

**Factors that Contribute to the Increase in the  
Number of Tuberculosis Patients in the Ehlanzeni  
District, Mpumalanga Province**

by

**Mmakala Esther Selala**

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**Supervisor : Dr JC Kgole**

**Co-supervisor : Dr ME Lekhuleni**

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## DECLARATION

I, **Mmakala Esther Selala**, hereby declare that this thesis, titled “**Factors that Contribute to the Increase in the Number of Tuberculosis Patients in The Ehlanzeni District, Mpumalanga Province**” is the result of my own independent investigations, and that all the sources I have used and quoted have been duly indicated and acknowledged by means of complete references.

**M.E. Selala** : .....

**Date Signed** : .....

**Student number** : 

## **DEDICATION**

This dissertation is dedicated to my husband, Mish, and my children Kholofelo, Tumiso and Toka in recognition of their great commitment, continuous support, abundance of love and understanding during my studies. Tumiso devotedly typed the manuscript. I am grateful for their contributions and the efforts they have invested in my studies. May God's wealth of blessings be with them always, Praise the Lord, Amen!

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## **ABSTRACT**

The aim of this study was to determine the factors that contribute to the increase in the number of tuberculosis (TB) patients in Mpumalanga Province, and to develop guidelines and recommendations to address the challenges of this health issue. The design of the study was qualitative phenomenological. The population consisted of all TB patients who were receiving treatment either at the intensive or the continuation phase. The sampling method was purposive and the sample size comprised 20 participants, of whom 10 were drawn from Shatale clinic at Bushbuckridge, and 10 from Mashishing clinic at Thabachweu municipalities in the Ehlanzeni district of Mpumalanga Province. The data was gathered by means of semi-structured interviews. Data analysis was performed, from which themes and categories were derived. This study revealed several factors that contributed to the increase in the number of TB patients at the study sites. The factors considered most important in this study were the general lack of knowledge of TB among participants, despite their various levels of education, poverty, overcrowding, poor ventilation in the shacks and Reconstruction and Development Program (RDP) houses, unemployment, lack of support while taking treatment, religious and ritual beliefs, and the influence of traditional healers who dispense herbal medicines with the dictum that participants have been possessed by evil spirits and witches. The majority of patients developed TB as a secondary opportunistic infection because of their HIV-positive status, and lack of capacity to practice personal hygiene and proper infection control. Guidelines, strategies and recommendations were formulated to address these public health challenges in the context nursing education, research, administration and practice.

## **KEY WORDS**

Tuberculosis patients, adherence, non-compliance, infection, multidrug-resistant tuberculosis (MDR-TB), extremely drug-resistant tuberculosis (XDR-TB).

# TABLE OF CONTENTS

	Page
DECLARATION	ii
DEDICATION	iii
ACKNOWLEDGEMENTS	iv
ABSTRACT	v
KEY WORDS	v
TABLE OF CONTENTS	vi
DEFINITIONS OF CONCEPTS	x
LIST OF ABBREVIATIONS	xi
LIST OF TABLES	xi
LIST OF APPENDIXES	xii
CHAPTER 1: OVERVIEW OF THE STUDY	1
1.1 Introduction and background	1
1.2 Problem statement	4
1.3 Research question	4
1.4 Aim of the study	4
1.5 Objectives of the study	4
1.6 Theoretical framework	5
1.7 Research methodology	5
1.8 Significance of the study	6
1.9 Conclusion	6
CHAPTER 2: RESEARCH METHODOLOGY	7
2.1 Introduction	7
2.2 Research methods	7
2.2.1 Qualitative research method	7
2.2.2 Descriptive research method	8
2.2.3 Contextual research method	9
2.3 Research design	9

## TABLE OF CONTENTS

	Page	
2.4	Population	10
2.5	Sampling	11
2.6	Inclusion criteria	12
2.7	Study sites	12
2.8	Data collection	13
2.8.1	Interview	13
2.8.2	Probing for responses	14
2.8.3	Field notes	14
2.8.4	Tape recording interviews	15
2.9	Data analysis	15
2.10	Ethical considerations	18
2.10.1	Permission	18
2.10.2	Informed consent	18
2.10.3	Right to confidentiality and anonymity	18
2.10.4	Privacy and the right to protection from harm	19
2.11	Measures to ensure trustworthiness	20
2.11.1	Credibility	20
2.11.2	Transferability	21
2.11.3	Dependability	21
2.11.4	Confirmability	22
2.12	Conclusion	22
<b>CHAPTER 3: RESULTS AND LITERATURE CONTROL</b>		<b>23</b>
3.1	Introduction	23
3.2	Socio-demographic variables of participants	24
3.3	Theme 1: Poverty and unhygienic conditions increase TB prevalence	26
3.3.1	Category 1: Poor housing	26
3.3.2	Category 2: Overcrowding	28
3.4	Theme 2: Low educational standards	29
3.4.1	Category 1: Low level of understanding	29

<b>TABLE OF CONTENTS</b>		<b>Page</b>
3.4.2	Category 2: Lack of knowledge about TB	30
3.5	Theme 3: Cultural beliefs	31
3.5.1	Category 1: Lack of knowledge due to traditional and cultural beliefs	31
3.5.2	Category 2: Lack of knowledge due to religious beliefs	33
3.6	Theme 4: Poor accessibility to health services	34
3.6.1	Category 1: Lack of information on TB since healthcare services are far	34
3.6.2	Category 2: Poor infection control practices	35
3.7	Theme 5: Low occupational standards	36
3.7.1	Category 1: Unemployment leads to lowered immune system due to inappropriate diet	37
3.7.2	Category 2: Lack of money to buy food and to pay transport to health services	39
3.8	Conclusion	39
<b>CHAPTER 4: STRATEGIES AND GUIDELINES TO REDUCE TB</b>		<b>40</b>
4.1	Introduction	40
4.2	Poverty and unhygienic conditions	41
4.3	Poor accessibility of health care services	42
4.4	Low educational standards	44
4.5	Cultural beliefs	46
4.6	Low occupational standards	47
4.7	Factors that influence treatment outcomes	49
4.8	Conclusion	50
<b>CHAPTER 5: RECOMMENDATIONS, LIMITATIONS, AND CONCLUSIONS</b>		<b>51</b>
5.1	Introduction	51
5.2	Recommendations	51
5.2.1	Infection prevention practices and infection control plans	51
5.2.2	Healthcare administration	52
5.2.3	Healthcare education	54
5.2.4	Perspectives for further research	56
5.3	Limitations of the study	57
5.4	Conclusion	57
<b>REFERENCES</b>		<b>58</b>

## **DEFINITIONS OF CONCEPTS**

### **Continuation phase**

Continuation is defined as the act to proceed forward (Longman, 2006:145). In this study, the continuation phase refers to the stage at which TB patients were taking treatment from the third to the sixth month (4 months) - the starters, and from the fourth to eight month (5 months) - the treatment patients (World Health Organisation, 2006: Draft 3:5).

### **Intensive phase**

The intensive phase refers to the initial starting point of medical treatment (Longman, 2006:377). In this study, the initial phase denotes the time at which patients started to take TB treatment for the first time, that is, the first two months in starters and the first three months in retreatment patients (World Health Organisation, 2006 Draft 3:5).

### **Tuberculosis**

Tuberculosis is an extremely infectious disease of the lungs caused by *Mycobacterium bacilli* (World Health Organisation, 2003:14). In this study, tuberculosis patients means all those who had taken TB treatment during the period of study and chosen purposely for this study

### **Patients**

Patients are sick people who are receiving medical treatment from a doctor or hospital (Longman, 2006:111). In this study, “patients” means all participants

diagnosed with TB and selected by the researcher purposely.

### **Retreatment**

Retreatment refers to the repeating of treatment which was once taken (Longman, 2006: 408). In this study, retreatment means the time or period when TB patients were repeating TB treatment in their life time.

## LIST OF ABBREVIATIONS

<b>AIDS</b>	Acquired Immunodeficiency Syndrome
<b>DOTS</b>	Directly Observed Treatment Supply
<b>HIV</b>	Human Immunodeficiency Virus
<b>IEC</b>	Information Educational Communication
<b>MDR-TB</b>	Multidrug-Resistant TB
<b>SANTA</b>	South African National Tuberculosis Association
<b>TB</b>	Tuberculosis
<b>XDR</b>	Extremely Drug-Resistant TB

## LIST OF TABLES

<b>Table 3-1:</b>	Themes and categories	24
<b>Table 3-2:</b>	Socio-demographic variables of participants	25

# LIST OF APPENDICES

APPENDIX 1	INTERVIEW QUESTIONS	66
APPENDIX 2	PARTICIPANTS' RESPONSES DURING INTERVIEW	69
APPENDIX 3	APPLICATION FORM FOR PROPOSED RESEARCH PROJECT	71
APPENDIX 4	CONSENT FORM	74
APPENDIX 5	STATISTICAL ANALYSES FORM	75
APPENDIX 6	ETHICS COMMITTEE CLEARANCE CERTIFICATE LIMPOPO PROVINCE	76
APPENDIX 7	A LETTER FOR RESEARCH AND ETHICS APPROVAL MPUMALANGA PROVINCE	77
APPENDIX 8	A LETTER OF COMMENTS FROM INDEPENDENT CODER TSHWANE UNIVERSITY OF TECHNOLOGY	78
APPENDIX 9	EHLANZENI DISTRICT MAP OF CLINICS AND HOSPITALS, MPUMALANGA PROVINCE	80
APPENDIX 10:	LETTER FROM EDITOR	81

# CHAPTER 1

## OVERVIEW OF THE STUDY

### 1.1 Introduction and background

Tuberculosis (TB) has been declared a global emergency, because it is out of control in many parts of the world. Globally, South Africa ranks fifth in the absolute number of people with new smear-positive TB, but countries such as China, India and Indonesia are faced with heavier disease burdens (Churchyard 2009:38). The type of TB being diagnosed in South Africa has changed over the past decade with a dramatic increase in smear-negative TB, extra-pulmonary TB, retreatment TB and now, increasingly drug-resistant TB. According to the World Health Organisation (WHO) (2006a:38), Swaziland and South Africa have the highest incidence rates per capita in the world with close to 1000 cases per 100 000 people. The World Health Organization (2003:122) further states that the Department of Health has reached the target of 70% case detections and 85% treatment successes. Tuberculosis is a preventable disease that kills 1.7 million people every year, and 9 million people annually are newly diagnosed with the disease whereas around half a million people are estimated to have multidrug resistant TB (MDR-TB) (Maun, 2010:25).

In the United States of America, two million people were infected with *Mycobacterium tuberculosis* and were at risk of developing active TB and, according to 2003 estimates, more than eight million people developed the active form of the disease every year and at least two million died of it (South Africa, Department of Health,2006a:22). The World Health Organization (2005a:21) reported that the risk of TB in European countries was between 0% and 15%, including England, prevalence for TB infection in Switzerland was between 0% and 40% and the incidence of TB in African countries was between 0% and

31%, and TB was the leading cause of death in Africa for people who were living with HIV/AIDS. However, compared to other countries, South Africa was last with regards to TB prevalence (Department of Health, 2007c:17).

Tuberculosis has become one of the epidemics in South Africa and has been correlated with neglect and poor management (Foundation for Professional Development, 2007:19). South Africa occupies the 9<sup>th</sup> position in the world for overall TB burden and in Africa it is ranked second after Zimbabwe. According to the Department of Health (2006b:8), the incidence of TB has increased from 169 per 100 000 people in 1998 to 645 per 100 000 in 2005, and it further indicates that the effective control of TB is dependent on a better-informed civil society. Tuberculosis is a major cause of morbidity and mortality in South Africa. The report of a research study conducted in the African Region indicated that TB was the leading cause of death among people living with HIV/AIDS, and 9.2 million new TB cases and 1.7 million deaths from TB were recorded in 2006. The study also indicated that 3 million people living with HIV/AIDS were receiving antiretroviral treatment and TB preventive therapy with isoniazid, even to the negative TB sputum, and recommended that TB-HIV activities should be collaborative (World Health Organisation, 2008a:4).

During 2004, the annual TB notification rate was 703/100 000. The Western Cape Province of South Africa, representing 9% of the country's population, accounted for 28% of the annual national notification of TB, and is thus carrying the greatest burden for this disease in the country. From 2004 to date, the rate of TB ranges between 5% and 15% annually. This puts a heavy workload on the region's primary health care resources, which manage 93% of the TB caseload (South Africa Department of Health, 2005:12).

According to World Health Organisation (2006c:6), nurses working with TB patients are faced with the following challenges:

- Patient relapse

- Discontinuation of treatment by patients
- Diverse attitudes and viewpoints regarding the relationship between TB and HIV/AIDS

The World Health Organisation (2003:6) stated that TB, as a social and health problem, is curable, even with the additional effect of HIV/AIDS. Socioeconomic factors such as poverty and unemployment adversely affect the prognosis of TB. Unemployed TB patients, especially those living far from clinics are unable to pay for transport to health services (Wong, 2003:6). Stanhope and Lancaster (2000:382) indicated that discharge planning prepares the patient for the next phase of care by means of organized planning and coordination of resources while Motsomane and Peu (2008: 60) emphasized that insufficient medication reduces the cure rate of TB.

In Mpumalanga Province, TB and HIV/AIDS were identified as priority healthcare programmes and notable concerns were raised in three districts (Department of Health, 2008e: 77). At Thabachweu and Bushbuckridge municipality clinics, an increase in patients with TB, including retreatment patients, were reported (Department of Health, 2007b:30). Factors stated by the South African National Tuberculosis Association (SANTA) in the Department of Health (2006a:8) were the high rate of population growth, unemployment, poverty, migration, inability to complete treatment (drug interruption) and HIV/AIDS, being HIV positive which increases the individual's risk of contracting TB in areas where both TB and HIV are common, inadequate TB treatment that results in drug-resistant TB forms, and the emergence of HIV and AIDS. The Mpumalanga Province in South Africa, compared to the other nine provinces, was ranked number seven in 2009 with respect to TB prevalence. Amongst the three districts of Mpumalanga Province, Ehlanzeni was listed number one in 2009 in terms of TB case detections (Department of Health, 2009a:10).

## **1.2 Problem statement**

There appears to be an increase in the number of TB patients on a monthly basis at clinics and hospitals in Thabachweu and Bushbuckridge municipalities of the Mpumalanga Province. The increase in the number of TB patients taking treatment per month per facility is between 18% and 40% (Department of Health, 2008d:11). A study conducted in China revealed that the leading cause of death among people living with HIV/AIDS who had TB was improper TB management due to drug addiction (World Health Organization, 2007b:7). These considerations led to the research question of this study.

## **1.3 Research question**

The following research question guided the study: “What are the factors that contribute to an increase in the number of TB patients in the Ehlanzeni district of the Mpumalanga Province?”

## **1.4 Aim of the study**

The aim of the study was to determine the factors that contribute to the increase in the number of TB patients in Ehlanzeni district of the Mpumalanga Province.

## **1.5 Objectives of the study**

The objectives of the study were to:

- Identify the factors that contribute to increase in the number of TB patients in the Ehlanzeni district.
- Develop guidelines that could be used to address the increase in the number of TB patients.

## **1.6 Theoretical framework**

Orem's theory of self-care and self-care deficit draws attention to the ability of a patient to perform self-care activities after recovering from disease, and will form the theoretical framework of this study. George (1995:106) offers insight into Orem's theory and nursing's metaparadigm, viz., the four concepts: human being, health, society and nursing. According to Orem's theory, human beings are distinguished from other living things by their capacity upon themselves, what they experience in thinking, communication and their guiding efforts George (1995:106). Health refers to the state of complete physical, social, psychological and mental human ability or power to engage in self-care (George 1995:101). According to Orem, adults in modern society are expected to be self-reliant and responsible for themselves, and for the well-being of their dependents. Most social groups accept that persons who are helpless, sick, aged, handicapped should be assisted to alleviate their immediate distress and to attain or regain responsibility within their existing capacities (George, 1995:107). Good nursing practice is an art that is associated with a plan of care delivery and evaluative research (George 1995:109). Supportive-educative systems offered to patients aim to promote them as self-care agents in relation to their therapeutic self-care demands. Thus, developmental self-care requisites and knowledge of self-care are required for illness, injury or disease, although factors such as age, mental capacity, culture, society, and emotional state may affect learning and practice of these imperatives (George 1995:107). In this study, these considerations are especially pertinent to establish and evaluate the factors that contribute to the increase in the number of TB patients in the Ehlanzeni district.

## **1.7 Research methodology**

The research method used in this study is qualitative, descriptive and contextual. The research design used is phenomenological and it refers to people's lived experiences or the perception of the meaning of an event as opposed to the event as it exists external to the person (Leedy, 2005:139). The population

studied included all patients diagnosed with TB, that is, new and retreatment patients who were taking TB treatment during the period of the study at the two clinics, namely, Mashishing in Thabachweu and Shatale in the Bushbuckridge municipalities of the Ehlanzeni district of Mpumalanga Province. Purposive sampling was used to select the participants. Data were obtained from the participants through semi-structured interviews. Tesch's method was used for data analysis. Details of the research methodology will be discussed in Chapter 2.

### **1.8 Significance of the study**

The study might benefit people of the Thabachweu and Bushbuckridge municipalities to identify the factors that contribute to the increase in the number of TB patients. The study will assist the community to understand TB and practice primary prevention strategies that will help reduce the transmission of TB and promote its cure. The study could be used for health administration purposes by informing and developing policies, and to improve the quality of nursing practice through patient care provision in clinics and hospitals.

### **1.9 Conclusion**

In Chapter 1, the overview of the study was discussed, and it included the problem statement, the research question, aims and objectives, theoretical framework, reference to research methodology and significance of the study. Chapter 2 will discuss the research methodology used in this study.

## **CHAPTER 2**

### **RESEARCH METHODOLOGY**

#### **2.1 Introduction**

Chapter 1 provided a general overview of and background to the study. The purpose of Chapter 2 is to describe the methodology that was used in this study. This chapter include details of the research method, the research design, population, sampling, inclusion criteria, study site, data collection, ethical considerations, data analysis and data interpretation.

#### **2.2 Research method**

In this study, qualitative, descriptive and contextual research method were used.

##### **2.2.1 Qualitative research method**

Health research includes any study that addresses the understanding of human health, health behaviour or health services (Green and Thorogood, 2005:5). Qualitative research uses language data and tends to have smaller sample sizes. The basis of qualitative studies is that they generally aim to seek answers to questions about the 'what', 'how' or 'why' of a phenomenon (Janesick, 2006:15). Qualitative approaches in health research allow description and promote the understanding of different patient experiences. In this study, the researcher included all patients diagnosed with TB and those on anti-TB treatment. Qualitative research provides a multi-method approach that facilitates a focused, interpretive, and naturalistic evaluation of the subject matter. It is a process of understanding, based on distinct

methodological traditions of inquiry that explore social or human problems (Eldred, 2009:21). Mouton and Babbie (2001:270) stated that qualitative researchers attempt to study human action from the perspective of the social actors themselves. Furthermore, the qualitative approach allows description and promotes understanding of different human experiences, uncovering new insights and explore their meanings. It is thus interested in the lived experiences or lives of people (Brink, 2006:119). In view of this, all patients diagnosed with TB and who were on anti-TB treatment were recruited to this study to gain information about their experiences related to TB. According to Cormack (2000:146), qualitative researchers may use various methods to collect data either by involving the participants in the subject's social world or by allowing the subjects to describe their understanding in their own terms. In this regard, the researcher used semi-structured interviews (Connolly, Davies and Wilkinson, 2005:146). In this study qualitative methodology was aimed at understanding reality by discovering the meaning attached by people to the natural setting, hence, the researcher was not detached from the object studied, but immersed herself subjectively as she interacted with the subjects who gave clarity, meaning and the knowledge experienced with regards to TB during interviews. Focus was generally on certain events, individuals and certain cases were selected for the study, including MDR-TB (multidrug-resistant TB) and XDR-TB (extremely drug-resistant TB). According to de Vos et al (2005:270), qualitative researchers develop their own strategies or tools as an aid or guideline to evaluate the immediate importance of the problem within the context of the study.

### **2.2.2 Descriptive research method**

Descriptive research involves either identifying the characteristics of an observed phenomenon or exploring possible connections among two or more phenomena. Every descriptive research case examines a situation as it is (Flick, 2002:17). In this study, by means of the descriptive research approach, the researcher was able to record information using field notes and audiotapes, and report on

the findings about the factors, as the participants experienced or saw them, that contributed to the increase in the number of TB patients in the study sites.

### **2.2.3 Contextual research method**

According to Mouton and Babbie (2001:272), some writers refer to contextual research methodology as the contextualist or holistic research strategy of qualitative research, and the aim of the qualitative researcher is thus to describe and understand events within the concrete, natural or immediate context in which they occur. Janesick (2006:15) asserted that qualitative research involves the studied use and collection of a variety of empirical referents such as case study, personal experience, life story, introspective, interview, observational, historical, interactional and visual text that describe routine and problematic moments and meaning in the lives of individuals. Participants who were diagnosed with TB and who were receiving anti-TB treatment participated in this study. They shared their different experiences and understanding of TB during data collection at the test sites in the Ehlanzeni district of the Mpumalanga Province. Qualitative enquiry is for the researcher who is willing to commit extensive time in the field, engage in the complex, time-consuming process of analysing a large amount of data, and reducing the data into few themes or categories. In this study, the researcher utilized semi-structured one-to-one interviews with participants to collect data. Interviews were conducted in a private room to ensure privacy.

## **2.3 Research design**

Phenomenological research attempts to understand people's perceptions, perspectives and understanding of a particular situation (de Vos et al, 2005:268). Phenomenology, according to Mouton and Babbie (2001:28;273) views human behaviour as a product of how people interpret their world, that is, how they are engaged in the process of making sense of their lives by continuously interpreting, creating, and

giving meaning to define, justify and rationalize actions. The purpose of phenomenological research is to describe experiences as lived by the participants (Burns and Grove, 2003:71). Smith (2003:115) regards phenomenology as a qualitative inductive research approach that is accessible to all since it uses rigorous effective methods to collect information and analyze rich data to illustrate another person's world. SANTA (2006:16) emphasizes that phenomenology is applied by exploring and preparing information, and hence requires the breakdown of barriers and fears surrounding the roles of researchers and participants to encourage critical thinking. Phenomenological researchers depend almost exclusively on lengthy interviews with a carefully selected sample of participants. The actual implementation of a phenomenological study involves interviews that are often very structured and, therefore, requires the researcher and the participants to cooperate (Leedy and Ormond, 2005:139). In this study, the interviews were semi-structured in which the researcher and the participants worked together to meet the objectives of the research phenomenon in question. Participants who agreed to be included in this study were either newly diagnosed with TB or patients who were receiving retreatment, and subjects who presented with MDR-TB. During interviews, the researcher paid careful attention to participants as they described their lived experiences about the factors that contributed to the increase in the number of TB patients in Thabachweu and Bushbuckridge municipalities in the Ehlanzeni district of the Mpumalanga Province. Accordingly, the interviews focused on common themes in the experience of the participants, despite the diversity among the individuals and their settings (Leedy and Ormond, 2005:140). The researcher used the various meanings identified to develop the overall description of the phenomenon.

## **2.4 Population**

Brink (2006:123) defines population as the entire group of persons or objects that meets the criteria for investigation which the researcher is interested in studying. In this study, the population comprised all persons newly diagnosed with TB and retreatment patients who were taking TB treatment during the period of the study at the two study sites, namely, Mashishing clinic in the Thabachweu municipality and

Shatale clinic in Bushbuckridge municipality of the Ehlanzeni district in the Mpumalanga Province. This province consists of 268 healthcare facilities of which 33 are hospitals, 38 are community healthcare centres and 197 are primary healthcare clinics.

## **2.5 Sampling**

Purposive non-probability sampling was used in this study. Mouton and Babbie (2001:277) describes purposive sampling as the method in which the qualitative researcher seeks to maximize the range of specific information that can be obtained from and about a particular context by purposely selecting locations and informants that differ from one another. Polit and Hungler, (2001:136) corroborates that in purposive sampling the researcher looks for individuals, groups and settings where the specific processes' being studied was most likely to occur. Twenty participants who were diagnosed with TB both at Initial and Continuation Phases of treatment were selected. Ten participants were drawn from Mashishing clinic at the Thabachweu municipality and ten from Shatale clinic at the Bushbuckridge municipality in the Ehlanzeni district of the Mpumalanga Province as the above clinics had the highest number in each sub-district in 2009. Data was collected from ten patients in each clinic until data saturation was reached. At the Mashishing clinic saturation was reached during the interview with the sixth participant while at the Shatale clinic saturation was reached with the fourth participant. The researcher decided to choose Ehlanzeni district as the study site and selected Bushbuckridge municipality because it was declared nationally in 2009 to be underperforming. Shatale clinic was selected as there were many TB clients and defaulters in the sub-district quarterly reports Department of Health, (2008a:19). The researcher selected Mashishing clinic at Thabachweu municipality as Mashishing clinic had the most TB patients and defaulters of all Thabachweu clinics.

## **2.6 Inclusion criteria**

Katz (2006:38) refers to inclusion criteria as eligibility reference points such as age, residence, health status and certain languages. This study included all patients who were diagnosed with TB and on anti-TB treatment either at the Intensive Phase or Continuation Phase, including Retreatment patients, MDR-TB and XDR-TB patients at the Mashishing clinic at Thabachweu municipality and Shatale clinic at Bushbuckridge municipality in the Ehlanzeni district of the Mpumalanga Province, South Africa. The researcher included males and females, aged 25 to 65 years.

## **2.7 Study sites**

Katz (2006:38) referred to the place where a study is conducted, how sites were selected and why sites met the criteria of the researcher as a study site. The Mpumalanga Province consists of three districts, namely, Ehlanzeni, Gert Sibande and Nkangala. Thabachweu municipality is a place with a natural monument and caves that boost the economy of the province. This rural municipality is located in a mountainous and rainy area notorious for its slippery mud and tarred roads, especially during summer. Thabachweu has a gold and two platinum mines, five timber factories, saw-mills, and many farmers, timber and immigrant workers. The area has three-roomed Reconstruction Development Programmes (RDP)-styled houses and muddy houses in informal settlements. It is a tourist destination with four museums and many curios. Bushbuckridge is classified as a very large rural and nodal area. Traditional practices in Bushbuckridge culture also involves educated people. During winter, the schools and churches are empty, and no recreational facilities exist. The majority of the people in Bushbuckridge are not educated, but it has many primary and secondary schools, and one technical college. Shatale consists of more RDP houses than other villages in greater Bushbuckridge. Many people prefer ploughing and gardening in their yards as a means of subsistence, while few are taxi drivers and some even taxi owners.

## **2.8 Data collection**

Data was obtained from the participants by means of semi-structured interviews (Cresswell, 2003:186).

### **2.8.1 Interview**

This study utilized open-ended questions and note taking during interviews, described as semi-structured interviews (Creswell, 2003: 186). One-to-one interviews can yield a great deal of useful information of facts, feelings and motives, present and past behaviours, peoples beliefs and perspectives, standards for behaviour and conscience, reasons or feelings (Karim and Karim, 2005:146; Leedy & Ormond, 2005:147). Data collection was done using semi-structured in-depth interviews. Preparation for the interviews was arranged with the clinic managers by the researcher. Appointments were made for interviews. The researcher liaised with the clinic manager in each clinic to schedule the return date for all TB patients on the days that the researcher will collect data. The private room and consent were also arranged in advance in each clinic with the managers and the participants.

The researcher went through the interviews with each participant after greeting each participant and explaining the reasons for the study and the questions they had to answer. During interviews, some participants reacted strangely due to the trauma of TB infection and the frustration they experienced. Others were angry, especially the retreatment TB patients and those infected with HIV/AIDS, and some felt hopeless about their poor prognosis. Some participants responded well to the use of audiotapes and field notes when data were recorded during the interviews. Audiotaped interviews were later transcribed. The researcher ensured first-hand experience with the participants, and observed their reactions and body language during interviews.

The central question was “What do you think could be the factors that lead to the increase in the number of TB patients in your area?” The patients were able to explore the topics although when probing for the responses some participants felt uncomfortable to discuss their experiences. Trust and confidentiality were built during one-to-one interviews and the participants responded to questions in their language preferences, until a saturation point was reached. Saturation occurred when the patients were repeating the same answers that other participants already mentioned

### **2.8.2 Probing for responses**

Throughout semi-structured interviews probing questions were asked for responses from the patients. Probes are more frequently required in eliciting responses to open-ended questions. Appropriate verbal probes might be “How is that” or “In what ways”. Generally, a useful probe is “Anything else” Creswell (2003:186). In this study, the researcher asked for responses as the participants were elaborating on factors that led to the increase in the number of TB, for example, participants who stayed in the RDP houses and experienced poverty were asked “How?” The participants responded with various reasons.

### **2.8.3 Field notes**

Field notes were taken during data collection. These were recorded in a small notebook and included observations and their interpretations. Interactions observed, conversations heard and impressions of field settings where the interviews were conducted were noted. These field notes were also used to validate the audiotaped comments. Mouton and Babbie (2001:253) are emphatic about the taking of accurate field notes and the recording of responses exactly as given by the participants to the researcher, and that these data sources should not be tampered with or summarized, paraphrased or corrected for bad grammar or spelling. Thus, exactness is very important as the interviewer will not necessarily know how the responses are to be coded before processing. In this study, the researcher observed these guidelines and

continued to collect data from all the participants, even though saturation was reached with the sixth participant at the first clinic and the fourth participant at the second clinic.

#### **2.8.4 Tape recording interviews**

A tape recorder was used to record the interviews. A tape recorder was placed on a small table during interviews in the private room. Tape recording affords an opportunity for participants to directly share their “reality” (Creswell, 2003:187).

### **2.9 Data analysis**

In this study, data from tape recordings were interpreted and analyzed in the context of the real situation. Data analysis refers to the reduction of data into constituent parts in order to find answers to the research questions. The main purpose had been to reduce the data to a clear and understandable form so that its relation to the research objective might be studied and that hypotheses may also be generated for future studies once conclusions has been drawn (de Vos et al, 2005:100). Data collected in the current study were analyzed qualitatively. The research findings were summarized in the form of themes and categories in table and text format.

The researcher needed to set aside preconceptions to better understand the phenomenon as experienced by the participants. Therefore a phenomenological design was used in this study and followed the specified steps in data analysis (Janesick, 2006:31):

- The researcher first obtained all descriptions in their entirety.
- The researcher then extracted significant statements from each description.

- The statements were then formulated into meanings and these meanings were clustered into themes
- The researcher then integrated these themes into a narrative description

In this research study, the Tesch's method of data analysis was followed and comprised of eight integrated steps as stated in Creswell (2003:192):

- Get a sense of the whole. Read all the transcriptions carefully. Write down some ideas as they come to mind. The researcher carefully and repeatedly read the transcripts of all the participants and understood their various languages and cultures. The researcher made field notes during data collection and also listened to the tape recordings, and wrote down the summary of the study.
- The researcher analyzed transcriptions of the interview, and went through them asking "What is this about?" and "What is the underlying meaning?" The researcher then coded the important and relevant key terms after reading relevant literature on the factors that generally contribute to increases in the incidence of TB, and built some perspectives on the collected data pertaining to the number of TB patients at Thabachweu and Bushbuckridge municipalities.
- The researcher rationalized the coding for the existence or frequency of concepts and listed all topics covered with participants. The researcher chose to code for existence by only indicating that something does or does not occur (Mouton and Babbie, 2001:492). The researcher grouped similar topics, and those that did not have association were clustered separately.
- The researcher abbreviated the topics as codes and wrote codes next to the appropriate segments of the text. This preliminary organizing scheme was employed to see if new categories or themes emerged as major findings. The researcher differentiated by coding the concepts of the collected data to include all meaningful instances of a specific code's data. The researcher then decided on the number of codes by determining the important and relevant keys looking at the relevant

literature on the factors contributing to increase in TB patients at Thabachweu and Bushbuckridge municipalities. An independent coder verified the data and commented that the researcher used too many acronyms without first defining the acronym, and that the researcher should edit the language of the whole dissertation. Interview schedules and field notes in the separate note books were then colour coded appropriately.

- The researcher developed themes and categories from coded or associated texts and reduced the total list of categories by grouping topics that relate to each other. This was accomplished by drawing lines between categories that showed interrelationships and categorizing the topics into smaller groups according to the headings that appear in the results section of the study. The researcher specifically chose coding for the existence or frequency of concepts occurring in relation to the factors that contribute to the increase in the number of TB patients at Thabachweu and Bushbuckridge municipalities.
- The researcher finally decided on the abbreviation for each category and arranged the codes alphabetically. The researcher ensured privacy and confidentiality of irrelevant information throughout the study. At the end of the study the irrelevant information were destroyed.
- The researcher collated the coded data belonging to each category in order to perform a preliminary analysis. The researcher and independent coder reached consensus for coding texts. The same codes for both males and females were used and irrelevant information was obliterated.
- The researcher analyzed the results by coding certain segments of the texts attached to certain meaningful key labels or codes. In practice, this involves reading and re-reading the texts to make sense of the patterns and themes that emerged from the data. In this study, the researcher communicated the analysis of results in the form of themes and categories.

## **2.10 Ethical considerations**

Ethics deals with matters of right and wrong. Ethics is the social, religious or civil code of behaviour that is considered correct. The following ethical considerations were observed during this study:

### **2.10.1 Permission**

The proposal served before the Senior Degrees Committee of the University of Limpopo - Turfloop Campus. The proposal was submitted to the Polokwane/Mankweng Hospital Complex Ethics Committee for ethical clearance. Permission was obtained from the Mpumalanga Provincial Department of Health Ethics Committee to conduct the study in Thabachweu and Bushbuckridge municipalities of the Ehlanzeni district.

### **2.10.2 Informed consent**

According to Cohen, Manion and Morrison (2008:52), the principle of informed consent arises from the subject's right to freedom and self-determination and competence to make correct decisions voluntarily after full information, including the right to discontinue participation in the project at any time without prejudice, had been given to the participant. Informed consent was obtained from all the patients after the purpose and the aims of the study had been explained to them, and all relevant information clarified. The patients understood the purpose of the research and that participation in the study was voluntary and that they would not be paid. Patients were also informed that they could terminate or opt out of the study at any stage without intimidation or repercussion. Permission to use a tape recorder and field notes was also requested and obtained from the participants by explaining the importance of these devices that will aid the researcher in data analysis (Burns and Grove, 2003:203).

### **2.10.3 Right to confidentiality and anonymity**

Complete anonymity exists if the participant's identity cannot be linked, even by the researcher. Confidentiality is the researcher's management of private information shared by the participant as stated by Burns and Groove (2003:204). All data gathered were treated with confidentiality and anonymity of the participants maintained. During the period of the study, all records and the tape recorder were locked in a cupboard in the researcher's home with the laptop computer that was only used for the research. The participants were informed about the steps that would be taken to keep the responses anonymous. These included codes used during the study and the master list that would be destroyed on completion of the study. The participants were informed about any risks or discomfort, benefits, the researcher's full names and the possibility of receiving a summary of results. The participant's privacy and dignity were protected by ensuring that no connection between the participants and the data could be made. The tape recorded interviews and the field notes were stored under lock and key by the researcher throughout the study until two years after graduation when the data will be completely destroyed. Confidentiality of the data was ensured throughout the study during data collection in the two chosen clinics.

### **2.10.4 Privacy and the right to protection from harm**

All the patients were assured that no harm or injury would be inflicted on them and that they would still be treated with respect when visiting the clinic for consultation. The interviews were conducted in a private room to ensure privacy. Also, professional secrecy was observed for all the patients who disclosed their HIV-positive status as one of the factors that contributed to the increase in the number of TB patients in their municipality areas. No risks or discomfort were experienced by the participants and their personal information has been kept secret and would not be disclosed to unauthorised people. Mutual trust was built between the researcher and the participants during data collection, and counselling was offered during interviews, where necessary (Connolly, Davies, Wilkinson, 2005:105).

## **2.11 Measures to ensure trustworthiness**

Trustworthiness of a study means applicability, consistency and neutrality of its findings or decisions (Mouton and Babbie, 2001:276; de Vos et al, 2005:351). The researcher constantly built trust with the participants during data collection and data analysis. A tape recorder and field notes were utilized in this study with the permission of the participants.

### **2.11.1 Credibility**

The credibility of qualitative data and the resulting findings are aspects of data quality on which most methodological attention is focused (Polit et al, 2001:313). Polit et al (2001:313) cited Lincoln and Guba (1985:301) who suggested a variety of techniques, such as prolonged engagement, persistent observation, triangulation and member checking, for improving the credibility of qualitative research. Credibility was achieved when confidence in the truth of the data and interpretation was attained. The following procedures were followed to achieve credibility in this study (Mouton and Babbie, 2001:277):

- **Prolonged engagement** - the researcher stayed in the field collecting data until data saturation occurred.
- **Referential agency** - the researcher used audiotapes and field notes for good record keeping.
- **Member checks** - the researcher interviewed the participants until data saturation was reached.

Credibility in this study was also ensured by accurate identification and description of the participants (de Vos et al, 2005:351). Credibility of qualitative data addresses the question whether the research has established confidence in the findings at the end of the study. In this study, an independent coder also verified the credibility of the data. Polit et al (2001:313) defined triangulation as a method used to improve the likelihood of qualitative findings being credible. Triangulation, therefore, refers to the use of

multiple referents to draw conclusions about what constitute the truth (Polit et al, 2001:313). In this study the researcher used observations, a tape recorder and field notes to ensure credibility of the data. According to Jooste (2010:319), the credibility of a study involves carrying out the investigation in such a way that the believability of the findings is enhanced and credibility is demonstrated. An independent coder was used to ensure credibility (Appendix 8). The independent coder suggested that the appropriate name or topic for Theme 2 should be “Factors associated with increased prevalence of TB,” and that the table should be placed close to where the findings are described as it would orientate the reader and provide a structure for the findings.

### **2.11.2 Transferability**

Transferability is the criteria against which applicability is measured in a qualitative study. Hence, it is the ability to transfer findings to other similar situations or problems (Lincoln and Guba, 1985:301; Polit et al 2001:313). Transferability essentially refers to the generalisability of the data (Jooste, 2010:321). According to Mouton and Babbie (2001:277) thick description ensures transferability in a qualitative study, depending on the similarities between sending and receiving contexts, and provided the researcher had collected sufficient detailed descriptions of data in a context and reported them with sufficient detail and precision to allow judgements about transferability to be made by the readers of the study. In this study, transferability was ensured by purposive sampling, collection of detailed information, and dense description of data.

### **2.11.3 Dependability**

Dependability is determined by the extent to which a study would be consistent if the enquiry were replicated with the same subjects in a similar context (Cormack, 2000:278). Dependability of qualitative data refers to the stability of conditions and data over time (Jooste, 2010:322). In this study, the

participants were purposely selected, and the data collection methods, analysis, and the findings of the study were described to ensure dependability. An independent coder was used to verify the data. The independent coder commented that the fact that only two themes were created by the researcher during data analysis was commendable.

#### **2.11.4 Confirmability**

Confirmability refers to the objectivity or neutrality of the data such that two or more independent people could agree on the meaning of the data (Polit and Hunger, 2001:315). Confirmability also indicates the degree to which the findings are the product of the focus of the inquiry and not of the biases of the researcher (Mouton and Babbie, 2001:279). In this study, the researcher obtained valuable information through prolonged contact with the participants, observing them during data collection and without allowing bias or her own perspectives to influence the conversations. An audit trail was done by giving the field notes and the collected data during interviews to the independent coder for scrutiny and confirmation.

#### **2.12 Conclusion**

Chapter 2 described the detailed methodology that was followed in this study, including the research method, research design, population, sampling, inclusion criteria, study sites, data collection, data analysis, ethical considerations and measures to ensure trustworthiness. The discussions of the research findings and the literature control will be explained in Chapter 3.

## CHAPTER 3

### RESULTS AND LITERATURE CONTROL

#### 3.1 Introduction

This chapter explains the results of the study and literature control to verify the themes and categories relative to the application of Orem's theory. According to Chinn and Peggy (2005:178), Orem's theory relates self-care deficit to nursing systems. Orem postulated that people benefit from nursing since they have health-related limitations in providing self-care. In this study, this premise had been tested on the participants who lacked knowledge with regard to TB. A study conducted by Motsomane and Peu (2008:59) in the North West Province, showed that TB participants who were HIV-positive did not want to take anti-TB medication as they thought they would be dying sooner and, as a result, they saw no benefit in TB treatment.

According to the Department of Health (2010:5), there is a high incidence and prevalence of both TB and HIV in South Africa that necessitate more concerted efforts to prevent the spread of the diseases, especially TB, MDR-TB and XDR-TB which may manifest secondary to HIV infection. Chronic TB patients are informed of the relevant resources available to them for continued care upon their discharge from hospital (Vlok, 2006:534). The South African National Tuberculosis Association (SANTA) (2001:6) highlights TB as a social and health problem that is curable, even with the complicating effects of HIV/AIDS. In this study, the central question to participants was "What do you think could be the factors that lead to the increase in the number of TB patients in your area?" The responses were categorized into five themes and their associated categories which are summarized in Table 3-1.

**Table 3-1:** Themes and categories

<b>Themes</b>	<b>Categories</b>
<b>1. Poverty and unhygienic conditions increase TB prevalence</b>	1.1 Poor housing
	1.2 Overcrowding
<b>2. Low educational standards</b>	2.1 Low level of understanding
	2.2 Lack of knowledge about TB
<b>3. Cultural beliefs</b>	3.1 Lack of knowledge due to traditional and cultural beliefs
	3.2 Lack of knowledge due to religious beliefs
<b>4. Poor accessibility to health services</b>	4.1 Lack of information on TB since health care services are too far away
	4.2 Poor infection control practices
<b>5. Low occupational standards</b>	5.1 Unemployment leads to a lowered immune system due to inappropriate diet
	5.2 Lack of money to buy food and to pay for transport to health services

### **3.2 Socio-demographic variables of participants**

Ten TB participants were selected from Mashishing clinic in the Thabachweu municipality and another ten from Shatale clinic in the Bushbuckridge municipality of the Ehlanzeni district, Mpumalanga Province. This study included both males and females. The socio-demographic variables of participants

that contributed to the increase in the number of TB patients at Ehlanzeni district of the Mpumalanga Province are summarized in Table 3-2.

**Table 3-2:** Socio-demographic variables of participants

<b>Demographic</b>	<b>Variable</b>	<b>n</b>
<b>1. Age</b>	6-25 years	3
	26-45 years	14
	46-65 years	3
<b>2. Type of house</b>	RDP house	9
	House with 3 bedrooms	4
	Shack	5
	Mud house	2
<b>3. Educational level</b>	Illiterate	3
	Primary education	3
	High school education	10
	College education	3
	University education	1
<b>4. Occupation</b>	Unemployed	5
	Education sector	1
	Health sector	2
	Administration	1
	Farming or domestic	3
	Mining sector	3
	Driver	1
	Hawker	3
	Prisoner	1

<b>5. Religious affiliation</b>	Roman Catholic	1
	Lutheran	1
	Anglican/Methodist	3
	ZCC	9
	Charismatic	5
	Traditional healer	1
<b>6. Distance travelled to clinic</b>	0 to 5 km	17
	More than 5 km	3

### **3.3 Theme 1: Poverty and unhygienic conditions increase TB prevalence**

In this study, it was found that unemployment and unhealthy living conditions contributed to the prevalence of TB in various communities of the Ehlanzeni district. Since unemployment is a major cause of poverty and leads to malnutrition, poverty predisposes individuals to TB. Thus, effective TB prevention and control is possible within an improved socio-economic framework. Poverty also contributed to an increasing number of defaulters as some participants indicated that TB treatment was painful without food as it increased their appetite, but that they did not have enough food to eat.

#### **3.3.1 Category 1: Poor housing**

Stolts (2009:38) affirmed that poor people living in shacks with little air circulation are at a higher risk of contracting TB infection from each other, although HIV/AIDS infection is another major predisposing factor to TB. According to the World Health Organization (2005a:40), poor housing and a high population density constitute the fifth TB transmission model. The World Health Organization (2007a:19) also reported that ventilation and ultraviolet light have definite effects on the transmission of TB.

The majority of the participants in this study stayed in RDP houses which they utilized as a home for their entire families. RDP houses have little or no ventilation and the problem is compounded by overcrowding. Mud houses also contributed to the increase in the number of TB patients. Many of the participants stayed in informal shacks in which hygiene standards are low and the floors dusty. Mud houses are used mostly for the accommodation of migrant mine workers. During winter these houses are very cold and people who occupy them, especially those with low resistance, are prone to respiratory illnesses, including TB.

One participant responded as follows during an interview session:

*“I am staying in the informal shack as I came here to work and as a migrant contractor the dust and dirt in the shacks as there is no space between neighbours so that environment give me this TB and also I am HIV positive due to many girlfriends as a migrant worker.”*

Poverty is the leading contributing factor to TB infections in migrant workers since they often face overcrowding in shared RDP houses, informal shacks, hostels and mud houses. Their close proximity to one another also means that they easily spread infections to one another. Retrenchment and recession contributed to poverty and malnutrition which further lowered the participants’ resistance to infections since they could not afford to buy healthy foods. Participants also indicated that the areas in which they stayed did not have proper shopping amenities, that the informal tuck shops sell mostly stale foods and in the evening the same tuck shops are being utilized as bedrooms. Likewise, bread sold from informal shacks and RDP houses were not properly covered. Dust was also a major problem for those who lived in mud houses and informal shacks. Nine participants reported that smoking was their main challenge as some dwellers smoked cigarettes while others mixed the cigarettes with dagga (marijuana). Four participants indicated that their TB was due to the smoke they inhaled from burning tyres during a strike that lasted for six months. An example of such a response is cited below:

*“The tyres that the strike peoples were burning, the spinning of the cars during batch on the dust, the smoke from burning the municipality buildings and the clinic we inhaled and it infected our chest and caused heaviness in our chest and polluted the air that we breath and caused TB, also the defaulter that caused by strike when clinic was burnt made us who were DOTS at clinic to stay at home without treatment and we were busy infecting others on no treatment.”*

Interestingly, the Mashishing clinic at the Thabachweu municipality was also burnt during a strike, and this coincided with the period of data collection and data analysis of this project. The prolonged strike action also contributed to some participants defaulting on taking TB treatment and this might have caused the development of resistance against the initial phase that further complicated into MDR-TB. Participants indicated that they were scared of intimidation during the strike. Three participants who were also mine workers reported that they worked underground with dust and without protective clothing and sometimes they used chemicals and that is why they contracted TB. The World Health Organization (2008b:3) confirmed that poor hygiene conditions, overcrowding and poverty play a significant role in promoting TB and that primary prevention through screening is an effective tool.

### **3.3.2 Category 2: Overcrowding**

Overcrowding constitutes a major health challenge and contributed to the spread of TB infection among participants living in the RDP houses in areas close to the Shatale and Mashishing clinics. Participants who stayed in 3-bedroom houses indicated that such an overcrowded lifestyle and behaviour presented a significant challenge to their health, and the same analogy applied to participants who stayed in informal shacks. The following responses were recorded from participants when they were asked about the factors they thought contributed to the increase in TB cases in their area:

*“I think working in the underground at the mines caused the TB since I was examined pre-employment with x-ray and I had no TB but after three years working there TB was found in me now.”*

*“The contributing factor to TB is overcrowding in the RDP houses as is hot and I am staying with my husband, four children and my brother who had TB last year.”*

Stolts (2009:38) listed multiple factors that could contribute to the TB epidemic, including overpopulation, climate change, malnutrition, conflict and turmoil that lead to displacement and migration. Furthermore, lack of adequate support from the healthcare system has resulted in low cure rates, high defaulter rates and inadequate follow-up of patients, ultimately spawning an epidemic of drug-resistant TB. Similarly, poor infection control in health facilities has led to the spread of TB (drug-susceptible and drug-resistant organisms) to other patients and to healthcare workers. It is widely acknowledged that economic hardship and poor living conditions are to blame for the spread of TB in affected communities (Kozier, 2004:38). The study conducted in Gambia on the risk factors for TB infection using the tuberculin skin test showed that smear positive TB cases were higher in subjects who were in contact with individuals with TB in their households compared to community control subjects (Christian, 2003:34).

### **3.4 Theme 2: Low educational standards**

Individuals with little formal education are at an increased risk for TB and lack of knowledge and ignorance promote TB infection in communities.

#### **3.4.1 Category 1: Low level of understanding**

In this study, the low level of knowledge of the participants contributed to the increased TB incidence reported at the test sites. Some participants reduced the prescribed TB drug dosage while others

interrupted treatment due to unbearable side effects. The results in this study further indicated that although 17 out of 20 participants had acquired some knowledge of TB at various levels, they still suffered from the disease, thus implying major gaps in the knowledge of these TB sufferers. One participant responded:

*“Sister I really did not understand that when I reduce and skip TB treatments other days will really lead me to repeat taking TB treatment today and prolong my months of taking treatment of TB from six to eight months and this killed also my partner as she did not know TB and she did what I also did as I confess.”*

### **3.4.2 Category 2: Lack of knowledge about TB**

In this study, most educated participants responded to interview questions like their illiterate counterparts. Schilling and Cann (2003:389) emphasized the need for patient education with regard to adverse or side effects of TB drugs and the reporting of these side effects. The fact that some participants did not believe that they had TB, indicated a lack of understanding of TB and the importance of the need of education to bridge the knowledge gaps. The following participant responses were recorded during interviews:

*“I don’t understand as an educator eating well at home and also at school there is feeding scheme and we eat healthy but I think this TB is not real TB but is Mafulare and witchcraft since people hate me since my children progress well at school so neighbours be witched me, I strongly believe that and my ancestors revealed to me also during the night through dreams.”*

*“TB treatment we drink four big tablets every day for half a year period and no off until I finish, really nurse you can’t cope even if you were in my boots, so I think to suffer from TB is a year or a life punishment as now I take TB injection with ART in the hospital, I really feel this is a curse to have one or both TB and AIDS, now life is a perpetual struggle to me and I feel I rather die so that I can stop to drink the years treatment.”*

These responses corroborated the patients' lack of knowledge and understanding of TB and, therefore, Orem's theory of self-care deficit. The need of healthcare education with regard to understanding TB as an infectious disease which is curable when taking treatment for 6 to 8 months is important. As an educator, the participant lacked knowledge of TB. According to Orem's theory, patients should be able to care for themselves if they understand TB and its treatment (George, 1995:101). The Department of Health (2008a:10) stated that Standardized Treatment for Regime 1 (new cases) are for those who are diagnosed with TB for the first time and they should take TB treatment for 6 months - thus the 2 months will be their Intensive phase and the last 4 months will be their Continuation phase, and during this period there is rapid killing of tubercle bacilli. Standardized treatment for Regime 2 (retreatment cases) is for those patients who were previously treated for TB, but were more likely to have bacilli resistant to isoniazid and perhaps other drugs. The retreatment regime is longer (8 months), thus the Intensive phase is 3 months with 2 months of streptomycin injection and the Continuation phase is 5 months. The XDR-TB does not respond to any of the anti-TB drug regimes and affected individuals are considered detrimental to the community since the government normally supply them with shelter and food not only to boost their immunity, but also as a prevention strategy.

### **3.5 Theme 3: Cultural beliefs**

Cultural diversity is a phenomenon in which people of different cultures share basic concepts, but from different perspectives and opinions which often result in behaviours that may be considered irrational, conflicting or contradictory (Lewis, 1996:2). In this study, it was observed that participants often placed strong focus on their cultural roots and this affected their understanding of TB, its transmission, and the benefits of a planned treatment schedule. These will be elaborated further in the subsections that follow.

### 3.5.1 Category 1: Lack of knowledge due to traditional and cultural beliefs

One of the participants (see response in section 3.4.2), despite her level of education, held firm cultural and traditional beliefs about ancestors and dreams, which made her to develop attitudes towards TB. Patients with strong cultural customs prefer to consult traditional healers on issues that affect their lives. Traditional healers play an important role in South African cultural folklore (Peu, 2000:1). The results of this study indicated that beliefs, culture and attitudes have a great impact on the participants' view points and behaviour. Culture also encompasses all spheres of human life, including religious beliefs. Every ethnic group, tribe or nation has a belief system which determines and shapes the lives and everyday activities of its members. The following responses from the participants illustrate these in the context of TB:

*“I delayed and denied TB treatment because as a traditional healer I know that Mafulare is only treated traditionally so I delayed by treating Mafulare first putting aside TB treatment, so I was at the active stage of TB infecting also my customers as I spits sputum on the ground at home and cover it with soil, when the air blows everybody inhale the germs and TB was spread. I also told my customers with Mafulare on clinic or doctors' medicine to stop when on my herbal medications so I contributed to make them to become resistant.”*

These sentiments reflect positively on traditional healers who offer support to patients suffering from TB, and connote a significant role for traditional healers in the DOTS course (SANTA, 2001:23). Mulder (2004:334) confirms that enemas cause imbalances between fluid intake and output, and therefore precautionary measures should be taken when prescribing TB medicines for patients who prefer traditional medicines. Therefore, it is critical that all traditional healers and TB patients know about the dehydrating effect of traditional medicines, particularly enemas.

In this study, participants confirmed that they lacked information on the signs and symptoms of TB, and the significance of completing TB treatment until it is completely cured. Most participants indicated that they might have contracted TB from those who spit saliva everywhere. They also believed that by inhaling dried saliva dust can contribute to the spread of TB. Some participants elaborated that they interrupted TB treatment or mixed TB medications with herbal preparations. Others indicated that they were convinced by the traditional healers that someone younger than them has seen a corpse and that the traditional healer will give inhalation medication for the coughing and tight chest, and only when they vomited a thick mucus then they will be healed.

### **3.5.2 Category 2: Lack of knowledge due to religious beliefs**

The participants in this study had various religious affiliations. Thus, religion had been implicated in the participants' understanding of how they were affected by TB. Since religion is regarded as an integral part of culture, illnesses such as TB and HIV/AIDS are frequently seen as a curse from God for sins committed by the sufferers while witchcraft is sometimes blamed for the scourge. The nine ZCC and five Charismatic participants in this study defaulted on TB treatment during fasting and praying. In addition, the ZCC participants stopped treatment because they believed in spiritual healing espoused by their church elders. Religion really is a cultural aspect that is firmly based on the values and beliefs of people. The following responses from the participants during interviews exemplify this:

*“I believe that what increase the TB disease to us is that TB treatment as a prophet in the church told me to go for spiritual medicine first so that I can be cured TB, I interrupted TB treatment and the nurses told me that I will take TB treatment for eight months instead of six months.”*

*“The cause for the increase in TB is that our pastors want us to fast and pray if we are sick or have any other problems as the Bible says with God all things are possible so through prayer and fasting, so many*

*Christians omit treatment and meal to pray so they infect others when they fast and omit TB treatment especially the first two months after diagnosing TB.”*

Deeply-rooted cultural beliefs can override and shape people’s behaviour despite their level of education. Shannon, Wilson and Stang (2004:1083) contended that patients should be educated that taking food prior to treatment may be useful in preventing gastro-intestinal disturbances. In this study, the researcher supports the aforementioned principle and the need to educate DOT supporters of the significance of a healthy diet in promoting health. This prerequisite for good TB prognosis is in line with Orem’s theory of self-care deficit in nursing practice and the provision of psychological support, and is particularly directed at patients to underscore the significance of completing TB treatment even though the duration may seem long (George, 1995:103).

### **3.6 Theme 4: Poor accessibility to health services**

Poor accessibility of communities to health services presents a major challenge for healthcare delivery.

#### **3.6.1 Category 1: Lack of information on TB since healthcare services are far**

According to the research study that was conducted by Shirley (2007:39), inaccessible health services, including the distance travelled to the healthcare facilities, contributed to patients defaulting on TB treatment. Although 17 participants in this study stayed close to the clinics and presumably had access to information on TB, they were still infected with the TB bacilli. This observation implied that these participants had no intrinsic motivation to utilize the free available healthcare services, and thus needed extrinsic motivation to encourage them and the communities from which they come to access and effectively utilize such services. The following response typifies this notion:

*“The distance from the mine to the clinic is too far and I don’t have transport also it is difficult to have one DOTS since we work different shifts and the clinic is far from mine for me to DOTS daily and TB treatment is tiring for six months, the cause for the increase in TB is that I need privacy so if the DOTS is off I omit the treatment since I don’t want everybody to know that I have TB”.*

The majority of participants in this study indicated that TB treatment was unbearable, inconvenient and too long. They also cited that they stayed far away from healthcare services, and had no supervision when taking treatment. Participants who worked in mines also cited distance as a major deterring factor, especially when they had to come for monthly follow-ups. They also did not receive supervision for appropriate DOTS. In addition, waiting in long clinic queues for monthly TB treatments was tiring to the already weak participants. Furthermore, participants with MDR-TB were disillusioned and felt hopeless because their poor prognosis meant years of treatment. The Department of Health (2008b:62) stressed the importance of adherence to anti-TB drugs and warned of the implications if taken incorrectly or irregularly, that is, the patient will not be cured and the disease will be prolonged and difficult to treat in future as it is expensive to treat MDR-TB and XDR-TB.

### **3.6.2 Category 2: Poor infection control practices**

According to the Department of Health (2007b:5), proper infection control measures apply to all the TB strains, irrespective of the resistance pattern. Special issues relevant to infection control measures for MDR- and XDR-TB were also highlighted. Individuals who shared dagga at shebeens and whistles from one mouth to another during strikes and sporting events are at increased risk for TB. Four participants indicated that they were first in denial about their TB-positive status. Migrant workers also contribute to low cure rates if they are still on treatment and transfer to other countries. Some participants defaulted on TB therapy as no DOTS support was available after transfer. Lack of knowledge of infection control measures by the police was problematic for a prisoner patient who had worked as a hawker since he

shared one cell with two or three other prisoners. Poor or no ventilation in the jail also encourages the spread of TB to uninfected prisoners since bacteria multiply rapidly in such conducive environments. Odendal (2009:40) stressed that infection control measures are essential to prevent the spread of *Mycobacterium tuberculosis* to vulnerable patients, healthcare workers, the community and those living in congregate settings.

### **3.7 Theme 5: Low occupational standards**

The low standards of education and unemployment are the leading causes of poverty and lower the immune system which predispose people to TB. One participant who was a health worker replied:

*“The factors that contribute to the increase in the number of TB in our area to me was that I had lowered resistance due to diabetes mellitus. The congested working condition with little ventilation predisposed me to TB as I am collecting them sputum daily and take vital signs so every patient pass through my vital signs room and because TB is infectious so patients infect us as much as they infect one another while waiting at the clinic.”*

Orem’s theory encourages the provision and maintenance of an environment free from hazards that supports personal development (George 1995:103). It is the responsibility of the government to ensure a safe environment with proper ventilation that does not expose people to health risks as indicated by the above participant. Investigations conducted in Africa, Asia, and South America have shown that healthcare workers are at increased risk of TB infection compared to the general population, since they have close contact with persons with TB who have not yet been diagnosed or started treatment (Department of Health, 2007a:15).

### **3.7.1 Category 1: Unemployment leads to a lowered immune system due to inappropriate diet**

According to the research study by Richmond (2004:25), malnutrition was the leading cause of lowered resistance among HIV-positive individuals which predisposed them to opportunistic infections such as TB. In this study, participants stayed in RDP houses, hostels, informal shacks and mud houses, thus confirming their poor living conditions. The majority were unemployed and those who worked earned a meagre wage as they were uneducated. Some participants depended on their children's social grants for daily living while others were single parents and sole bread winners. The above are borne out by the following response:

*“The Government that we voted for and does not create the jobs for us, I am single, my wife passed away and they say is AIDS, I was retrenched and I support five children, we don't have food, we survive by the grants for the two children who are under fourteen years from the five children, I am now weak and having frequent coughs and they say is TB”.*

Lawn (2009:39) reported the findings of a study on the burden of TB among people with HIV/AIDS in Gugulethu clinic in the Western Cape of South Africa. It was observed that before, during and after ART initiation, two thirds of the people either had prior or current TB infections. Most of the prior TB cases occurred within the 2-3 years before initiating ART. Once on ART, the risk of becoming infected with TB was extremely high during the first 3 months, probably due to unmasking of TB missed by baseline screening. The key determinant of TB risk was the person's CD4 cell count, and hence those with poor immune recovery on ART were at higher risk (Mono, 2009:59).

In 2007, Clayden (2008:3) conducted a study in Khayelitsha, a township outside Cape Town, on antiretroviral therapy (ART) and TB treatment in HIV/AIDS patients who developed TB while receiving ART. The findings from the study cohort of adults receiving rifampicin-based TB treatment with either

nevirapine- or rifavirenz-containing ART were limited by the small number of patients who developed TB while on ART. There was no increased risk of viral load (>400 copies/ml) with TB. According to Stephen (2005:10) the ongoing risk of TB during HAART (highly active antiretroviral treatment) is much greater among those with low CD4 cell count and advanced clinical stage of disease, past history of TB is not a risk factor. It is confirmed that the risk of TB during HAART in Africa is associated with advanced pre-treatment immunodeficiency, the risk might be decreased by earlier initiation of HAART. In addition, those patients with advanced immunodeficiency may derive greatest benefit from adjunctive treatments such as isoniazid prophylaxis (Gustafson, 2005:21).

The World Health Organization (2008c:27) states that Provider-initiated diagnostic HIV testing that includes offering HIV testing to everyone with TB as part of their routine management should be integrated in all health care facilities. In this study, 12 out of 20 participants were HIV positive, and 8 were already taking ARTS. Some participants knew their HIV status, while the others tested for HIV when they were already positive for TB due to the recent programme for collaboration of HIV/AIDS and TB which allows every HIV-positive person to be screened for TB as much as it allows every TB-positive person to be screened for HIV. One HIV positive and retreatment participant was diagnosed with MDR-TB, consistent with the notion that HIV-positive individuals are prone to multiple opportunistic infections. Three of the participants first denied their HIV-positive status due to the sensitivity and the stigma attached to the disease. TB is the most common opportunistic infection and a leading cause of death in persons living with HIV/AIDS. People with HIV-associated immunosuppression may become infected or re-infected with TB upon exposure. One participant responded as follows:

*“I really delayed myself as I was scared to test HIV because I thought I will kill myself, but I have been loosing weight, suffered from sexually transmitted infections (STI’S) and flues as well as pneumonia until when I was counselled for a test, as I was already sick I was positive, my soldiers were 15 and TB also*

*was present now I am taking treatment and I have accepted and the fear to die is gone as I saw worse people in the wellness project on ARTS.”*

### **3.7.2 Category 2: Lack of money to buy food and to pay for transport to health services**

According to the World Health Organization (2005c:24), unemployment in underdeveloped countries is a contributory factor for transmission of TB and the percentage rises between 7.5% and 13.9%. The following response attests thus:

*“Really TB is still going to finish us and malnutrition as I am affected and poverty of unemployment will kill us, I left TB treatment sometimes as they make me to be hungry meanwhile I don’t have food since I am not working and now TB is repeating me and the duration for TB now will increase from six months to eight months, I think this time it will be from better to worse, TB is my enemy and a life sentence to me.”*

A low employment rate contributed to the increase in the number of TB patients since 5 participants indicated that they were unemployed and one was a prisoner.

## **3.8 Conclusion**

Chapter 3 discussed the results of this study in relation to the literature control. Five themes emerged from the data, namely poverty and unhygienic conditions increase prevalence of TB, low educational standards, cultural beliefs, poor accessibility to health services and low occupational standards. In Chapter 4, the strategies and guidelines to reduce TB will be discussed.

# CHAPTER 4

## STRATEGIES AND GUIDELINES TO REDUCE TB

### 4.1 Introduction

The results and literature control were outlined in the previous chapter. In Chapter 4, strategies to stem the increase in the number of TB patients and ways to strengthen TB support programmes will be discussed. The guidelines are aimed at planning more effective actions to address the findings discussed in Chapter 3, and to give readers of this study a better understanding of the following issues in the context of TB in healthcare settings (Department of Health, 2008c:5):

- Infection prevention and control procedures to reduce the risk of TB transmission in healthcare facilities
- Increasing awareness of TB among healthcare staff to inform better preventive action
- Raising issues related to MDR-TB and XDR-TB

There is a need to bridge the knowledge gaps that have been identified in this study with respect to the spread, clinical manifestations and prevention of TB. In view of these limitations, the conceptualization of guidelines according to Foundation for Professional Development (2007:5) will help healthcare managers and workers to minimize the risk of TB in clinical facilities and other community settings where the risk of TB transmission may be high due to the prevalence of TB, MDR-TB and XDR-TB. The appropriate disease intervention and primary health promotion strategies that could be effective will be rationalized to motivate TB patients to access the available free healthcare services in their municipalities. Bathopele principles and patients rights encourage patients to know the services that are offered at their

nearest health service providers. The following guidelines were developed as they relate to the themes that emerged from this study.

#### **4.2 Poverty and unhygienic conditions**

People who live in overcrowded houses and unhygienic conditions are at increased risk of exposure to TB. Patients diagnosed with TB are especially vulnerable when discharged from hospital to their homes in poor communities where treatment support is generally lacking. Pillitteri (2003:1037) maintains that discharge planning is an important link in the patient's move from hospital to home, or to the referral facility. If a discharge plan were to be developed with careful consideration of the patient's socio-economic circumstances, TB patients would adhere to their treatment regime and not be apt to sudden relapse. Stanhope and Lancaster (2000:382) concur with the view that a discharge plan is part of a continuous healthcare process that prepares the patient for the next phase of care. Therefore, it is important that all healthcare facilities have a comprehensive discharge plan in order to enhance the patient's prognosis. To achieve this plan, DOTS strategy should always be observed to ensure the continuity of care in various home settings where the patients reside. The majority of participants indicated that they were unemployed and stayed in shacks and RDP houses, and that overcrowding presented a significant risk factor for the increasing incidence of TB. Orem's theory of self-care deficit (George, 1995: 103) implies that treatment guidelines is a healthcare obligation that will give direction to TB patients on how to continue with treatment in their home environment. Proper administration and practice of a patient discharge plan can thus eliminate some of the socio-economic variables or factors that contribute to the rising incidence of TB in poor-resource settings.

Tuberculosis is regarded as a curable disease if patients adhere to the treatment regime until completion. Patients who interrupt treatment and default on it may face the challenges of retreatment and the development of drug resistance. Hence, MDR-TB becomes a health burden for affected individuals as they have to undergo years of treatment or be confined to a TB institution. It is very costly for the

government to care for MDR-TB and XDR-TB patients. The prognosis of TB patients is particularly poor if they have developed resistance in addition to being HIV-positive and on ART, because of their incompetent immune system. Moreover, dedicated mobile clinics should visit farm workers and miners. Farm owners and mine managers should motivate for regular visits by occupational health practitioners who, together with workplace occupational health and safety representatives, should run appropriate TB awareness programmes that emphasize infection control and preventative measures.

According to Odendal (2009:6), TB is a constant problem in healthcare settings, and the most common opportunistic infection and leading cause of death among people living with HIV/AIDS. It is estimated that between 30% and 40% of people living with HIV/AIDS reside in high-burden TB settings and will thus develop TB in the absence of TB preventive therapy or ART Eldred (2009:39). The risk of developing TB usually doubles in the first year after becoming infected with HIV and increases progressively over time. Persons with HIV in the absence of TB at the time of diagnosis may still contract TB infection in later years, and will then become risk factors for its spread in their communities, or to fellow patients, healthcare workers, and staff in health facilities. Awareness campaigns and continuous health education on the advantages of taking TB treatment early to promote a better cure rate should be prioritized. The Department of Health should encourage the integration of more comprehensive healthcare services as an effective tool in disease surveillance and control. Local municipalities should create job opportunities for the poor and more houses for those who stay in shacks and overcrowded RDP houses to reduce the spread of TB.

### **4.3 Poor accessibility of health care services**

Effective TB risk and treatment management are hampered by the distance that people have to travel to access healthcare services. Poor infection control may be due to lack of information in remote rural villages. The participants of this study indicated that the DOTS programme provides a solution to the factors that contribute to increase in the number of TB patients. The Department of Health (2000:9)

regards the DOTS short course as a significant breakthrough as it provides solutions to the control of the TB epidemic in South Africa. It is suggested that all healthcare providers should use the DOTS programme in the management of TB, especially since the government is committed to sustain TB control activities (Department of Health, 2005:22). The World Health Organization (2005b:55) regards the following factors as critical to the effective management of TB:

- Patient access, that is, distance, time, cost, acceptability;
- Regular drug supply;
- Duration and periodicity of treatment, that is, daily and intermittent;
- Direct observation of treatment (DOTS) by a person who strictly gives the TB patient treatment at home until cured; and
- Drug presentation, that is, blister pack, fixed-dose combinations and patient kits.

Proper infection control measures are likely to reduce the risk of TB, although people may lack information in this regard. There is a need to encourage the DOTS strategy and triage TB suspects amongst our communities. According to Allender and Spradley (2005:211), DOTS needs sustained political commitment, with the governments of various nations recognizing the long-term benefits of providing the resources and staff necessary to ensure its proper implementation. DOTS therapy should be given to all TB patients who agreed to use the services of community-based health workers meeting with them in their homes, at their jobs or at other local venues. Determining where a TB patient will receive DOTS is an important factor in promoting better cure rates for TB as it encourages patients to complete their treatment. Standardized treatment for regime 1 (New cases) and the standardised treatment for regime 2 (Retreatment cases) should be implemented according to the patient's weight following the National TB guidelines at the intensive and continuation phases of treatment. There is standardised treatment regime 3 for children under 8 years and a standardised treatment regime 4 for the MDR-TB cases. The standardised treatment regime should be commenced as soon as the smears are positive or

there is definite diagnosis of any type of TB. Each patient should be given TB treatment and supervised by a DOTS supporter until completion to ensure appropriate TB management. Prophylaxis of TB will also reduce its spread.

All TB records and registers should be properly filled. If there is no DOTS supporter, or not convenient for the patient to see a DOTS supporter, the patient should come to the facility for treatment each morning (Department of Health, 2008d:12). Furthermore, triage of TB suspects allows for their fast-tracking or separation for rapid diagnosis and treatment in healthcare services where there is adequate ventilation. The accompanying of a TB patient on discharge from hospital to home is being practiced by some hospitals. Such accompaniment not only makes it easier to trace treatment defaulters, but also reduces defaulting. Motivational strategies should be implemented to encourage hospitals that do not accompany their patients upon discharge. Failure to administer a motivational system will increase defaulter rates, retreatment TB, MDR-TB and XDR-TB, and Government spending on TB medications. The World Health Organization (2009-2011:53) emphasize the significance of the DOTS strategy as a high standard of TB care that will ensure successful treatment outcomes. All patients with drug-resistant TB should receive ART irrespective of their CD4 count (Bekker, 2008:25). The author further stated that if prisoners qualify for ART, it should be started 2-4 weeks after TB treatment had been initiated.

#### **4.4 Low educational standards**

Patients in this study indicated that they lacked information and understanding of TB, despite their various educational standards. This knowledge gap should be bridged in communities through proper implementation of health promotion strategies that will reduce TB transmission. The process should include patients and the community in TB advocacy campaigns. The community should be made aware of the various aspects of TB, including infection, signs and symptoms, prevention and control. Patients should understand that is important for them to know their HIV status, so that they might be eligible for isoniazid preventive therapy, and that they have the right to rapid TB diagnosis and treatment through the

implementation of the DOTS strategy (World Health Organization, 2006b:12). Patients should know that TB can be spread by coughing and that healthcare settings and community service require persons to cover their mouths when coughing, and that healthcare workers should wear masks as part of a safer environment. Caring for TB patients in a well-ventilated room should be encouraged. Healthcare workers should not stigmatize patients with a low socio-economic status. Election campaigns should include themes that are in line with “The Stop TB Strategy” (World Health Organization, 2006c:3). Undiagnosed, untreated and potentially contagious TB patients should be encouraged to utilize the services offered in healthcare settings. The study by Maselesele (2009:28) provided yet another endorsement of the effectiveness of DOTS as a TB intervention and MDR-TB DOTS management strategy of TB. Diagnosis and treatment monitoring will result in the best adherence indicators, including smear conversion from positive to negative, improvement in symptoms and overall clinical improvement.

The safe collection of sputum should be part of good TB infection control. The promotion of proper cough etiquette and cough hygiene in the form of posters in the clinic waiting areas should be encouraged by healthcare workers (World Health Organization, 2006d:20). The community should be informed through health promotion of the importance of suspected TB cases if they know the signs and symptoms of the disease. Awareness campaigns should be extended to communities as a continuum of care for patients who are diagnosed in hospital. Health promotion should as well include the provision of preventative strategies to children of all ages. Smear positive TB patients should be given isoniazid 5 mg/kg daily for 6 months (Department of Health, 2009b:33). Healthcare workers should receive continuous medical education on collaboration efforts that include TB, HIV and AIDS and sexually-transmitted infections (STIs). As a primary TB prevention strategy, enhanced hygiene standards in all environments should be advocated.

## 4.5 Cultural beliefs

Traditional, cultural and religious belief systems often inhibit or even prohibit people from accessing comprehensive healthcare services and thus gain valuable knowledge of health-related issues. Wong (2003:1375) pointed to several roles that nurses assume in the management of TB, including helping the family to understand the rationale for diagnostic procedures, assisting with radiographic examinations, performing skin tests and obtaining specimens for laboratory examinations. Pearson (2002:1090) underscored the need for patient education in aspects of TB medication, for example, when patients experience difficulty in swallowing drugs, they can mix the drugs with soft foods to facilitate intake. The patient must be urged to comply with the prescribed treatment regime, and not miss doses or discontinue drug intake without medical approval. The community need to know how TB is transmitted as well as the signs and symptoms associated with the disease so that they can independently apply their knowledge to develop and actively participate in lifestyle strategies that reduce disease incidence and prevalence (Foundation for Professional Development, 2007:44). The following are TB signs and symptoms that people are often unfamiliar with due to impinging cultural beliefs:

- Coughing that lasts for more than two weeks is the most common symptom of pulmonary (lung) TB;
- Loss of appetite and weight that requires TB patients to be weighed weekly or every two weeks;
- Chest pain due to infiltration of the lung parenchyma is common in pulmonary TB;
- Dyspnoea due to lung tissue destruction (necrosis) and fibrosis;
- Haemoptysis as a result of the rupture of blood vessels in the wall of the pleural cavity;
- Common systematic symptoms, including fever, chills, night-sweats, tiredness and malaise; and
- Anaemia which is common in disseminated TB.

Family members of the TB patient have the constitutional right to access information about the disease (Republic of South Africa, 1996). Their understanding of TB as a disease will enhance their coping skills and will further improve supportive care to the patient and also aid in tracing healthcare contacts. Notwithstanding the challenges posed by cultural beliefs, every person should have freedom of access to all healthcare matters in the language that they understand best.

#### **4.6 Low occupational standards**

Some participants cited lack of money to pay for transport and to buy food while others interrupted TB treatment due to lack of food while taking medication. Schilling and Cann (2003:389) noted that patients should eat balanced meals to promote recovery. They also emphasized that nurses must warn patients about the adverse effects of medication and educate them to report fatigue, weakness and other signs and symptoms which they might experience. The following guidelines are key success factors that promote adherence to TB treatment and represent a good strategy for reducing TB. Family members should support patients and not allow their personal lives to become affected by the disease (Van Wyk, 2005:46). Family members also need to inform TB patients of any health awareness days which they should attend together with the patient to increase their understanding of TB. The attendance of health awareness events may be difficult as some TB sufferers stay far from the health facilities and lack money for transport and food. According to the Department of Health (2010:28), the Mpumalanga Province has a high level (58%) of MDR-TB cases and to achieve a higher cure rate in this province, drug-susceptibility tests must be done for every TB case. According to Gustafson (2005:34), the following need to be observed by healthcare practitioners to promote adherence to treatment:

- Spend time with the patient, and repeatedly explain the goals of therapy and need for adherence;
- Consider monitoring medication such as co-trimoxazole prior to ART initiation;
- Negotiate a treatment plan for DOTS strategy that the patient can understand and adhere to;

- Encourage disclosure to family or friends who can support the treatment plan;
- Inform the patient of the potential side effect-effects, duration and coping mechanisms;
- Establish readiness to take treatment before ART initiation if the patient's CD4 count is below 200;
- Provide adherence tools in the form of calendar entries of medications and pill boxes;
- Encourage the use of alarms, pages or other available mechanical aids for adherence;
- Develop links with community-based organizations to support adherence;
- Anticipate, monitor and treat side-effects, and encourage the patient to disclose other medications which they might be taking, including traditional medicines;
- Encourage links with support groups and create links with TB patient advocates;
- Make follow up appointments to commit the patient to the specialized investigations to ensure the treatment outcomes on the subsequent follow ups; and
- Provide written information if the patient vomit the pills or forget doses.

Lewis et al. (2004:605) cautioned that patients on anti-retroviral drugs for HIV and AIDS should not take rifampicin, as it can impair the effectiveness of the drugs. Such patients are given another tuberculostatic with minimal drug interaction or antagonism. Nurses should emphasize adherence to prescribed medication regimes for TB in order to decrease the opportunities for transmission of the disease and the progression to MDR-TB (Wong, 2003:1105; Allender and Spradley, 2005:211). The report and action plan for implementing collaborative TB and HIV activities should start at global, regional and national levels and prioritise the epidemiological implications at the country level (World Health Organization, 2006b:20). The Foundation for Professional Development (2007:40) promotes the idea that healthcare staff should be re-orientated towards education and training for integrated TB, HIV and AIDS and STI updated protocols. Such procedures should include TB screening and detection as a joint effort with

community-based workers, DOTS, volunteers and family members. In this study, one participant denied being HIV negative and TB-positive due to the stigma attached to the two conditions. Two participants elaborated that the lack of support from family members caused severe stress which resulted in them neglecting their status and delaying medical consultation.

Research conducted by Maselesele (2009:29) on TB in the South African healthcare sector revealed that adherence to TB treatment is a major arbiter of successful outcome and also reduces the potential for acquired MDR-TB, the main rationale for the DOTS strategy. Before any TB medication regime is initiated, the patients must be tested for HIV and AIDS for purposes of exclusion, as these patients can often end up with MDR-TB (Kozier, German and Snyder, 2004:88). Nurses must therefore understand the barriers to treatment adherence and reduce or eliminate these barriers. Polit, Beck and Hunger (2001:122) recommended a patient-centred approach, which includes facilitating access to treatment, deciding with the patient the most convenient time and place for DOTS which is more effective than the defaulter tracing method. Finally, TB prophylaxis is an effective preventative measure for those who are in close contact with TB patients.

#### **4.7 Factors that influence treatment outcomes**

- Personal and social characteristics of patients and healthcare workers;
- Culturally determined knowledge and beliefs of patients and service providers;
- Administering TB prophylactics to all TB contacts;
- Healthcare infrastructure that support TB treatment and promote adherence to TB treatment, facility-based DOTS is recommended to be the most effective;
- Quantity and quality of information about TB that is available to patients and the public;
- Strengthening support systems through formulation of support groups;

- Promoting patient-centred approaches that include facilitating access to the laboratory service for diagnoses and treatment, choosing with the patient the most convenient time and place for direct observation of treatment and, when possible, providing other social and medical services that are much more effective than spending resources on defaulter tracing;
- Increasing patients' knowledge about TB, especially the serious consequences of inadequate and incomplete treatment, for example, prolonged illness and disability for the patient, infectiousness of the patient causing continued transmission of TB in the community, development of drug resistant TB, and the possibility of death;
- Quality of training that the healthcare workers have received with regard to delivering integrated comprehensive services that includes voluntary counselling and testing for all TB, HIV and AIDS and STI patients for (sexual transmitted infections), and screening of all HIV positive patients for TB;
- Patients and healthcare workers share responsibility for treatment outcomes, the provider must do everything possible to educate, support, influence and persuade the patient to take their medication as prescribed and to complete treatment (The South African Tuberculosis Control programme, 2007:13)

## **4.8 Conclusion**

In Chapter 4, strategies and guidelines for reducing TB incidence and prevalence were discussed. Chapter 5 will elaborate on the recommendations, limitations and the conclusions of this study.

## **CHAPTER 5**

### **RECOMMENDATIONS, LIMITATIONS, AND CONCLUSIONS**

#### **5.1 Introduction**

In Chapter 4, the strategies, guidelines and literature control were discussed. These strategies included the need to improve the socio-economic status and standard of living of TB patients and their families, as well as guidelines for effective TB management and preventive actions. In this chapter, the researcher will discuss recommendations for reducing TB transmission, incidence and prevalence in the context of healthcare practice, administration, education and research.

#### **5.2 Recommendations**

Based on the findings of the study, the researcher makes the following recommendations for nursing practice, healthcare administration, healthcare education and further research.

##### **5.2.1 Infection prevention practices and infection control plans**

Orem's theory advocates therapeutic self-care as an appropriate TB prevention strategy (George, 1995:100). All patients with a cough that lasts for more than two weeks should be registered and issued a file without having to stand in long queues. Suspected TB patients should be instructed to cover their mouths and noses when coughing or sneezing and separated from other patients in a well-ventilated area. Sputum collection should always be done in an open, ventilated area. Healthcare providers must facilitate the rapid diagnostic screening of TB suspects and ensure that patients who are already on TB treatment adhere to their treatment regimes. Nurses should encourage every patient to have a trained DOTS

supporter and provide voluntary, confidential HIV counselling and testing with adequate access to treatment (World Health Organization, 2003:12). All TB-positive patients should be screened for HIV and all HIV-positive patients should be screened for TB as an effective infection control plan.

The implementation and quality of TB prevention and control plans should be monitored on a regular basis, correcting any inappropriate practices or failure to adhere to institutional or national policies (Department of Health, 2007c:10). The sharing of mouth devices (for example, whistles and vuvuselas at sporting events) and those used for the smoking of cigarettes, dagga (marijuana) and other recreational drugs should be strongly discouraged. Individuals who are in denial about their TB- or HIV- positive status should be encouraged to attend voluntary counselling, testing and support services. Healthcare workers should practice good personal hygiene such as washing their hands before and after seeing patients. Poor communities should be encouraged and assisted to grow vegetables in gardens at their homes to promote good nutrition. Prisoners with TB should be isolated from other prisoners to prevent the spread of the disease in overcrowded, poorly ventilated jails. Thus, healthcare providers should work in close collaboration with prison officials to stem the tide of TB transmission in prisons.

Nursing practice becomes more effective when those who excel in caring for the sick are recognized. It is recommended that healthcare workers nursing such patients should be given awards to recognise them besides performance management bonus to promote continuous excellence performance to the carers and to boost their morale of the staff.

### **5.2.2 Healthcare administration**

Planning and monitoring of implementation strategies for TB prevention should be prioritized as a core administrative function in healthcare facilities. Since healthcare workers are at increased risk for infection with TB, healthcare administrators and managers should motivate for improved self-care support systems (Department of Health, 2007a:6). Protection of healthcare workers and staff is thus an

administrative priority. Patients with TB should be motivated to complete treatment and not to default as the development of MDR-TB and XDR-TB may have serious administrative and financial (budgetary) implications for healthcare facilities and the Government. The recent emergence of XDR TB in South Africa has highlighted the need for more effective infection control measures in healthcare settings (Department of Health, 2007a:5), and is consistent with Millennium Development Goal 6 which aims to reduce TB prevalence rates by 50 per cent in 2010 (Red Cross, 2006-2015:23). More (2010:24) suggested the development of nursing capacity in our country in areas where TB represents a high disease burden. DENOSA's role was to coordinate and provide training for nurses to better equip them with knowledge and skills related to early TB detection, DOTS, MDR-TB, adherence to therapeutic regimes and proactively assist the country in achieving Millennium Development Goals (MDG) numbers 6 and 8. Administratively, each healthcare facility should have a trained infection control representative (Churchill, 2007:22).

Health administration and education systems have an important role in promoting good health practices and TB prevention practices. The maintenance of patient confidentiality amongst healthcare personnel and the building of trust relationships between patients and healthcare workers would bolster the rendering of value-added health services, and customer utilization and satisfaction. The multidimensional roles of nurses in healthcare facilities should be recognized to ensure and improve quality patient care. Each hospital or clinic should have at least one identifiable person responsible for overseeing the overall infection prevention and control function.

According to the Department of Health (2007b:9), there are five components to good administrative controls, namely:

- Conducting risk assessment;
- Infection prevention and control plan;
- Administrative support for procedures in the plan including quality assurance;

- Education of patients and increasing community awareness and training of staff; and
- Initiation and communication with TB programmes.

All healthcare facilities should implement national policies and guidelines to advance TB eradication. Hospital or national health laboratory services should apply specialized standard safety procedures as a move towards better infection control.

Healthcare administrators and managers should offer incentives for good infection control practices at the hospitals and other healthcare facilities, for example, hand washing and covering of the mouth and nose when coughing or working with infected patients. Supervision of infection control practices and surveillance of TB infections amongst healthcare workers are important benchmarks for evaluation of the implementation of prevention strategies. The use of DOTS (tracers) is recommended to reduce the number of TB defaulters that complicate to MDR-TB and add to the overall costs of therapy. The accompaniment of discharged TB clients to their homes provides another approach to trace defaulters in order to ensure the continuity of care that will decrease retreatment TB and MDR. This study supports the notion of allocating DOT supporters to TB patients so that they can complete TB treatment (Boyatzis, 2008:14). As a final point, the integration of services for TB, HIV and STI should be prioritized to minimize the challenges facing the government in healthcare facilities (Motsoaledi, 2009:35).

### **5.2.3 Healthcare education**

Orem's theory of self-care advocates the maintenance of continuous education and elevation of human functioning (George, 1995:101). Health promotion is one of the cornerstones of education of communities, for example, being able to recognize the signs and symptoms of TB, and to seek healthcare and further investigations early may impact on TB prevention. Environmental control measures should be emphasised in collaborative TB, HIV/AIDS and STI health promotion activities (Telisinghe, 2009:15). The Department of Health should be the main driver of health promotion strategies. The researcher drew

on Orem's theory of self-care (George, 1995:12). Chinn and Peggy,( 2005:44) stressed that health promotion targeting TB patients, healthcare workers, and communities at large may lead to better infection control strategies and practices to stem the scourge of TB, and possibly also co-infections such as HIV/AIDS and other STIs.

It is imperative that the Department of Health engage traditional healers and empower them with knowledge through workshops so that they can become part of TB, HIV/AIDS and STI health promotion initiatives and dispel myths like "Mafulare". Traditional healers should encourage TB patients that consult them to seek medical advice early and complete the full treatment regime so that they can be cured. Education should be offered to the communities (for example, via churches, civic organizations, ward councillors and election officials, popular media, etc.) in the form of awareness campaigns on the signs and symptoms of TB and its prevention. Patient health education should stress the dangers of mixing TB drugs with traditional medications.

The World Health Organization (2007c:20) advocates that health workers should be trained to offer routine, provider-initiated diagnostic HIV testing in STI clinics, in the context of prevention of mother to child transmission (PMTCT) during pregnancy. Correspondingly, healthcare workers should acquire skills to provide the same type of routine management services to TB sufferers and those co-infected with HIV and receiving ART. According to Phipps and Sands (2003:33), DENOSA's trainer of the trainer's course on TB and MDR-TB took place from 17 to 20 August 2009. It was conducted in collaboration with the National Department of Health to equip nurses with knowledge and skills in care and control of TB and MDR-TB to improve the quality of nursing care of TB services, and to address the challenges of discrimination and stigma directed towards affected patients. This event represents a positive step in the direction of continuous vocational or proficiency training of nurses. There is a great need for occupational health nurses to promote infection control measures in correctional facilities as prisoners share overcrowded and poorly-ventilated cells (Naledi, 2009:24). Venter (2008:27) substantiated that all prisoners should be offered and encouraged to participate in ongoing educational programmes that

address TB, HIV/AIDS and STI risk management, including a focus on wellness and access to ART in detention facilities.

#### **5.2.4 Perspectives for further research**

According to a Department of Health (2009b:8) report, there are people who buy TB-infected sputum so that they may qualify for a disability grant. Previously, people who had TB would qualify for a social relief grant (disability grant). As the policy currently stands, TB is not regarded as a disability as it is a curable disease. Only the MDR-TB and XDR-TB cases are assessed to determine a need for any form of social relief, based on individual circumstances. In the same report, the Department of Health appealed to healthcare workers to be vigilant when supervising the collection of sputum so that dishonesty in TB testing and treatment can be corrected as this practice inherently distorts the real TB situation in the country and undermines genuine efforts to fight TB. Recently, Gray (2009:32) indicated that a file review from Hlabisa district in Durban showed that mortality in patients on ART doubled in the presence of prevalent or incident TB as an opportunistic infection.

The above studies and the current findings presented in this thesis could be used as reference points for further research on TB, and more specifically from a nursing research perspective. The results reported here were further communicated to the TB programme coordinators of the two sub-districts so that the recommendations can be taken into consideration when planning and implementing strategies to reduce TB in the greater Ehlanzeni district (Mpumalanga Department of Health 2009:28) and (Mpumalanga Department of Health 2008:25).

Tuberculosis is easily transmitted among prisoners in correctional institutions because of overcrowding, poor ventilation, and limited access to health care services. This study recommends future research into various topical aspects of TB, HIV/AIDS and STI prevention and control in such institutions. The management of TB and TB records is still a major challenge for nurses, so research of health

administration systems is suggested. Nurses and healthcare workers are also at increased risk of infections in their work environment, and this could be studied in different contexts. More research is needed to inform implementation and evaluation of infection control practices in healthcare settings.

### **5.3 Limitations of the study**

The strike at Thabachweu municipality during the period of this study contributed to TB clients defaulting on treatment due to the fears of intimidation. Participants experienced anxiety due to unrest that led to burning of the Mashishing clinic. The researcher also faced financial constraints as the research project was not properly funded.

### **5.4 Conclusion**

This study was qualitative, descriptive and phenomenological. The objectives of the study were met in that factors that contributed to the increase in the number of TB patients in the Ehlanzeni district of the Mpumalanga Province had been identified and classified into themes and categories. Guidelines, strategies and the recommendations to address the risk factors were established.

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# APPENDIX 1

## INTERVIEW QUESTIONS

	Official Use												
<b>Section A: Demographic information</b>													
<b>1. Age</b>													
<table border="1"><tr><td>6 -25 years</td><td>1</td></tr><tr><td>26-45 years</td><td>2</td></tr><tr><td>46-65 years</td><td>3</td></tr><tr><td>66-85 years</td><td>4</td></tr></table>	6 -25 years	1	26-45 years	2	46-65 years	3	66-85 years	4					
6 -25 years	1												
26-45 years	2												
46-65 years	3												
66-85 years	4												
<b>2. Size of the house (how many bedrooms?)</b>													
<table border="1"><tr><td>RDP House</td><td>1</td></tr><tr><td>3 bedrooms</td><td>2</td></tr><tr><td>4 bedrooms</td><td>3</td></tr><tr><td>5 bedrooms</td><td>4</td></tr><tr><td>Informal shack</td><td>5</td></tr><tr><td>Mud house</td><td>6</td></tr></table>	RDP House	1	3 bedrooms	2	4 bedrooms	3	5 bedrooms	4	Informal shack	5	Mud house	6	
RDP House	1												
3 bedrooms	2												
4 bedrooms	3												
5 bedrooms	4												
Informal shack	5												
Mud house	6												
<b>3. Highest standard passed</b>													
<table border="1"><tr><td>Never went to school</td><td>1</td></tr><tr><td>Primary school</td><td>2</td></tr><tr><td>High school</td><td>3</td></tr><tr><td>College</td><td>4</td></tr><tr><td>University/Technikon</td><td>5</td></tr></table>	Never went to school	1	Primary school	2	High school	3	College	4	University/Technikon	5			
Never went to school	1												
Primary school	2												
High school	3												
College	4												
University/Technikon	5												

**4. Occupation, what type of employment?**

Unemployed	1
Education sector	2
Health	3
Administrative	4
Social worker/religious	5
Domestic/farming	6
Mining	7
Driving	8
Hawker	9
Others (specify)	10

**5. Religious affiliation**

Roman Catholic	1
Lutheran	2
Anglican, Methodist, Presbyterian	3
Dutch reformed	4
ZCC	5
Charismatic	6
Others (specify)	7

**6. Distance travelled to clinic or facility?**

0 to 5km	1
More than 5km	2

### **Question 7**

#### **Central question**

What do you think can be the factors that can contribute to the increase in the number of TB patients in our area?

### **Question 8**

#### **Probing questions**

Probing questions will be asked after stimulated by the central question and it will be guided and depend on the response from the participants during the data collection process.

## APPENDIX 2

### PARTICIPANTS' RESPONSES DURING INTERVIEW

**Researcher:** Good morning mama.

**Participant:** Morning sister.

**Researcher:** How are you feeling today.

**Participant:** (pause) I am gradually improving on the treatment day by day.

**Researcher:** I am the researcher who made appointment to come and interview you today, if you are willing to participate, it is free, confidential and it is for the purpose of obtaining true information which will enable the department to plan better for all TB in future to improve the quality of care given to our patients.

**Participant:** (mmm) I agree sister that is why I signed a consent for participating.

**Researcher:** Can you allow me to use a tape recorder and take notes during interview so that I will be reminded during report writing?

**Participant:** With pleasure sister.

**Researcher:** Between which ages do you fall?

**Participant:** Between 26-45 years.

**Researcher:** In which type of house do you stay?

**Participant:** RDP house.

**Researcher:** Which highest standard did you pass?

**Participant:** I am from college.

**Researcher:** What is the type of your employment?

**Participant:** Mining industry smelters.

**Researcher:** From which religious affiliation do you belong?

**Participant:** ZCC.

**Researcher:** What is your distance travelled to the clinic?

**Participant:** 0 to 5km.

**Researcher:** What do you think can be the factors that can contribute to the increase in the number of TB patients in our area?

**Participant:** Dust that we inhale when the cars are spinning, overcrowding in the RDP and CMI mine which there is no protective clothing where I work, cigarette smoke with alcohol which I drink since I am stressed by not accepting that I am HIV positive and now they say I have TB meanwhile we are witched and this TB is Mafulare.

**Researcher:** How does spinning cars affect you?

**Participant:** Through dust when the cars on a dusty roads that we inhale and the smoke from friction of tyres on a tarred road when we inhale.

**Researcher:** Any other thing else?

**Participant:** No.

**Researcher:** Thank you for your time and information.

# APPENDIX 3

**APPLICATION FORM FOR PROPOSED RESEARCH  
PROJECT UNIVERSITY OF LIMPOPO  
Polokwane Campus**

**POLOKWANE CAMPUS  
RESEARCH ETHICS  
COMMITTEE**

**A. PARTICULARS OF APPLICANT/CHIEF RESEARCHER**

Title: MRS..... First name: ..Mmakala Esther..... Surname: ...Selala.....

Department: Nursing ..... Tel: ..015 268 2384.....

School: ...Health Care Sciences.....

**B. DETAILS OF RESEARCH PROJECT**

(Tick appropriate block(s) with a 'x')

1.a New project  or : Continuation of project

1.b Independent research :  or : Contract research:

Post-graduate research:  or : Undergraduate research :

Degree (specify) \_\_\_ Master Curationis (M CUR) \_\_\_\_\_

At which university is the degree registered? \_University of Limpopo\_ Turloop \_\_\_\_\_

2.a. Title of project: Factors that contribute to increase of tuberculosis patients in Ehlanzeni District Mpumalanga Province.

b. Co-workers (Not for post-graduate research. See Guidelines)

Name	Department/Institution	Signature

c. Research Co-ordinator (In the case of independent or contract research)

Name	Department/Institution	Signature

d. Supervisor (In the case of post-graduate research)

Name	Department/Institution	Signature
MRS JC Kgole	Nursing	<i>JC Kgole</i>

e. Co-supervisor (In the case of post-graduate research)

Name	Department/Institution	Signature
MRS ME Lekhuleni	Nursing	<i>ME Lekhuleni</i>

Hospital Superintendent/Health Care Manager

Name	Department/Institution	Signature

g. Other involved departmental heads

Name	Department/Institution	Signature

C. SPECIAL REQUIREMENTS

Will the research involve the following:

	Yes	No		Yes	No
Experimental animals		X	Approval from Animal ethics Committee attached (separate application form required)		X
Special apparatus		X	Is it available at Medunsa?		X
Special drugs (medicaments)		X	Explanation of who will supply the drugs attached		X
Radio isotopes		X	Completed radio Isotopes form attached (Appendix 4)		X

Special laboratory facilities		X	Is it available at Medunsa? If no, attach a statement of requirements		X
Electron microscopy		X	Completed Electron microscope form attached (Appendix 3)		X
Health care services	X		Signature of health care manager attached		
Statistical analysis		X	Has a statistician been consulted? If yes, attach form. (Appendix 2) If no explain.		X

**D. ETHICAL ISSUES**

1. *Indemnity*

If a hospital (human, dental or veterinary) will be involved, please attach the written approval of the Superintendent. Should the use of the service laboratories be required, attached a letter of consent of the hospital management that this is in order.

2. *Consent*

Will patients/human volunteers form part of the experiment/trial/survey? If so, kindly modify the attached form, specifically for your project. (Appendix 1)

**E. BUDGET**

Who will finance this project? (Tick appropriate block with a "x")

University of Limpopo (Medunsa Campus)	Health Department	Self	X	Other (specify)

Please indicate the institutions where application has been made for financial support or where it is intended to apply for financial support.

MRC	NRF	CSD	Other (specify)

NB: Approval of the research project does NOT imply that the requested funds will be made available to the applicant.

# APPENDIX 4

**UNIVERSITY OF LIMPOPO (Polokwane Campus) CONSENT FORM**

Statement concerning participation in a Clinical Trial/Research Project\*.

Name of Project / Study / Trial\*

.....

I have read the information on \*/heard the aims and objectives of\* the proposed study and was provided the opportunity to ask questions and given adequate time to rethink the issue. The aim and objectives of the study are sufficiently clear to me. I have not been pressurized to participate in any way.

I understand that participation in this Clinical Trial / Study / Project\* is completely voluntary and that I may withdraw from it at any time and without supplying reasons. This will have no influence on the regular treatment that holds for my condition neither will it influence the care that I receive from my regular doctor.

I know that this Trial / Study / Project\* has been approved by the Research, Ethics and Publications Committee of Faculty of Medicine, University of Limpopo (Medunsa Campus) / Dr

Name of patient/volunteer

Signature of patient or guardian.

.....  
Place.

.....  
Date.

.....  
Witness

**Statement by the Researcher**

I provided verbal and/or written\* information regarding this Trial / Study / Project\*  
I agree to answer any future questions concerning the Trial / Study / Project\* as best as I am able.

I will adhere to the approved protocol.

..Selala E.....



Name of Researcher

Signature

.....  
Date

.....  
Place

\*Delete whatever is not applicable.

## APPENDIX 5

<b>STATISTICAL ANALYSES</b>
-----------------------------

The Chairperson,  
Polokwane Campus Research Ethics Committee  
Box  
UNIVERSITY OF LIMPOPO  
Polokwane Campus

Dear Sir/Madam

**STATISTICAL ANALYSES**

I have studied the research protocol of \_\_\_\_\_  
titled: \_\_\_\_\_

and I agree/do not agree \* to assist with the statistical analyses.

Yours sincerely,

\_\_\_\_\_  
Signature: Statistician

\_\_\_\_\_  
Name in block letters

\_\_\_\_\_  
Date

\* Please delete which is not applicable. If you do not agree to assist with the statistical analyses, please provide reasons on a separate sheet.

# APPENDIX 6



# LIMPOPO

PROVINCIAL GOVERNMENT  
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF HEALTH AND SOCIAL DEVELOPMENT

ETHICS COMMITTEE  
CLEARANCE CERTIFICATE  
UNIVERSITY OF LIMPOPO  
Polokwane/Mankweng Hospital Complex



PROJECT NUMBER: 095/2009

TITLE: Factors that contribute to increase of tuberculosis patients in Ehlanzeni District Mpumalanga Province

RESEARCHER: E.S. Selala

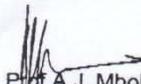
ALL PARTICIPANTS:

Department:

Supervisor: Mrs J.C. Kgole  
Co-Supervisor: Mrs M.E. Lekhuleni

Date Considered: 03/07/2009  
Decision of Committee: Recommended for Approval

Date: 06/07/2009

  
Prof A.J. Mbokazi

Chairman of Pietersburg Mankweng  
Hospital Complex Ethics Committee

Note: The budget for research has to be considered separately. Ethics Committee is not providing any funds for projects.

# APPENDIX

7



**health**  
 Department:  
 Health  
**MPUMALANGA PROVINCE**

No. 7 Government Boulevard  
 Riverside Park  
 Extension 2  
 NELSPRUIT  
 1200

Private Bag X 11285  
 NELSPRUIT  
 1200  
 Tel.: +27 13 766 3429  
 Fax: +27 13 766 3458

Litiko LeteMphilo

UmNyango WezaMaphilo

Departement van Gesondheid

Enquiries: Molefe Machaba (013) 766 3009/Kate Mathe 3102

6 August 2009

**Mrs Esther Selala**  
 P.O BOX 355  
 Graskop  
 1270

Dear Mrs Esther Selala

**APPLICATION FOR RESEARCH & ETHICS APPROVAL: FACTORS THAT CONTRIBUTE TO THE INCREASED IN THE NUMBER OF TB PATIENTS IN ENHLANZENI DISTRICT AT MPUMALANGA PROVINCE.**

The Provincial Research and Ethics Committee has approved your research proposal in the latest format that you sent. No issues of ethical consideration were identified.

Kindly ensure that you provide us with the report once your research has been completed.

Kind regards,

*Molefe Machaba*

Molefe Machaba  
 Research and Epidemiology

*Mosa Moshabela*  
 Mpumalanga PHREC  
 Chairperson: Dr Mosa Moshabela

MPUMALANGA PROVINCE  
 DEPARTMENT OF HEALTH  
 PLANNING & INFORMATION  
 2009-08-07  
 PRIVATE BAG X 11285  
 NELSPRUIT 1200

07-08-2009  
 Date

2009/08/07  
 Date

MPUMALANGA PROVINCE  
 DEPARTMENT OF HEALTH  
 PLANNING & INFORMATION  
 2009-08-07  
 PRIVATE BAG X 11285  
 NELSPRUIT 1200



## APPENDIX 8



### FACULTY OF SCIENCE

---

Adelaide Tambo School of Nursing Science

23 February 2010

Dear Esther

**Re: Consensus reading of the data analysis of the mini-dissertation**

Thank you for the opportunity to read your mini-dissertation. My comments are as follows:

- The technical quality of the mini-dissertation is not of a high quality. There are many English grammar mistakes in the document as well spelling mistakes. Though I know that you did not ask me to check that but as an experienced researcher I know that the dissertation must be examined and you could be disadvantaged. You frequently use very informal language and I suggest you have the whole dissertation language edited. The use of the word 'shark' for 'shack' or 'gem' for 'germ' are examples.
- I do not feel that the qualitative phenomenological approach is the correct design for the study. The way you gathered and analyzed the data is more suitable for a qualitative exploratory design. There is no reason to use a phenomenological design as your examiner will expect a certain level of data gathering and analysis, which is not presented in the dissertation.
- The research methods and design is repeated in Chapter 1 and Chapter 2. In some instances, for example the data analysis approach does not correspond exactly in the two chapters. In Chapter 1, the approach described by Mouton and Babbie is used whilst in Chapter 2, Tesch's approach is described. Much of what was written in Chapter 1 is repeated in Chapter 2. This is not acceptable in a scientific document.
- You use many acronyms without first defining the acronym.

With regards to the data analysis, is following is pertinent.

The themes and categories of the findings section are presented as follows.

Themes	Categories
Biographical data of TB participants interviewed at Mashishing and Shatale clinics	Age classification Type of house Level of education Type of occupation Religious affiliation Distance travelled
Literature control	Poverty and unhygienic living conditions Lack of information about TB and the knowledge on the control of infection HIV positive status as a predisposing factor and TB as an opportunistic infection Failure of adherence to TB treatment and ending up

The fact that you created only two themes is commendable. However, the second theme, Literature control, is not a usual as a theme topic and should be replaced by a theme that is appropriate for the categories supporting the theme. I would suggest Factors associated with an increased prevalence of tuberculosis. I suggest you add such a table where the findings are described as it would orientate the reader and provide a structure for the findings. You chose to do the findings and the literature control at the same time and it reads fine. However, be careful as you sometimes make unjustified assumptions. An example is the religion is a factor in the increased prevalence of tuberculosis. This is not true and the assumption is without substance. You are also making statements about culture and religion which are not clear and should be supported with more literature.

I wish you well in your academic pursuits.

Kind regards



Prof SCD Wright

## **APPENDIX 9**

### **EHLANZENI DISTRICT MAP OF CLINICS AND HOSPITALS, MPUMALANGA PROVINCE**

Note the following: all hospitals are indicated as circles and all community health centres as green triangles. All the other squares are clinics, including the satellite clinics and the mobiles.

# APPENDIX 10

**FACULTY OF NATURAL SCIENCES**  
**DEPARTMENT OF MEDICAL BIOSCIENCES**



Donavon C. Hiss, PhD (Medicine)  
University of the Western Cape  
Private Bag X17  
Bellville 7535  
South Africa

Tel: +27 (0) 21 959 2334  
Fax: +27 (0) 21 959 1563  
E-mail: dhiss@uwc.ac.za

23 September 2010

To Whom it May Concern

This serves to confirm that I have edited the language, spelling, grammar and style of the MCur Mini-Dissertation by Mmakala Esther Selala: *Factors that Contribute to the Increasing Number of Tuberculosis Patients in the Ehlanzeni District, Mpumalanga Province.*

Sincerely Yours

Donavon C. Hiss  
Ph.D. (Medicine), Dip. Freelance Journalism, Dip. Creative Writing



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