................... 80
5.4 Attitudes regarding tuberculosis treatment ............................................................... 81
5.5 Practice regarding tuberculosis treatment ................................................................. 82
5.6 Summary ..................................................................................................................... 85
CHAPTER 6 ..................................................................................................................... 86
CONCLUSION, LIMITATIONS AND RECOMMENDATIONS ........................................... 86
6.1 Introduction .................................................................................................................. 86
6.2 Conclusion ................................................................................................................... 86
6.3 Limitation of the study ............................................................................................... 88
6.4 Recommendations .................................................................................................... 89
6.4.1 Practice .................................................................................................................... 89
6.4.2 Future research ...................................................................................................... 90
6.5 Summary .................................................................................................................... 91
References ....................................................................................................................... 92
Annexure A: Ethical Clearance Certificate from UNAM .................................................... 99
Annexure B: Research Permission Letter from UNAM .................................................... 100
Annexure C: Permission Letter from the Ministry of Health and Social Services .......... 101
Annexure D: Research Questionnaire ............................................................................ 102
Annexure E: Consent form ............................................................................................. 108
List of tables

Table 4.1: Respondents Demographic data...............................................................34

Table 4.2: Respondents’ knowledge of risk factors for transmission of tuberculosis disease...........................................................................................................41

Table 4.3: Knowledge of Outcome if TB treatment is interrupted.........................44

Table 4.4: Responding to whether tuberculosis is curable.....................................45

Table 4.5: Family members’ reaction to news of patient’s TB disease....................48

Table 4.6: How respondents take their TB medicines............................................50

Table 4.7: What can be done for patients not to interrupt treatment......................56

Table 4.8: The relationship between the age of the respondents and knowledge of signs and symptoms of TB ..................................................................................58

Table 4.9: The relationship between the sex of the respondents and knowledge of signs and symptoms of TB ..................................................................................58

Table 4.10: The relationship between education of the respondents and knowledge of signs and symptoms of TB............................................................................59

Table 4.11: The relationship between the marital status of the respondents and knowledge of signs and symptoms of TB.................................................................59

Table 4.12: The relationship between the place of residence of the respondents and knowledge of signs and symptoms of TB.................................................................60

Table 4.13: The relationship between the employment status of the respondents and knowledge of signs and symptoms of TB disease..................................................60
Table 4.14: The relationship between duration of treatment on TB and knowledge of signs and symptoms of TB.................................................................61

Table 4.15: The association between the age group of the respondents and knowledge of the risk factors for TB...............................................................62

Table 4.16: The relationship between the sex of the respondents and knowledge of the risk factors for TB.................................................................62

Table 4.17: Relationship between education and knowledge of risk factors for TB..63

Table 4.18: Relationship between the place of residence and knowledge of risk factors for TB.................................................................64

Table 4.19: Relationship between the employment status and knowledge of the risk factors of TB.................................................................64

Table 4.20: Relationship between the marital status and knowledge of the risk factors for TB.................................................................65

Table 4.21: Relationship between duration on treatment and experience of side effects.................................................................66

Table 4.22: Relationship between the duration on treatment and missing the medicines.................................................................67

Table 4.23: Relationship between the duration on treatment and times treatment missed.................................................................68

Table 4.24: Relationship between the experience of side effects and missing treatment.................................................................69
Table 4.25: Relationship between demographic variables and the respondents having ever missed treatment........................................................................................................70

Table 4.26: Relationship between drinking alcohol and respondents’ ever-missed TB treatment..................................................................................................................................................73

Table 4.27: Patient and family reaction to the news that the patient has been diagnosed with TB disease........................................................................................................73
List of figures

Figure 4.1: Distribution of respondents by age group........................................35
Figure 4.2: Distribution of the respondents by educational level......................36
Figure 4.3: Distribution of respondents by marital status.................................36
Figure 4.4: Employment status of respondents..............................................37
Figure 4.5: Respondent knowledge of signs and symptoms of tuberculosis (TB) disease...........................................................................................................40
Figure 4.6: Respondents’ attitude and reaction when diagnosed with TB............46
Figure 4.7: Ever missed TB treatment..............................................................52
Figure 4.8: Number of times TB treatment missed..........................................53
Figure 4.9: Reasons for interrupting TB treatments...........................................54
ACKNOWLEDGEMENTS

I wish to thank, first and foremost my Almighty God for guiding me throughout my work on this thesis. Glory to the Lord!

It is with my immense gratitude that I acknowledge the support and valuable guidance of my Supervisors Dr. J.E de Villiers and Dr. H. Iita for their untiring efforts to work with me.

My special thanks go to the Post Graduate Committee of the University of Namibia for the approval of my research proposal as well as to the Ministry of Health and Social Services for giving me permission to carry on with my research at Keetmanshoop Health district.

I thank the (Acting) Director of //Karas Regional Health Directorate Dr. Job Ndile, Senior Medical Officer for Keetmashoop district Dr. Kooper, and PHC Supervisor Sr. Namukwambi for allowing me to conduct my research in Keetmanshoop Health District. I would like to give special thanks to the District TB and Leprosy Coordinator Mr. Moses Katandawa and the TB Field Promoters who assisted me during data collection. I thank the patients who were on tuberculosis treatment who voluntarily participated in my research.

I cannot find words to express my gratitude to Dr. Ebong Akpacio for assisting me with statistical analysis and editing my work.

I am indebted to my colleagues and friends who supported me with words of encouragement to carry on with my study. Finally, I would like to thank my family for their invaluable support.

Thank you very much. May God bless you all!

ix
DEDICATION

I would like to dedicate this thesis to my dearest daughter Laina Ndapewa Wilhelm for bravely supporting me through my study.
DECLARATIONS

I, Elizabeth Kateta, declare hereby that this study is a true reflection of my own research, and that this work, or a part thereof has not been submitted for a degree in any other institution of higher education.

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____________________________
Elizabeth Kateta

Student Number: 9614508

Date: APRIL 2018
# LIST OF ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>CNR</td>
<td>Case Notification Rates</td>
</tr>
<tr>
<td>DSP</td>
<td>Directorate of Special Programmes</td>
</tr>
<tr>
<td>DOT</td>
<td>Directly Observed Treatment</td>
</tr>
<tr>
<td>DOTS</td>
<td>Directly Observed Treatment Short-course</td>
</tr>
<tr>
<td>DTLC</td>
<td>District Tuberculosis and Leprosy Coordinator</td>
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<tr>
<td>DR-TB</td>
<td>Drug-Resistant Tuberculosis</td>
</tr>
<tr>
<td>E</td>
<td>Ethambutol</td>
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<tr>
<td>HIV</td>
<td>Human Immunodeficiency virus</td>
</tr>
<tr>
<td>H</td>
<td>Isoniazid</td>
</tr>
<tr>
<td>TB</td>
<td>Tuberculosis</td>
</tr>
<tr>
<td>MDR-TB</td>
<td>Multi-drug-resistance Tuberculosis</td>
</tr>
<tr>
<td>MoHSS</td>
<td>Ministry of Health and Social Services</td>
</tr>
<tr>
<td>NTLCP</td>
<td>National Tuberculosis and Leprosy Control Programme</td>
</tr>
<tr>
<td>PHC</td>
<td>Primary Health Care</td>
</tr>
<tr>
<td>PGSC</td>
<td>Postgraduates Studies Committee</td>
</tr>
<tr>
<td>R</td>
<td>Rifampicin</td>
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<tr>
<td>S</td>
<td>Streptomycin</td>
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<tr>
<td>UNAM</td>
<td>University of Namibia</td>
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<tr>
<td>WHO</td>
<td>World Health Organization</td>
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<tr>
<td>Z</td>
<td>Pyrazinamide</td>
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CHAPTER 1
INTRODUCTION

1.1 Introduction and Orientation to the study

Globally, tuberculosis (TB) is a serious public health problem and is one of the top killer diseases. In 2011, an estimated 8.7 million new cases of TB were reported worldwide and 1.4 million people died from TB (World Health Organization [WHO], 2012). The five countries with the largest number of TB case notifications in 2011 were India (2.0 million–2.5 million), China (0.9 million–1.1 million), South Africa (0.4 million–0.6 million), Indonesia (0.4 million–0.5 million) and Pakistan (0.3 million–0.5 million) (World Health Organization [WHO], 2012). India and China alone accounted for 26% and 12% of global cases, respectively (WHO, 2012). A study done in sub-Saharan Africa on a review of compliance to anti-tuberculosis treatment and risk factors for defaulter treatment revealed a high rate of patients who did not turn up for their tuberculosis treatment follow up (Castelnuovo, 2010). In the study the proportion of patients defaulting varied from 11.3% to 29.6% between investigated countries. In four studies that were evaluated by Castelnuovo (2010) the majority of the patients’ defaulted treatment during the continuation phase (patient on tuberculosis treatment received initials phase of two months treatment regimen and will continue further four months regimen to complete 6 months treatment.) The identified risk factors for defaulting were: distance from the hospitals, lack of repeated smears, unit transfer after the intensive phase, (i.e, the initial two months of treatment), experiencing side effects of the treatment, having no family support, poor
knowledge about TB treatment, being more than 25 years old, and depending on public transport (Castelnuovo, 2010).

Another study done in Mpwapwa district, central Tanzania, to assess the knowledge, attitudes and practices of patient regarding tuberculosis and its treatment showed that patients’ knowledge on tuberculosis disease, causes and treatment period was poor. Friends and relatives were the main source of TB information in the community. The study concluded that TB patients in Mpwapwa district had poor knowledge of tuberculosis that was a likely cause of their delay in seeking treatment (Mangesho et al., 2012).

Namibia has one of the highest case notification rates (CNR) of TB in the world with 11,145 cases of TB notified in 2011, equivalent to a CNR of 545/100,000 population (Ministry of Health and Social Services [MoHSS], 2012b). Namibia remained among the top five ranked countries in the world with the highest per capita tuberculosis disease (MoHSS, 2016).

A number of strategies have been adopted to deal with the increasing TB burden in Namibia and worldwide. Directly Observed Treatment (DOT) service is a component of Directly Observed Treatment Short-course (DOTS) strategy whereby TB patients take medicines under supervision and support from others, a nurse, relative or community member (MoHSS, 2012a). TB-DOT promotes adherence to and completeness of TB treatment under supervision. First-line anti-TB medicines (Rifampicin (R), Isoniazid (H), Pyrazinamide (Z), Streptomycin (S), and Ethambutol (E) are taken for a six months course and can cure Tuberculosis if medication is taken according to the prescription without interruption (MoHSS, 2012a). Despite
TB-DOT being practiced in Namibia, a number of TB defaulters, failures, multi-drug resistance tuberculosis (MDR-TB) and deaths are reported (MoHSS, 2012b).

In Namibia, according to statistics from MoHSS –National Tuberculosis and Leprosy Control Programme (NTLCP), //Karas, Hardap and Erongo regions are the regions with the highest TB burden in the country. The MoHSS -NTLCP Annual report (2012 - 2013) indicates the following TB treatment outcome for retreatment cases in 2012: nationally Namibia reported TB failure rate of 10%, defaulter rate of 7% and death rate of 8%, //Karas region reported TB failure rate of 7 %, and defaulter rate of 6 %; Hardap region a failure rate of 10 %, and defaulter rate of 4%; while Erongo region reported failure rate of 4% and defaulter of 2%. //Karas region is one of the areas most threatened by TB, as it has the highest case notification rate in the country (CNR 996/1000) (MoHSS, 2012b).

Treatment success rate for re-treatment cases nationally for Namibia was reported as 73%; //Karas region 78%, Hardap 77% and Erongo 86% for the 2011 cohort; overall, the treatment success rate both nationally and for these high TB burden regions was below the 90% target (MoHSS, 2012a). Successful completion of treatment for patients who default depends on the patients’ knowledge, attitude and practice towards the control of TB (MoHSS, 2012a). The total number of TB patients who were registered as defaulters and/or treatments interrupters in 2012 were 54 (MoHSS, 2012a). It has been observed that patients diagnosed with TB in Keetmanshoop district are missing their daily DOTS several times, absconded from hospital, some are smoking and they present themselves at health facilities under the influence of alcohol as observed by Keetmanshoop nurses at TB ward and clinics.
The spread of tuberculosis is aggravated by poverty, overcrowding, smoking and HIV/ infection (MoHSS, 2012b). Generally, there is a non-satisfactory level of knowledge among TB patients based on the studies done in Namibia and worldwide on factors associated with treatment non-adherence (Mainga, 2008; Mangesho et al., 2012). Due to the enormity of the TB situation and challenges faced in managing TB patient in //Karas region the researcher thought it worthwhile to assess the knowledge, attitudes and practices of patients diagnosed with TB with regards to their TB treatment in the region.

**1.2 Problem statement**

Defaulted refers to a patient whose treatment was interrupted for two or more consecutive months (MoHSS, 2012a). The defaulter (Lost to Follow Up) rate reported by the National TB and Leprosy Control Programme (NTLCP) for 2012/2013, for Namibia was 7%, while the TB failure rate was 8% and fatality rate was 10% (MoHSS, 2012b). Keetmanshoop district reported a TB failure rate of 8%, defaulter rate of 6% and fatality rate of 7% for treatment outcome of new smear positive TB cases, in 2011, while treatment outcome for new smear positive patients co-infected with TB/HIV in Keetmanshoop district the reported death rate was 14%, failure rate 9% and defaulter rate of 2% (MoHSS, 2012b). Patients who fail to return for follow up TB treatment are more likely to develop drug-resistant tuberculosis (DR-TB) (Ricks et al., 2012). The knowledge, attitudes and practices of patients on TB treatment are likely to influence TB treatment adherence. If the knowledge, attitudes and practices are insufficient it may contribute to treatment failure and defaulting (Tachfouti, Slama, Berraho & Nejjari, 2012).
Health education sessions are usually conducted in the health facilities by the nurses to all TB patients and in the communities by the TB Field Promoters. However, it appears the health education programme has not achieved the desired outcomes. The researcher did not come across any research done regarding patients’ knowledge, attitudes and practices on tuberculosis treatment in Keetmanshoop district specifically. It is therefore important to determine the knowledge, attitudes and practices of patients regarding TB treatment adherence in Keetmanshoop district, in the //Karas region. Good adherences contribute to cure for TB, improve quality of life for the TB patients and prevent the development of drug resistant TB and the implications thereof.

1.3 Purpose of the study

The purpose of this study was to assess and describe the knowledge, attitudes and practices of patients with TB, related to tuberculosis treatment in Keetmanshoop district.

1.4 Objective

The objectives of this study are to:

- Assess the knowledge, attitudes and practices of the patients on tuberculosis treatment in Keetmanshoop district.
- Describe and assess how the knowledge, attitudes and practices of patients who are on tuberculosis treatment in Keetmanshoop district affect their adherence to tuberculosis treatment.
1.5 Significance of the study

The study is the first to be conducted among patients on TB treatment in Keetmanshoop district and it will seek to determine issues that need to be addressed to improve adherence to TB treatment. The study will not only contribute to a body of knowledge, but results will be useful to influence and inform policymakers and programme managers in matters that might improve patients’ knowledge, attitudes and practices towards adherence to TB treatment in health facilities in Namibia. Improved knowledge, attitudes and practices on TB will result in improved adherence of patients to TB treatment and might decrease emergence of drug resistant TB. It may subsequently lead to positive effects on economic productivity and saving of scare financial resources.

1.6 Definition of concepts

The key concepts and their use as applied in this research are defined as follows:

**Knowledge** – Defined as the information, understanding and skills gained through education or experience (Wehmeier, McIntosh, Turnbull & Asby, 2010). In the context of this research knowledge relevant to patients are meanings of TB infection, transmission, treatment and control, knowing reason for treatment, duration of treatment and consequences of stopping treatment. Numerous theories explain knowledge as an achievement that involves mental reasoning involving the cognitive system: perception, learning, communication and association (Chinenye, 2015).

**Attitudes** – Is the way of feeling or acting toward a person, thing or situation (Wehmeier, et al., 2010). In the context of this research attitudes are the way patients
accepted TB diagnosis and willingness to complete their treatment without interruption.

**Practice** – Refers to *(action not idea)* the way of doing something in a particular situation (Wehmeier, et al. 2010). In the context of this research practice includes the patient’s regular attendance at follow-up and consistency in taking tuberculosis treatment to prevent complications and further transmission of the disease.

**Tuberculosis** – Is a potentially fatal contagious disease that can affect any part of the body but is mostly affecting the lungs (MoHSS, 2012a). Tuberculosis is caused by a bacterium called *Mycobacterium tuberculosis*. It is an infection, which is common worldwide especially in Africa and Asia and especially common among people with low immunity such as people with HIV/AIDS (WHO, 2012). In this research people with pulmonary and extra-pulmonary TB are called TB patients.

**Treatment adherence** – Refers to the extent of patients taking their medications as prescribed without interruption (Michael, Bryson & Rumsfeld, 2009; MoHSS, 2012a). In this study patients are said to have adhered to their treatment when they have taken their medication daily without having missed any single dose.

**Patient** – for the purpose of this study patients are all persons who have been diagnosed with any form of tuberculosis of the age 18 to 60 years.
1.7 Summary

This chapter has presented the orientation to the research problem, namely tuberculosis as public health problem in Namibia as well as globally. Background information about the knowledge, attitudes, and practices of patient on TB treatment with the related influence to tuberculosis treatments adherences was also presented. The statement of the problem, purpose and objectives, the significance of the study were provided and the overview of the study and the study direction. The key terms that will be embodied in the study were also defined. The next chapter will discuss the literature related to the knowledge, attitudes and practice of patients on TB treatment.
CHAPTER 2
LITERATURE REVIEW

2.1 Introduction

A literature review provides important facts and background information on the topic and offers ideas on how to proceed with the research project (Brink, 2010; Burns & Grove, 2009). This chapter discusses burden of TB globally, TB situation in Namibia and the strategy to respond to TB in Namibia. It is also discusses information from previous studies and research on the knowledge, attitudes and practices of patients on tuberculosis related to tuberculosis treatment.

The World Health Organization (WHO) declared Tuberculosis (TB) a global public health emergency in 1993 and since then efforts to control the disease have intensified on national and international level (WHO, 2012). Despite the efforts in the sub-Saharan region, tuberculosis continues to be the leading killer disease among adults especially in their productive years of life (Gumeyi, 2010).

2.2 Global tuberculosis burden

The burden of TB can be measured in terms of incidence (defined as the number of new and relapsed cases of TB arising in a given time period, usually one year), prevalence (defined as the number of cases of TB at a given point in time) and mortality (defined as the number of deaths caused by TB in a given time period, usually one year). TB remains one of the world’s biggest threats. In 2014 an
estimated 9.6 million new TB cases were reported globally and TB killed 1.5 million people worldwide (1.1 million HIV-negative and 0.4 million HIV-positive) (WHO, 2015). TB is highest in Asia, Africa, India and China and together they account for almost 40% of the world’s TB cases, while the other 60% of the cases are in the South-East Asia and Western Pacific region. The African region has 24% of the world’s TB cases and, the highest rate of cases and deaths per capita. Multi-Drug Resistance (MDR) – TB cases continue to increase worldwide and 60% of these are found in India, China, the Russian Federation and Africa (WHO, 2012). Almost 80% of TB cases among people living with HIV reside in Africa (WHO, 2012).

2.3 TB situation in Namibia

The first edition of the National Guidelines for the Management of Tuberculosis was published in 1995, followed by the second edition in 2006, and the third edition in 2012 to provide guidance in controlling and managing the tuberculosis epidemic in Namibia. An evaluation of the implementation of the first medium-term plan for tuberculosis (TB MTP-1) was conducted in 2009, informing the development of the second medium-term plan for TB and leprosy (TBL MTP-11, 2010-2015). The prevalence of TB in Namibia per 100,000 people increased from 657 in 2000 to 822 in 2004, but it fell to 565 in 2010 (MoHSS. 2012a).

Despite the case notification decreased in Namibia TB from 545/100,000 in 2011 to 529/100,000 in 2012. Namibia is still among the countries with a very high per capita TB burden. Regions in Namibia having high tuberculosis case notification rates were Erongo 762/100,000, //Karas 996/100,000 and Hardap 725/100,000, while regions with the highest disease burden were Khomas with 17%, Erongo 10%,
Ohangwena 10% and Kavango 9%. These four regions account for close to 46% of the TB cases in Namibia (MoHSS, 2012a).

The defaulter (Lost to Follow Up) rate reported by the National TB and Leprosy Control Programme (NTLCP) for 2012/2013 for Namibia was 7%, TB failure rate was 8% and fatality rate was 10% (MoHSS, 2012b). Keetmanshoop district reported a TB failure rate of 8%; a fatality rate of 7% and a defaulter rate of 6% as TB treatment outcomes for new smear positive cases in the district in 2011 (MoHSS, 2012b). Keetmanshoop district is in //Karas region, which is one of the areas most affected by TB and it reported 757 cases of all forms of TB in 2012 (CNR: 996/100 000 the highest in the country), (MoHSS, 2012b).

2.4 The strategy to respond to TB in Namibia

A national programme for the control of tuberculosis (TB) and leprosy was established in 1991 under the Primary Health Care (PHC) Directorate, and was moved to the Directorate of Special Programmes (DSP) in 2004 when the new Directorate was created to cater for TB HIV/AIDS, Malaria and Sexually Transmitted Diseases. The National Guideline for the management of TB is provided to all health facilities in Namibia. Namibia has adopted the WHO’s Directly Observed Treatment Short Course (DOTS) strategy which is the most cost-effective public health strategy to fight TB (MoHSS 2012a). The five elements of the DOTS Strategy are:

- Sustained political commitment to TB control express in term of adequate human and financial resources
- Access to a quality-assured network of sputum smear microscopy
• Standardized short-course chemotherapy for all cases of TB under proper case management conditions, including directly observed treatment (DOT)
• Uninterrupted supply of quality-assured anti-TB medicines; and
• Recording and reporting system enabling treatment outcome assessment of all patients and assessment of overall programme performance

The above DOTS strategy can be attained by a strong and competent central (national level) unit, supervision for TB control at all levels in health system; a nationwide network of laboratory diagnostic services, including sputum smear microscopy accessible to patients in the primary health care services; and controlling and sustaining uninterrupted medicine supply and diagnostic materials (MoHSS, 2012a).

The use of the DOTS strategies

Element 1: Sustained political commitment to TB control express in term of adequate human and financial resources

Political commitment is required to support the overall structural and financial changes needed to improve the availability, distribution and motivation of competent health workers in TB care (WHO, 2017). Political and community leaders should mention the need to fight tuberculosis and emphasize in the treatment adherence during public address (MOHSS, 2012a).

Element 2: Access to a quality-assured network of sputum smear microscopy

The laboratory network should be nationwide accessible to patients in the primary health care services for early diagnostics sputum smear microscopic and subjected to regular control (MOHSS, 2012a).
Element 3: **Standardized short-course chemotherapy for all cases of TB under proper case management conditions, including directly observed treatment (DOT)**

The Namibian TB guidelines recommend the use of Directly Observed Treatment (DOT) for the management of TB. Directly Observed Treatment means that patients on tuberculosis treatment swallow their TB medicines in the presence of another person observing them do taking their medication (MoHSS, 2012a).

Various DOT options are available with the DOT strategy, and patients can choose to receive their treatment under supervision at the health facility, at the workplace, or under supervision and support of a guardian based at home or community-based DOT supporter (MoHSS, 2012a). Service providers are expected to discuss the possible options of the DOT strategy to patients at the onset of treatment to ensure the preference of treatment choice of the patient.

The DOT strategy is aimed at ensuring that patients adhere to their TB treatment. The term “adherence” refers to the extent to which patients follow a prescribed regimen (MoHSS, 2012a). Non-adherence is the inability or failure to take the prescribed treatment. Keeping clinic appointments and counting pills when patients show up at the clinic or are visited by the health worker are some of the ways to measure adherence (MoHSS, 2012a).

Patients who miss their daily, weekly or two weekly medicines collection are being traced and put back on their treatment, while those who interrupted their treatment
for two consecutive months are recorded as defaulters (lost to follow up) (MoHSS, 2012a; WHO, 2011).

Adherence to TB treatment requires active patient involvement, and collaboration between patient and health-care providers in managing their treatment. The extent of treatment adherence may be facilitated by positive or negative attributes related to the health system, social/family issues, personal factors, and drug factors for example, medication side-effects are negative drug attributes while a fixed-dose combination is a positive drug attribute in relation to treatment adherence (MoHSS, 2012a). Empowerment of people with TB, and communities, through advocacy, communication and social mobilization as well as patient and community participation in TB care are important in facilitating treatment adherence using the DOTS approach (MoHSS, 2012a).

**Element 4: Uninterrupted supply of quality-assured anti-TB medicines**

The pharmaceutical services should sustaining uninterrupted medicine supply by ordering enough TB medications. The WHO recommends the use of fixed-dose combinations (FDCs) as they thought to prevent acquisition of drug resistance due to inadequate therapy, which may occur with separate (‘loose’) medications. With FDCs, the number of tablets is less and may thus encourage patient adherence.

**Element 5: Recording and reporting system enabling treatment outcome assessment of all patients and assessment of overall programme performance**

The establishment of a reliable recording and reporting system is an essential part of DOTS strategy. The different forms/registers are used to record the individual
patient’s data, including information on treatment outcomes, which used to compile quarterly treatment outcomes in cohorts of patients (MOHSS, 2012a). These data, when compiled and analyzed, can be used at the health facility level to monitor treatment outcomes, at the district level to identify local problems as they arise, at national level to ensure consistently high-quality TB control across regionally, nationally and internationally to evaluate the performance of each country (WHO, 2017).

2.5 Tuberculosis cause, transmission, risks factors and signs and symptoms

In Namibia TB is almost always caused by *Mycobacterium tuberculosis* (*M.tb*); infections caused by other bacteria are rare. *M. tb* is transmitted from an infectious patient primarily through inhaled by the contact (*droplet transmission*) (MoHSS, 2012a). The inhaled bacilli settle in the lung, and cause infection (*primary infection*). In most cases, the bacilli are contained by the body’s immune system and remain dormant for the rest of the person’s life without any further consequences. Individuals with compromised immunity systems may develop TB disease at any point in their life. Mains risks for transmission of TB at population level include poor living and working conditions, and factors that impair the host’s immune system, such as HIV infection, malnutrition, smoking, diabetes, alcohol abuse and indoor air pollution (MoHSS, 2012a). Addressing these factors is crucial to eliminated achieving the goals of eliminating TB as a public health problem in Namibia (MoHSS, 2012a).
Pulmonary tuberculosis is recognized by most common signs and symptoms such as persistent cough for 2 weeks or more, coughing up blood, chest pain, night sweats, shortness of breath, loss of appetite and loss of weight (MoHSS, 2012a).

2.6 Knowledge of patients about Tuberculosis

Tuberculosis treatment should be commenced immediately when the person diagnosed with TB. The treatment is taken for a minimum of six months in a new uncomplicated TB case and it can be taken for longer than twenty-four months in complicated TB case. Recommended regimes for new and previous treated TB patients in Namibia are as following:

- Standard regime for new TB patients is initial phase of 2 months of RHZE daily, followed by the continuation phase of 4 months of RHE daily (total six months) (MoHSS 2012a, p. 34).

- Previous treated TB patients are treated with retreatment regime with 1st line medicines which is initial phase of 2 months of RHZES daily, followed by 1 months of RHZE, followed by continuation phase of 5 months of RHE daily (total 8 months) (MoHSS 2012a, p. 35).

- Drug resistance – TB regimes all patients on treatment for DR-TB should admitted in hospital during intensive phase, or at least until smear or culture conversion.

Tuberculosis medicine has many side effects, such as nausea and vomiting, yellow skin and eyes (jaundice), tingling and numbness in the hands and feet and skin rashes among others (MoHSS, 2012a), therefore patient diagnosed with TB need to know these and report any experienced side effects for management.
Although tuberculosis treatment is provided free of charge. It is quite a challenge for most of the patients to take daily medicines for a period of 6 to 8 months or 24 months. There is a need for ongoing psychological support from the clinician, nurses, close relative and the community (employer in particular) in order for the patient on TB treatment to adhere to the treatment (MoHSS, 2012a).

Patients who fully understand their disease and its treatment are more likely to complete their treatment; therefore, health workers are required to discuss with the patient the diagnosis and treatment prior to starting tuberculosis treatment (MoHSS, 2012a).

Poor knowledge may be a cause of delay in seeking treatment. In a study done in Mpwapwa district, central Tanzania it was reported that the community had a low knowledge on the causes and the transmission of tuberculosis (Mangesho et al., 2012). Similarly, a study done in Ethiopia showed that 33% of the patients interviewed believed that TB patients must always be admitted for treatment and 39.9% knew that anti-TB drugs are freely dispensed; 20.8% and 22.6% of the respondents mentioned traditional medicine and the use of holy water respectively, as a cure for TB. Wrong perceptions and poor knowledge regarding TB treatment influence treatment success (Kura, Gedif & Tadesse, 2010).

A study in Juba city, South Sudan indicated that 80.45% of the respondents were not knowledgeable on cause of TB, 52% did not know signs and symptoms, 39.2% did not know overall treatment duration and 54.9% did not know the importance of adherence to treatment; which shows that defaulting might be caused by poor TB knowledge (Kenyi et al., 2014)

In Kigali, Rwanda a cross- sectional quantitative study carried out to evaluate
knowledge, attitude and practices towards TB infection among patients diagnosed with TB indicated participants had good TB knowledge with 59.9%, while 40.1% of the participants had poor TB knowledge. Poor responses were on the signs and symptoms regarding coughing up blood and shortness of breath, which were 37.2% and 25.1% respectively (Chinenye, 2015).

Bati, Legesse and Medhin (2013) in a study in Itang Special District, Gambella Region, South Western Ethiopia regarding community knowledge, attitudes and practice about tuberculosis, indicated that the causes, prevention thereof, and signs and symptoms were not well known by community members. Participants indicated that pulmonary tuberculosis is caused by alcohol consumption (42.7%), smoking (13.9%), exposure to cold air (16.6%), and germs (3.3%) (Bati et al., 2013). The same study revealed that 29.2% of the participants mentioned hygiene, as a means of preventing transmission of tuberculosis and 41% believed avoiding smoking is a preventative measure for TB transmission. In the same study only 9.9% of the participants indicated that coughing for two weeks or more is one of the major signs and symptoms of pulmonary tuberculosis (Bati et al., 2013). This study indicates that knowledge about TB varies among TB patients and generally were poor.

A study in Nigeria, including 47, 193 respondents, by Agho, Hall and Ewald (2014) on factors associated with respondents’ knowledge of and attitude towards TB, revealed that 36.5% of the respondents believed TB could be spread through sharing utensil and 3.9% of them thought TB could be spread through touching a person with TB.

These misconceptions about cause of TB is also shared in a study in Namibia by Mainga (2008) in the Khomas region, where twenty-four percent of the respondents indicated tuberculosis could be transmitted by touching a TB patient, while 33%
stated that TB could be transmitted through talking to a TB patient, 30% said TB could spread by using the same utensil, while 15% said TB could spread through polluted water. Poor knowledge among TB patients may lead stigma and to poor adherence to treatment.

2.7 Attitudes and practices relate to TB treatments adherence

An attitude refers to the way of feeling or acting toward a person, thing or situation, whereas practice refers to the way of doing something in a particular situation (Wehmeier et al., 2010). Many studies have examined the attitudes and practices of TB patients with regards to their TB treatment as these have been known to have an effect on their adherence to the prescribed treatment.

A study in India reported that about 16% of 538 TB patients were non-adherent (Bagchi, Ambe & Sathiakumar, 2010). This study pointed out that factors affecting non-adherence among newly-diagnosed patients were: travel-related factors and smoking during treatment; while those patients on TB treatment indicated alcohol consumption during treatment and lack of adequate drug supply as common factors contributing to non-adherence (Bagchi et al., 2010). In another study done by Tachfouti et al. (2012), in Morocco, the reasons given by the respondents for prematurely stopping their treatment were: they feel better (72.9%); long duration on the treatment (34.1%); and difficulty to access health facility (4.7%).

A study reviewing information from the researches done in sub-Saharan Africa countries on compliance to anti-tuberculosis treatment and risk factors for defaulter treatment reveals a high rate of loss to follow up (Castelnuovo et al., 2010). The proportion of patients defaulting varied from 11.3% to 29.6%. This study indicated
the majority of the patients defaulted treatment during the continuation phase. The common risk factors associated with defaulting reported on the reviewed studies were: distance from the hospital, not being on the first course of TB medications, lack of repeated smears, unit transfer after the intensive phase, experiencing side effects and lack of family support (Castelnuovo et al., 2010). The study concluded that consequences of non-adherence to TB treatment may be severe for individuals who may become multi-drug resistant or even die of the disease, and poor treatment adherence may jeopardize public health (Castelnuovo et al., 2010).

Disclosure of TB diagnosis to family and close associates has bearing on adherences to TB treatment. In a study done in South Sudan about 91% of tuberculosis patients were not willing to freely reveal diagnosis of TB to members of the family and the community (Kenyi et al., 2010). This is indicating that patient are afraid and might be avoiding stigmatization by keeping their diagnosis secret. This may also contribute to non-adherence, as they may not have family support which is crucial for patients on chronic treatment.

A systematic review intended to combine factors associated with tuberculosis treatment non-adherence and lost to follow-up among tuberculosis patient with/without HIV in developing countries by Tola et al (2015) revealed that when patients feel better after few weeks on treatment, tobacco and alcohol use, knowledge deficit about duration of treatment were some behavioral factors associated with non-adherence and lost to follow up.

In the same study it was concluded that other factors such as poor communication between patient and health care worker, distance from treatment center and side
effect of both TB and HIV medications; were associated with TB treatment non-adherence and lost to follow up (Tola et al., 2015). In another similar study done by Chani (2010) at Andara in the Kavango region Namibia, long waiting hours at the clinic, non-availability of food and lack of knowledge of TB or treatment were found significant factors contributing to noncompliance.

Another study in North Gondar, Ethiopia by Adane, Alene, Koye and Zereke (2013), it revealed that the overall non-adherence for the last one-month of treatment was 10% and for the last four days was 13.6%. The most common reasons of missing pills were forgetfulness (34%); vomiting (24%); travelling to other places (17%); feeling better (3.6%); and 6% of the participants were substance users (Adane et al., 2013).

Esmaer et al. (2013), in a study carried out in Amhara region, Ethiopia found that the main reason for people to delay in seeking TB treatment by TB patients were no access to transport; and high cost of transport to the health facilities or treatment centres. It is therefore important to note that a number of factors contribute to TB patient adhering or not adhering to their prescribed treatment and at times a combination of factors impact on a patient’s ability and willingness to adhere to the treatment.

2.8 Summary

This chapter has reviewed the relevant literature on knowledge, attitude and practice of TB patients related to their treatment. In most studies conducted to determine patients’ knowledge, attitudes and practices with regard to tuberculosis treatment
adherence, it was noted that many of the patients had low level of knowledge on TB and the treatment of TB and this might negatively influence the attitudes and practices of tuberculosis treatment adherence. Patients with low level of knowledge about TB and TB treatment, often interrupt treatment. Poverty, alcohol use, homelessness, lack of support, discrimination, long distance to health facilities, and treatment side effects were also highlighted as important factors associated with poor TB treatment adherence. The next chapter will present the methodology that the researcher followed to carry out this study.
CHAPTER 3
RESEARCH METHODOLOGY

3.1 Introduction
This chapter discusses the methodology used to conduct this study, defines the research design, and describes the study population and the sample selection criteria, the research instruments, validity and reliability, data collection procedure, data analysis as well as the ethical considerations.

3.2 Research design

A research design is a plan and procedure that is adopted by the researcher to answer the research question, validly, objectively, accurately and economically. Through a research design, the researcher decides and communicates to others the decisions regarding what study design the researcher proposes to use, how he/she is going to collect information from respondents, how respondents will be selected, how information collected will be analyzed and how the findings will be communicated (Kumar, 2011).

In this research study, a quantitative research approach with cross sectional analytical design were utilized to analyze the knowledge, attitudes and practices of patients who were on tuberculosis treatment in Keetmanshoop district.
3.2.1 Quantitative study

Quantitative research is a formal, objective, systematic process for generating numeric information about a situation. It is conducted to test and describe new situation or events, examine relationships among variables and determine the effectiveness of treatments or interventions on selected health outcome (Grove, Gray & Burn, 2015). This study focused on assessing and describing the respondents’ knowledge, attitudes and practices related to treatment adherences as well as examine any association between different determined variables. The quantitative design was selected by the researcher to enable the quantification of the magnitude of the problem and enable the correct public health approach that can be adopted, based on the research outcome.

3.2.2 Cross-sectional study

A cross-sectional study is a non-experimental research design that looks at data at one point in time, that is, in the immediately present (Brink, Walt & van Rensburg, 2013; LoBiondo-Wood & Haber, 2002). It involves examining a group of subjects simultaneously in various stages of development to describe the changes in a phenomenon across these stages (Grove et al., 2015). In this study the researcher utilized a cross sectional design as data were collected from the research participants during a certain point in time and the data was then used to assess their knowledge, attitude and practices related to TB treatment adherance. This design was suitable as it allowed the researcher to have a snapshot of the situation and will enable planning for any possible intervention.
3.3 Study settings and population

Population is a particular set of individuals or elements that possess the characteristics that are intended to answer the research question (Grove et al., 2015). In this study patients who were on tuberculosis treatment represented the population.

The target population is the entire set of individuals or elements who meet the sampling criteria. For this study the target population was all TB patients on TB-DOTS at Keetmanshoop district, //Karas region. Keetmanshoop district is found in the //Karas region of southern Namibia. This region has a hot desert climate. Keetmanshoop district covers an area of 161,541 square kilometers with a total population of 77,421 according to the Namibian census 2011. It consists of both urban and rural areas with sparse population residing on the farms (Namibia Statistic Agency, 2011).

The district has one hospital, which serves as the regional hospital, two health centres and four PHC clinics. The PHC clinics include A, B, C and D clinic, while the health centres are A and B. TB patients are served at the health facilities and at the TB DOT point (a container at the location in Keetmanshoop peri-urban) (MoHSS, 2016).

Patients who registered during the third quarter (July to September 2016) on the TB program at Keetmanshoop District were 93 (MoHSS, 2016). This cohort of TB patients on treatment was used, as it was the most recent available statistic during the data collection period. Patients diagnosed with tuberculosis usually come to designated health facility to collect their tuberculosis medicines either on a daily
basis, or after every two weeks or monthly to refill their medicines, while those hospitalized drink their medications under nurses’ supervision in the ward.

### 3.4 Sampling

A sample is the selected elements (people or objects) chosen for participation in a study; and people involved in a study are referred to as subjects or participants or respondents (University of Missouri, n. d). Researchers often decide to select a sample of the population to study because he/she may not have access to the whole population or it may be uneconomical to study the whole population. The sampling method could be probabilistic (random) and non-probabilistic (nonrandom). Probabilistic sampling methods are designed to increase representativeness and decrease systematic bias in quantitative and outcome studies (Grove et al., 2015). For this study the researcher adopted a systematic random sampling approach as it equally ensures representativeness of the population in the sample. The systematic sample design was used because the number and listing of the target population was known and the sample size was calculated, although some argue that this procedure does not actually give each element of the population an equal opportunity to be included (Grove et al., 2015). The systematic sampling provides random but not equal chance for inclusion of participants in the study. This method is commonly used in nursing research when the sample size is small (Grove et al., 2015). Probabilistic systematic sampling also called interval sampling method was used to select every second patient who visited the health facilities for tuberculosis treatment during data collection period for participation in the study.
Sample size: This refers to the number of subject in a sample (Polit & Beck, 2010). The mathematical formula the researcher used to determine sample size was \( n = \frac{N}{1 + Ne^2} \) (Israel, 2009). The researcher used the formula to estimate sample size for the study, where \( n \) is sample size, \( N \) is population (93), \( e \) is the margin error considered by study (0.05 or 5%). The calculated sample size \( n = 93/1 + 93(0.05)^2 \), gave a sample size of 76 participants.

Inclusion and Exclusion criteria

The Inclusion criteria were:

- Patients on TB treatment aged 18-60 years, attending treatment at the seven health facilities in Keetmanshoop district. The researcher decided on this age group, as these patients are more likely to recall what they have been told at the health facility.

- Patients who were on TB-DOT treatment for at least one month at Keetmanshoop District Health facilities were included. Being on TB treatment for at least a month would give the patient some experience and knowledge of TB and the treatment.

Exclusion criteria were: Patients on tuberculosis treatment who were of the age below 18 years and above the age of 60 years as well as patients on TB DOT treatment at districts other than Keetmanshoop health district. Patients who had already completed TB treatment were also not included in the study.
3.5 Data collection Research Instruments

The researcher developed a questionnaire with closed-ended questions for the study. The questions for the research questionnaire were constructed from the relevant literature review and some were adopted from the Namibia TB management guideline. Close-ended questions were used to enable the participants to easily select the options as it related to them and to facilitate easy analysis thereafter based on the quantitative approach to the research.

The questionnaire comprised of 3 sections:

Section A - Demographic data of the participants;
Section B – Knowledge. – Patients’ basic information with regards to TB as a disease and its treatment; and,
Section C - Questions about the patients’ attitudes and practices. The questions were framed to enable patients to be assessed on positive and negative attitudes and practices such as their willingness to take TB treatment, adherence to treatment and reason for non-adherence to TB treatment.

3.6 Validity and reliability

Validity is the degree to which an instrument measures what it is supposed to measure (Maree, 2009; Polit & Beck, 2010). Forms of validity include content validity, criterion-related validity and constructs validity. Content validity is defined as the extent to which the instrument covers the complete content of the particular construct that it is set out to measure. In this case, the content in question is the research objective (Maree, 2009). To measure validity, the questions for the research
questionnaire were constructed from relevant literature reviews. The questions were framed to include items that covered the research objectives. The questionnaire was reviewed by the research Supervisor and two experienced researchers and changes were made prior to use for the final data collection. The pilot test helped in ensuring construct validity and was done on ten patients who were on tuberculosis treatment at Keetmanshoop district to measure their knowledge, attitudes and practices related to treatment adherence.

Reliability refers to the degree of accuracy and consistency with which an instrument measures the attribute it is designed to measure (Polit & Beck, 2010). Maree (2009) also described reliability as the extent to which a measuring instrument will give the same results consistently. Therefore, it implies that the reliability of the instrument is the same over time. The TB field health promoters who helped in administering the questionnaire were trained in understanding the questionnaire and administering it consistently during the data collection. This ensures the reliability of the data collected. Piloting of the questionnaire assisted in refining terms to ensure the respondents easily understood the terms and answered correctly as it related to them.

3.7 Pilot test

A pilot test is a mini-study used to determine reliability and validity of the research instrument (Burns & Grove, 2009). For this study pilot testing was carried out in Keetmanshoop district at the Keetmanshoop hospital, A and B Clinic with 10 questionnaires administered and adjustment were made on section A, whereby a question on the duration on treatments was added. The TB patients who participated
in the pilot test were excluded in the main study. All those who participated in the pilot were identified and informed that they will not participate in the main research.

3.8 Data collection procedure

Data were collected between October and December 2016. The researcher engaged the services of six TB Field Health Promoters, as research assistants, who usually work in the health facilities and in the community on TB services. These research assistants were trained by the researcher to administer the questionnaire. The research assistants were trained on the research objectives, the questionnaire items, participant enrollment, confidentiality and importance of informed consent. The research assistants were informed to explain the research purpose and obtain a written informed consent from each of the respondents. Grove et al., (2015, p.506) defines interview as a structured or unstructured oral communication between the researcher and subject or study participant during which information is obtained for a study. The researcher and research assistants interviewed the respondents as they came to collect their daily or monthly TB treatments at Keetmanshoop district health facilities. Once a patient who met the criteria was identified, every second patient in that category was invited to participate in the study and once agreed, interviews were carried out in a room identified in the health facility for this purpose. Data were collected over a period of two and a half months until the calculated sample size was reached.

3.9 Data analysis

Data analysis is ‘the process of organizing the data in an orderly, coherent fashion so that the researcher can discern patterns and relationships’ (Brink, 2010). Data were
entered in a Microsoft Excel software programme and analysis done using Epi-info software version 7. Analysis consisted of initial univariate analysis, which looked at the frequencies and proportions of different variables. Bar graphs, pie charts and tables were used to present the data. A bi-variate analysis was used to determine the association between key variables such as gender, age, knowledge, attitudes and practices related to adherences. A chi-squared test was used to test for relationships between the dependent (level of knowledge, attitudes and practices) and independent (demographic information) variables of the study population.

3.10 Ethical consideration

Approval for the study was obtained from the University of Namibia Postgraduate Studies Committee (PGSC) and permission to conduct the study was also obtained from the Ministry of Health and Social Services Research Ethics Committee (appendix A & B) as well as the Research Ethics Committee of the University of Namibia. The researcher also obtained permission from the //Karas Regional Directorate of the Ministry of Health and Social Services and Keetmanshoop District Management Committee before commencing with data collection. Full information about the purpose of the study and how the participants will contribute to the body of knowledge that will assist in increasing adherence to TB treatment were provided to the study participants.

Participants were informed that they have the right to decide whether to participate or not and also have the right to withdraw from the study anytime, or to refuse to give information and ask for clarification about the purpose of the study. Their refusal will in no way affect their continued access to treatment and other services at the hospital and clinics in the district. Participants were also assured that their
identity would remain anonymous in presentations, reports, and publications of the study (Brink, 2010). Informed written consent was obtained from the study participants.

Participants were assured of their self-determination by informing them that their participation is done voluntarily. No participant’s name was used; special number or codes were issued in order to ensure anonymity. For confidentiality the research information will not be divulged to unauthorized people. The participants were not exposed to any physical, psychological and emotional harm and were reassured and treated in a friendly way during the interviews which were conducted in a quiet environment in a private room in the health facilities (Polit & Beck, 2010). The participants were informed that they might not directly benefit from the research, as there were no incentives given, but their valuable information will be helpful for the future patients’ intervention with regards to treatment adherence.

3.11 Summary

This chapter discussed the research methodology that was used in the study. A quantitative method was found to be the most appropriate approach for this study. The discussion in this chapter focused on the research design, population, sampling, research instruments, data collection procedure, data analysis and the issue of research ethics. The next chapter deals with the result of the analysis of the data and findings from the research.
CHAPTER 4

PRESENTATION OF RESULTS

4.1 Introduction

This chapter deals with the presentation of the research findings. Data analysis was done by means of Epi-info software version 7. A total number of 76 patients on tuberculosis treatment were enrolled in the study and provided data covering their socio-demographic data, knowledge, attitudes and practices pertaining to their tuberculosis treatment disease at Keetmanshoop district health facilities. The presentation is therefore structured along this line and the further analysis that examined relationship between the key variables.

4.2 Section A: Socio-demographic Data

The demographic data of the respondents was collected to determine their background in relation to knowledge, attitudes and practices of patients who were on tuberculosis treatment at Keetmanshoop district. This information included the age, sex, whether they had attended school and education level, marital status, residential area, employment status and occupation. Table 4.1 below displays the demographic data of the respondents in variables, strata, frequency and percentages.
Table 4.1: Respondents Demographic data (N=76)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Strata</th>
<th>Frequency (Number)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Male</td>
<td>44</td>
<td>57.89</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>32</td>
<td>42.11</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>76</strong></td>
<td><strong>100</strong></td>
</tr>
<tr>
<td>Attended School</td>
<td>Yes</td>
<td>70</td>
<td>92.11</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>6</td>
<td>7.89</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>76</strong></td>
<td><strong>100</strong></td>
</tr>
<tr>
<td>Residence</td>
<td>Rural</td>
<td>33</td>
<td>43.42</td>
</tr>
<tr>
<td></td>
<td>Urban</td>
<td>33</td>
<td>43.42</td>
</tr>
<tr>
<td></td>
<td>Peri-urban (Shanty town)</td>
<td>10</td>
<td>13.16</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>76</strong></td>
<td><strong>100</strong></td>
</tr>
<tr>
<td>Employed</td>
<td>Yes</td>
<td>24</td>
<td>31.58</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>52</td>
<td>68.42</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>76</strong></td>
<td><strong>100</strong></td>
</tr>
<tr>
<td>Duration on treatment</td>
<td>One month</td>
<td>10</td>
<td>13.16</td>
</tr>
<tr>
<td></td>
<td>Two months</td>
<td>16</td>
<td>21.05</td>
</tr>
<tr>
<td></td>
<td>3 months and more</td>
<td>50</td>
<td>65.79</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>76</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
4.2.1 Age of respondents

As it appears in figure 4.1 below, the majority of the respondents were under the age category 29 to 39 years (34.21%, n=26) while the least represented were those aged 51 – 60 years (7.89%, n=6).

![Distribution of respondents by age group](image)

**Figure 4.1: Distribution of respondents by age group (N=76)**

4.2.2 Gender of respondents

The majority of the respondents in this study were male (57.89%, n=44) and female were 42.11% (n=32). See table 4.1.

4.2.3 School attendance and level of education

The respondents were asked whether they had attended school or not of which 92.11% (n=70) of the respondents indicated “yes” and 7.89% (n=6) indicated “no”. With regard to educational level of the respondents 60.53% (n= 46) of respondents attained secondary level, 28.95% (n=21) had a primary education level, and only 2.63% (n=2) had attained tertiary level (See Figure 4.2).

35
Figure 4.2: Distribution of the respondents by educational level

4.2.4 Marital status

The majority of the respondents (64.47%, n= 49) were single. Only 15.79 % (n=12) of the respondents were married, while 10.53% (n=8) were divorced, and 5.26% (n=4) were widow/widower, while 3.95% (n=3) were co-habiting without being legal married (See Figure 4.3).

Figure 4.3: Distribution of respondents by marital status (N=76)
4.2.5 Respondents’ place of residential

In this study an equal number of the respondents were living in urban and rural area (43.42 %, n=33) respectively and 13.16 % (n=10) of the respondent were living in (peri-urban) shantytowns.

4.2.6 Employments status

Only 31.58% (n=24) of the respondents were employed and 68.42 % (n=52) of the respondents were unemployed.

4.2.7 Occupation

As indicated below the majority of the respondents were unemployed 68.42% (n=52) and among those who were employed majority were in informal sector 19.74% (n=15).

![Employment status of respondents](image)

**Figure 4.4:** Employment status of respondents
4.2.8 Duration on treatment

Respondents were asked to indicate how long they have been on tuberculosis treatment. As shown in table 1 above, 13.16% (n=10) were on the tuberculosis treatment for one month, 21.05% (n=16) were on the treatment for two months and 65.79% (n=50) were on treatment for three months or more.

4.3 Knowledge of respondents about TB disease and its treatment (Section B)

This section presents the findings on the knowledge of the patients concerning tuberculosis and TB treatment with regards to signs and symptoms, knowledge of risk factors for tuberculosis transmission, the outcome of voluntarily interrupting treatment and knowledge whether tuberculosis is curable.

4.3.1 Respondents knowledge of tuberculosis signs and symptoms

- Persistent cough for 2 weeks or more

Figure 4.5, illustrates that the majority of respondents (98.68%, n=75) agreed that persistent coughing for two week or more is an indication for the signs and symptoms of tuberculosis while 1.32% (n=1) disagreed that persistent coughing for two week or more is a sign and symptom of tuberculosis.

- Coughing up blood

Of the 76 respondents, 75% (n=57) agreed that coughing up blood is a sign and symptom of tuberculosis, 22.37% (n=17) disagreed and 2.63% (n=2) did not know.
• Chest pain

Among the respondents 90.79% (n=69) agreed that chest pain is a sign and symptom of tuberculosis, 9.21% (n=7) disagreed.

• Night sweats

Out of the 76 respondents 81.58% (n=62) agreed that night sweats is a sign and symptom of tuberculosis, 15.79% (n=12) disagreed and 2.63% (n=2) did not know.

• Shortness of breath

Of all the respondents, 85.53% (n=65) agreed that shortness of breath is a sign and symptom of tuberculosis, 14.47% (n=11) disagreed and none did not know.

• Loss of appetite

Loss of appetite is a non-specific symptom that is also associated with TB. Among the respondents 66 out of the 76 (86.84%) agreed that this could be a sign and symptom of tuberculosis while 8 respondents (10.53%) disagreed and only two respondents were not sure whether this symptom is associated with TB or not.

• Weight loss

Weight loss is also a non-specific symptom that is also associated with TB. Among the respondents 71 out of the 76, (93.42%) agreed that this could be a sign and symptom of tuberculosis, while 4 respondents (5.26%) disagreed and only one respondent was not sure whether this symptom is associated with TB or not.
• Tiredness or weakness

Of the respondents, 86.84% (n=66) agreed that tiredness or weakness is a sign and symptom of tuberculosis, 13.16% (n=10) disagreed and none did not know.

Figure 4.5 below summarizes the knowledge (agree by the respondents) on the signs and symptoms of TB.

![Knowledge of signs and symptoms of TB](image)

**Figure 4.5: Respondent knowledge of signs and symptoms of tuberculosis (TB) disease (N=76)**

From the data presented in figure 4.5 above, the three most commonly known signs and symptoms of TB indicated by the respondents included persistent cough for 2 weeks or more, weight loss and chest pain. The least cited symptoms and signs of TB, indicated by respondents included night sweats and coughing up blood.
4.3.2 Respondents knowledge of risk factors for tuberculosis transmission

Table 4.2: Respondents’ knowledge of risk factors for transmission of tuberculosis (N=76)

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>Agree (%)</th>
<th>Disagree (%)</th>
<th>Don’t Know (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drinking from the same cup with others</td>
<td>42 (55.26)</td>
<td>29 (38.16)</td>
<td>5 (6.58)</td>
<td>76 (100)</td>
</tr>
<tr>
<td>Shaking hands</td>
<td>30 (39.47)</td>
<td>41 (53.95)</td>
<td>5 (6.58)</td>
<td>76 (100)</td>
</tr>
<tr>
<td>Coughing without covering mouth</td>
<td>74 (97.37)</td>
<td>2 (2.63)</td>
<td>0</td>
<td>76 (100)</td>
</tr>
<tr>
<td>Gathering at social events</td>
<td>49 (64.47)</td>
<td>25 (32.89)</td>
<td>2 (2.63)</td>
<td>76 (100)</td>
</tr>
<tr>
<td>Sharing a room with more than 5 people</td>
<td>58 (76.32)</td>
<td>16 (21.05)</td>
<td>2 (2.63)</td>
<td>76 (100)</td>
</tr>
<tr>
<td>Smoking tobacco</td>
<td>53 (69.74)</td>
<td>20 (26.32)</td>
<td>3 (3.95)</td>
<td>76 (100)</td>
</tr>
<tr>
<td>Drinking alcohol</td>
<td>45 (59.21)</td>
<td>29 (38.16)</td>
<td>2 (2.63)</td>
<td>76 (100)</td>
</tr>
<tr>
<td>Working on road construction exposed to dust or cement</td>
<td>58 (76.32)</td>
<td>17 (22.37)</td>
<td>1 (1.32)</td>
<td>76 (100)</td>
</tr>
</tbody>
</table>
Table 4.2 above indicates the respondents’ knowledge of tuberculosis transmission risk factors. The risk factors were formulated to include both positively associated factors with TB and those not associated with TB in order to properly assess the respondents’ knowledge of TB transmission.

- **Drinking from the same cup with others**

The majority of the respondents (55.26%, n=42) agreed with the statement that drinking from the same cup with others is a risk factor for transmission of tuberculosis, while 38.16% (n=29) disagreed and 6.58% (n=5) did not know.

- **Shaking hands**

Of the respondents, 39.47% (n=30) agreed that shaking hand is a risk factor of transmitting tuberculosis, however 53.95% (n=41) disagreed and 6.58% (n=5) did not know.

- **Coughing without covering mouth**

Tuberculosis is an airborne disease, which can spread when a TB patient cough without covering his/her mouth. Seventy-four respondents (97.37%) agreed with the statement that coughing without covering mouth is a risk factor of transmitting tuberculosis and 2.63 % (n=2) disagreed.

- **Gathering at social events**

Of the respondents, 64.47% (n=49) agreed that gathering at social events is a risk factor of transmitting tuberculosis, 32.89% (n=25) disagreed and 2.63 % (n=2) did not know.
- Sharing a room with more than 5 people

The risk of the transmission of airborne infection is higher in small-enclosed poorly ventilated or overcrowded room. Fifty-eight of the respondents (76.32%) agreed that sharing a room with more than five people is a risk factor of transmitting tuberculosis, 21.05% (n=16) disagreed and 2.63 % (n=2) did not know.

- Smoking tobacco

Of the respondents, 69.74% (n=53) agreed that smoking tobacco is a risk factor of transmitting tuberculosis, 26.32% (n=20) disagreed and 3.95 % (n=3) did not know.

- Drinking alcohol

Alcohol consumption is associated with many adverse health effects. Of the respondents, 59.21% (n=45) agreed that drinking alcohol is a risk factor of transmitting tuberculosis, 38.16% (n=29) disagreed and 2.63% (n=2) did not know.

- Working on road construction exposed to dust or cement

Of the respondents, 76.32% (n=58) agreed that working on road construction exposed to dust or cement is a risk factor of transmitting tuberculosis, 22.37% (n=17) disagreed and 1.32% (n=1) did not know.

4.3.3 Knowledge of Outcome if TB treatment is interrupted

The respondents had to indicate whether they agreed, disagreed or did not know about the possible outcome for treatment interruption: treatment failure, drug resistance and death.
Table 4.3: Knowledge of Outcome if TB treatment is interrupted (N=76)

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Agree (%)</th>
<th>Disagree (%)</th>
<th>Don’t Know (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment failure</td>
<td>72 (94.74)</td>
<td>2 (2.63)</td>
<td>2 (2.63)</td>
<td>76 (100)</td>
</tr>
<tr>
<td>Drug resistance</td>
<td>68 (89.47)</td>
<td>6 (7.89)</td>
<td>2 (2.63)</td>
<td>76 (100)</td>
</tr>
<tr>
<td>Death</td>
<td>71 (93.42)</td>
<td>2 (2.63)</td>
<td>3 (3.95)</td>
<td>76 (100)</td>
</tr>
</tbody>
</table>

- Treatment Failure

Most of the respondents (94.74%, n=72), agreed that voluntary treatments interruption leads to treatment failure, while 2.63 % (n=2) disagreed and those who did not know were 2.63 % (n=2).

- Drug resistance

Of the respondents 89.47% (n=68), agreed that voluntarily interrupting treatment results in drug resistance. However 7.89 % (n=6) disagreed and 2.63 % (n=2) did not know.

- Death

Of the respondents 93.42% (n=71), agreed that death may occur as a result of voluntarily interrupting treatment. However 2.63 % (n=2) disagreed and 3.95 % (n=3) of the respondents did not know whether death could occur as a result of voluntarily interrupting treatment.

4.3.4 Is tuberculosis disease curable?

Respondents were asked to indicate whether tuberculosis is curable or not.
Table 4.4: Responding to whether tuberculosis is curable. (N=76)

<table>
<thead>
<tr>
<th>TB is curable</th>
<th>Frequency (Number)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>73</td>
<td>96.05</td>
</tr>
<tr>
<td>No</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Don’t Know</td>
<td>3</td>
<td>3.95</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>76</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

As indicated in Table 4.4 above, 96.05% (n=73), indicated “yes” to the question whether tuberculosis is curable and only 3.95 % (n=3) of the respondents did not know whether tuberculosis is curable.

4.4 Attitudes and practice of patients who were on tuberculosis treatment in Keetmanshoop district (Section C)

In this section the results of the respondents with regards to attitudes and practices when diagnosed with tuberculosis as well as practices that may impact on their treatment is presented.

Attitudes of patients who were on tuberculosis treatment in Keetmanshoop district

4.4.1 Respondents’ reactions when she/he was diagnosed with tuberculosis

Figure 4.6 below, indicates the respondents’ reactions when they were diagnosed with tuberculosis.
Figure 4.6: Respondents’ attitude and reaction when diagnosed with TB (N=76)

- Felt embarrassed and isolated

Of the respondents 26.32% (n=20), agreed that they were feeling embarrassed and isolated when they were diagnosed with tuberculosis, 72.37% (n=55) disagreed that they felt embarrassed and isolated and 1.32% (n=1) did not know whether he/she felt embarrassed and isolated.

- Feared family will contract TB from him/her

As TB is a communicable disease 60.53% (n=46) of the respondents agreed that they feared to transmit tuberculosis to their family, while 39.47% (n=30) did not have such fears.
• Felt pity and cried

Twenty of the respondents (26.32%) agreed that they felt pity for themselves and cried, while the majority (68.42%, n=52) did not have such emotions and 5.26% (n=4) did not know whether the felt pity for themselves or not.

• Accepted it without worry

Majority of the respondents stated that they accepted being diagnosed with TB without worry because they knew that TB is treatable and can be cured and 6.58% (n=5) of the respondents disagreed with the statement.

• Other reaction

Seven of the respondents (9.21%) indicated that they experienced other reactions when they were diagnosed with tuberculosis. The following sentiments were expressed:

“I was afraid to die”
“I was feeling unlucky”
“I was afraid of losing friends”
“I was shocked and worried”
“I was thinking how did I get tuberculosis” and, “Why me?”

4.4.2 Did you tell your family members about your TB treatment?

Most of the respondents (97.37 %, n=74) stated that they informed their family members about being diagnosed with tuberculosis and only 2.63 % (n=2) of the respondents did not tell their family members about their tuberculosis diagnosis.
4.4.3 What were your family reactions when you informed them that you were on tuberculosis treatment?

Respondents were asked about their family reaction when they informed them that they were taking tuberculosis treatment. The possible family reactions were provided as option and respondents were asked to indicate whether they agreed, disagreed and did not know. Table 4.5 below presents the responses:

**Table 4.5: Family members’ reaction to news of patient’s TB disease (N=76)**

<table>
<thead>
<tr>
<th>Family member’s reaction</th>
<th>Agree (%)</th>
<th>Disagree (%)</th>
<th>Don’t Know (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wanted to stay away from patient</td>
<td>13 (17.11)</td>
<td>63 (82.89)</td>
<td>0</td>
<td>76 (100)</td>
</tr>
<tr>
<td>Encouraged patient to follow Doctor’s advice</td>
<td>74 (97.37)</td>
<td>2 (2.63)</td>
<td>0</td>
<td>76 (100)</td>
</tr>
<tr>
<td>Express willingness to remind patient to take his/her TB medicines</td>
<td>67 (88.16)</td>
<td>9 (11.84)</td>
<td>0</td>
<td>76 (100)</td>
</tr>
<tr>
<td>Felt it was not patient’s fault to get TB</td>
<td>65 (85.53)</td>
<td>11 (14.47)</td>
<td>0</td>
<td>76 (100)</td>
</tr>
<tr>
<td>Feared to be infected with TB</td>
<td>50 (65.79)</td>
<td>25 (32.89)</td>
<td>1 (1.32)</td>
<td>76 (100)</td>
</tr>
</tbody>
</table>

- Wanted to stay away from patient

Thirteen of the respondents (17.11%) agreed that their families wanted to stay away from them, while 82.89% (n=63) of the respondents disagreed that their families wanted to stay away from them.
• Encouraged patient to follow the doctor’s advice

Majority (97.37 %, n=74) of the respondents agreed that their families were showed support and encouraged them to follow their doctors’ advice, while only 2.63% (n=2) of the respondents did not agree with the statement.

• Family members were willing to remind patient to take his/her TB medicines

Sixty-seven (88.16%) of the respondents agreed that their families were willing to remind them to take medication every day, while 11.84 % (n=9) of the respondents did not agree with the statement.

• Felt it was not patient’s fault to get TB

A high number of the respondents (85.53 %, n=65) agreed that their families were not blaming them for getting infected with tuberculosis, while 14.47% (n=11) disagreed that their families felt that it was not their fault to get TB.

• Feared to be infected with TB

Fifty of the respondents (65.79 %) agreed that their families feared to be infected with TB bacteria, while 32.89 % (n=25) disagreed that their families feared to be infected with TB and 1.32% (n=1) did not know whether family feared to be infected with tuberculosis or not.

Practice of patients who were on tuberculosis treatment in Keetmanshoop district (Section C)

The following questions were used to assess the practice of patients on tuberculosis treatment in Keetmanshoop district.
4.4.4 Smoking and drinking alcohol

- Do you smoke?

This question was asked to determine whether the respondents do smoke and the responses showed that 39.47% (n=30) of the respondents were smokers and 60.53% (n=46) were not smokers.

- Do you drink alcohol?

The question was asked to determine whether the respondents were taking alcohol or not. Of the respondents 42.11% (n=32) indicated that they do consume alcohol and 57.89%, (n=44) indicated that they were not drinking alcohol.

4.4.5 How do you take your TB Medicines?

Table 4.6, indicates different places where the patient on tuberculosis treatment can take their daily medicine. The answers provided by the respondents are shown in table 4.6 below.

Table 4.6: How do you take your TB Medicines? (N=76)

<table>
<thead>
<tr>
<th>How TB medicine is taken</th>
<th>Frequency (Number)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient comes to clinic daily to drink medicine</td>
<td>31</td>
<td>40.79</td>
</tr>
<tr>
<td>At home, supervised by relative</td>
<td>27</td>
<td>35.53</td>
</tr>
<tr>
<td>At home, supervised by health extension worker</td>
<td>3</td>
<td>3.95</td>
</tr>
<tr>
<td>Hospitalized and medication given by nurse</td>
<td>12</td>
<td>15.79</td>
</tr>
<tr>
<td>Takes at home alone, no supervision</td>
<td>3</td>
<td>3.95</td>
</tr>
<tr>
<td>Total</td>
<td>76</td>
<td>100</td>
</tr>
</tbody>
</table>
Thirty-one (40.79%) of the respondents indicated that they travelled to the clinic to drink their pills on a daily basis, followed by 35.53% (n=27) who indicated that they take their tuberculosis medicines at home supervised by a relative or treatment supporter, while 3.95% (n=3) of the respondents took their tuberculosis medicine at home supervised by health extension worker. Twelve respondents (15.79%) were hospitalized and the nurses gave medications and 3.95% (n=3) of the respondents took their medicines at home alone without supervision.

4.4.6 Have you experienced any side effects of the medicines?

The respondents were asked to indicate whether they had experienced medicine side effects or not. Twenty-two respondents (28.95%) stated that they had experienced medicine side effects, but majority (71.05%, n=54) stated that they did not experience such side effects.

4.4.7 How did you manage the side effects?

Respondents who experienced medicine side effects were asked to indicate how they managed the side effects. Out of these 22 respondents, 22.73% (n=5) indicated that the medicine side effects disappeared without intervention applied, while for most of them (77.27%, n=17) they reported to health workers and none of them stopped taking their pills after they experienced side effects.

4.4.8 Have you ever missed your TB treatment?

This question was asked to determine whether respondents missed their treatment or not. One third of the respondents (33 %, n=25) had missed their treatment, whilst
67% (n=51) of the respondents said they took their medications without missing a dose.

Figure 4.7: Responses on the missing TB treatment (N=76)

<table>
<thead>
<tr>
<th>Number of times TB treatment missed</th>
<th>24% (n=6)</th>
<th>44%</th>
<th>24% (n=6)</th>
<th>8% (n=2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>missed for one time</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>missed for three days</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>for more than a week</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Patients on tuberculosis treatment who missed their treatment for a consecutive period of four weeks or a month is regarded as tuberculosis treatment defaulters.

Figure 8 below summarizes the finding.
4.4.10 The following reasons for missing doses were indicated

This question was answered only by the patients on tuberculosis treatment who had missed treatment (n=25). Patients could indicate more than one reason for interrupting TB treatment. The following reasons for missing doses were indicated. Options given to respondents were agreed, disagreed, or did not know for each of the possible reason provided. Figure 4.9 below shows the number of respondents who agreed with each of the options (n=25).
As shown in Figure 4.9 above, the most commonly cited reasons for missed treatment were forgetting to take the pills, long distance to health facility and not enough food available to eat when taking the medicines.

- Feeling better

Nine of the respondents (36%) agreed that feeling better was a reason for missing taking pills and 64% (n=16) of the respondents disagreed.

- Forgot to take pills

Seventeen of the respondents (68%) agreed that a reason for missed treatment was forgetting to take pills and 32% (n=8) did not agree with the statement.

- Long distance to health facility

Thirteen (52%) of the respondents agreed that a reason for missed treatment was long distance to health facility and 48% (n=12) of the respondents disagreed.
- Body weakness

Nine respondents (36%) indicated that a reason for missed treatment was body weakness, whilst 64% (n=16) of the respondents disagreed.

- No support from family or friends

Seven respondents (28%) agreed that a reason for missed treatment was no support from family or friends, whilst 72% (n=18) of the respondents disagreed.

- Not enough food, pills make me feel hungry

Twelve of the respondents (48%) agreed that a reason for missed treatment was not enough food, whilst 52% (n=13) of the respondents disagreed.

- It is not important to take medicine everyday

Four of the respondents (16%) agreed that a reason for missed treatment was feeling that it was not important to take medicine every day and 84% (n=21) of the respondents disagreed.

- Health worker did not explain the consequences of not taking treatment as prescribed

Three respondents (12%) agreed that a reason for missed treatment was due to the health worker who did not explain the consequences of not taking treatment as prescribed, whilst 88% (n=22) of the respondents disagreed.
4.4.11 What can be done for patients not to interrupt treatment?

The above question was asked to determine the respondents’ practice to prevent treatment interruption. This question was answered by indicating agreed, disagreed and did not know.

The responses are summarized in table 4.7 below:

**Table 4.7: Respondents’ intervention to prevent TB treatment interruption (n=76)**

<table>
<thead>
<tr>
<th>Intervention needed</th>
<th>Agree (%)</th>
<th>Disagree (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continue with treatment despite not having symptoms</td>
<td>62 (81.58)</td>
<td>14 (18.42)</td>
<td>76 (100)</td>
</tr>
<tr>
<td>Ask relatives to remind patient on follow up date</td>
<td>68 (89.47)</td>
<td>8 (10.53)</td>
<td>76 (100)</td>
</tr>
<tr>
<td>Pack health passport and medication when travelling</td>
<td>73 (96.05)</td>
<td>3 (3.95)</td>
<td>76 (100)</td>
</tr>
<tr>
<td>Report medication side effects to Doctors and Nurses</td>
<td>73 (96.05)</td>
<td>3 (3.95)</td>
<td>76 (100)</td>
</tr>
</tbody>
</table>

**Intervention needed**

- Continue with treatment despite not having any symptoms.

Sixty-two of the respondents (81.58%) agreed that they would continue with treatment despite not having any symptoms, while 18.42% (n=14) of the respondents disagreed to continue with treatment despite not having any symptoms.

- Ask relatives to remind patient on follow up date
Sixty-eight of the respondents (89.47%) agreed that they would ask their relatives to remind them of the follow-up date, while 10.53% (n=8) disagreed to involve their relative to remind them of their follow up date.

- Pack health passport and medication when travelling

Seventy-three of the respondents (96.05%) agreed that they would pack their health passport and medication when travelling away from home to prevent treatment interruption and 3.95% (n=3) of the respondents disagreed with the statement above.

- Report medication side effects to doctors or nurses.

A high proportion of the respondents (96.05%, n=73) agreed to report medication side effects to doctors or nurses and only 3.95% (n=3) of the respondents disagreed with the statement above.

4.5 Exploring relationships and significance testing (Correlations)

4.5.1 The relationship between demographic variables and knowledge of signs and symptoms of TB

The main sign and symptom of TB disease was taken as persistent cough for two weeks or more and this was used as the proxy for knowledge of signs and symptoms of TB by the respondents and the relationship of this knowledge explored against the demographic variables.
Table 4.8: The relationship between the age of the respondents and knowledge of signs and symptoms of TB (N=76)

<table>
<thead>
<tr>
<th>Age group</th>
<th>Agreed</th>
<th>Disagreed</th>
<th>Total</th>
<th>Chi-squared</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-28</td>
<td>22</td>
<td>1</td>
<td>22</td>
<td>2.49</td>
<td>0.48</td>
</tr>
<tr>
<td>29-39</td>
<td>26</td>
<td>0</td>
<td>26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40-50</td>
<td>22</td>
<td>0</td>
<td>22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>51-60</td>
<td>6</td>
<td>0</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>75</td>
<td>1</td>
<td>76</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The p-value is 0.48. At the 5% level of significance this means that there is no significant relationship between the age group of the respondents and their knowledge of signs and symptoms of TB disease.

Table 4.9: Relationship between the sex of the respondents and knowledge of signs and symptoms of TB (N=76)

<table>
<thead>
<tr>
<th>Sex</th>
<th>Agreed</th>
<th>Disagreed</th>
<th>Total</th>
<th>Chi-squared</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>32</td>
<td>0</td>
<td>32</td>
<td>0.02</td>
<td>0.87</td>
</tr>
<tr>
<td>Male</td>
<td>43</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>75</td>
<td>1</td>
<td>76</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The p-value is 0.87, which is more than 0.05. This indicates that there is no significant relationship between the sex of the respondents and their knowledge of signs and symptoms of TB disease.
Table 4.10: Respondents’ education relationship with knowledge of signs and symptoms of TB (N=76)

<table>
<thead>
<tr>
<th>Educated</th>
<th>Agreed</th>
<th>Disagreed</th>
<th>Total</th>
<th>Chi-squared</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>69</td>
<td>1</td>
<td>76</td>
<td>2.47</td>
<td>0.11</td>
</tr>
<tr>
<td>No</td>
<td>6</td>
<td>0</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>75</td>
<td>1</td>
<td>76</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The p-value is 0.11 which is more than 0.05 and indicates that there is no significant relationship between whether the person has had formal education or not and knowledge of the signs and symptoms of TB disease.

Table 4.11: The relationship between the marital status of the respondents and knowledge of the signs and symptoms of TB (N=76)

<table>
<thead>
<tr>
<th>Marital status</th>
<th>Agreed</th>
<th>Disagreed</th>
<th>Total</th>
<th>Chi-squared</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single</td>
<td>48</td>
<td>1</td>
<td>49</td>
<td>0.56</td>
<td>0.97</td>
</tr>
<tr>
<td>Married</td>
<td>12</td>
<td>0</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Divorced</td>
<td>8</td>
<td>0</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Widow/Widower</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cohabiting</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>75</td>
<td>1</td>
<td>76</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Looking at the data and the p-value of 0.97 which is much higher than 0.05, this shows that there is no significant relationship between marital status and knowledge of signs and symptoms of TB disease.
Table 4.12: The relationship between the place of residence of the respondents and knowledge of the signs and symptoms of TB. (N=76)

<table>
<thead>
<tr>
<th>Residence</th>
<th>Agreed</th>
<th>Disagreed</th>
<th>Total</th>
<th>Chi-squared</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>32</td>
<td>1</td>
<td>33</td>
<td>1.32</td>
<td>0.52</td>
</tr>
<tr>
<td>Urban</td>
<td>33</td>
<td>0</td>
<td>33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peri-urban/Shanty town</td>
<td>10</td>
<td>0</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>75</td>
<td>1</td>
<td>76</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The p-value of 0.52 indicates that there is no significant relationship between the place of residence of the respondents and knowledge of signs and symptoms of TB disease.

Table 4.13: The relationship between the employment status of the respondents and the knowledge of signs and symptoms of TB disease. (N=76)

<table>
<thead>
<tr>
<th>Employed?</th>
<th>Agreed</th>
<th>Disagreed</th>
<th>Total</th>
<th>Chi-squared</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>24</td>
<td>0</td>
<td>24</td>
<td>0.16</td>
<td>0.69</td>
</tr>
<tr>
<td>No</td>
<td>51</td>
<td>1</td>
<td>52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>75</td>
<td>1</td>
<td>76</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The data and the p-value, which is greater than 0.05 show that there is no significant relationship between the employment status of the respondents and knowledge of signs and symptoms of TB disease.
Table 4.14: Relationship between duration of treatment on TB and knowledge of signs and symptoms of TB (N=76)

<table>
<thead>
<tr>
<th>Duration on TB treatment</th>
<th>Agreed</th>
<th>Disagreed</th>
<th>Total</th>
<th>Chi-squared</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>One month</td>
<td>10</td>
<td>0</td>
<td>10</td>
<td>0.53</td>
<td>0.77</td>
</tr>
<tr>
<td>2 months</td>
<td>16</td>
<td>0</td>
<td>16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 months and more</td>
<td>49</td>
<td>1</td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>75</td>
<td>1</td>
<td>76</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The p-value of 0.77 indicates that there is no significant relationship between the duration of the respondents on TB treatment and knowledge of signs and symptoms of TB disease.

4.6 The relationship between the demographic variables of the respondents and knowledge of risk factors for TB transmission.

To examine this relationship knowledge of sharing a room with more than 5 people as a significant risk factor for TB transmission was used. The responses from the study participants were used to examine the association between the demographic variables and the knowledge of risk factors for TB transmission.

4.6.1 The association between the age group of the respondents and knowledge of the risk factors for TB

To examine this relationship, the age group of the respondents was classified into two – below 40 years and 40 years and above.
Table 4.15: The association between the age group of the respondents and knowledge of the risk factors for TB (N=76)

<table>
<thead>
<tr>
<th>Age group</th>
<th>Agreed</th>
<th>Disagreed/Don’t Know</th>
<th>Total</th>
<th>Chi-squared</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-39</td>
<td>32</td>
<td>16</td>
<td>48</td>
<td>5.3</td>
<td>0.02</td>
</tr>
<tr>
<td>40-60</td>
<td>26</td>
<td>2</td>
<td>28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>58</td>
<td>18</td>
<td>76</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The p-value is 0.02, which is less than 0.05. This indicates there is a significant relationship between the age group of the respondents and knowledge of the risk factors for TB disease. Those respondents aged between 40-60 years appear to have more knowledge of the risk factors for TB disease than those aged 18-39 years.

4.6.2 Relationship between the sex of the respondents and knowledge of the risk factors for TB

The researcher also explored the relationship between the sex of the respondents and their knowledge of risk factors for TB transmission. The finding is shown on the table 16 below.

Table 4.16: The relationship between the sex of the respondents and knowledge of the risk factors for TB (N=76)

<table>
<thead>
<tr>
<th>Sex</th>
<th>Agreed</th>
<th>Disagreed/Don’t know</th>
<th>Total</th>
<th>Chi-squared</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>22</td>
<td>10</td>
<td>32</td>
<td>1.10</td>
<td>0.29</td>
</tr>
<tr>
<td>Male</td>
<td>36</td>
<td>8</td>
<td>44</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>58</td>
<td>18</td>
<td>76</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The p-value of 0.29 indicates that there is no significant relationship between sex of the respondents and knowledge of risk factors for TB disease.

4.6.3 The relationship between education of the respondents and knowledge of risk factors for TB

The relationship between having attended school or not by the respondents was correlated with their knowledge of risk factors for transmission of TB. The finding is shown in table 4.17 below:

Table 4.17: Relationship between education and knowledge of risk factors for TB (N=76)

<table>
<thead>
<tr>
<th>Educated?</th>
<th>Agreed</th>
<th>Disagreed/Don’t know</th>
<th>Total</th>
<th>Chi-squared</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>54</td>
<td>16</td>
<td>70</td>
<td>0.006</td>
<td>0.94</td>
</tr>
<tr>
<td>No</td>
<td>4</td>
<td>2</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>58</td>
<td>18</td>
<td>76</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The p-value of 0.94 is higher than 0.05 and indicates there is no significant relationship between knowledge of risk factor of TB disease and whether the respondents attended school or not.

4.6.4 The relationship between the place of residence of the respondents and knowledge of risk factors for TB

The place of residence as reported by the respondents was correlated with their knowledge of the risk factors for the transmission tuberculosis. The finding is shown in table 4.18 below:
Table 4.18: Relationship between the place of residence and knowledge of risk factors for TB (N=76)

<table>
<thead>
<tr>
<th>Residence</th>
<th>Agreed</th>
<th>Disagreed/Don’t know</th>
<th>Total</th>
<th>Chi-squared</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>26</td>
<td>7</td>
<td>33</td>
<td>0.03</td>
<td>0.86</td>
</tr>
<tr>
<td>Urban/Peri-urban</td>
<td>32</td>
<td>11</td>
<td>43</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>58</td>
<td>18</td>
<td>76</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The p-value of 0.86 indicates that there is no significant relationship between place of residence of the respondents and knowledge of the risk factors for TB disease.

4.6.5: The relationship between the employment status of the respondents and knowledge of the risk factors of TB

The employment status of the employment was correlated with knowledge of the risk factors for the transmission tuberculosis. The finding is shown in table 19 below:

Table 4.19: Relationship between the employment status and knowledge of the risk factors of TB (N=76)

<table>
<thead>
<tr>
<th>Employed?</th>
<th>Agreed</th>
<th>Disagreed/Don’t know</th>
<th>Total</th>
<th>Chi-squared</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>21</td>
<td>3</td>
<td>24</td>
<td>1.61</td>
<td>0.2</td>
</tr>
<tr>
<td>No</td>
<td>37</td>
<td>15</td>
<td>52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>58</td>
<td>18</td>
<td>76</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The $X^2$ and the p-value indicate that there is no significant relationship between the employment status of the respondents and knowledge of the risk factors for TB disease.

4.6.6 Respondents’ marital status relationship to knowledge of the risk factors for TB

The researcher also explored the relationship between the marital status of the respondents and their knowledge of the risk factors for TB transmission. The finding is shown in table 4.20 below.

**Table 4.20: Relationship between the marital status and knowledge of the risk factors for TB (N=76)**

<table>
<thead>
<tr>
<th>Marital Status</th>
<th>Agreed</th>
<th>Disagreed/Don’t know</th>
<th>Total</th>
<th>Chi-squared</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single</td>
<td>36</td>
<td>13</td>
<td>49</td>
<td>0.25</td>
<td>0.61</td>
</tr>
<tr>
<td>Married/Widowed/Cohabiting</td>
<td>22</td>
<td>5</td>
<td>27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>58</td>
<td>18</td>
<td>76</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The p-value of 0.61 indicates that there is no significant relationship between the marital status of the respondents and knowledge of the risk factors for TB disease.
4.7 Attitudes and practice

The research also examined association between some of the attitude and practice variables and the reported experience of the respondents that might have effects on adherence to TB treatment.

4.7.1 Relationship between duration on treatment and respondents’ experience of side effects of the medicines

The research explored the relationship between the duration the respondents had been on TB treatment and their report of experience of side effects of the treatment.

The data is shown in table 4.21 below:

**Table 4.21**: Relationship between duration on treatment and experience of side effects (N=76)

<table>
<thead>
<tr>
<th>Duration on treatment</th>
<th>Experienced side effects</th>
<th>Chi-squared</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Total</td>
</tr>
<tr>
<td>One month</td>
<td>2</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>2 months and more</td>
<td>20</td>
<td>46</td>
<td>66</td>
</tr>
<tr>
<td>Total</td>
<td>22</td>
<td>54</td>
<td>76</td>
</tr>
</tbody>
</table>

The p-value of 0.77 indicates that there is no significant relationship between the duration on treatment and the respondents’ reported experience of side effects of the medications.
4.7.2 The relationship between the duration on treatment and missing the medicines

The research explored the possible relationship between the duration the respondents had been on TB treatment and the practice of missing some doses of the treatment. Table 4.22 below displays the data.

**Table 4.22: Relationship between the duration on treatment and missing the medicines (N=76)**

<table>
<thead>
<tr>
<th>Duration on treatment</th>
<th>Ever missed TB treatment</th>
<th>Chi-squared</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Total</td>
</tr>
<tr>
<td>One month</td>
<td>1</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>2 months and more</td>
<td>24</td>
<td>42</td>
<td>66</td>
</tr>
<tr>
<td>Total</td>
<td>25</td>
<td>51</td>
<td>76</td>
</tr>
</tbody>
</table>

The p-value of 0.196 indicates that there is no significant relationship between the duration the respondents have been on TB treatment and having ever missed their TB treatment.

4.7.3 The relationship between the duration on treatment and number of times the respondents missed taking their treatment

This relationship was examined by categorizing the number of times the respondents missed their TB treatment in two: none to once and three days and more. Table 4.23 displays the data.
Table 4.23: Relationship between the duration on treatment and times
treatment missed (N=76)

<table>
<thead>
<tr>
<th>Duration on treatment</th>
<th>Number of times TB treatment missed</th>
<th>Chi-squared</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>None - once</td>
<td>3 days and more</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>One month</td>
<td>9</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>2 months and more</td>
<td>48</td>
<td>18</td>
<td>66</td>
</tr>
<tr>
<td>Total</td>
<td>57</td>
<td>19</td>
<td>76</td>
</tr>
</tbody>
</table>

The p-value of 0.43 indicates that there is no significant relationship between the duration the respondents have been on TB treatment and having missed treatment once or not at all and missing treatment for 3 days and longer.

4.8 The relationship between the experience of side effects and the respondents’ ever missing treatment

The researcher also tested for the relationship between the respondents’ reported experience of side effects of the TB medicines and their practice of missing their TB treatment. Table 4.24 below displays the data.
Table 4.24: Relationship between the experience of side effects and missing treatment (N=76)

<table>
<thead>
<tr>
<th>Experienced side effects</th>
<th>Ever missed TB treatment</th>
<th>Chi-squared</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Total</td>
</tr>
<tr>
<td>Yes</td>
<td>8</td>
<td>14</td>
<td>22</td>
</tr>
<tr>
<td>No</td>
<td>17</td>
<td>37</td>
<td>54</td>
</tr>
<tr>
<td>Total</td>
<td>25</td>
<td>51</td>
<td>76</td>
</tr>
</tbody>
</table>

The p-value of 0.88 indicates that there is no significant relationship between the reported experience of side effects and having ever missed their TB treatment.

4.9 Relationship between demographic variables and the respondents having ever missed treatment

This section presents the results of respondents’ demographic variables in relationship with practice of taking treatment. The data is presented in table 4.25 and the explanation of the data after the table.
Table 4.25: Relationship between demographic variables and the respondents having ever missed treatment (N=76)

<table>
<thead>
<tr>
<th>Demographic Variable</th>
<th>Ever missed TB treatment</th>
<th>Chi-squared</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Total</td>
</tr>
<tr>
<td><strong>Age group</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-39 years</td>
<td>16</td>
<td>32</td>
<td>48</td>
</tr>
<tr>
<td>40-60 years</td>
<td>9</td>
<td>19</td>
<td>28</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>25</td>
<td>51</td>
<td>76</td>
</tr>
<tr>
<td><strong>Educated?</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>22</td>
<td>48</td>
<td>70</td>
</tr>
<tr>
<td>No</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>25</td>
<td>51</td>
<td>76</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>6</td>
<td>26</td>
<td>32</td>
</tr>
<tr>
<td>Male</td>
<td>19</td>
<td>25</td>
<td>44</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>25</td>
<td>51</td>
<td>76</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>15</td>
<td>34</td>
<td>49</td>
</tr>
<tr>
<td>Married/Widowed/Cohabiting</td>
<td>10</td>
<td>17</td>
<td>27</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>25</td>
<td>51</td>
<td>76</td>
</tr>
<tr>
<td>Residence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------</td>
<td>----------</td>
<td>----------</td>
<td>--------</td>
</tr>
<tr>
<td>Rural</td>
<td>9</td>
<td>24</td>
<td>33</td>
</tr>
<tr>
<td>Urban/Peri-urban</td>
<td>16</td>
<td>27</td>
<td>43</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>25</td>
<td>51</td>
<td>76</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Employment status</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Employed</td>
<td>7</td>
<td>17</td>
<td>24</td>
<td>0.04</td>
</tr>
<tr>
<td>Unemployed</td>
<td>18</td>
<td>34</td>
<td>52</td>
<td>0.83</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>25</td>
<td>51</td>
<td>76</td>
<td></td>
</tr>
</tbody>
</table>

The associations of respondents’ demographic variables and practice with regard to having ever-missed treatment were analyzed.

**Age group**

Age group was divided into two category groups of younger and older age. This was done to examine the relationship among two age group and practice with regards to having ever-missed treatment.

The study revealed that the p-value of 0.88 indicates there is no significant relationship among age group of (18-39; 40-60 years) and having ever missed TB treatment.

**Education**

The p-value of 0.63 indicates no significant relationship between educated or not and having ever missed TB treatment.
Sex

The p-value is 0.046, which is less than 0.05 this indicates there is a significant relationship between the sex of the respondents and having ever missed taking TB treatment.

Marital status

The p-value of 0.75 indicates no significant relationship between the respondents’ marital status (single and married/widowed/cohabiting) and having ever missed TB treatment.

Residence

The p-value of 0.5 indicates no significant relationship between the respondents dwelled in rural and urban/peri-urban and having ever missed TB treatment.

Employment status

The p-value 0.83 indicates no significant relationship between the respondents’ employs’ status (employed or not) and having ever missed TB treatment.

4.10 The relationship between drinking alcohol and having ever missed TB treatment

The researcher also examined the relationship between the practice of drinking alcohol as reported by the respondents and their having ever-missed their TB treatment. This was necessary to test the impact of drinking alcohol on missed treatment. Table 4.26 below presents the finding.
Table 4.26: Relationship between drinking alcohol and respondents’ ever-missed TB treatment

<table>
<thead>
<tr>
<th>Drinks alcohol</th>
<th>Ever missed TB treatment</th>
<th>Chi-squared</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Total</td>
</tr>
<tr>
<td>Yes</td>
<td>14</td>
<td>18</td>
<td>32</td>
</tr>
<tr>
<td>No</td>
<td>11</td>
<td>33</td>
<td>44</td>
</tr>
<tr>
<td>Total</td>
<td>25</td>
<td>51</td>
<td>76</td>
</tr>
</tbody>
</table>

The p-value of 0.14 is greater than 0.05 indicates that there is no significant relationship between the drinking alcohol and respondents having ever missed their TB treatment.

Table 4.27: Patient and family reaction to the news that the patient has been diagnosed with TB disease

Reliability Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Cronbach’s Alpha</th>
<th>Cronbach’s Alpha based on standardized items</th>
<th>Number of items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient reaction</td>
<td>.271</td>
<td>.057</td>
<td>5</td>
</tr>
<tr>
<td>Family reaction</td>
<td>.486</td>
<td>.486</td>
<td>5</td>
</tr>
</tbody>
</table>

Cronbach’s Alpha tests how the different items in a variable reliably measure the same latent variable. Cronbach’s Alpha score varies between 0 and 1. The closer the score is to 1 the more internally consistent the items in the variable.

In the context of this study the researcher sought to know the patient and the family’s reaction to the news that the patient has been diagnosed with TB disease. People’s
reactions to news of a serious disease or illness vary depending on several factors including the belief, culture, religion/faith, social characteristics and socio-economic status. The reaction of the study participants and their family to news of the participant being diagnosed with TB disease was reported and categorized into five items.

From the result of the analysis Cronbach’s Alpha for patient reaction is .271 and for family reaction .486. This indicates the items as reported within each variable were not internally consistent. A score of less than .5 is usually regarded as unacceptable based on the rule of George and Mallery (2003) as cited by Kroone (2014).

4.11 Summary

This chapter presented the findings of the study. Tables and figures were used to display the findings in percentages and frequencies. The associations between independent and dependent variables were examined by using chi-square and p-value. The results of the study have indicated that there is high knowledge of the signs and symptoms of TB among the respondents, but misconception exist regarding knowledge of the risk factors for TB. Many of the respondents feared transmitting the TB infection to their family members when they were first diagnosed with TB. Majority informed their family members of being diagnosed with TB and family member were generally supportive and some agreed to remind the patients to take their medications and keep their clinic appointments. There were no significant associations between the demographic variables and knowledge of signs and symptoms of TB diseases. Significant associations were found between the age of the respondents and knowledge of the risk factors for TB as well as between
the sex of the respondents and having ever missed TB treatment. The significance level was set at p-values < 0.05. The next chapter will discuss the findings of the study.
CHAPTER 5
DISCUSSIONS OF THE STUDY FINDINGS

5.1 Introduction

This chapter focuses on the discussion of the findings regarding the knowledge, attitudes and practices of the patients on tuberculosis treatment with regards to treatment adherence in the Keetmanshoop district of the //Karas region. The discussions include demographic characteristics, knowledge, attitudes and practices of patients on tuberculosis treatment. The significance of the findings is highlighted and the findings from this research are also compared with what other researchers have published on the subject as reviewed from the literature.

5.2 Demographic characteristics

In this study the respondents were 18 to 60 years old, and the majority of the respondents were between 29-39 years (34.21%); therefore, the majority of the participants were young and middle aged people. The male respondents were 57.89 %, more than the female respondents (42.11%). The finding of predominately more males over females diagnosed with tuberculosis was also reported in the study done in Dhaka city, Bangladesh by Tasnim, Rahman and Hoque (2012) and Zaranyika (2012) at Swakopmund district, Namibia. These researchers reported male to female proportions among the respondents for their study with (55.6%; 65.0%) male and female (44.4%; 45.0%) respectively.
This study revealed that 92.11% of the respondents had attended school with more respondents (60.53%) having secondary level education and only 7.89% never had a formal education. This study result is similar to the study done by Mweemba, Haruzivishe, Chipimo, Cristenson and Johansson (2008) in Lusaka Zambia whereby 57.7% of the respondents’ attained secondary or higher-level education and 42.3% had only primary education. In the present study the researcher found no significant relationship between level of education of the respondents and their adherence to TB treatment. In contrast to the study done by Chinenye (2015) reported significant relationship between educational level and practice of taking medicine regularly as prescribed, and the study found that participants with high educational level were 4.5 times higher practices in taking their medicines than those not educated.

This study revealed that equal numbers of the respondents were living in urban and rural areas (43.42% respectively) and only 13.16% were living in shantytown (peri-urban) and 68.42% of the respondents were unemployed while 31.58% had some form of employment. A high rate of unemployment may contribute to the development of TB as a result of poverty, poor living standard and lack of adequate nutrition. Unemployment may also lead to poor nutrition, inability to afford transport costs to the health facility therefore interfere with adherence to TB treatment. Good nutrition is needed during TB treatment for successful treatment of the patient (MoHSS, 2012a).

The duration of TB treatment might have an influence on the knowledge of the respondents regarding tuberculosis because when exposure to taking treatment is longer and it increase the experience of the respondents. In this study fifty (65.7%) of the respondents had been on TB treatment for more than three months and this might
have increased their knowledge of TB and TB medicines because they had been well exposed to health education on TB during clinical appointments.

5.3. Knowledge of respondents about signs and symptoms

The study revealed that the respondents had good knowledge with regards to the most common signs and symptoms of tuberculosis such as persistent cough for two weeks or more (98.68%), chest pain (90.79%), weight lost (93.42%), shortness of breaths (85.5%) and tiredness or weakness (86.84%). This is in contrast to a study done by Kenyi et al. (2012) in Juba City, South Sudan where it was reported that 52% of the respondents did not have good knowledge of signs and symptom of tuberculosis.

Good knowledge on the signs and symptoms might be influenced by the fact that some patient experienced the same signs and symptoms before being diagnosed with tuberculosis. The study found that there was no significant relationship between the age of the respondents, their educational level, gender, place of residence, marital status and duration on treatment and knowledge of the signs and symptoms of TB disease. In this study good knowledge of signs and symptoms of TB seems not to make any positive impact on respondents’ adherence to tuberculosis treatment.

5.3.2 Respondents knowledge of risk factors for tuberculosis transmission

The study has revealed that the majority of the respondents had a good knowledge of the risk factors for transmitting tuberculosis such as coughing without covering the
mouth (99%); gathering at social events (64.47%); sharing room with more than five people (76.32%); which all can put other persons at risk of getting tuberculosis. This study equally found that some of the respondents harbor some misconceptions or myths associated with the transmission of tuberculosis. Some of the respondents wrongly believed risk factors for transmitting tuberculosis included shaking hands with TB patient, which was indicated by approximately 40% of the respondents and about 76% of the respondents wrongly believed that working on road construction and exposure to dust or cement could cause TB.

Poor knowledge of risk factors in transmission of TB was confirmed by responses on the drinking in same cup with others (55.26%) and working on road construction exposed to dust or cement (76.32%) in transmitting TB. The study found significant association between knowledge of risk factor and age group of the respondents. There was no association between knowledge of the risk factors and other demographic variables. This finding of respondents’ poor knowledge of the risk factors in transmitting tuberculosis is in line with a study done by Agho et al. (2013) using data from the Nigeria Demographic and Health Survey, whereby the respondents indicated that tuberculosis can be transmitted by touching a TB patient (3.9%), sexual contact (5.0%), using same utensil (36.5%) and TB spread through food (11%).

Among other demographic variables a significant relationship was found between the age group of the respondents and knowledge of risk factors for tuberculosis with a p-value of 0.02. The aged group 40-60 appeared to have more knowledge of risk factors for tuberculosis than those aged 18-39 years. The reason for this might be that
the older persons have experience and longer exposure to health information than the younger members of the population. Poor knowledge of the risk factors for transmission and misconceptions may lead to stigma and discrimination for TB patients and may lead to failure to disclose their TB infection to their family and close relatives. This may negatively impact on their adherence to their TB treatment and may result in poor treatment outcomes.

5.3.3 Knowledge of the outcome if tuberculosis treatment is interrupted

Most of the respondents (94.74%) had a good knowledge about the outcome when tuberculosis treatment is interrupted, which account to treatment failure. Knowledge on drug resistance (89%) and death (93.42%) in interrupting treatment was also good. Few of the respondents did however not know the outcome when tuberculosis treatment is interrupted. Knowledge of the outcome if treatment is interrupted did not seem to correlate with patients’ decision to miss the doses of the medication. Poor knowledge of the outcome of interruption of treatment may be a cause for stopping treatment, because patients do not have awareness of the dangers of interrupting TB treatment. This is in line with a study done by Dladla (2013), in Waterberg district in Limpopo province, South Africa whereby 4% of the respondents believed that TB cannot result in death if not treated. If patients have a poor knowledge of the outcome if treatment is interrupted this may result in poor treatment adherence and subsequently development of drug resistant TB, which have serious consequences for the patient and the public health system in general.
5.3.4 Knowledge of the respondents whether tuberculosis is curable

The study found that most of the respondents (96.05%) had good knowledge that tuberculosis is curable. This is in agreement with a study done in Sudan by Mohamed, Pharm, Yousif, Ottoa and Bayoumi (2007) whereby 80.3% of the respondents knew that tuberculosis is curable. However, the present study did not demonstrate any significant association between the knowledge that TB is curable and adherence of the respondents to their TB medications. This study found also that approximately 4% of the respondents did not know whether tuberculosis is curable. Patients who experienced TB relapse or have known a patient with TB relapse or treatment failure might be the ones who held this perception. Tuberculosis infection does not confer life-long immunity; hence relapse or new infection is possible.

5.4 Attitudes regarding tuberculosis treatment

Tuberculosis treatment is a treatment that last at least for six months. A number of factors have been identified that may interfere with the effectiveness of the treatment. The attitudes of the patient while on treatment are important variables in the treatment success.

This study revealed that most of the respondents’ (93.42%) reaction to news of being diagnosed with tuberculosis indicated they accepted it without worry, but 60.53% of the respondents were afraid of transmitting the disease to the family member, whilst 26.32% of the respondents reported that they were felt embarrassed and isolated. In many societies including Namibia TB is still a dreaded disease and patients with TB
are stigmatized. Hence disclosing that person has TB infection takes some efforts and persuasion from health workers.

This study found that 97.37% of the respondents indicated they disclosed their tuberculosis diagnosis to family members. This is in contrast to the study done by Kenyi (2015), whereby 91.2% of the respondents did not disclose to the family or community member that they had tuberculosis, but rather preferred to call their illness other names like chronic cough or chest disease. It is important for the patients diagnosed with TB to disclose their tuberculosis infection to family members and close contacts to avoid the spreading of the disease in the community and accord such family members and contacts the opportunity to go to the health facilities for TB screening. It is therefore a positive attitude and practice that respondents in this study indicated they did tell contacts/family about their TB diagnosis.

5.5 Practice regarding tuberculosis treatment

The health services and community have a collective responsibility of ensuring that patients started on TB treatment take all their medicine as prescribed (MOHSS, 2012a). The TB nurse or TB Field Health Promoter should put the TB treatment card aside when a patient did not turn up for his/her daily DOT appointment or for collection of a weekly or 2-weekly medicine supply (MOHSS, 2012a). After a week the patients or his/her DOT supporter did not attending the health facility, the nurse should make effort to trace the patient or his/her DOT supporter. When efforts to trace the patients succeeded, the reason for treatment interruption should be established and treatment is continued as before (MOHSS, 2012a).
Out of 76 respondents 39.4% indicated they were smokers and 42.11% indicated they do consume alcohol. Smoking and alcohol consumption may interfere with the effectiveness of the medication.

A study done by Kamenye, Sumpi, Van Dyk and Ashipala (2016), on the knowledge, beliefs and practice of patients diagnosed with tuberculosis found that patients on tuberculosis treatment engaged in behavior such as drinking alcohol which might make them forget taking their medication as required. The researchers concluded that individual health education should be emphasized to make people aware of unhealthy lifestyle and refrain from it in order to ensure treatment effectiveness (Kamenye et al., 2016).

The finding in this study 67% of the respondents took their medications regularly without missing a single dose, is much lower than that reported in study by Chinenye (2015) in Kigali, Rwanda where (83.9%) of the respondents reportedly took their medicines without missed doses.

This study also found significant relationship between the sex of the respondents and having ever missed taking tuberculosis treatment, the p-value 0.046. Where a high proportion of the patients miss taking their TB medicines regularly it portends a great danger to a public health system in addition to the poor treatment outcome quality of life for individual. Treatment adherence is a big challenge in the management and control of tuberculosis (MoHSS, 2012a).

Less than one third of the respondents in this study experienced medicine side effects, which either disappeared on its own or they sought help from the nurse or doctor. The experience of side effects was not a significant reason for the patients in this study to miss their treatments.
The main reason given for the interrupting medication were forgetting to take pills (68%); long distance to health facility (52%); not enough food to eat before taking pills (48%); body weakness (36%), feeling better (36%); no support from family/friends (28%); thinking that it was not important to take pills everyday (16%) and health worker did not explain the consequences of missing treatment (12%). In a similar study done in Morroco by Tachfouti et al., (2012), the reasons given by the respondents for premature stopping to take their treatment were feeling better (72.9%), long duration on the treatment (34.1%) and difficulty to access health facility (4.7%).

This study found good attitudes to treatment by the respondents as almost 82% of the respondents were of the opinion that to prevent treatment interruption patients who are on treatment should continue with treatment despite not having any symptoms, and 89% of them stated that they would ask a relative to remind them on follow up date.

Ninety-six percent of the respondents also indicated that patients on treatment should pack their health passport when travelling and 95% stated that patients on treatment should report medication side effect to the doctor or nurse. In contrast, in a study done by Dladla (2013), only 20% of the respondents indicated they wanted support from their family, 18% stated that healthcare worker attitudes towards TB patients should change, 16% of the respondents wanted ongoing education on the dangers of not completing TB treatment, 15% indicated that TB clinic should be open on weekends for patients to refill their TB drugs and 11% wanted food parcels for TB patients in order to increase their compliance to TB treatment. A positive attitude to treatment is a good omen for the patients to adhere to treatment especially in long-
term care for conditions such as tuberculosis. This ensures completion of treatment, better outcomes and general improvement in the health status of the community.

5.6 Summary

This chapter has presented a discussion of the findings of the study. Discussions included the implications of the findings on the demographic variables and findings related to the knowledge, attitudes and practices of the patients who are on TB treatment. The study revealed that more males than females were on the treatment for TB, and there was no significant relationship between most of the variables and knowledge regarding the signs and symptoms of the disease. However, those respondents aged over 40 years tended to have more knowledge on the risk factors for tuberculosis than those aged less than 40 years. About a third of the respondents in this study had missed one or more doses of their medicines but the majority of the respondents showed a good attitude toward TB treatment. The significance of these finding were highlighted and the findings were compared to what other researchers have reported in the literature. The next chapter will present the conclusions from the study, highlight the study limitations and make recommendations emanating from the study.
CHAPTER 6

CONCLUSION, LIMITATIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter summarizes the findings from the study, draws the conclusion as well as highlights the limitations of the study. The chapter also covers the recommendations emanating for practice and future research. The summary of the finding is presented considering the research objectives of this study.

6.2 Conclusion

The first objective of this study was to assess the knowledge, attitudes and practices of patients who were on tuberculosis treatment in Keetmanshoop district. The study revealed that the respondents had a good knowledge on some aspect of TB such as main signs and symptoms of tuberculosis, factors associated with risk of transmissions of tuberculosis, and problems that may arise if treatment is voluntarily interrupted. However, some of the respondents had misconceptions and poor knowledge with regards to some risk factors of transmission such as the belief that shaking hands with a TB patient, drinking from the same cup and drinking alcohol could lead to transmission of TB. Majority of the respondents knew that TB is a curable disease.

The second objective was to describe and assess how the knowledge, attitudes and practices of patients who are on tuberculosis treatment in Keetmanshoop district affect their adherence to tuberculosis treatment.
Majority of the respondents in the study had been on TB treatment for more than 3 months and were visiting the health facilities daily to receive supervised treatment. The study found that many of the respondents feared they could transmit the disease to their family members after they were diagnosed with TB and most of them informed the family members about their TB diagnosis. The family members in turn supported them and encouraged them to follow the doctor and nurse’s advice on treatment.

Although many of the respondents were aware of the danger of voluntarily interrupting TB treatment such as developing resistance and even death, the study found that a good number of them had missed one or more doses of the medications. The reasons often cited for missing the treatment were forgetting to take pills, long distance to health facilities and not enough food to eat while on the treatment. Nevertheless, some of the respondents indicated that to ensure adherence to treatment it was important for patients to take along their health passport and medicines when travelling and to continue with the medications even if they have side effects and to report such side effects to their health care workers. Most of the respondents were generally positive about their TB treatment although it appears good knowledge and a positive attitude did not ensure full adherence to the TB treatment.

The findings of the study revealed that the respondents had a good knowledge on tuberculosis with regards to signs and symptoms of diseases. There was poor knowledge, and misperceptions exist on the risk factors associated with transmission of tuberculosis such as dust or cement, smoking tobacco, shaking hands and drinking alcohol. Although most of the respondents knew that tuberculosis is curable among the respondents there were some who missed taking their treatments; as they did not
take treatment daily as recommended. The study has therefore highlighted gaps between knowledge and practice among the patients who are on TB treatment in the Keetmanshoop district. Some factors such as forgetfulness, long distance to health facilities, lack of food while on treatment and poor health education from the health care workers were highlighted by the respondents as factors that hindered them to take their medication regularly as prescribed thus impacting on adherence.

6.3 Limitation of the study

The researcher identified the following limitations in the study:

- The study population was small and was limited to a cohort of patients on tuberculosis treatment in Keetmanshoop health district only, therefore the results of the study will not be generalized to all patients on tuberculosis treatments in other parts of Namibia as the situation in other district may differ from what prevails in the Keetmanshoop district.

- The scope of the study was limited to adults (18-60 years), hence the views of patients on tuberculosis treatment below age 18 and above 60 were not captured. The views of the health care providers that provide services for these patients were not covered in the study.

- This study was designed as a quantitative study. In quantitative study, close-ended questions may mislead the respondents to select an answer that they may perceive as correct or just guess the answer. As this was a quantitative study there was no in-depth exploration of the reason why patient did not adhere to their treatment.

- The research questionnaire was in English only, Nama and Afrikaans speaking participants who could not understand English were assisted by the
tuberculosis field health promoters who were the research assistants to translate and complete the forms. The influence of this on the responses of this set of respondents cannot easily be ascertained although they were trained to collect the data objectively.

6.4 Recommendations

The researcher makes the following recommendations for practice and future research.

6.4.1 Practice

The following practice issues are recommended by the researcher based on the research findings:

- The researcher found that one of the reasons stated by the respondents for non-adherence to their medications was the long distance to travel to the health facilities to their medicines. It is hereby recommended that the Minister of Health and Social Services, //Karas Regional Directorate to take urgent steps to train and deploy health extensional workers to every village in the district to assist in providing DOT for TB patients who are resident within the village cluster.

- Also some of the respondents indicated that the reasons they could not take their medications as they were supposed to be because of lack of food. It is hereby recommended nurses and other health care workers involved in TB care identify patients in need of food support and refer such patients on tuberculosis treatment to the social workers and the Regional and Local Authority and NGOs that may be in position to assist such patients so that
they can continue with their TB treatment uninterrupted. Also the social workers should explore the possibility of working with NGOs to establish vegetable gardens that may support the nutritional and financial wellbeing of the patients.

- The research highlighted that some of the participants had many misconceptions on TB especially regarding the risk factors for transmission. Also some of them engage in practices that may interfere with the effectiveness of their TB treatment such as drinking alcohol and smoking. It is hereby recommended that nurses, TB field promoters and the health extensional workers as well as doctors should continuously provide health information regarding tuberculosis disease, the risk factors, signs and symptoms, prevention, importance of taking and adhering to tuberculosis treatment and avoiding unhealthy lifestyle such smoking and drinking alcohol needs to be intensified. Patients who have completed their TB treatment and are healthy could be employed as role model to motivate and support TB patients who are still undergoing treatment.

6.4.2 Future research

- This was a quantitative study and limited in scope as already highlighted. In the future a qualitative study to explore knowledge, attitudes and practices of patient on tuberculosis treatment should be carried out in order to explore fully all the issues that are important in enhancing the knowledge of patient improving their attitude and practice and therefore ensure better adherence to treatment by the patients.
Future research should also examine community attitudes towards patients on tuberculosis treatments and how this impacts on patients’ adherence to treatment. Also it would be necessary to explore how introduction of food rations and other kind incentives would influence the behavior and practice of TB patient on treatment towards enhancing better treatment adherence.

6.5 Summary

This chapter has presented a summary of the findings and conclusions from the research. The research has highlighted that most of the TB patients in Keetmanshoop district have a good knowledge of the signs and symptoms of TB and some knowledge of the risk factors associated with the transmission of TB. However misconceptions are still prevalent on some of the risk factors associated with TB transmission. The attitude of the patients on TB treatment was generally positive but the good knowledge and positive attitude did not always translate to adherence to TB treatment. The reasons proffered by TB patients for non-adherence were also highlighted. Recommendations have been made to address the gap in knowledge and practices including strengthening health education, working with stakeholders to provide nutritional support to the TB patients in need and improving access to health facilities and services. Areas for further research including exploring how food supplements may assist in improving adherence to TB treatment have also been highlighted. The research has contributed to understanding the attitudes and practices of TB patients in Keetmanshoop district regarding adherence to their TB treatment.
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Annexure A: Ethical Clearance Certificate from UNAM

ETHICAL CLEARANCE CERTIFICATE

Ethical Clearance Reference Number: SONPH/119/2016

Date: 9 September, 2016

This Ethical Clearance Certificate is issued by the University of Namibia Research Ethics Committee (UREC) in accordance with the University of Namibia’s Research Ethics Policy and Guidelines. Ethical approval is given in respect of undertakings contained in the Research Project outlined below. This Certificate is issued on the recommendations of the ethical evaluation done by the Faculty/Centre/Campus Research & Publications Committee sitting with the Postgraduate Studies Committee.

Title of Project: Knowledge, Attitudes and Practices of Patients Related to Tuberculosis Treatments Adherence in Keetmanshoop District

Nature/Level of Project: Masters

Researcher: E. Kateta

Student Number: 9614508

Faculty: School of Nursing and Public Health

Supervisor: Dr. J.E. de Villiers (Main); Dr. H. Iita

Take note of the following:
(a) Any significant changes in the conditions or undertakings outlined in the approved Proposal must be communicated to the UREC. An application to make amendments may be necessary.
(b) Any breaches of ethical undertakings or practices that have an impact on ethical conduct of the research must be reported to the UREC.
(c) The Principal Researcher must report issues of ethical compliance to the UREC (through the Chairperson of the Faculty/Centre/Campus Research & Publications Committee) at the end of the Project or as may be requested by UREC.
(d) The UREC retains the right to:
   (i) withdraw or amend this Ethical Clearance if any unethical practices (as outlined in the Research Ethics Policy) have been detected or suspected,
   (ii) request an ethical compliance report at any point during the course of the research.

UREC wishes you the best in your research.

[Signature]

Director –Centre for Research and Publications
ON BEHALF OF UREC
RESEARCH PERMISSION LETTER

Date: 20/06/2016

TO WHOM IT MAY CONCERN

RE: RESEARCH PERMISSION LETTER

1. This letter serves to inform you that student: KATETA ERIZABETH (Student number: 9614508) is a registered student in the SCHOOL OF PUBLIC HEALTH for the MASTER IN PUBLIC HEALTH degree at the University of Namibia. His/her research proposal was reviewed and successfully met the University of Namibia requirements.

2. The purpose of this letter is to kindly notify you that the student has been granted permission to carry out postgraduate studies research. The School of Postgraduate Studies has approved the research to be carried out by the student for purposes of fulfilling the requirements of the degree being pursued.

3. The proposal adheres to ethical principles

Kind regards

Signed: [Signature]
Name of Main Supervisor: Dr. E. J. Bevilais

Signed: [Signature]
Dr. M. Hédimbi
Director: School of Postgraduate Studies
Tel: 2063523
E-mail: mhedimbi@unam.na

Centre for Postgraduate Studies
Office of the Director
2016 - 07 - 0 4
University of Namibia
UNAM
Annexure C: Permission Letter from the Ministry of Health and Social Services

Republic of Namibia

Ministry of Health and Social Services

Office of the Permanent Secretary

Ref: 17/03
Inquiries: Ms. H. Namgondje

Date: 05 September 2016

Ms. Elizabeth Katula
School of Public Health
University of Namibia
P.O. Box 506
Keetmanshoop
Namibia

Dear Ms. Katula,

Re: Knowledge, attitude and practices of patients related to tuberculosis treatment adherence in Keetmanshoop District

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


101
Annexure D: Research Questionnaire

Thank you for the consent to participate in the study. Please answer all questions honestly. Remember that all the information you give is totally confidential. Free feel to ask if you have any question.

Section A: Demographic Information

SA01- How old are you? _______

SA02- Sex:

_____1) Female _____2) Male

SA03- Have you ever been to school?

_____1) Yes _____2) No

SA04- If yes to 03, what is your level of schooling?

_____1) Primary

_____2) Secondary

_____3) Tertiary (universities)

SA05- What is your marital status?

_____1) Married _____2) Divorced

_____3) Single _____4) Widow/Widower

_____5) Cohabiting

SA06- Where do you stay?

_____1) Rural _____2) Urban

_____3) Shanty town _____4) Homeless

SA07- Are you working?

_____1) Yes _____2) No

SA08) If yes to 07 what is your occupation?

_______________________________________
SA09) Duration on TB treatment  
______1) one months  
______2) two months  
______3) three months and more

Section B: Knowledge of TB Disease

SB01- How do you recognize TB disease?

<table>
<thead>
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<th>Agree</th>
<th>Disagree</th>
<th>Do not know</th>
</tr>
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<tbody>
<tr>
<td>Persistent Coughing for two weeks or more</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coughing up blood</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chest pain</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Night sweats</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shortness of breath</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loss appetite</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight loss</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tiredness or weakness</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SB02) TB transmitted through:

<table>
<thead>
<tr>
<th>Risk factors</th>
<th>Agree</th>
<th>Disagree</th>
<th>Do not know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drinking in the same cup with others while you are on TB treatment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shaking hand</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coughing without cover the mouth</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gathering at social events</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sharing room with more than 5 people</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoking tobacco</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Drinking alcohol
Working in road contract exposure to dust or cement

SB-03) Voluntarily interrupts or stop TB treatment will read to the following:

<table>
<thead>
<tr>
<th>Outcome for treatment interruption</th>
<th>Agree</th>
<th>Disagree</th>
<th>Do not know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment Failure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drug resistance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Death</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

SB-04) Is TB curable disease?
_______ 1) Yes _________ 2) No _________ 3) I do not know

Section C: Attitudes and Practices regarding TB treatments

SC – 01) Are you smoking?
_____ 1) Yes _________ 2) No

SC – 02) Are you drinking alcohol?
_____ 1) Yes _________ 2) No

SC - 03) What was your reaction when you were diagnosed with TB disease

<table>
<thead>
<tr>
<th>Reaction to diagnosed with TB disease</th>
<th>Agree</th>
<th>Disagree</th>
<th>Do not know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feels embarrassed and isolated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fear that my family will get TB from me</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feels pity for myself and cried</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>I accepted it without worries because I know that TB is treatable and can cure.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SC - 04) other reaction

____________________________________________________________________

____________________________________________________________________

SC - 05) Did you tell your family member that you are on TB treatment?

_______ 1) Yes ________ 2) No

SC -06) What was their reaction?

<table>
<thead>
<tr>
<th>Possible family member’s reaction</th>
<th>Agree</th>
<th>Disagree</th>
<th>Don’t Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wanted to stay away from patient</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Encouraged patient to follow Dr’s advice</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Were willing to remind patient to take his/her TB medicines</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Felt it was not patient’s fault to get TB</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feared to be infected with TB</td>
<td></td>
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</tr>
</tbody>
</table>

SC – 07) How do you take your TB treatment?

____ 1) I came to the clinic to drink my pills on daily basis

____ 2) at home supervised by my relative or treatment supporter

____ 3) At home supervised by extensional health worker

____ 4) Hospitalized and medication given by nurse

____ 5) Takes at home alone, no supervision

SC- 08) Have you experience any medicine side effects since you started your treatment?

____ 1) Yes ____ 2) No
SC - 09) If yes to 08, how did you manage treatment side effect?
1) It disappeared without intervention  2) I reported it to health worker
3) I stop to take pills

SC – 10) Have you ever missed your TB treatment?
1) Yes  2) No

If yes, how many times did you miss your treatment?
1) one time  2) three days  3) more than one week  4) two months or more

SC- 11) Reasons for treatment interruption

<table>
<thead>
<tr>
<th>Possible reasons</th>
<th>Agree</th>
<th>Disagree</th>
<th>Do not know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeling better</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forget to take pills</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Long distance to health facility</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body weakness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No support from family or friends</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not enough food, pills make me feel hungry</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is not important to take medicine everyday</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health worker did not explain the consequences of not taking treatment as</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>prescribed</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SC – 12) What can be done for patients not to interrupt treatment?

<table>
<thead>
<tr>
<th>Intervention needed</th>
<th>Agree</th>
<th>Disagree</th>
<th>Do not know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continue with treatment despite not having symptoms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ask relatives to remind patient on follow up date</td>
<td></td>
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<tr>
<td>Pack health passport and medication when travelling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Report medication side effects to Drs and Nurses</td>
<td></td>
<td></td>
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</tbody>
</table>

**Thank you!**
Annexure E: Consent form

THE KNOWLEDGE, ATTITUDES AND PRACTICES OF TUBERCULOSIS PATIENTS ON THE TREATMANTS IN KEETMANSHOOP DISTRICT

Informed consent

My name is Elizabeth Kateta. I am a student at UNAM doing a Master in Public Health.

The study has two main purposes:

. The information is needed academically as a requirement for completion of MPH course.

. To assess and describe the knowledge, attitudes and practices of patients related to tuberculosis treatments in Keetmanshoop district.

The survey takes about 10 to 15 minutes to complete. The information you will provide will be kept strictly confidential and anonymous, no name will be used, code number will be provided: therefore honest answers to the questions are expected.

Participation in this study is voluntarily. You have the right to decide whether to participate or not and to withdraw from the study anytime. Your refusal will in no way affect your access to treatment and other services at the hospital and clinics in the district. There are no incentives to be given, but your valuable information will be helpful for the future patients ‘intervention with regards to treatment adherences.

Your participation in this study will be highly appreciated.

Participant’s signature ………………………Researcher’s signature: …………………

The researcher contact: ekateta90@gmail.com Cell phone Number: 0814985976