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**ASSESSMENT OF KNOWLEDGE AND AWARENESS LEVELS,
ATTITUDES AND PRACTICES OF PORT ELIZABETH COMMUNITY
MEMBERS ON DRUG RESISTANT TUBERCULOSIS**

A THESIS SUBMITTED BY

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TO

**THE SCHOOL OF GOVERNMENT AND PUBLIC ADMINISTRATION,
FACULTY OF MANAGEMENT AND COMMERCE, UNIVERSITY OF
FORT HARE**

**IN FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF ADMINISTRATION (D.ADMIN)**

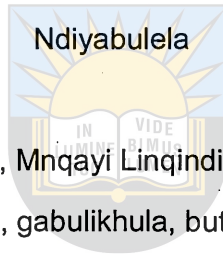
SUPERVISOR: PROFESSOR EDWIN IJEOMA

2017

DEDICATION

In loving memory of my late grandparents

Elsie Nomhamha Thanda and Makuliwe Geelbooi Nivi who have worked tirelessly to ensure that we have food on the table and despite being illiterate continuously encouraged us to get education until their last moments in this world



Mamsukwini, Lawukazi, Dibashe, Mnqayi Linqindi, Tiki ayivumani nepokotho nawe Xhamela, nokwindla, ncancatshe, gabulikhula, butsholo bentonga, malamba endle, nyamayenyamakazi.

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To my children (Unam, Mivuyo, Indiphile, Joy) and other family members

This is a pattern which I hope you will emulate

Bekunga akungasweleki mlandeli

DECLARATION

I, Thanduxolo Elford Fana (student number 201511466) hereby declare that the thesis titled "Assessment of knowledge and awareness levels, attitudes and practices of Port Elizabeth community members on Drug Resistant Tuberculosis" submitted for the award of Doctor of Administration: Public Administration degree at the University Of Fort Hare, is my own original work. I further declare that I have not previously submitted it, at any University for a degree and that all the sources referred to or quoted have been indicated and acknowledged by means of complete references.

Surname and Initials

Fana, TE



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Signature:

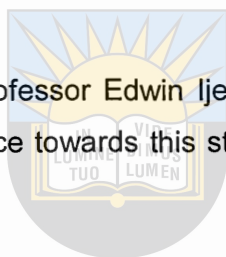
A handwritten signature in black ink, appearing to read 'Thanduxolo Elford Fana', written over a dotted line.

ACKNOWLEDGEMENTS

The researcher's sincere gratitude and appreciation is extended to the following as successful completion of this study would not have been possible without them.

First, I would like to thank our Heavenly Father for His unrelenting Grace and Love that have taken me thus far. Thanks Lord, Almighty, for the strength, guidance and protection throughout this study. Without Him this would be impossible. To God be the Glory and Honour.

I am grateful to my Supervisor, Professor Edwin Ijeoma, whose support, constructive comments and professional guidance towards this study was not only encouraging but also a source of inspiration.



I thank Mrs Pumza Foko for her assistance which made my student life easy at UFH.

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I am also grateful for the support and encouragement that I got from my colleagues (Baartman, Sambumbu, Mosalakae, Klaasen, Lumka, Dr. Thomas, Van Der Walt and Erasmus).

I acknowledge the assistance and encouragement that I got from my younger brother Elliot Mntuwekhaya (Coach) Fana, Trevor Nivi, Ms Sibiya and my cousin Wikana Mtila.

Last, special thanks go to Ms Grootboom and those who took care of my children (Ayahluma, Unam, Indiphile and Joy) whom I have neglected most of the time when I was busy with my studies.

The financial assistance from the National Research Foundation towards this research is hereby acknowledged. Opinions expressed and conclusions arrived at, are those of the author and are not that of the National Research Foundation.

ABSTRACT

The aim of this study was to assess community members' knowledge and awareness levels, attitudes and practices of Drug Resistant Tuberculosis. The Health Belief Model, Social Cognitive Theory and the Socio Ecological Model were used as the theoretical foundations for this study. This study was conducted at Port Elizabeth in Nelson Mandela Bay Municipality using a quantitative research method. The sample size consisted of four hundred (400) respondents aged above 18 years who were purposively and conveniently selected from Port Elizabeth area in the Nelson Mandela Bay Municipality. Data was collected using close ended questions which were administered by the researcher and two research assistants to the selected respondents. Data was analysed using bivariate, multivariate and descriptive statistics. The results of this study illustrate that the Port Elizabeth community members had poor knowledge and awareness levels, unfavourable attitudes and good practices of Drug Resistant Tuberculosis. Secondly, the results also indicate that males and youth had good knowledge and awareness levels, positive attitudes and good prevention practices of Drug Resistant Tuberculosis compared to female and adult respondents. The findings also showed statistically significant association between age and knowledge, attitudes and practices. There was a strong relationship between gender and attitudes while there was no relationship between gender and knowledge as well as gender and practice. The study also revealed low literacy levels, low self-efficacy belief, inadequate information and erroneous beliefs and misconceptions about Drug Resistant Tuberculosis among the respondents. The study also revealed that a dual health system existed and was in use within the study area. The study also showed that Drug Resistant Tuberculosis was a highly stigmatised disease and that acted as a barrier to adoption of positive health behaviour. The knowledge gap among the research respondents was mainly attributed to structural barriers such as high unemployment rate, illiteracy levels, poverty, discriminatory and stigmatising health care workers or staff and community attitudes and practices. It is recommended that health education campaigns need to be intensified so that the correct information is disseminated to the people and misconceptions and stigma that exist in society is addressed.

Such health education campaigns should emphasise that all forms of TB are preventable and curable when the infected are diagnosed early and put on treatment early and adherent to it. The campaigns should also put emphasis on sharing information on how TB is not transmitted and the basic human rights as outlined in the South African Constitution, as lack of this information has a potential of raising unnecessary fears of infection, discriminatory and stigmatising attitudes and practices. It is also recommended that healthcare workers are properly trained in counselling Drug Resistant Tuberculosis infected people so that they can be able to provide emotional support to the infected for the duration of the treatment, as it has a potential to influence the Tuberculosis control program outcomes. Collaborations with spiritual healers and congregational leaders should be promoted. It is recommended that a similar study be conducted using a qualitative approach among urban and rural residents or spiritual and traditional healers in Easter Cape.

Key words

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Knowledge, , Attitude, Practices, Drug Resistant Tuberculosis, and Tuberculosis.

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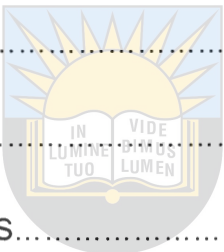
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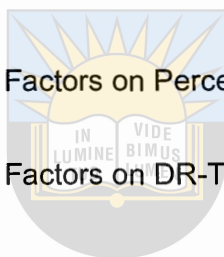
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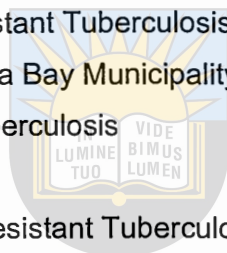
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LIST OF ABBREVIATIONS AND ACRONYMS

AIDS	-	Acquired Immunodeficiency Syndrome
ARV	-	Antiretroviral
DR-TB	-	Drug Resistant Tuberculosis
HCW	-	Health Care Workers
HIV	-	Human Immunodeficiency Virus
ILO	-	International Labour Organization
INH	-	Isoniazid
MDR-TB	-	Multidrug Resistant Tuberculosis
NMBM	-	Nelson Mandela Bay Municipality
PTB	-	Pulmonary Tuberculosis
TB	-	Tuberculosis
TDR	-	Totally Drug Resistant Tuberculosis
RIF	-	Rifampicin
WHO	-	World Health Organisation
XDR	-	Extreme Drug Resistant Tuberculosis



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CHAPTER ONE

INTRODUCTION AND THE GENERAL FRAMEWORK OF THE STUDY

1.1 INTRODUCTION, BACKGROUND AND MOTIVATION FOR THE STUDY

South Africa (SA) is burdened by tuberculosis (TB). This is because the rate of TB is double that of the other developing countries (Javed, Tahir, Hashmi & Jamil, 2016: 1). In addition, the numbers of Multi Drug Resistant-Tuberculosis (MDR-TB) and Extreme Drug Resistant-Tuberculosis (XDR-TB) infected people have increased because of the rise in the number of HIV/AIDS infections and inadequate management of tuberculosis. Drug Resistant Tuberculosis (DR-TB) is caused by inconsistent or partial treatment of the disease. This occurs when tuberculosis patients default treatment protocol possibly because their health improved or the doctors and health workers prescribed incorrect treatment regimens. World Health Organisation estimated that there were four hundred and fifty thousand to six hundred thousand (450 000 to 600 000) new MDR-TB cases globally each year (WHO, 2013).

Drug Resistant Tuberculosis is generally preventable and treatable. In order to treat it, second-line anti-tuberculosis drugs must be administered to the infected patient for two years (Javed et al., 2016: 2). The drugs used to treat it cost more than first-line drugs and they have adverse drug side effects that are more severe, but manageable (Ahmed, Velayati & Mohammed, 2016: 251).

The treatment of MDR-TB is very expensive and the prevention of MDR-TB is a serious challenge. The spread of MDR-TB could ultimately lead to an incurable epidemic. XDR-Tuberculosis is a subset of Drug Resistant TB in which the strains of tuberculosis are extremely resistant to several of the best second-line drugs. XDR-Tuberculosis patients are difficult to treat and they make up approximately 10 percent of MDR-tuberculosis cases (Kodisang, 2014: 25).

If XDR-Tuberculosis is not properly controlled in South Africa, it is feared that it will spread and become very difficult and expensive to contain thereafter. XDR-tuberculosis was first identified in South Africa in 2005 in the town of Tugela Ferry in KwaZulu-Natal Province. This type of tuberculosis is resistant to all major anti-tuberculosis drugs (South African Institute of Race Relations, 2008). It is stated that in SA only 42% of the patients who were diagnosed with MDR tuberculosis began treatment in 2012. It is further stated that Drug Resistant tuberculosis epidemic is rising in SA and that the country is not doing well in detecting and treating it (Bateman, 2015: 4).

It is further revealed that the budgetary implications of failing to respond appropriately to the DR tuberculosis is a daunting challenge for the country, as the current per patient costs of XDR tuberculosis is ZAR 303 508 (USD 26 392), four times greater than that of MDR tuberculosis at ZAR 77 878 (USD 6 772); and 103 times greater than drug sensitive tuberculosis at ZAR 2 955 (USD 257). The DR tuberculosis comprises only 2.2 % of the case burden but it consumed 32% of the total estimated 2011 national tuberculosis budget of ZAR 2, 5 billion (USD 218 million). Furthermore, 45% and 25% of the DR tuberculosis costs were attributed to anti- tuberculosis drugs and hospitalisation. The above are some of the reasons on which a decision to decentralise and de-institutionalise DR tuberculosis Management was based (Bateman, 2015: 6).

Intensive case detection has led to the increase in the number of Drug Resistant TB infected people who have been reported since 2006. In South Africa, in the year 2012, there were 14 161 MDR-Tuberculosis and 1545 XDR-Tuberculosis cases. These figures were from the sputum tests that were made by the South African National Health Laboratory Services and those done by private laboratories in the country were not known (South African National Department of Health, 2014). Thus, meaning that the number would be higher.

Research conducted in South Africa indicates that the non-adherence to tuberculosis medication by patients was a major cause of the development of drug resistant tuberculosis in South Africa. The mortality among MDR-Tuberculosis defaulters is high owing to substance abuse and the supposed lack of social support from the community and health care workers (South African Tuberculosis Vaccine Initiative, 2006).

The National Tuberculosis Program initially required hospitalization of all Drug Resistant tuberculosis patients for an initial period of six months as required by the South African National Department of Health. A clinical review of the Drug Resistant tuberculosis services revealed that the tuberculosis management program was facing many challenges. Among those challenges were delayed treatment initiations, unavailability of beds to admit newly diagnosed, poor infection control in hospital and poor treatment outcomes due to non-adherence to treatment by the infected. In order to deal with these challenges, a decision to decentralise and de-institutionalise services for the treatment of Drug Resistant TB infected peoples so that they are nearer to their communities was made. A decision to reduce the time that MDR-Tuberculosis patients were required to stay in centralised DR-Tuberculosis hospitals was made (South African National Department of Health, 2011).

After the passing of the de-centralisation and de-institutionalisation policy in 2011, DR tuberculosis is managed at three levels. These are Tertiary levels (centres of excellence) Primary Health Centres and at the Community level. The literature revealed that holding patients against their will is illegal and that it is not guarantee that the infected people will heal or get better from their illness (Kodisang, 2014, 23). Certain circumstances require that people infected are treated at home where they have full support of their families and are not congested in small or overcrowded wards (Semegni, 2012: 15).

The implementation of the Decentralised Care Model will improve efficiency and effectiveness of the Drug Resistant Tuberculosis management, if all the relevant stakeholders are playing their role. Key to the successful decentralisation and de-institutionalisation and effective Drug Resistant Tuberculosis program is effective infection control, effective DR-TB advocacy, communication and social mobilisation at the community level. Community and family members need to be well informed about the diseases so that they can be in a position to provide emotional support, nursing care to the patients during treatment, help with early identification and reporting of changes in patient's conditions to the clinic nurse or the community care giver (Fana, Mayekiso & Gwandure, 2013: 63; Segmeni, 2012: 13).



1.2 STATEMENT OF THE PROBLEM

South Africa has the highest number of HIV/AIDS infected people in the world and was ranked number three (3) by the WHO, among the highest tuberculosis burdened countries in the world after China and India (Department of Health, 2011: 1). With the identification of MDR and XDR tuberculosis the well-being of people was further threatened. Those infected with HIV/AIDS run the risks of being co-infected with these drug resistant strains of tuberculosis. In 2005, there was 66% co-infection rate of tuberculosis and HIV/AIDS. With the outbreak of extreme drug-resistant tuberculosis in Tugela Ferry, 52 people of the 53 were also infected with HIV/AIDS (Ndabeni & Hayward, 2011: 13; South African tuberculosis Vaccine Initiative, 2006). From 2004 until 2012 South Africa has had 69460 people that were registered as patients of MDR and 6242 for XDR. By 2014, Kwa-Zulu Natal was having the highest number (19888) followed by Western Cape with 15034 and Eastern Cape in the third position with 12377 MDR tuberculosis patients. On the other hand, on XDR tuberculosis patients, Eastern Cape had higher number than Western Cape with 1662 patients and the WC had only 650 patients; while KZN continued to hold the first position with 3011 patients (South African National Department of Health, 2014).

According to Knasnovsky, Cegielski, Erasmus, Siwisa & Der Walt (2011: 5) tuberculosis is the leading cause of morbidity and mortality worldwide. It is reported that people infected with Drug Resistant tuberculosis tend to have a high mortality rates especially if they are co-infected with HIV and AIDS. In a study that was conducted in the Eastern Cape it was revealed that 65 out of 206 Drug Resistant Tuberculosis patients died before treatment started, and that of 108 HIV positive patients 86 of them died before the end of the first year of treatment.

The Eastern Cape has the second highest incidence of tuberculosis in South Africa after Kwa-Zulu Natal (Ndjeka, 2014). Port Elizabeth is one of the biggest cities in the Eastern Cape. It is in this part of the Eastern Cape where Jose Pearson Tuberculosis Hospital is situated. This is where Drug Resistant Tuberculosis patients were initially kept before the passing of the policy framework for decentralisation and de-institutionalisation of Drug Resistant Tuberculosis Management in 2011.

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The assessment of communities' knowledge, attitudes and practices (KAP) are the key elements in prevention and control of the spread of Drug Resistant Tuberculosis parallel to other control strategies. Unfortunately, there is little information on communities KAP toward DR-Tuberculosis as there were only three studies found which dealt with healthcare workers knowledge, attitudes, beliefs and practices on Drug Resistant Tuberculosis. Ignorance, lack of knowledge, stigmatisation and lack of awareness about symptoms of tuberculosis often lead to underutilisation of services, delays in health seeking behaviour and poor treatment compliance by the community members (Bayouni *et al.*, 2007: 21; Promtussananon & Petzer, 2005: 75; Koay, 2004: 502).

Inadequate knowledge and misconceptions are detrimental to the tuberculosis control program as it increases treatment default and non-adherence rate. If

people are not aware that tuberculosis is a contagious, airborne disease they will not know how to adopt preventative measures (Bayouni et al., 2007: 21).

Therefore, in order to address the above problem, it is of importance that community's knowledge and awareness levels, attitude and practices towards Drug Resistant Tuberculosis be explored.

1.3 THE RESEARCH QUESTION

1.3.1 The Main Question

The main research question for this study is: What are the knowledge levels, attitudes and practices of the Port Elizabeth community members in relation to curbing the spread of Drug Resistant Tuberculosis?

1.3.2 Sub-Questions

This study's sub-questions are:

1. What are the knowledge and awareness levels of the Port Elizabeth residents regarding Drug Resistant Tuberculosis?
2. What are the attitudes and practices of the Port Elizabeth residents regarding Drug Resistant Tuberculosis?
3. Are there any age and gender related differences in knowledge levels, attitudes and practices of the Port Elizabeth's residents regarding Drug Resistant Tuberculosis?

1.4 AIMS AND OBJECTIVES OF THE STUDY

1.4.1 Aim of the Study

The main aim of this study was to assess the knowledge and awareness levels, attitudes and practices of Port Elizabeth community members on Drug Resistant tuberculosis and in relation to curbing its spread.

1.4.2 Objectives of the Study

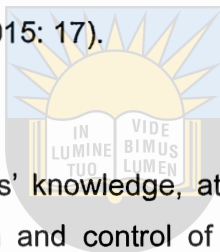
The objectives of the study were to:

1. Assess Drug Resistant Tuberculosis knowledge and awareness levels of Port Elizabeth residents;
2. Establish the attitudes and practices of Port Elizabeth residents regarding Drug Resistant Tuberculosis;
3. Assess if there are any age and gender related differences in knowledge and awareness levels, attitudes and practices of Port Elizabeth residents regarding Drug Resistant Tuberculosis.
4. Provide recommendations on how to create and improve awareness, positive attitudes and practices regarding Drug Resistant Tuberculosis among Port Elizabeth community members.

1.5 SIGNIFICANCE OF THE STUDY

According to Haasnoot *et al.*, (2010: 902) every one second a person is infected with tuberculosis and every 10 seconds someone dies of tuberculosis worldwide. In South Africa the number of tuberculosis and HIV and AIDS infected people is increasing gradually.

This is happening despite the fact that tuberculosis and HIV and AIDS treatment is provided freely in public or government clinics and hospitals in SA (Lim et al., 2015: 6; Peltzer & Promtussananon, 2005: 75). Inadequate knowledge and misconceptions are detrimental to the tuberculosis control program as it increases treatment default and non-adherence rate. If people are not aware that tuberculosis is a contagious, airborne disease they will not know how to adopt preventative measures (Bayouni et al., 2007: 21). Knowledge influences attitudes and health seeking behaviour. If there is misconception about a disease, people will then have negative attitudes and that will impact negatively on health seeking behaviour (Isara & Akpodiete, 2015: 17).



The assessment of communities' knowledge, attitudes and practices (KAP) are the key elements in prevention and control of the spread of DR-Tuberculosis parallel to other control strategies. There is a gap in the literature on the information on communities' KAP toward Drug Resistant Tuberculosis as only three studies were found, which dealt with healthcare workers and patients. Secondly, Knowledge Attitudes Behaviour and Practices methodology is used in conducting those studies. There is an urgent need to provide targeted interventions in order to improve knowledge and understanding of Drug Resistant Tuberculosis in communities and thereby curb its spread. In order to ensure that such interventions are accurately targeted, it is of significance to first explore the existing knowledge, attitudes and practices about Drug Resistant Tuberculosis among Port Elizabeth community members.

In this study the researcher used Health Belief Model, Social Cognitive Theory and Social Ecology Model in order to account for different determinants that are affecting and influencing health seeking behaviour or practices. The spread of Drug Resistant Tuberculosis is a huge threat to public health and presents challenges that cannot be easily understood.

Such challenges require thorough analysis using a multi-level approach that can be able to assist in linking human behaviour and the environment; as well as an individual level approaches that focuses on the individual beliefs, attitudes, knowledge and practices. South Africa is a multi-cultural society. The analysis of health behaviour and its determinants in such a multicultural society become a challenge. (Murima, 2013: 41 & Kumar et al., 2013: 1).

However, health behaviour analysis can assist in ensuring that there is baseline data which will assist in the development of target health education interventions (advocacy, communication and social mobilisation) that are informed by the needs of the community. This study will also assist in establishing how Port Elizabeth residents conceptualise Drug Resistant Tuberculosis and how knowledge, attitudes influence health seeking behaviour or decision making.

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1.6 RELEVANCE OF THE STUDY

South Africa is among the twenty two high TB burdened countries in the world (WHO, 2015). In order to address this situation SA government with the assistance of various NGOs had provided biomedical interventions and various health education and awareness campaigns in an effort to prevent or curb the continuing spread of this deadly but preventable disease. Drug Resistant TB was initially managed using Centralised policy which required forced admission of all infected people at dedicated Drug Resistant TB institution. However, due to various challenges a de-centralised and de-institutionalised policy was passed which allowed people to be treated or managed at facilities near to where they live. Some of the reasons for management of Drug Resistant TB infected people in facilities that are nearer to their places of residence to increase accessibility and acceptability to community members.

This study wishes to establish knowledge and awareness levels, attitudes and practices of Port Elizabeth community members of Drug Resistant TB in relation to curbing its spread. It also seeks to establish whether there are any relationships between age, gender and knowledge, attitudes and practices of the respondents. This study is undertaken in order to address the gap in knowledge that exist about this phenomenon especially in the Eastern Cape. The few studies that have been previously undertaken have looked at patients and healthcare workers and ignored ordinary community members.

This study will be of great value as it will provide baseline data which can be used by program planners and policy makers in developing targeted interventions that are informed by the needs of the community members. The study is relevant in that, it will disseminate information with regard to the acceptability of Drug Resistant TB infected in communities.



1.7 OVERVIEW OF THE RESEARCH METHODOLOGY

1.7.1 Research Design

According to Babbie and Mouton (2001: 156) research design is a plan or blue print of how the researcher intends to conduct the research. The research design is about drawing a plan that will be followed during the study in order to answer the research question. The focus of the research design is on the logic of research, aiming at the kind of evidence that is required to address the research questions. In the research design the researcher must specify as clearly as possible what he or she intends to find out and also determine the best way of doing it (Babbie & Mouton, 2001: 157).

In this study a descriptive design was used to investigate community member's knowledge levels, attitudes and practices in relation to curbing the spread of Drug Resistant TB in Port Elizabeth. In this study quantitative data was collected through the use of 400 structured questionnaires.

1.7.2 Research Methodology

Research methodology is a way of collecting and processing information within the research process framework and the kind of tools and procedures to be used (Mouton, 2011: 165). The function of research methodology is to control the acquisition of information and interpret data after it has been collected. Research methodology also focuses on steps that are taken in the research process and the techniques and methods that are utilised (Denscombe, 2007: 248).

1.7.2.1 Quantitative Research Design

Quantitative research is the "formal, objective, systematic process in which numerical data is used to obtain information about the world". Furthermore, this method is used to describe variables, examine relationships and determine cause-effect interactions between variables. The researcher also controls the study by imposing conditions on the research situation so that biases are minimized (Burns & Grove, 2005: 134). Quantitative researchers are more concerned about issues of design, measurement and sampling because their deductive approach emphasizes detailed planning prior to data collection and analysis (Neuman, 2000: 89).

In this study, the researcher wants to establish or assess Drug Resistant Tuberculosis knowledge and awareness levels, attitudes and practices among Port Elizabeth community members.

Secondly, the researcher wanted to establish whether there are any relationships between age, gender and knowledge levels, attitudes and practices among Port Elizabeth community members on Drug Resistant Tuberculosis. In order to achieve the above objectives the researcher used a quantitative research design, as it uses numerical data and statistical analysis to make meaning of the world around us, describe variables and examine relationships.

This method was used to measure and quantify the results. Quantitative data analysis using Ms. Excel and SPSS statistical applications was utilised to identify relationships and also compare the relationships between nominal and ordinal variables. Descriptive statistics were generated through univariate analysis. Univariate analysis was done in order to generate frequencies and identify patterns in the collected data in order to determine the magnitude of knowledge, attitudes and practices and other variables. Bivariate analysis was done in order to identify relationships between different variables (age, gender, race etc.). Through the use of bivariate analysis cross tabulations were done and contingency tables generated to record and measure the association between variables. Multivariate analysis was done in order to correlate knowledge, attitudes and practices with socio-demographic variables.

1.7.2.2 The Population and study area or setting

In this research, the participants were male and female residents of both formal and informal settlements in Port Elizabeth who were above 18 years of age. These respondents have been staying in Port Elizabeth areas for more than a year. The Nelson Mandela Bay Municipality has a population of about 1 521 115 million and Port Elizabeth is part of this municipality together with Uitenhage and Despatch. The unemployment rate is 37% and youth unemployment rate is at 47% (Statistics South Africa, 2013).

Female headed households are at about 41% and it is in Port Elizabeth Kwa-Zakhele where 98% of 580 households use bucket system and that 81% of them used paraffin as their source of energy. Diseases spread fast in impoverished areas (Statistics South Africa, 2013).

1.7.2.3 Sampling

In this study the researcher selected a sample of 422 but it is only 400 questionnaires were appropriately filled and used during data analysis. Non-probability sampling was used. In this type of sampling the probability that a given element will be included in a study cannot be specified and in certain instances certain elements may not have a chance of being selected at all. In this study the researcher used a combination of convenience or accidental and purposive sampling to select eligible participants for this study. Purposive and accidental sampling involves the use of the research subjects or participants that are conveniently available to the researcher (Leedy, & Ormond, 2014: 78). With this type of sampling the participants were not selected from the population based on some form of probability, but rather on the knowledge of the researcher and how easy it was for the researcher to have access to them. This sampling method is not time consuming, costs less and there is no need to have a list of the population (Welman & Kruger, 1999: 62).

Therefore, for the purpose of this study, the researcher collected information from anyone who was easily accessed, met the inclusion criteria and gave consent to participate in the study at that specific given time. Secondly, the researcher selected the sample on the basis of knowledge of the population, the usefulness of the units, its elements, and the purpose of the study. Lastly the researcher selected a sample from the residents of Port Elizabeth which was representative of the demographics of the population (gender, race, age).

These methods were suitable for the purpose of this study, as the researcher did not have a full list of the population, time and financial resources.

1.7.2.4 Data Collection Instruments and Methods

Data was collected using a four point Likert scale questionnaire. This questionnaire consisted of close-ended questions in which respondents were asked to tick to indicate the extent to which they agreed or disagreed with the statement. The research subjects were given a choice of filling in the questionnaire themselves or having them filled by the two research assistants. The use of questionnaires allowed collection of information regarding Drug Resistant TB knowledge, attitudes and practices of the respondents.

1.7.2.5 Data Analysis

During data analysis, data was loaded to Ms Excel and also SPSS. These statistical tools enabled the researcher to identify relationships and also compare the relationships between nominal and ordinal variables. Descriptive statistics were generated through univariate analysis. Univariate analysis was done in order to generate frequencies and identify patterns in the collected data so that the magnitude of knowledge, attitudes and practices and other variables can be determined.

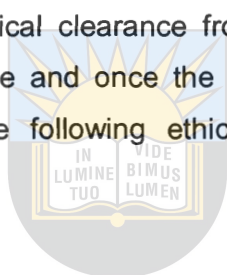
Bivariate analysis was done in order to identify relationships between different variables (age, gender, race etc.). Cross tabulations were also done and contingency tables generated to record and measure the association between variables. Multivariate analysis was done in order to correlate knowledge, attitudes and practices with socio-demographic variables.

1.7.2.6 Research Results

The research report include the socio-demographic profile of the respondents, their Drug Resistant Tuberculosis knowledge, attitudes and practices scores and the association between age, gender and knowledge, attitudes and practices.

1.8 ETHICAL CONSIDERATIONS

The researcher applied for ethical clearance from the University of Fort Hare Research and Ethics Committee and once the approval was granted the data collection commenced and the following ethical principles or aspects were adhered to during the study:



1.8.1 Truthfulness to the Study Participants

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The researcher identified himself and the research assistant to the research subjects. The participants were informed about the reason for the research. The ethical clearance letter and student cards of the research and the assistants were shown to the participants so that they can know who they were talking to and also to understand the purpose of the research that was being conducted.

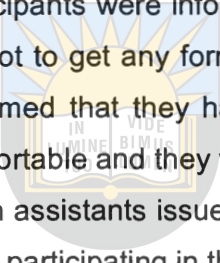
1.8.2 Voluntary Participation

The researcher understands the fact that when conducting research, the participants should not be coerced to participate. In this study, the participants agreed to participate out of their own will after they were asked by the researcher. The researcher informed the participants that they were not forced or obliged to participate in the study. The purpose of the study was clarified to them in order to enable them to make a sound decision as to whether they were going to be part of the study or not.

The research participants were also informed that they had a right to withdraw their participation in the study at any time should they wish to do so; and that they were not to be penalized in any way for Withdrawal.

1.8.3 Informed Consent

The researcher provided the participants with accurate information with regard to this study in order to allow them make an informed decision with regard to their participation. The research participants were informed that their participation was voluntarily, and that they were not to get any form of payment for participating in the study. They were also informed that they had a right to withdraw from the study whenever they felt uncomfortable and they would not be penalized for doing so. The researcher and research assistants issued the consent forms which were signed by the participants before participating in the study.


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1.8.4 Avoid Harm to the Study Participants

The research subjects were informed about the possibility that some of them might suffer from emotional pain when answering the questions on the research instrument. The researcher informed the participants that they will be referred for counseling if they do experience emotional pain either during or after the research session. Efforts were also made not to include embarrassing and psychologically harmful questions in the research instrument. They were also informed about their right to withdraw from the study anytime should they wish to do so without any prejudice.

1.8.5 Anonymity and Confidentiality

The research was conducted in such a manner that the participants were not in any way associated with the given responses.

This was achieved by ensuring that the participants were not asked to give any personally identifying information during data collection. The data collected is stored in a disc and kept in a locked safe which was only accessible to the researcher only. This data will be kept for the duration of five years. Only the research results will be made available or disseminated through a workshop which will be held in their community halls and by publication of an article in a journal of which a copy will be sent to the Library in the Municipality.

1.9 DELIMITATIONS OF THE STUDY

In order to make the study more manageable for the researcher, the study focussed on the following:

It was conducted among the residents of Port Elizabeth who were 18 years old on their last birthday. In this study, the researcher excluded participants if they were below the age of 18 years on their last birthday. Community members with TB, severe health problems and cognitive impairments and all those who were residents for less than a year in Port Elizabeth were also excluded.

1.10 LIMITATIONS OF THE STUDY

The findings of this study cannot be generalized to the whole of Eastern Cape or South Africa as it was conducted in a limited area which is Port Elizabeth. Data was collected using closed ended questionnaire and therefore the responses might be biased in accordance to its design. A mixed method or qualitative approach would have assisted in gaining a better understanding of respondent's beliefs, attitudes and practices. Data quality might have been compromised via unrepresentativeness of the sample. Some of the respondents who left their homes early and came back in the evenings were left out from this study. This shortcoming was further worsened by carrying out the household survey during week days when possibly most people were at work and schools.

1.11 CLARIFICATION OF CONCEPTS AND TERMS

1.11.1 Public Administration (As Discipline)

According to Fox, Schwella & Meyers (1991) Public Administration is a system of structures and processes that are functioning within a particular society or environment with an aim of the guiding the formulation or construction of proper government policy and the effective and efficient execution of the formulated policy. Dwivedi and William (2011: 23) further stated that, as a modern profession and a field of study, public administration has developed through a succession of two epistemological phases at the beginning of the twentieth century.

Public Administration as an academic discipline studies and analyses the machinery and procedures of government while formulating and implementing policies, and analysis/ study that gives birth to new ideas, which are then applied to the activity of government to test the practicality as to whether they increases the efficiency. Public administration is a study of the manner in which the country's administration is organised as well as how it functions. It is an academic study field that can be acquired in tertiary institutions (Oyedele, 2015: 7).

As a field of practice, Nigro and Nigro (1980: 3) are of the view that a one sentence definition of public administration is inadequate. This is because the field of public administration has never been precisely delimited as both practitioners and scholars have considerably, broadened their concept of what public administration covers. This broadening is due to great expansion in governmental programs caused by increasing new societal problems, and public administration is government's central instrument for dealing with general societal problems. Public administration deals with government's response to increasing societal responsibilities of which public health education or promotion are part of the study objective.

Hanekom et al. (1986: 14), is of the opinion that public administration is neither viewed as the all-embracing executive action directed towards the accomplishment of a goal, nor the exclusive routine activities of white collar workers, but administration is viewed as an ever-present phenomenon encountered in any group activity. Hanekom et al. (1986: 14), further admit to the existence of varying views in the field of public administration and state that the practical usage of the term in accordance with the different views has become familiar in certain circles. They also sound a warning that to condemn one or more of the views may be a futile exercise. It is important that the user of the term should, by any means of description and context, clearly indicate the way in which it is to be used. As an academic discipline and a field of practice, public administration has a wide challenge, which is relevant in the context of the study and that being the curbing, preventing and controlling the continuing spread of Drug Resistant Tuberculosis in the Eastern Cape which is a huge challenge or threat to Public Health.



1.11.2 Public Administration (As an Activity Or Function)

Public Administration is also defined as the implementation of government's policy. Public administration is a management of public affairs that is geared towards the achievement of the needs of the citizens of the country. This practice is meant to improve the living condition of the people (Oyedele, 2015: 7).

Public administration, as an activity, refers to the work that is carried out by government officials at different spheres of government and levels within government institutions to enable the achievement of the goals and objectives (Fana, 2013: 12; Du Toit & Van Der Walddt, 2008: 10).

According to Du Toit & Van Der Walddt (2008: 10) the following factors are the main contributors to the origin and further development of the service of public administration:

- Human needs – the basic human needs for survival such as food, shelter, water, health, etc.
- Common needs – needs that can be provided on behalf of the society such as provision of water, and electricity, refuse removal, etc.
- Increasing need for services – increasing need for government services due to increasing population growth.
- Need for better distribution of services – division of common needs among the different spheres of government for delivery of service in an effective and efficient manner.

Public Administration is that section of government that is concerned with the implementation of the political parties election manifesto. It is further described as the mixing of human, financial and material resources in order to achieve programs as specified in the public policy (Oyedele, 2015: 9).

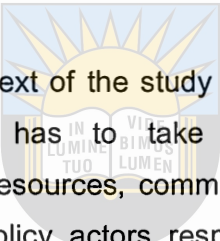
1.11.3 Public Policy

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According to Hanekom (1987: 8), public policy is an intended course of action and interaction which is to serve as a guideline in the allocation of resources that are required to achieve community goals and objectives, which were decided upon and made publicly known by the legislator.

Hanekom (1987: 7) further writes that public policy consists of courses of action, which involve what government decides to do or not, and that all public policies are future oriented, usually aimed at the promotion of the general welfare of the society, rather than a societal group. Public policy has two dimensions namely the political and the administrative dimension. The political dimension, which pertains the involvement of the government (the legislator) in deciding on the activities and resources necessary to reach visualised objectives and the administrative dimension which relates to the actions undertaken to realise the goals envisaged.

The improvement of the welfare of the people in a country largely depends on the policies that are passed and their implementation; the availability of resources and on whether the policies drafted by policy makers and adopted are indeed addressing the needs of that particular society. Without clearly defined policies, the chances of improving the general welfare of society would be difficult. It is also necessary to know who influences what in making public policy; what has an effect on what and to what extent, what is justified and what is not, and who should do what (Hanekom, 1986: 25).



Public policy-making in the context of the study is part of government's array of challenges, and government has to take decisions based on certain considerations, such as need, resources, commitment etc. In the context of the study, public policy involves policy actors responding to policy issues in the context of making policies for Management and Prevention of the continuing spread of Drug Resistant Tuberculosis which is a threat to Public Health. Decentralised and deinstitutionalised Policy Framework for Management of Drug Resistant TB was introduced in order to replace the Centralised Policy for Management of Drug Resistant Tuberculosis.

Public policy refers to government programs that are meant to address the diverse problems and challenges that exist in society (Ijeoma, 2010: 12-13). The decision to decentralise and deinstitutionalise the management of Drug Resistant TB was taken due to high costs of hospitalisation, shortage of hospital beds to admit patients, refusal of forced hospital admission by some of the infected community members which in itself was a violation of basic human rights that are entrenched in the South African Constitution, the growing public concern about Drug Resistant TB infected people who were not admitted and staying with them in communities without treatment and lastly lack of infection control measures in some of the hospitals.

1.11.4 Knowledge

Knowledge is explained as “the facts, feelings that are understood by people or group of people with regard to a specific issue”. It is the amount of understanding that one has about a particular subject (Collins English Dictionary, 1991).

Knowledge is acquired from colleagues and organisation where people socialise like schools, congregation, newspapers, radio, films, television social media and internet. Decision with regard to various issues are made based on the amount of knowledge that one has about the subject matter, whether is factual or erroneous (Musasa, 2011: 9).

Knowledge is also of significance in that it assists in shaping individual's reality. In this context, knowledge refers to, the understanding and awareness of the various issues regarding Drug Resistant tuberculosis. Conceptual, procedural, declarative and descriptive knowledge are the various kinds of knowledge (Murima, 2013: 3).

- Conceptual knowledge is profession or discipline specific facts and concepts
- Procedural knowledge is the one that is utilised when completing a job or activity
- Declarative knowledge is the one that is common or known to be the case

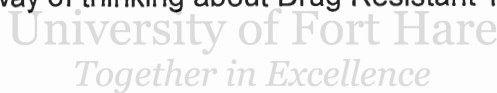
In this study the conceptual knowledge is of significance as it will allow the researcher to establish research subjects' knowledge and awareness levels, attitudes and practices of Drug Resistant Tuberculosis. The continuing spread of Drug Resistant Tuberculosis indicates gap in procedural knowledge and hence need to establish what aspect are lacking exactly. Declarative is also important even though it does not stop people from engaging in risky behaviour. The level of awareness about declarative and procedural knowledge can assist in establishing factors that hinder or assist behavioural change or adoption of positive health actions.

1.11.5 Attitude

Attitude is defined as an opinion or behaviour reflecting what you are against or in favour of. It is one's view or way of thinking. An attitude is a positive or negative response towards a particular issue or subject (Oxford dictionary, 2005).

Attitudes influence or affect behaviour and form 'biases' to respond and act in a particular way. Attitudes can be manifested either in a cognitive or behavioural form or both. Attitude as a cognitive component involves individual's thoughts and beliefs, whereas attitude as a behavioural component involves the manner in which attitude influences and affects actions (Murima, 2013: 4).

Within the context of this study, attitude refers to the respondent's or community members' opinion or way of thinking about Drug Resistant Tuberculosis.



1.11.6 Tuberculosis: TB

It is a disease caused by a bacterium called mycobacterium tuberculosis. It mainly affects the lungs and it is called pulmonary tuberculosis but other organs can also be involved like joints, abdomen, spine, nervous system and other organs which is called extra pulmonary tuberculosis (Fana, Mayekiso & Gwandure, 2013: 61). Active tuberculosis is infectious and can be spread by coughing, sneezing and talking. Extra Pulmonary tuberculosis is virtually un-infectious (Kodisang, 2014: 9).

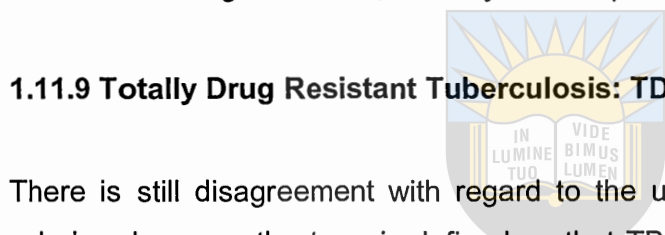
1.11.7 Multi Drug Resistant Tuberculosis: MDR-TB

MDR-TB (Multi Drug Resistant Tuberculosis) is the name given to tuberculosis when the bacteria causing it are resistant to at least isoniazid and rifampicin, two of the most effective tuberculosis drugs (Musasa, 2011: 6).

1.11.8 Extensive Drug Resistant Tuberculosis: XDR-TB

XDR-TB is the tuberculosis strain that is resistant to the first and second line drug regimens (South Africa Department of Health, 2011: 4).

Extensively Drug Resistant tuberculosis is defined as strains resistant to at least rifampicin and isoniazid in addition to being resistant to one of the fluoroquinolones, as well as resistant to at least one of the second line injectable tuberculosis drugs amikacin, kanamycin or capreomycin (Kadisong, 2014: 10).



1.11.9 Totally Drug Resistant Tuberculosis: TDR-TB

There is still disagreement with regard to the use of the term TDR-TB among scholars however the term is defined as that TB strain that is resistant to all the first and second line drugs that are used to treat TB (Parida, Axelsson-Robertson, Rao, Singh, Master, Lutckii, Keshavjee, Anderson, Zumla & Mauerer, 2015: 1).

1.11.10 Pulmonary Tuberculosis: PTB

Pulmonary tuberculosis is TB that affects the lungs, and is the most common form of tuberculosis in South Africa (Kodisang, 2014: 9; South African National Department of Health, 2009: 17).

1.11.11 Prevalence

Prevalence is the number of existing cases in an area at a specified period of time (De Vos et al., 2005: 372). According to the study, the problem is TB in South Africa and particularly in Port Elizabeth.

1.11.12 Incidence

Incidence is defined as the number of new cases of a particular problem that are identified in a specified area or context during a specified period of time (De Vos et al., 2005: 372). According to the study, the problem is Tuberculosis in South Africa and particularly in Port Elizabeth.

1.11.13 Awareness

Being aware refers to “having knowledge or being informed of current developments about something or a particular subject matter (Collins English Dictionary 1991: 106).



Kavanagh (2002: 74) describe awareness as “having knowledge about a situation or fact or becoming conscious of the challenges that the world presents to us. Having feelings and thoughts about something and possessing the attributes to deal with the challenges that the situation presents”. In this study, awareness refers to Port Elizabeth community members understanding, knowledge, attitudes and practices on Drug Resistant TB.

1.11.14 Mono Resistant Tuberculosis

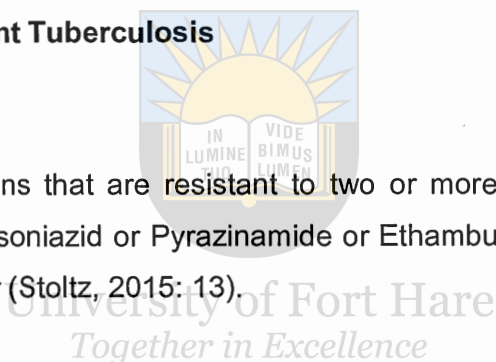
It is a tuberculosis strain that is resistant to a single first line anti-tuberculosis drug (Rifampicin, Isoniazid, Pyrazinamide or Ethambutol) (Stoltz, 2015: 13).

1.11.15 Rifampicin Resistant (RR-TB)

It is a tuberculosis strains that are resistant to Rifampicin detection using phenotypic or genotypic methods, with or without resistance to other anti-TB drugs. It includes Mono, poly, MDR and XDR tuberculosis (Stoltz, 2015: 15; South African National Department of Health, 2011)

1.11.16 Poly-Resistant Tuberculosis

It is tuberculosis strains that are resistant to two or more first line tuberculosis drugs (Rifampicin or Isoniazid or Pyrazinamide or Ethambutol) but not Rifampicin and Isoniazid together (Stoltz, 2015: 13).



1.11.17 Ethics

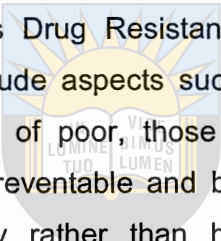
Ethics are rules of conduct that are recognised in respect to a particular class of human actions or particular group or culture. Ethics is the study of what we understand to be good and correct behaviour and how people make those judgements. It also involve doing what is right and good despite pressure from others and beyond the demands of laws and the regulations (Stoltz, 2015: 13).

In this study ethics will be rules of conduct that are recognised as being good and correct in respect to the management and control of the spread of Drug Resistant Tuberculosis.

1.11.18 Morals

Morals are principles or habits with respect to right and wrong. While morals prescribe the dos and don'ts, morality is a personal compass of right and wrong (Van Niekerk & Kopelman, 2005: 127).

For the purpose of this study, morals will be regarded as the right and wrong attitudes and practices towards Drug Resistant Tuberculosis. Such attitudes, beliefs and practices might include aspects such as viewing DR-TB as curse, punishment, witchcraft, disease of poor, those living in poverty and are HIV infected, not curable and not preventable and being acceptance, treating each other with respect and dignity rather than hatred, and discrimination and stigmatisation etc.

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1.11.19 Theory

Theories are different tools that individuals use in trying to understand their experiences or the world around them. It is a systematic collection of interrelated concepts and principles that are merged or combined to formulate an explanation for a specific aspect (Kodisang, 2014: 14).

1.12 THEORETICAL FRAMEWORKS

Theories and models assist when people are trying to make sense of the world. Theories are statements that involve giving reasons as to why certain things are the way they are. Theories are also useful in that they can be used to describe and predict events (Sabatier, 2007: 321; Mouton, 2001: 2007).

This study is based on the Social Ecology Model which states that the individual and the environment affect and influence each other. The Health Belief Model which is also used in this study, states that knowledge change precedes behavioural change. The Social Cognitive Theory states that health behavioural change is a result of reciprocal determinism and that self – efficacy belief determines behavioural changes.

This study seeks to assess the knowledge and awareness levels, attitudes and practices of Port Elizabeth community members of Drug Resistant Tuberculosis in relation to efforts to curb the spread of this disease. It also seeks to establish association between age, gender and knowledge levels, attitudes and practices. The researcher used the Health Belief Model and Social Cognitive Theory to account for the knowledge, attitudes and practices of the community members and the Social-Ecological Models to establish factors that influences knowledge, attitudes and practices of community members.

1.13 FRAMEWORK FOR THE THESIS

This study is structured in the following chapters

Chapter 1: Introduction: This chapter gives an introduction, background and motivation for the study, the problem statement, research question, the aims and the objectives of the research, significance, delimitation, ethical consideration and definition of the key concepts.

Chapter 2: Theoretical Framework: In this chapter a discussion about the Health Belief Model, Social Learning or Cognitive Theory and Socio- Ecological Model as they form the theoretical framework or basis for this research study is provided.

Chapter 3: Literature Review: A general overview TB and literature related to normal and Drug Resistant Tuberculosis knowledge, attitudes and practices as the subject of investigation is discussed.

Chapter 4: Research methodology: A detailed description of the research methodology that is used in this study is provided in this chapter. The research question, goal and objectives, sampling strategy, research design, data collection, analysis and ethical considerations are discussed.

Chapter 5: Legislative framework and public health ethics: In this chapter an overview of various pieces of legislation that are used in management of Drug Resistant TB is provided as they form the legislative framework in this study.

Chapter 6: Research findings: In this chapter, a detailed report of the research findings as they emerged during data analysis is presented.

Chapter 7: Discussion of the results: In this chapter, discussion of the results of the empirical study in the light of the theoretical framework from which this study was based is presented.

Chapter 8: Summary, conclusions, limitations and recommendations: The last chapter of this study provides a summary of the key findings, and provides recommendations and conclusions based on the data with due consideration of the limitations of the study.

The next chapter of the study gives a detailed discussion on the theoretical models that formed the basis for this study.

CHAPTER TWO

THEORETICAL FRAMEWORK FOR THE STUDY

2.1 INTRODUCTION

In the previous chapter, the researcher gave a brief introduction about the phenomenon that is being investigated. In this chapter the three theoretical models that are forming the basis of this study are discussed. They are the Health Belief Model, Social Cognitive Theory and Social Ecology Model. This is because human behaviour is influenced and affected by various factors, and therefore using one model or theory will fall short when trying to explain and understand human behaviour. In an effort to try and explain health behaviour, numerous models and theories have been used in accordance to their stages of influence.

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However, for the purpose of this study, the following models or theories will be used:

- The Health Belief Model (Rosenstock, 1966)- Individual or intrapersonal level -
- Social Learning or Cognitive Theory (Bandura, 1977)- Interpersonal level -
- Social Ecology Model (McLeroy, et al., 1988) - Multi-level approach -

The continuing spread of diseases such as Drug Resistant tuberculosis despite numerous efforts to educate communities on how to prevent themselves from such diseases presents us with problems or challenges that cannot be easily understood. These challenges need to be addressed using the appropriate models which look at human behaviour and the environment, as well as individual level issues such as knowledge attitudes and beliefs.

Therefore, the purpose of this chapter is to discuss the Health Belief, Social Learning or Cognitive Theory and the Social Ecological Models. The Health Belief Model was chosen because it assists in establishing knowledge, attitudes, perceptions and practices at individual level. The Social Learning or Cognitive Theory is utilised in order to understand how people acquire knowledge, adopt and sustain positive health related behaviour. The Social Ecological Model is utilised to help in establishing knowledge and awareness levels, attitudes and practices taking into account the environment from which the respondents are coming from; and the factors that are affecting or influencing them.



2.2 THE HEALTH BELIEF MODEL (HBM)

The Health Belief Model was developed by an American Psychologist in the 1950's to explain the widespread failure of tuberculosis screening. This model was then modified in 1974 by Irwin Rosenstock (Ndoro, 2009: 44). The Health Belief Model seeks to establish the behaviours that are believed to underpin the control of an individual and it functions on the proposition that people are rational and act in ways that are beneficial to them. The Health Belief Model assumes that, when people are to make health related decisions, they rationally weigh healthy and unhealthy outcomes of their actions whether social or economic.

The Health Belief Model is built on the components of Social Stimulus Response and Cognitive Theories or the Value Expectancy Theory. The stimulus response theory is said to be operating on the premise that, learning results from consequences of events (reinforcements) that determine and influence future behaviour. Furthermore, it is stated that, from the perspective of stimulus response theories, cognitive functions such as thinking and reasoning are very influential when it comes to predicting and explaining behaviour, whereas reinforcements are crucial for influencing future behaviour (Ndoro, 2009: 35).

The second type of learning theories that makes up the Health Belief Model is a value expectancy model that is used to describe individuals' health behaviour based on their knowledge, attitudes and perceptions. In terms of the Health Belief Model, behaviour is a result of an individual's expectations hence behaviour performed is in response to beliefs and values held (Champion and Skinner, 2008: 2).

Value is regarded as a desire to maintain good health and avoid illness whereas expectancy refers to the beneficial behaviour and action that will prevent and avoid illness in terms of the expectancy theory in the Health Belief Model. Expectancy can further be determined by an individual's perceived susceptibility to and severity of contracting a disease. Individuals will adopt positive health related behaviour if they perceive that the behaviour is beneficial to them or that they are at threat and perceive that there are no barriers in adoption of positive health related behaviour. The Health Belief Model is widely used in health education and promotion interventions. According to this model, knowledge change precedes behaviour change. In terms of this model knowledge is regarded as important and essential in performing a motivational role for the promotion and adoption of a behaviour change. According to this model, knowledge alone, cannot bring about sustainable health behaviour adoption, but is regarded as a starting point in the behaviour change process (Champion & Skinner, 2008: 2; Glanz, Rimer, & Lewis, 2002: 52).

The Health Belief Model states that when trying to determine the health behaviour, perceptions about the disease also plays a very important role. The Health beliefs are seen to be directly related to the attitudes and perceptions regarding diseases. When health beliefs are negative, people will not adopt positive health behaviours relating to that disease (Glanz, Rimer, & Lewis, 2002: 52).

Secondly, this model assumes that demographic and socio-economic factors indirectly influence health beliefs about diseases like tuberculosis. The demographic factors influence the manner in which individuals behave regarding a disease and their attitude towards preventing its spread. Income and availability of health care services are socio-economic factors that influence health beliefs and the spread of diseases. The HBM assumes that health behaviour is influenced by the following six key constructs: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action and lastly self-efficacy (Miller, 2013: 56; Liefoghe et al., 1995: 65; Glanz, Rimer, & Lewis, 2002: 52).



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Table 1: Concepts and definition of the constructs of Health Belief Model

Concept	Definition	Application
Perceived Susceptibility	One's opinion of the chance of contracting a condition	Define population(s) at risk, risk levels; personalise risk based on a person's features or behaviour; heighten perceived susceptibility if too low.
Perceived Severity	One's opinion of the seriousness of a condition and its consequences	Specify consequences of the risk and the condition.
Perceived Benefits	One's belief in the efficacy of the advised action to reduce risk or seriousness of impact	Define action to take; how, where, when; clarify the positive effects to be expected.
Perceived Barriers	One's opinion of the tangible and psychological costs of the advised action	Identify and reduce barriers through reassurance, incentives, assistance.
Cues to Action	Strategies to activate "readiness"	Provide how-to access information, promote awareness, reminders.
Self-efficacy	Confidence in one's ability to take action	Provide training, guidance in performing action.

Source: Croyle (2005: 14)

2.2.1 The Components of the Health Belief Model

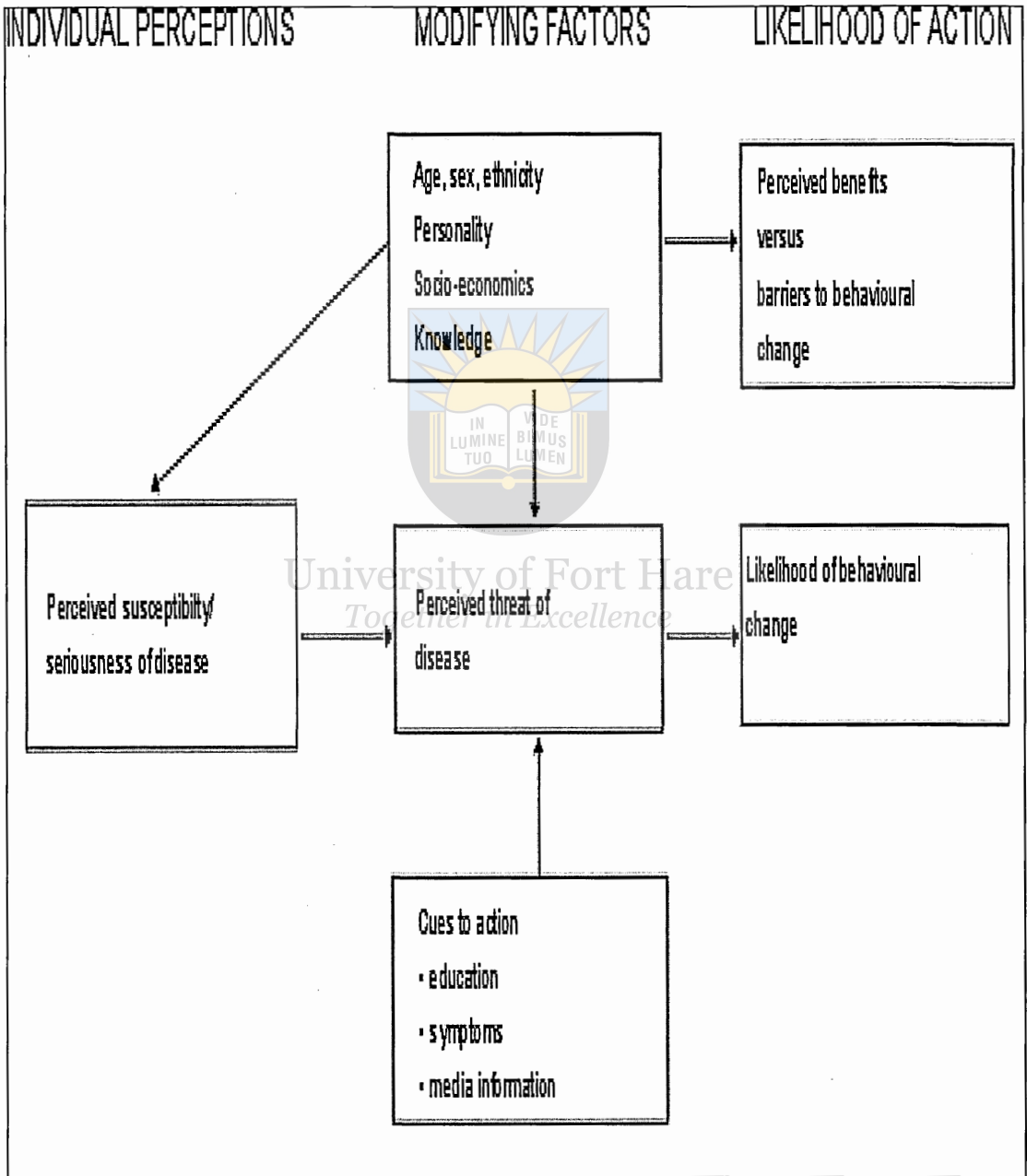


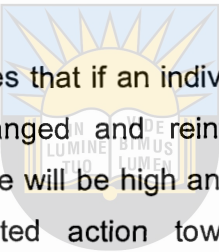
Figure 1: The components of the Health Belief Model

Source: Glanz, Rimer & Lewis (2002: 52)

2.2.1.1 Individual Perceptions

Perceived personal susceptibility

Perceived personal susceptibility is the process by which individuals subjectively perceive themselves as susceptible to contracting a health condition and their chance of being infected. Perceived personal susceptibility relates to the likelihood that an individual will get infected with a particular condition or disease (Glanz et al, 2002: 53).



The Health Belief Model assumes that if an individual's knowledge, attitudes and perceptions are positively changed and reinforced, that person perceived susceptibility towards the disease will be high and that will lead to the individuals taking a positive health related action towards that disease. Perceived susceptibility has been found to be predictive of certain health behaviours. If people perceive themselves to be susceptible to tuberculosis, they will be more willing to adopt practices that will prevent infection of the disease such as, seeking early treatment and assisting those who are infected so that the disease is not spread to other people in the community.

So if people perceive themselves to be susceptible to a disease they regard themselves to be vulnerable to infection. High levels of perceived personal susceptibility towards diseases such as tuberculosis are important for the application or taking of positive health related or actions behaviours against the spread of that disease (Liefoghe et al., 1995: 66).

When perceived risk is low, unhealthy behaviour manifests and results in the development of diseases or even death. It is also said in some studies that, even when perceived risks is high, there is disregard for it.

High susceptibility is not always followed by health affirming actions. Despite high perception of risk towards HIV and AIDS, the disease is continuing to spread because people are continuing to engage in risky sexual behaviour (Musasa, 2011: 45).

Perceived Severity

Perceived severity is defined as “an individual’s perception of the seriousness of contracting the disease or condition” (Champion & Skinner, 2008: 85). Perceived severity of the disease takes into account personal feelings of the graveness of a condition based on individual awareness of the consequences of that condition. Such an evaluation will include the evaluation of both economic consequences, such as medical expenses or job loss, and social (isolation) consequences of the disease (Miller, 2013: 39; Ndoro, 2009: 63).

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According to the Health Belief Model, if perceived severity of a disease is regarded to be high among the individuals, then those individuals perceives themselves to be at high risk of contracting an illness or disease. It is assumed that such people will try and adopt positive health related behaviours or actions in order to try and avoid and prevent infection by such a disease. If perceived severity level of danger of infection is assumed to be high, and the perceived personal vulnerability to infection is assumed to be relatively high then the perceived effectiveness of the preventative measure will also be high (Ndoro, 2009: 62).

On the other hand, individuals with low perceived severity of a disease are less likely to take preventative measures or actions (Champion & Skinner, 2008: 12).

An individual will likely take action if they believe that the negative physical, social and psychological effects of a condition or disease pose a serious threat or consequence to them (Champion & Skinner, 2008: 12).

Perceived Benefits

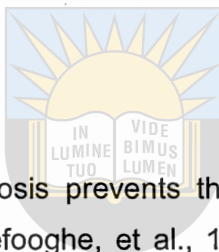
Perceived benefits refers to the positive consequences of adopting a certain health related behaviour and action. It is stated that the perceived benefits represent the components of the value outcomes of the Health Belief Model. It assumes that individuals will adopt health promoting behaviours if they believe that their behaviour and action will reduce their chances of acquiring a disease because the focus would be on the positive outcomes of the action. People who perceive the benefits of avoiding tuberculosis infection are able to easily adopt positive health related behaviours to prevent being infected by it. They actively engage in preventative practices against tuberculosis and do not stigmatise or discriminate against those infected by the condition.

Similarly, people who do not have the conviction or belief that preventative behaviour or action will prevent them against the infection by the disease, they will not bother with adopting appropriate steps or actions to try and prevent themselves from the infection. For instance, people who do not believe that condoms are effective in protecting against STI's and HIV and AIDS will not bother themselves by using them during sexual intercourse. (Murima, 2013: 50; Ndoro, 2009: 44).

Perceived Barriers

Perceived barriers prevent an individual from taking certain behaviours or preventative actions.

Perceived barriers consist of factors that prevent or hinder one's ability to adopt a particular health behaviour or action (Champion & Skinner, 2008: 26). These barriers may be issues such as cost, social support for the particular behaviour or action, pain and inconvenience. Individuals cognitively evaluate the positive and negative aspects of that accompany a behaviour type and this represents a value outcome of the Health Belief Model (Ndoro, 2009: 39). Stigma and discrimination attached to tuberculosis are some of the barriers to early TB diagnosis and taking of treatment. People associate tuberculosis and HIV infection this lead to individuals delaying seeking treatment because of fear of being stigmatised in the community (Ndoro, 2009: 45).



Discrimination towards tuberculosis prevents the increase of health promoting behaviour within individuals (Liefhoghe, et al., 1995: 64). The perceived barriers for tuberculosis patients to complete treatment successfully include the intake of large amounts of medication and stopping some social habits, such as smoking and drinking alcohol (Kelly, 1999: 15). The Health Belief Model assumes that if there are no social and economic barriers people would be more willing to adopt positive health beliefs regarding tuberculosis. It further assumes that absence of barriers to TB infected would result in community members seeking treatment early and maintaining healthy behaviours such as treatment adherence. Positive behaviour are not adopted when the perceived barriers outweigh the benefits. For instance, people who believe condoms are effective in preventing HIV can still perceive condoms as a barrier to pleasurable sex (Musasa, 2011: 58).

Therefore, in order for new risk reduction actions to be undertaken an individual needs to accept that the benefits of changing the behaviour or actions are better than the results of the old behaviour actions. Perceived barriers act as a single most powerful predictor for decision making (Musasa, 2011: 58).

Cues to action

Cues to action are referred to as health motivators. Cues to action or health motivators give a disease or health condition a "human face" and make people aware of the reality of the disease. Cues to action can be referred to as either internal or external. In tuberculosis or HIV and AIDS campaigns cues to action can be conveyed to the general public by showing images of ordinary people infected with the disease and the harmful effects it has on their bodies and lives. This may be seen as a cue to action to motivate individuals to take up positive health related actions to avoid tuberculosis infection. Cues to action are said to have a causal relationship with perceived susceptibility. Where perceived susceptibility is low, there is a need for intense cues to action as they will promote interest towards the adoption of the new behaviour (Hall, 2011: 5).

Self-efficacy

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The concept of self-efficacy was developed by Albert Bandura. It refers to one's confidence in his or her ability to perform a certain behaviour or action. It is argued that an individual will not try out any behaviour or action if they lack the confidence to perform the said action or behaviour. It is this aspect of self-efficacy, which allows an individual to continue in his or her attempt at making behavioural changes, despite the challenges and obstacles that they may be faced with (Liefoghe, et al., 1995: 56).

2.2.1.2 Modifying factors

The demographic, socio-psychological and structural factors are also referred to as modifying factors in the HBM. Individual characteristics such as one's culture, educational level, past experiences, skills and motivation are some of the variables that can modify the four major constructs of ones perceptions (Hounton, Carabin & Henderson, 2005: 8).

Demographic variables

Age and gender are some of the demographic factors that affect the individuals' perceived threat to a disease or illness and ability to avoid risk behaviour and adopt positive health action or behaviour (Dennill et al, 1999: 157). TB infection is also affected and influenced by an individual's behaviour and developmental stages. TB is said to be infecting more men than women. Men are also more likely to die of the disease. In most countries in Africa, notification rates are higher for men than for women (Holmes, Hausler & Nunn, 1998: 96).

Old people are also at high risk of TB due to normal ageing. Ageing weakens the immune systems and the old people become vulnerable to diseases such as TB. Adults are also more likely to be living in nursing homes, where mini-epidemics of TB can occur (Hanson & Benedict 2002: 25). In South Africa, it was discovered that most of the TB cases occurred among people between 20 and 49 years old (Lawn et al., 2006: 1046).

Socio-psychological variables

According to Dennill et al. (1999: 156) peer pressure, social class and personality are some of the socio-psychological variables that influence one's perception of illness and their likelihood of taking preventative actions.

Structural variables

Knowledge about the disease or previous exposure or contact with the disease influences one's perception. A risk perception of a particular disease can make people feel vulnerable to infection with that disease and avoid engaging in risky behaviour. It is argued that the fear of a disease does not lead to a high perception of risk of infection towards that particular disease (Dennill et al., 1999: 157).

Behavioural change can take place only if the people have the relevant knowledge and positive perceptions. When these two factors are present people are more likely to adopt positive health actions or behaviour (seek healthcare and medical treatment). Poor or insufficient knowledge about TB limits people's ability to prevent its spread and seek early treatment. Individual perceptions regarding factors such as personal susceptibility, severity, benefits and barriers are important predictors of preventive TB behaviour or actions (Becker, 1974b: 324).

Knowledge, attitudes, and perceptions about health influence and affect their behaviour and actions (Petrovici & Ritson, 2006: 222). Knowledge, attitudes and perceptions influence and affect the health seeking, diagnosis, treatment initiation and adherence, and communication and relationships with health care providers. The Global TB control and management program depends on self-presentation from the community and sputum smear for diagnosis (Gelaw, 2016: 9).



So for successful control of TB, people need to have high knowledge and awareness levels about the disease so that they can be in a position to identify the signs and symptoms of TB at an early stage and seek medical assistance at an early stage when the damage is still manageable and minimum (Kasse, et al., 2006: 143).

According to Mangesho et al., (2007: 38) knowledge and perceptions about TB are an important aspect in TB health education programme planning as it can assist in removing or dispelling misconceptions and erroneous beliefs and thereby improve both the knowledge and levels of awareness of TB within society. Knowledge and positive perceptions are prerequisites for behavioural change. People with high or good knowledge and awareness levels of tuberculosis are more likely to seek medical assistance and adhere to treatment.

Mangesho et al., (2007: 42) state that poor or lack of TB knowledge inhibit or limit individual's ability to curb the spread of diseases and seek early treatment. Individual perceptions related to such factors as personal susceptibility, severity, benefits and barriers represent important predictors of preventive TB behaviour. High-risk populations embark on TB screening because of their perceptions of personal susceptibility to TB, the severity of the disease and the potential benefits of screening against the perceived barriers to the adoption of those health related behaviours or actions.

2.2.1.3 Variables Affecting the Likelihood of Action

Variables affecting the likelihood of taking action to prevent a disease are influenced by an individual's perception of the severity and the magnitude of the disease and the extent to which the individual feels at risk of contracting the disease. Secondly, the cost-benefit analysis of taking the preventative actions needs to be undertaken (Dennill et al., 1999: 157).

Sources of information on TB

Health communication is important in relation to public health interventions (Strecher & Rosenstock, 1997: 41). Health communication is regarded as new in the discipline of communication. It is stated that when effective health communication is used the intended receiver of the message clearly understands the messages in the way that the sender intended. It therefore involves the ability to access information, to be able to read, to understand what is being communicated and to act on health information. Health education is the "process through which we understand and share meanings related to physical, social and mental health and illness" (Neuhauser, 2008: 6). The information about TB is disseminated through television, newspapers, magazines, radio, internet, social media, friends, family members, teachers and health care workers.

2.3 THE SOCIAL COGNITIVE THEORY (SCT)

The Social Cognitive Theory is used to understand how individuals can adopt and sustain positive health related behaviours. According to the social learning and imitation theory human beings are motivated to learn positive behaviours through observing and imitating other human beings (Pajares, 2002: 48).

The Social Learning Theory failed to take into account the process of delayed and non-reinforced imitations and also did not include self-efficacy. It was then changed to Social Cognitive Theory so that the important role that cognition plays in human's ability to construct reality, self-regulate, encode information and perform behaviours can be stressed. The Social Cognitive Theory was developed by Bandura in 1986 in order to present an integrated model to explain, and predict human behaviour, motivation and action (Pajares, 2002: 49).

In this model or theory Bandura proposed view of human functioning and learning that accords a central role to cognitive, vicarious, self-regulatory, and self-reflective processes in human adaptation and change. It views people as self-organised, proactive, and self-regulated rather than reactive organisms that are completely shaped and influenced by the environmental forces. In this model human functioning is viewed as a product of a dynamic interplay between personal, behavioural, and environmental forces and that is known as the notion of triadic reciprocal causation (Pajares, 2002: 49).

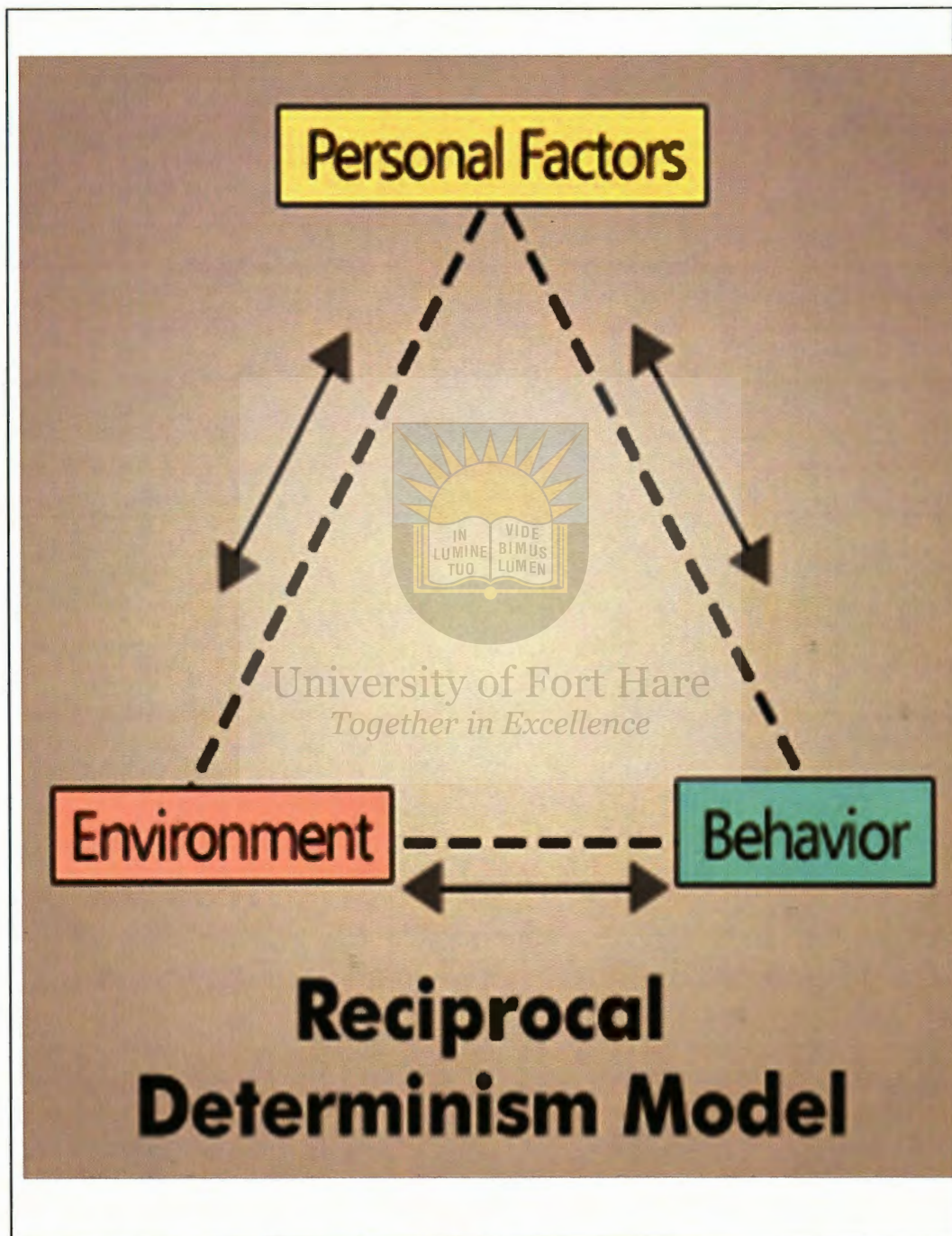


Figure 2: Reciprocal Determinism Model

Wood and Bandura (1989: 393)

In terms of this notion people interpret their own behaviour, which informs and alter their own behaviour. The personal factors that individuals possess inform and alter subsequent behaviour .The Social cognitive theory is based on the view of human agency, where individual human beings are regarded as proactive agents that are engaged in their own development and are capable of achieving anything through their own independent actions (Pajares, 2002: 49).

Self-belief is another factor that human beings possess, and it enables them to exercise some form of control over their thoughts, actions and feelings. In terms of this theory, the beliefs that people have about themselves serves as an important element in the exercise of control and personal agency. So, people's behaviour is or can be influenced by their thoughts, beliefs and feelings. Human beings are further viewed as producers and products of their own environments and social systems. The concept of human agency was expanded to include collective agency because of the fact that human lives are not lived in isolation (Bandura: 1986: 397).

This expansion further makes it possible to apply the theory to both individualistically and collectively orientated societies. The concept of collective agency assumes that human beings work together on shared beliefs, about their capabilities and aspirations in order to better their lives. Social systems and environments influence the human behaviour through the psychological mechanisms of the self-system.

So, economic conditions, socio-economic status, and educational structures affect human behaviour indirectly because they are the factors that influence people's self-efficacy beliefs, aspirations, personal standards, emotional states and other self-regulatory factors (Stoltz, 2015: 14; Miller, 2007: 45).

2.3.1 Albert Bandura's Fundamental Human Capabilities

The ability to symbolise, plan alternative strategies (forethought), learn through vicarious experience, self-regulate, and to self-reflect are capabilities that human beings possess that define what it is to be human. These capabilities provide human beings with the cognitive skills that are influential in determination of one's own destiny and course in life. These human capabilities are essential for reciprocal interaction between the environmental determinants, personal and behavioural determinants that allow humans beings to learn and acquire new behaviours (Miller 2013: 37).



The following are Bandura's fundamental capabilities:

2.3.1.1 Self-reflection – it is the ability of human beings to make sense of their experiences, explore their own thoughts and self-beliefs, engage in self-evaluation, and alter thinking and behaviour accordingly.

2.3.1.2 Self-regulation – it is the capacity that individuals have and it allows human beings to change their behaviour by themselves. The ability for individuals to self-regulate their own behaviour appropriately and consistently involves their ability to self-observe and self-monitor themselves accurately. Human beings regularly assess the outcomes of their behaviour and action. The adoption of future behaviour is influenced by assessment and self-regulation processes.

2.3.1.3 Ability of forethought – it is the ability that enables human beings to solve cognitive problems through the use of symbols. It involves planning of the course of action and the anticipation of the likely consequences of such actions.

2.3.1.4 Capacity to symbolise – it is the ability to draw internal cognitive symbolic representations of the world to create meaning of the environment, construct guides for action, solve problems cognitively and gain knowledge by reflective thoughts. Symbolizing experiences enables human beings to provide their lives with structure, meaning and continuity. It allows individuals an opportunity to store information that can be used to guide future behaviours and actions.

2.3.1.5 Vicarious learning – it is the ability to learn, not only from one's own experience, but by observing the behaviour of others or gaining a distanced experience. It enables individuals to acquire behaviour without undergoing the trial and error process of performing it. The observed behaviour and action are then symbolically coded in the individual's mind in order to be used as a guide for future action and assist in avoiding fatal mistakes. Vicarious learning is also influenced by attention, retention, production and motivation processes. Retention refers to the ability of an individual to observe and assimilate the witnessed actions. Observed behaviours can be only reproduced if they are retained in the memory, through the symbolizing. Human beings are motivated to adopt observed behaviours that produce valued results and expectations.

2.3.2 Self-efficacy in Social Cognitive Theory

Self-efficacy is defined as people's judgment of their ability to organize and execute courses of action that are required in order to attain the designated type of performance (Bandura, 1986: 391). Self-efficacy is further defined as an individual's belief that makes it possible to successfully and consistently adopt a new behaviour (Ndoro, 2009: 49).

Self-efficacy involves the generative capability in which social, cognitive and behavioural sub-skills are organised into integrated courses of action in order to serve a particular purpose. Peoples motivation, affective states and actions are mainly based on what they believe than on what is objectively true (Bandura, 1986: 393).

The manner in which people behave can often be better predicted by their beliefs about their capabilities than what they are actually capable of accomplishing. The identification of the perceptions of self-efficacy can assist in predicting what individuals do with the knowledge and the skills they possess. Self-efficacy assists in understanding why human beings sometimes deviate from the knowledge and skills possessed that are applied successfully (Bandura, 1986: 394).

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People's accomplishments are predicted better by self-efficacy beliefs than the previous attainments, knowledge and skills. Knowledge and skills are however a prerequisite for success as no amount of self-belief alone can produce success. The self-efficacy belief influences people to make certain choice and pursue certain cause of action especially those that are of major benefit to themselves. People also tend to select tasks and activities that they feel competent and confident that they complete successfully and avoid those tasks in which they do not feel competent on (Ndoro, 2009:46).

The effort that individuals put in a given tasks, how long they will preserve if confronted with obstacles and challenges and how resilient they will be in the face of adverse situations is determined by an individual's self-efficacy beliefs. People with a high sense of self-efficacy to accomplish a task put great effort, persistence and resilience towards achievement of their goals.

Secondly, people with a strong sense of personal belief, further approach difficult tasks as challenges to be mastered rather than as threats to be avoided. With the huge intrinsic interest to overcome and master challenges, they set themselves challenging goals and maintain a strong commitment to them. They attribute failure to insufficient effort, knowledge or skills which they can improve (Bandura, 1986: 395).

Social constraints and at times lack of the resources that are necessary can make people who have high levels of self-efficacy to behave in ways that are contrary to their beliefs and abilities. Strong self-efficacy beliefs are the product of time and multiple experiences; they are highly resistant and predictable, whereas weak self-efficacy requires constant reappraisal if it is to serve as a predictor of positive behaviour (Ndoro, 2009: 46).



Bandura (1986, 396) further state that measures of self-efficacy should be tailored to the domain of the psychological functioning that is being explored. This means that in order to explore the relationship between efficacy and behaviour one need to be sure of the fact that the self-efficacy beliefs that are measured are relevant to the behaviour that the focus is on. So this means that, if the aims are not clear and performance ambiguity is perceived, then the sense of self-efficacy will not aid in prediction of the behavioural outcomes.

According to Bandura (1986, 396) individuals develop self-efficacy by interpreting information from four sources which are the mastery experience, vicarious experience, verbal or social persuasion and lastly the somatic or emotional states.

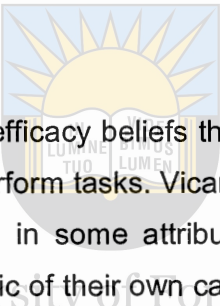
Self-efficacy sources of Information



Figure 3: Self efficacy sources of information

Source: Bandura (1986: 396)

According to Tomaselli (2013: 47) the above mentioned sources show the significance of the reciprocal determinism and how self-efficacy influences human thoughts and behaviours. The interpreted result of one's previous performance or mastery experience is the most influential source. People assess and interpret the results of their actions and use these interpretations to guide their future behaviours. The outcomes that the individuals interpret as successful raises their self-efficacy and those that are interpreted as failures lower their self-efficacy. People who possess a low self-efficacy discount their successes and do not change their beliefs positively (Bandura, 1986: 398).



People can also form their self-efficacy beliefs through their vicarious experience of observing other individuals perform tasks. Vicarious experience is very powerful when observers see similarities in some attributes, and then assume that the model's performance is diagnostic of their own capacity. Individuals with attributes that are similar can provide the greater comparative information for gauging their individual abilities. The effect of vicarious experience is minimized when individuals perceive the model's attributes as highly divergent from their own. A significant model in an individual's life can assist in creating self-beliefs that will influence the behaviours and actions of that individual (Ndoro, 2009: 47).

Individuals develop self-efficacy through social persuasion they receive verbally from other individuals. Individuals who positively persuade and motivate other individuals strengthen and enhance the self-efficacy that is developed by other individuals. Effective persuasion must cultivate the individual's beliefs in their capabilities whilst at the same time ensuring that the envisioned outcome is realistically attainable (Williams and Williams, 2010: 455).

The concept of social persuasion allows people to note that, it is much easier to weaken self-efficacy beliefs through negative appraisals than to strengthen such beliefs through positive encouragement. The last source of self-efficacy relates to the emotional and somatic states individuals go through such as anxiety, stress, arousal and mood states (Tomaselli, 2013: 37).

When people are contemplating an action they are able to assess their level of confidence by the emotional state they experience during that time. Reactions to an anticipated behaviour provide cues about the anticipated success or failure of that action. When individuals experience negative thoughts and fears about their capabilities, then those reactions can themselves lower self-efficacy perceptions and trigger additional stress and agitation that result in adequate performance and failure. An individual's level of self-efficacy can be raised by improving the individual's physical and emotional well-being and reducing negative emotional states. Individuals can enhance their self-efficacy by altering their own thinking and feelings that directly have an influence on their psychological states (Ndoro, 2009: 49).

The components of the Social Cognitive Theory are used in this study to aid in explaining how the respondents or Port Elizabeth community members acquire knowledge and maintain behavioural patterns towards health issues.

2.3.3 ADOPTION OF THE SOCIAL COGNITIVE THEORY IN THIS STUDY

The psychosocial and personal determinants of health can be broadly addressed by the use of Social Cognitive Theory as it recognizes that social systems have an impact on the adoption of health behavioural changes. Attitudes and beliefs that people have, directly affects the adoption of positive health related behaviours.

The Social Cognitive Theory, when adapted to health related matters, aims at assisting people to adopt and maintain healthy habits by implementing effective self-regulatory habits. If people are able to exercise some control over health related issues that affect them they are able to experience a healthy lifestyle. Self-regulatory skills that enhance health are very useful and can improve an individual's lifestyle.

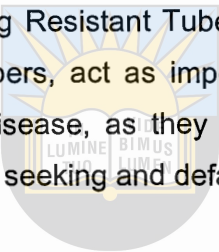
Research that is guided by the theory can help us understand how social factors and cognitive factors can contribute in improving human health. The Social Cognitive Theory is adopted within the study to explain and understand how the attitudes and behaviours people hold, impact on their health related behaviours. The decision was made to use the theory in this study because it seeks to explain the internal and external factors that influence people in the adoption of health related issues.



Self-efficacy plays a pivotal role in the adoption of positive health-related behaviour. The greater the level of self-efficacy within an individual, then the greater the chances are that they will adopt and maintain a positive health related behaviour. Normative influences regulate people's behaviours because people want to embark on behaviours that are normatively accepted by society. Individuals regulate their behaviour in light of the accepted norms within the society in which they live. Therefore if there is a culture of support and acceptance towards DR-TB patients within a given community then discrimination, isolation and stigmatisation will not be accepted or prevalent within that community. Perceived barriers in individuals make the adoption of positive health related behaviours challenging (Bandura, 1986: 395).

The theory identifies two different barriers to the adoption of positive health related behavioural change. The first is comprised of personal impediments which represent lack of people's self-efficacy to adopt positive health related behaviours. The other type of barrier is made up of situational impediments. Situational impediments are those impediments that are caused by structures of health services and impede the adoption of health related behaviours by individuals (Ndoro, 2009: 48).

The stigma associated with Drug Resistant Tuberculosis, negative attitudes and behaviours of community members, act as impediments for people infected or suspecting infection with that disease, as they results in people not disclosing their condition or delaying health seeking and defaulting treatment.



2.4 THE SOCIAL ECOLOGY MODEL

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The Social Ecology Model is based on the 1979 work of Urie Bronfenbrenners. It state that the individual behaviour and practices are affected or influenced by various factors that exist at different levels. Its attention is on the significance of the interplay between the environment and the people (Murima, 2013: 38).

The Social Ecological Model assumes that multi levels influence while also ensuring that there is interaction and reinforcement among the levels. The Social Ecology Model also divides the environment into five (5) spheres that are responsible for shaping person's health behaviour and actions (Kumar, Quinn, Kim, Musa, Hilyard & Freimuth, 2012: 229). The individual, interpersonal, institutional, community and the policy level are the five spheres or levels of influence in the Socio-Ecological Model.

The Social Ecology Model assumes that, changes at the different levels will lead to modification at the individual, and that as the individual is modified, the level characteristics will also be modified, and this is called reciprocal causation. Therefore, the individual's behaviour is modified by factors at multiple levels. Social, physical and cultural aspects of the environment have a collective effect on health (Murima, 2013: 38; Kumar et al., 2012: 230).

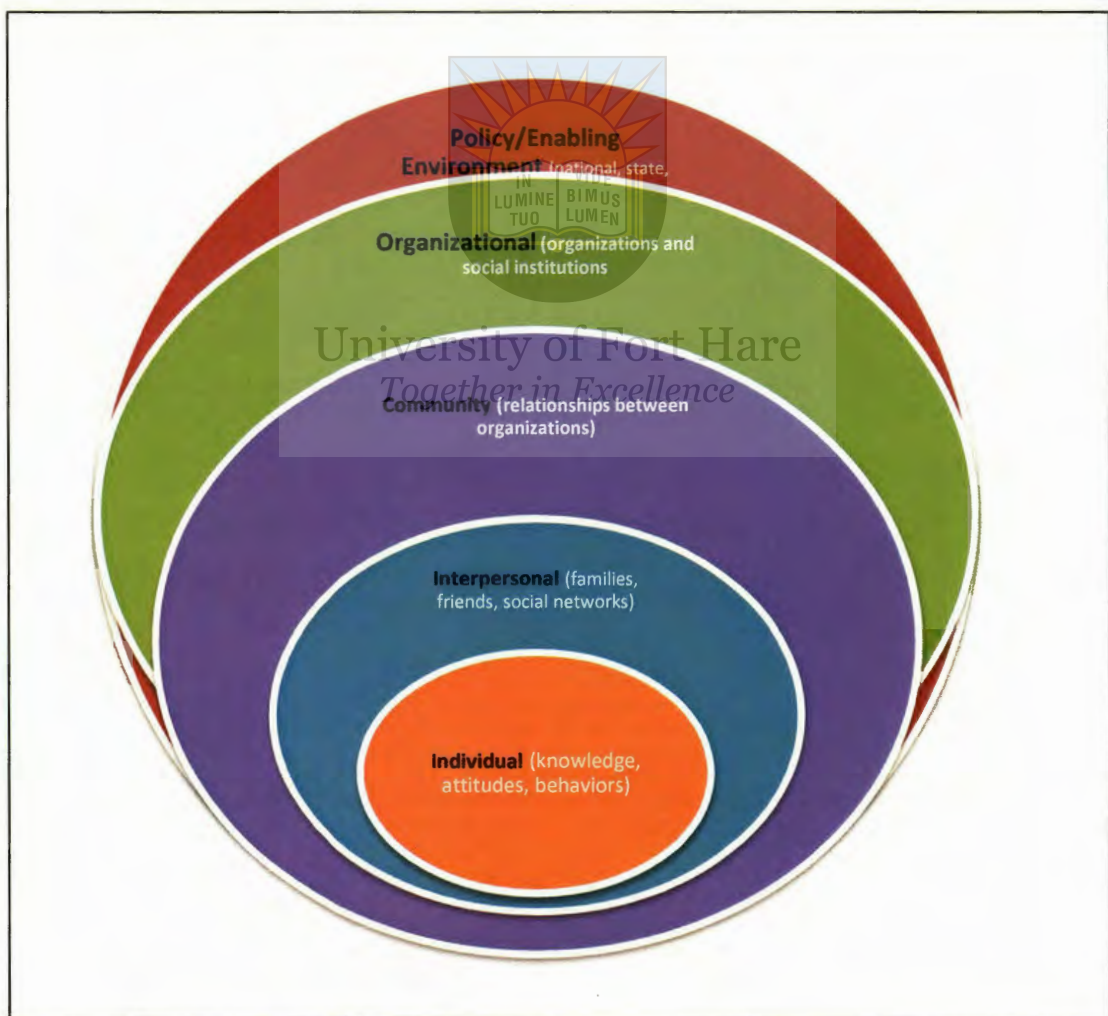
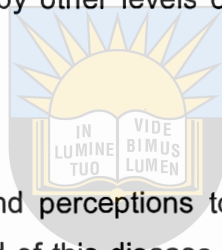


Figure 4: Socio-Ecological Model

Source: Mc Leroy, Bibeau, Steckler & Glanz (1988: 356).

2.4.1 Individual or Intrapersonal Level

The first level or sphere of the Social Ecological Model is the individual or intrapersonal level. This level deals with individual factors that have a potential of influencing health behaviour or actions (Murima, 2013: 39). Factors or variables such as attitudes, beliefs, knowledge, skills and personal traits are measured at the intrapersonal level. The variables at the individual level are usually within the area over which an individual has control, despite the fact that some of those variables can also be affected by other levels of influence (Kumar et al., 2012: 230).

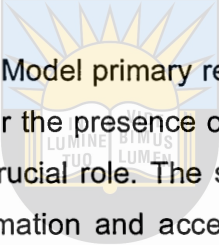


Community beliefs, attitudes and perceptions towards Drug Resistant TB may hinder efforts to curb the spread of this disease within the community. Secondly, community beliefs, attitudes and perceptions regarding effectiveness of treatment of Drug Resistant TB can also hinder prevention efforts and affect health seeking behaviour among community members. According to Murima (2013: 39), the individual level is the most significant level, because the individual behaviour affects and influences group dynamics. The understanding of the variables in this level also assists in the program design and interventions implementation. So, this means that an understanding of community members knowledge, attitudes and practices of Drug Resistant Tuberculosis in this study is best understood through the analysis of their individual characteristics before an analysis of the wider environment is made. The individual level seeks to modify the individual's knowledge, beliefs, attitudes and skills.

2.4.2 Interpersonal/ Relational Level

The second level of the Social Ecological Model is the relational or interpersonal level (Kumar et al., 2012: 230).

This level deals with social influences family, friends and norms within social networks. The interpersonal level has a significant effect on health behaviours and actions including decision to consult healthcare providers (Kumar et al., 2012: 230; McLeroy et al, 1988: 357). In the Social Ecology Model, the interpersonal level is of significance, as it includes formal and informal social networks which are a large aspect of one's social identity. It is these types of networks that provide insights into the factors that could mediate health behaviour. (Mc Leroy et al., 1988: 357)



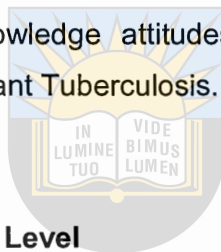
According to the Social Ecology Model primary relationships can influence health decision making. The absence or the presence of family members and friends in an individual's life play a very crucial role. The social networks are important in that they provide support, information and access to new social contacts. The interpersonal level in the Social Ecology Model is the level at which the social and cultural norms to which groups and individuals subscribe to are recognized. The norms are of great significance in the design and implementation stages of an intervention. Peers can influence the decision and choices that an individual make. Awareness of the norms and practices of these social relationships become significant because the changes that happen also have an effect on individual as well (Murima, 2013: 40).

2.4.3 Institutional or Organizational Level

The institutional or organizational level is the third level of the Social Ecology Model. It consists of different organizations operating in a community, such as hospitals, churches and schools which either provide information or services that can promote or hinder the adoption of certain health related behaviour or actions (Mc Leroy et al., 1988: 361).

At this level, schools can be used to provide physical, social and normative environment where community members can be afforded an opportunity to learn, imitate and practice health behaviour. Schools are an ideal environment in which community members can be taught about health issues or behaviour and how best to protect themselves from health related infections (Kumar et al., 2012: 231 ; Mc Leroy et al. 1988: 361).

In this study, the institutional level is used to better understand how the institutions at institutional level affect knowledge attitudes and practices of community members regarding Drug Resistant Tuberculosis.



2.4.4 Community or Structural Level

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The community or structural level is the fourth level of the Social Ecology Model. It includes social relationships or networks and norms that exist either formally or informally among individuals, groups and institutions. At this level factors such as socio-economic status, norms, culture and values play a very significant role in the promotion or discouraging health behaviour (Murima, 2013: 40).

According to the Social Ecology Model, the community is viewed as a result of interconnected relationships that have an influence on an individual's health behaviour (Murima, 2013: 41). In the Social Ecology Model, the community has a wide and different definitions and it is not just confined to geographical definition. In this model the community is divided into the following three structures:

- Community as a mediating structure;
- Community as relationships between organizations, and
- Community as power

Churches and non-governmental organisations fall under community as mediating structure as they can assist or hinder the adoption of health related behaviour or action. The community as relationship among organizations is defined as the relationships that exist between various organizations that are found within a particular geographical area. When there are no relationships among organizations competition for little resources that are available results in conflict, lack of collaboration and duplication of services and roles. This can lead to conflicting messages being sent to the community and thereby exposing them to health risks. The community as power structure in the cities and local societies play a significant role in describing health challenges and identifying and acquiring the skills, expertise and resources that can help in controlling them from spreading to other locations. In this study, the structural or organizational level is significant in that culture, norms and value systems plays a very important role in health decisions (Murima, 2013:42).



2.4.5 Policy Level

The policy level is the last level of the Social Ecology Model. This level entails policies that affect and influence an individual's behaviour at various levels. The Policy Framework for decentralised and de-institutionalised Management of Drug Resistant Tuberculosis and Patients' Rights are policy documents that have the ability to influence the management of Drug Resistant Tuberculosis. The above policy documents are made in order to try and give guidance in terms of managing and controlling the spread of Drug Resistant Tuberculosis and also promote individual rights to freedom of choice when it comes to treatment and choices relating to care options. The policy level involves policies both at local and national level that regulates healthy actions and practices for the prevention, care or support, detection and treatment of a health condition (McLeroy et al., 1988: 362).

A community member can refuse to be admitted to a hospital and at certain instances even treatment despite being diagnosed with Drug Resistant Tuberculosis and thereby risk dying of the disease or infecting or spreading the disease to the broader community if treatment is completely refused (South African National Department of Health Policy Framework for Management of Multi Drug Resistant Tuberculosis, 2011).

The Social Ecology Model shows how various factors at different levels influence and shape an individual's behaviour. People who are infected with Drug Resistant Tuberculosis may refuse to take their prescribed medication, probably because at the individual level they have knowledge, attitudes and belief issues towards the use of western medication. It may be that they do not have enough knowledge about their condition and have negative attitudes towards treatment.

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At interpersonal level family members might believe in witchcraft and therefore rely on traditional healers and herbs than in western medicine. Their peers might promote the use of traditional healers and without having discussed with them the effectiveness of western medicine in the management of their condition.

At the institutional level they may not be receiving their medication and also not treated with respect and dignity by the health care workers. Their poor economic conditions may also make it impossible to take their medication on empty stomach as they cannot afford to buy food and pay taxi fare to go to the clinics or Primary Health Care Centre's to fetch their treatment. At Policy Level, the requirement that Drug Resistant Tuberculosis patients should have to take their daily treatment at decentralised centres in which they were referred to might affect treatment adherence.

In this study, the Social Ecology Model seeks to present the relationship between the different levels of influence and the individual. At the individual level, knowledge, attitudes and practices assist in selection and development of the questionnaires for this study. Secondly, the various levels of influence of the Social Ecology Model helped in the assessment and understanding of factors that are influencing community members knowledge and awareness levels, attitudes and practices on Drug Resistant Tuberculosis.

2.5 APPLICATION OF THE THREE THEORIES IN THIS STUDY.

The theoretical models are aimed at understanding and explaining knowledge and awareness levels, attitudes and practices in relation curbing the continuing spread of Drug Resistant Tuberculosis. However, there is no single theory or model that is able to explain broadly the scope of all health related behaviours and attitudes (Ndoro, 2009: 48).

A combination of theories is needed to explain and describe variations in health related behaviour. For example, when people perceive the threat of Drug Resistant Tuberculosis, their target behaviour is the adoption of positive health related behaviour. Perceived threat of Drug Resistant TB is a construct of the Health Belief Model, but behavioural capability to adopt a positive health related behaviour is a construct of the Social Cognitive Theory, whereas the process and regulations to be followed for the management of the Drug Resistant Tuberculosis are a policy issues which are a component of the Social Ecology Model.

For health-related behaviours to be addressed components of all the three theories (Health Belief Model, Social Cognitive Theory and the Socio Ecological Model) need to be integrated.

Behavioural capabilities to adopt positive health related behaviour are influenced by the level of knowledge and skills that an individual possesses which are constructs of the Health Belief Model and also a component of the individual level sphere of the Social Ecology Model.

The Social Cognitive Theory provides an in-depth description of health related behaviours while the Social Ecology Model provides an explanation on how factors at different levels influence knowledge, attitudes and practices while also giving policy direction as to how and where the Drug Resistant Tuberculosis condition should be managed. By referring to the Health Belief Model, Social Cognitive and Social Ecology Model, a rich description towards health-related behaviours is provided within the study. The Social Cognitive Theory explains some of the determinants of human functioning which the Health Belief Model fails to account for adequately. The Social Ecology Model shows the interrelationships or influences that exist at various levels of the environment that influence and are in turn influencing and playing an important role in shaping the health behaviour.

Social Cognitive Theory and the Social Ecology Model show the crucial reciprocal nature of the relationship between individuals, their environment and health related behaviour. The contribution of the Health Belief Model, Social Cognitive Theory and the Social Ecology Model provide a broad theoretical framework that guides the study and assist in analysing and explaining the findings of the study. All these models are used in the study to describe and explain community knowledge levels, attitudes, beliefs and practices of Drug Resistant Tuberculosis and the effect of socio-demographic factors because they complement each other.

It is proposed that a broad understanding and explanation of the factors which possibly result in the continual spread of TB can be provided by integrating the three theories.

2.6 LIMITATIONS OF THESE MODELS

The Health Belief Model does not consider the gap between the intended and the actual behaviour or action, which is made up of social, emotional, and physiological factors affecting the health related behaviour or actions. It also does not account for the effect of other variables on health such as the environment, economics, social norms, peer norms which are all playing an active role in decision making. The Health Belief Model also focuses on perceptions (cognitive processes) and does not account for factors such as personal habits and socio-cultural norms that can influence decision making. (Murima, 2013: 52).

One of the biggest advantages of the Social Ecology Model over other health related models is its ability to involve interdisciplinary views in an attempt to understand and account for health behaviour or actions. The Model incorporates disciplines such as economics, psychology, sociology, anthropology and health education just to mention but a few, in an attempt to understand human health behaviour and its influences. The multiplicity of the levels and different approaches needed to initiate change however makes it difficult for intervention implementation and monitoring (McLeroy et al., 1988: 25). It also presents a lot of work in terms of intervention implementation as it involves several sectors of society. One such level that is challenging to tackle is the policy level; given the autocratic nature that exists in implementing or adoption of policy changes.

Another challenge of the Social Ecology Model is the challenge of changing social norms and public policy. Norms are hard to change and initiating change or adoption of new behaviour may be met with resistance at every stage of the five spheres of influence. Despite the weaknesses of the Model, it is still a perfect fit for this study as it is used to explore various influences on community member's decision making and to understand how community members and their environment affect each other (reciprocal causation).

2.7 CONCLUSION

The chapter has discussed the three models namely; the Health Belief Model, Social Cognitive Theory and the Socio Ecological Model. These models were discussed in order to form a theoretical basis or foundation on which an assessment of Drug Resistant Tuberculosis knowledge and awareness levels, attitudes and practices of Port Elizabeth community members would be based on. In the next chapter, a general overview of TB and a literature review on knowledge and awareness levels, attitudes and practices of normal and Drug Resistant Tuberculosis will be provided.



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CHAPTER THREE

GENERAL OVERVIEW OF TUBERCULOSIS AND LITERATURE REVIEW ON KNOWLEDGE AND AWARENESS LEVELS, ATTITUDES AND PRACTICES OF NORMAL AND DRUG RESISTANT TUBERCULOSIS

3.1 INTRODUCTION

In chapter two, the discussion about the theoretical models that formed the basis of this study was provided. Drug Resistant Tuberculosis is a serious health condition and can be fatal if left unattended. The disease continues to spread, infect and kill people despite efforts to prevent and curb it in the country. The first section of this chapter begin by giving a general overview of Tuberculosis, its causes, diagnosis, transmission, prevention modes and methods. The second section provides an in-depth literature review on normal and Drug Resistant Tuberculosis. It is important to understand community knowledge and awareness levels, attitudes and practices as it will assist in informing future interventions that are designed to help curb the spread of the disease in the community.

3.2 TUBERCULOSIS

3.2.1 Historical Overview of Tuberculosis

Tuberculosis is caused by the Mycobacterium Tuberculosis, a bacillus that was discovered by Robert Koch in 1882 (Dodor, 2009:11). The Mycobacterium Tuberculosis is surrounded by a waxy substance which prevents it from being destroyed in the infected person. Despite Robert Koch managing to distinguish M. tuberculosis from M. bovis, there were still no antibiotics for the treatment of TB until 1944 when streptomycin was discovered (Palomino et al., 2007: 61).

Tuberculin tests were available from 1890, and the Bacillus Calmette-Guerin (BCG) vaccine was used in humans for the first time in 1921, but it became widely used in 1945. In the 1950s there was a development of multidrug chemotherapy regimens by Sir John Crofton and his colleagues. When rifampicin was discovered, there was then a development of the present short course regimes (Yusuf, 2014: 9; Airgecho, 2014: 2).

As the time went on, new TB drugs were developed such as Streptomycin and para-aminosalicylic acid, as well as the Bacille Calmette Guerin (BCG) vaccine. Such efforts led to the reduction in prevalence and TB seemed to be under control (Iseman, 2002: 87). Globally, TB remains the leading cause of death among millions of people. The emergence of Drug-Resistant TB strains presents a new challenge in the fight to control and prevent the spread of disease. TB is still continuing to spread and affects the majority of the poor people especially in developing countries (WHO, 2002a: 3).



In 1993, WHO declared TB a global emergency and promoted Directly Observed Treatment Short-course (DOTS). The DOTS system was expected to ensure increase in case detection and cure rate. It was also aimed at reducing treatment defaulter while increasing TB treatment compliance. The ultimate goal was to decrease TB burden in communities (Toman, 2004: 99; WHO, 2001: 25). Despite these efforts TB has continued to develop into an epidemic that is fuelled by HIV, poor management of the disease, as well as non-compliance to treatment. This has in return caused an increase in reactivation rates, re-infection of patients that had been cured, and the development of Drug Resistance TB strains. Today TB is considered to be the leading cause of death together with HIV and AIDS in the world, despite the fact that its causative organism, *Mycobacterium tuberculosis*, was documented over 100 years ago. It is estimated that one third of the World's population is infected with tuberculosis. This is against the global efforts to control and eradicate the disease. Tuberculosis remains a major cause of illness and death globally, more so in Asia and Africa (WHO, 2013).

3.2.2 Epidemiology of Tuberculosis

This section covers discussion on global and local epidemiology of TB.

3.2.2.1 Epidemiology of Tuberculosis Globally

Tuberculosis was first discovered by Robert Koch in 1882. Since then, it has continued to rise and has spread to many communities for a very long time with significant effects. Today, TB is considered a global epidemic and a major cause of death among millions of people in the world especially in the poor and developing third world countries, despite the fact that its treatment was discovered eight years after its discovery (WHO: 2015: 5; Kodisang, 2014: 12).

TB ranks alongside HIV and AIDS as the leading cause of death worldwide. Globally, TB kills about two million people a year. In 2014 for instance, there was an estimated 9.6 million of new TB cases (5.4 million men, 3.2 million women and 1.1 million children) in the world. The prevalence or occurrence varied in different regions and countries. The high incidents of TB globally are a cause for concern and a huge threat to public health (WHO: 2015: 5; Kodisang, 2014: 12).

Globally, the number of TB incidents is falling slowly, at an average rate of 1.5% per year 2000 to 2014 and 2.1% between 2013 and 2015 (WHO, 2015: 13). The cumulative decline in TB incidents rate was 18% between the year 2000 to 2014 (WHO, 2015: 13). TB related deaths globally were estimated at about 1.5 million (1, 1 million death were of HIV negative people while the remaining 0, 4 million was HIV positive people). 890 000 deaths were reported among men, 480 000 women and the remaining 140 000 were children (WHO, 2015: 5).

On a per capita basis, almost 28% of the world TB burden is in Africa. Africa is also considered to have the world's highest TB mortality rate (WHO, 2015: 9). In 2014, approximately 90% of the total TB deaths (among HIV-negative and HIV-positive people) 80% of TB deaths among HIV-negative people occurred in the African and South-East Asia Regions. India and Nigeria accounted for one third (1/3) of the global TB deaths. The number of TB deaths among HIV negative people per 100 000 population averaged 16 globally; but 21 when deaths among HIV positive people are also included (WHO, 2015: 24).

Twenty countries in the world from Asia, Africa, Eastern Europe and South America are regarded as having the highest burden of TB by WHO. South Africa is the third highest TB burdened country in the world after India and China (WHO: 2015: 13). In 2014, the 22 high TB burdened countries accounted for almost 83% of all estimated new TB cases.

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3.2.2.2 Epidemiology of Tuberculosis in South Africa.

In 2012, South Africa was reported by many researchers to have one of the highest prevalence and incidence of TB rates in the world (WHO, 2012: 10-11). TB was discovered in South Africa in the 17th century and its discovery coincided with the arrival of the European settlers (Abdool Karim et al., 2009: 3-4).

The local, indigenous South African population which was previously unexposed then quickly developed TB. This was further worsened by later socio-political and economic events that subsequently unfolded. The overcrowded living conditions in the hostels, poor wages, poor nutritional status and the migrant labour system which characterised the mining sector at the time contributed to the spread of TB.

The prevalence rate of TB was further made worse by the discovery of HIV and AIDS and the increasing number of people that were diagnosed with it. This has further lead to the development of Drug Resistant TB strains which further worsened the spread of TB. The South African TB situation “has reached a crisis point” and is of “serious epidemic proportions” (WHO, 2012: 10-11).

With the rise in number of HIV and AIDS infected people, the new TB cases in South Africa also increased from 110,000 (301 per 100 000 populations) in 1990 to 450,000 (834 per 100,000 populations) in 2014 (HST, 2014; WHO, 2015: 140). Secondly, TB-related deaths also increased from 14,000 deaths (38 per 100,000 populations) to 72,000 deaths (134 per 100,000 populations) (WHO 2015: 141).

Currently, TB is the leading cause of deaths in South Africa (Wilson, Howel, Toppozini, Dong, Clark & Hurtado, 2011: 1102). The majority of TB infections in South Africa affect young people aged between 35-44 years (2285 new cases of which 845 were female and 1440 were males) and these are people living in the townships and informal settlements (WHO, 2015: 175).

South Africa is one of the twenty two countries designated by the WHO as high burden countries (HBC). South Africa ranks amongst the countries that are worst hit by TB burden in the world as it contributed to 450,000 new TB cases in 2014. It is also among the countries which have not achieved the targeted treatment success rate of 85% for smear positive pulmonary TB (WHO, 2015: 141; Day & Gray, 2013: 227).

3.2.2.3 Epidemiology of TB in the Eastern Cape Province

Gauteng, Eastern Cape and the Western Cape are the Provinces with the highest incidences of tuberculosis (per 100 000 population) in South Africa. The Eastern Cape is the second in number of incidences (782 incidents per 100 000 population), while Gauteng is at 922 and Western Cape 730 incidences taking the first and the third positions respectively (Pillay 2015: 12).

The TB death rate in the Eastern Cape Province has continuously shown a steady decrease from 2006 at 187 per 100,000 population to 87 per 100,000 population in 2014 (HST, 2014) . In terms of the TB statistics the Eastern Cape is always performing poor in the sense that its average is always below the national average. The cure rate in Eastern Cape was below 70%, and that was well below the National and WHO target of 85%. The defaulter rate of the Eastern Cape was the highest at 8, 5% (Pillay 2015: 12; Department of Health, 2015: 24).

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3.2.2.4 Epidemiology of TB in the Nelson Mandela District Municipality

In the Nelson Mandela Bay Municipality, One in 100 people is infected with TB. Secondly, 90% of those diagnosed with TB are also co-infected with HIV and AIDS. Nelson Mandela Bay Municipality has a 3rd of highest rate of TB treatment defaulters and also ranks bottom ten (10) worst metros in the country of deaths caused by TB, TB cure and treatment success rate (Pillay, 2015: 2).

In 2013 the defaulter rate was 13% but decreased to 9, 5 % in 2014 and that is worse or above the defaulter rate that was achieved by the province which was 8, 5%. The number of TB related deaths is unacceptably high considering the fact that with timely diagnosis and correct treatment, almost all people infected with tuberculosis can be cured.

3.2.3 What is Tuberculosis

Tuberculosis is a disease that is caused by a bacterium (TB germ) called mycobacterium tuberculosis and enters the body through the nose from the air we inhale or breath and it damages the lungs (Kodisang, 2014: 13; Fana et al., 2013: 27; Collins, 1991: 3). TB mainly affects the lungs and also other parts of the body such as joint, spine, brain etc. There are two types or forms of TB namely TB of the lungs or pulmonary (PTB) and TB that occurs elsewhere in the body or extra pulmonary TB (EPTB). Tuberculosis is infectious and can be spread easily through coughing and sneezing (active pulmonary tuberculosis). However, extra pulmonary tuberculosis is un-infectious (Kodisang, 2013: 9).

3.2.4 Aetiology, Transmission and Spread of Tuberculosis

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It can take almost 4 to 12 weeks for one to see primary lesion or tuberculin reaction after the primary infection with mycobacterium tuberculosis as it has along and variable incubation period (Shama, 2013: 246; Kodisang, 2013: 12). TB is a communicable disease that is caused by the bacteria Mycobacterium tuberculosis in humans and it affects several organs of the body including kidneys, brain, intestines, bones and lymph nodes (Bati et al, 2013: 7).

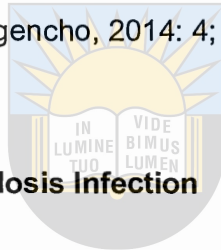
There are other several species of the genus Mycobacterium which are also human pathogens, but all of them are of much lower virulence than the Mycobacterium tuberculosis (Paul, Akter, Aftab, Khan, Barua, Islam, Husain & Sarker, 2015: 2). The M tuberculosis complex (MIC) bacterium is a bacterium that causes tuberculosis and it has an endemic character and worldwide distribution. The M tuberculosis complex comprises of closely related species that are strictly for human and zoonotic tuberculosis (Airgecho, 2014: 3).

The MIC has the following seven species and subspecies namely, *M tuberculosis*, *M canetti*, *M africanum*, *M pinnipedii*, *M microti*, *M caprae* and *M bovis*. Despite the difference in species tropism, the MIC is characterized by 99, 9% or greater similarity at the nucleotide level and possesses identical 16S and rRNA sequence (Airgecho, 2014: 3).

M tuberculosis is a large non motile and non-spore forming rod shaped bacillus. Bacteria in this group are known for their high lipid content in their cell wall. The distinctive feature of this bacterium is its cell walls. It has an inner peptidoglycan layer that is responsible for the structural integrity and the shape forming properties of the bacterium. The lipid coat confers the distinctive features of the group: acid fastness, extreme hydrophobicity, resistance to weak disinfectants. This lipid coat also contributes to the slow growth of some species as it restricts their intake of nutrients. The lungs are the point of entry of tuberculosis even though it can affect and manifest itself at any tissue or organ in the body, like the brain, kidneys and the lymphatic system (Yusuf, 2014: 9; Airgecho, 2014: 3).

According to Chinenye (2015: 2), tuberculosis spreads generally through droplets that are expelled when a person who is infected with the bacilli coughs, sneezes, speak, spit or sing. The transmission of tuberculosis is almost entirely by droplet infection from an infected person who is coughing and producing sputum that is contaminated with *Mycobacterium tuberculosis*. A person infected with *M tuberculosis* is the main reservoir of pulmonary tuberculosis (PTB). Such person might have pulmonary cavities that are rich in bacilli (Tolossa, Medhin & Legesse, 2014: 3; Knechel, 2009: 35). People with cavitary pulmonary tuberculosis are almost always smear positive and are the main source of infection in the transmission of tuberculosis (Chinenye, 2015: 2; Tolossa et al., 2014: 3; Bati et al., 2013: 7 ; Knechel, 2009: 35).

When coughing and sneezing tuberculosis infected person release infectious droplets into the air or atmosphere. These droplets dry in the air and become light particles containing the live tuberculosis bacilli in the air. In areas where there is no ventilation these droplets remain suspended for a long period and the bacilli remain alive longer especially in the dark. When people breathe in these infectious particles, the small one enter the alveoli and become dormant or latent infection for a long period before they become active TB depending on immune system. The closer and more prolonged the contact with the infectious person, the greater the risk of infection. It is not everyone who is exposed to TB gets an active infection (Chinenye, 2015: 2; Airgencho, 2014: 4; Yusuf, 2014: 9).



3.2.5 Risk Factors for Tuberculosis Infection

According to Craig et al., (2007: 8) the risk of TB infection increases when there is overcrowding, poor ventilation and presence of an infected person who is coughing for a long period. People with smear positive TB are the most infectious especially if one has low immune system and have been exposed for a long time to the infectious droplets. It is said that individuals who are smear negative and culture negative are less infectious while those that have extra pulmonary tuberculosis (ETB) are not infectious at all.

Pulmonary TB is infectious and it is easily spread. For TB to be transmitted there must be somebody who is infected with pulmonary TB and who is not yet on treatment (Kodisang, 2013: 13).

According to Kodisang (2013: 14), the following cases are more likely to get infected with tuberculosis.

- People with low or compromised immune system (HIV and AIDS infected people, people living with diabetes, cancer).
- Tuberculosis contacts (people who have contact for a long period and also indoors with someone who is infected and not on TB treatment)
- People taking immune suppressive drugs (chemotherapy and steroids)
- People that are working in the mines
- The elderly and the children (children below 5 and adults above 65 years)
- Malnourished, severely underweight people and those in overcrowded areas



3.2.6 Tuberculosis Infection and Active Tuberculosis

In the world, it is estimated that there are almost two billion people infected with mycobacterium tuberculosis. However, only less than one percent of these develop active TB, while the rest remain with latent TB infection (LTBI). This means that there is a difference between active and latent tuberculosis. In many cases the TB bacteria become latent into the lungs of the person, and in the majority of the people it remains dormant for many years. During this period, those people will not have the signs and symptoms of TB nor become infectious. The body's defence system controls the dormant bacteria so that they do not become active TB but remain latent. Stress and weak immune system trigger progression of latent TB to active TB (Kodisang, 2013: 14; Fana, 2013: 5).

3.2.7 Pathogenesis of Tuberculosis

Healthy adult people who are exposed to relatively low numbers of bacteria generally clear them before a considerable damage to the lungs is made (Chinenye, 2015: 2).

However, if the phagocytic cells do not clear the infection, the new T cells, polymorph nuclear cells (PMNs) and more macrophages continue to be attracted to the area where the bacteria is growing. Mycobacteria are also transported to other organs via the lymph vessels or bloodstream and produce dissemination foci there (Airgecho, 2014: 4).

The host develops granulomas, foci fibrose, scar, and calcify but the infection remain clinically silent. Primary TB reactivates to become organ TB either within months or after a number of years in about 10% of the infected people. The reactivation starts with the ceseation necrosis in the centre of the granulomas (tubercles) that may progress to activation and frequently stems from old foci in the lung apices. Tissue destruction is then caused by cytokines among which tumour necrosis factor alpha (TNFa) appears to play a very significant role. The cytokines are also responsible for the cachexia associated with tuberculosis. The body's immune defence have a hard time in containing necrotic tissue lesion in which large volumes of Mycobacterium cells occur (Sudre, Ten Dam, & Kochi, 1992: 151).

In some instance when the phagocytes fail to kill the bacteria, the T cells and macrophages wall off the growing lesion with a thick fibrin coat. This walled of lesion is called tubercle. They calcify and give rise to the hard edged lesion that is visible in chest x-rays. A considerable damaged is caused by the Phagocytes when they try to kill the bacteria as they release lysosomal enzymes and TNF. The points where the bacteria grow initially have a cheese like appearance (caseous necrosis) but as the bacteria grow and phagocytes continue to enter the area, the necrotic region becomes a liquid. People with liquefied lesions are more infectious than those who have lesion in caseous necrosis (Airgecho, 2014: 4).

3.2.8 Signs and Symptoms of Tuberculosis

According to Kodisang (2013: 14) the following are the symptoms of TB:

- Loss of appetite
- Persistent cough for more than two weeks
- Loss of weight
- Night sweats
- Prolonged fever
- Tiredness and
- Weakness



3.2.9 Diagnosis of Tuberculosis

Tolossa et al., (2014: 3), states that diagnosis of tuberculosis is done through one or a combination of the following methods:

- Taking medical history
- Chest X-ray
- Tuberculin skin test
- Bacteriology

3.2.9.1 Medical History

Taking the infected persons medical history assist in establishing whether they have been exposed to a person with TB, symptoms of TB disease, or if they have had TB infection or TB disease before, or risk factors for developing the disease (Kodisang, 2013: 14; Fana, 2013: 45). TB contacts are also discovered during taking of medical history and that also aid in determining the possible strain of TB that the person is having (an MDR-TB contact is more likely to also have and MDR-TB strains) (Kodisang, 2013: 14; Fana, 2013: 45).

3.2.9.2 Tuberculin Skin Test

In order to establish whether an individual has TB, a tuberculin skin test is utilised. In most cases mantoux tuberculin skin test is used because of its accuracy. The classification of the test as positive largely depends on the size of the indurations, the person's risk factors for TB, and for those that may be exposed to TB at work, the risk of exposure to TB in the work (Airgecho, 2014: 12).

It is reported that the results of the tuberculin skin test reaction can be affected by various factors. Close contacts that have a negative reaction to the tuberculin test are advised to be retested 10 weeks after the last time they were in contact with person who has TB infection. People suspected of TB or with TB symptoms of tuberculosis disease may be given a tuberculin skin test. They should be evaluated for TB disease, regardless of their skin tests results (Ahmed, Velayati, Mohammed, 2016: 254).

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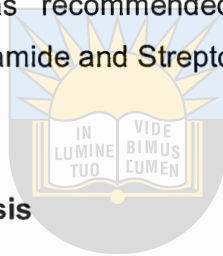
3.2.9.3 Bacteriologic examination

The third step is a bacteriologic examination. A sputum specimen is obtained from person suspected of having pulmonary TB disease; other specimen is obtained from patients suspected of having extra-pulmonary TB. The sputum specimens are examined under a microscope to check whether acid-fast bacilli (AFB) are present. When AFB is seen, they are counted. People with positive smears are considered infectious (Singh, 2014: 56).

The sputum specimen is then cultured, or grown to establish if it contains *M. tuberculosis*. If the culture is positive it confirms the diagnosis of TB disease. After the specimen has been cultured it is tested for drug susceptibility. Drug susceptibility test assist in prescription of the correct drugs for use in treatment the infected person (Singh, 2014: 56).

3.2.9.4 Chest X-ray

For a proper diagnosis and for a decision to be made on whether a person has tested positive for the tuberculin skin test, a Chest x-ray is utilised. Chest X-ray is also used to check long abnormalities in people who are suspected to be infected with TB or those that are showing signs and symptoms of tuberculosis. The results cannot confirm that a person has tuberculosis (Harries et al., 2004: 23). People diagnosed with TB are immediately put on treatment that includes a combination of tablets and injections for a period of six months to 9 months. The standard treatment regimen as recommended by WHO include Isoniazid, Rifampicin, Ethambutol, Pyrazinamide and Streptomycin (Kodisang, 2013: 14).



3.2.10 Treatment of Tuberculosis

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It is stated that the drugs that are used currently to treat TB were manufactured 50 years ago (Kodisang, 2013: 14; Vega et al, 2007: 749). Due to the high number of TB incidence globally, there have been calls for the development of improved and more effective TB drugs in order to fight and control both the sensitive and resistant strains (Kodisang, 2013: 14).

The key to curbing the continued spread of TB is to initiate treatment as soon as possible to those that are infected. By providing correct treatment for the right duration then the mortality and morbidity due to TB will be reduced. The main purpose of using the Anti-TB drugs is to:

- cure the infected individual
- prevent relapse
- prevent death from TB and its complication
- prevent the development of acquired Drug Resistant TB

- and to reduce the transmission of *M. tuberculosis* to other people. Thus, successful treatment of tuberculosis has benefits both for the individual and the community in which person resides.

Tuberculosis is the leading cause of death from a single infectious disease. A quarter of avoidable deaths among adults in the world are as a result of TB, despite the fact that it is preventable and curable. Anti TB drugs were first discovered in 1944. TB control efforts in the world have failed to yield positive results of halting and curbing the spread of TB. Inadequate political commitment and unavailability of funding; inadequate organization of services; poor case management and over reliance on BCG are cited as the reasons for the failure of the TB control program (Fana, 2013: 5; Harries et al, 2004: 25).

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In order to improve the situation, the WHO tuberculosis control endorsed DOTS as strategy for effective identification of suspected people and curing infected people (Tamiru, 2015: 1; Musasa, 2011: 25). The standard treatment regimen for susceptible TB involves two phases namely; the initial phase and continuation phase. The initial phase run for two months and the continuation phase last for 4 months. The standard treatment regimen that is used to quickly kill the bacterium during the initial phase includes Isoniazid (H), Rifampicin (R), Ethambutol (E) and Pyrazinamide .

The infected become less infectious within 10 to 14 days of having started treatment. During the continuation phase is Rifampicin (R) and Isoniazid (H) are utilised for a period of 4 months in order to prevent relapse and eliminate the bacilli that is still left (Yusuf, 2014: 18).

When dealing with severe TB cases such as meningitis and miliary TB the period of treatment is extended to nine months with the initial phase unchanged at two months (RHZE) and the continuation phase (RH) extended to seven months. Anti-TB drugs have three characteristics: bactericidal ability, sterilizing ability and the ability to prevent resistance (Yusuf, 2014: 19).

The anti TB drugs possess three properties to different extent. Isoniazid and Rifampicin are the most powerful bactericidal drugs, active against all populations of TB bacilli. Rifampicin is RNA- polymerase inhibitor, rapid complete absorption on an empty stomach. Isoniazid interferes with cell wall synthesis absorbs in to the cerebra-spinal fluid, therefore often used in TB meningitis (Yusuf, 2014: 19).

Pyrazinamide and streptomycin are also bactericidal and sterilizing against certain populations of TB bacilli. Pyrazinamide is well absorbed orally, penetrates into the cerebra-spinal fluid and active in an acid environment against TB bacilli inside macrophages and reduces tuberculosis relapse rate. Streptomycin is an active against rapidly multiplying extracellular TB bacilli (Airgencho, 2014: 49).

Ethambutol is a bacteriostatic drugs used in combination with more powerful bactericidal drugs to prevent the emergence of resistant bacilli. TB is preventable and curable when the correct TB treatment regimen is prescribed and properly administered to the infected all that is needed is commitment from both the health care workers and the infected to do their part in the fight against the spread of this disease (Yusuf, 2014: 19).

3.2.11 Side Effects of Tuberculosis Treatment or Drugs

Chinenye (2015: 5); Kodisang (2013: 16); Fana (2013: 78) and Harriet (2004: 130), state that taking anti TB drugs can result in the following side effects:

- Peripheral neuropathy
- Anorexia
- Skin rash or skin reactions
- Sleepiness or lethargy
- Nausea
- Vomiting
- Abdominal pain
- Diarrhoea
- Joint or bone pains
- Psychosis
- Malaise
- Renal failure
- Headache
- Dizziness
- Auditory
- Vestibular nerve damage or hearing loss
- Poor vision or loss of vision



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3.2.12 Outcomes of Tuberculosis

TB is a dangerous and infectious disease that is both preventable and curable. TB treatment outcomes are usually evaluated through sputum results. When the sputum is negative the infected is cured (Kodisang, 2013: 16).

The infected person can be referred to as having failed treatment if they do not complete treatment and when that happens the TB germ becomes resistant to some of the drugs that are usually used to treat TB. This can lead to a phenomenon that is called Drug Resistant TB (Kodisang, 2013: 16; Fana, 2013: 79).

3.2.13 Prevention of Tuberculosis

Global tuberculosis control and prevention strategies include DOTs implementation, diagnosis and treatment of Multi Drug Resistant Tuberculosis, collaboration of TB/HIV activities, addressing the needs of poor and vulnerable population, strengthening of health care system, involvement of all stakeholders, empowering people and communities with knowledge, and promotion of research. Besides, the investigation of TB contacts, follow up and giving of preventive therapy for those who are being infected are also recommended in many countries (Yusuf, 2014: 19).

3.2.13.1 Primary prevention

Primary prevention involves actions taken to prevent the development of a disease in a person who is well and does not have the disease in question. Such activities can include health promotion as well as disease prevention activities.

Health promotion activities can be as simple as using appropriate hand washing techniques or can be more sophisticated such as vaccination to prevent disease occurrence. The only vaccination for TB on the market is the Bacille Calmette-Guerin (BCG) vaccine.

3.2.13.2 Secondary prevention

Secondary prevention involves the identification of people who have already developed a disease, at an early stage in the disease's natural history, through screening and early intervention. The rationale for secondary prevention is that if we can identify disease earlier in its natural history, intervention measures will be more effective. Perhaps, we can prevent mortality or complications of the disease and use less invasive or less costly treatment to do so. Another type of secondary prevention measure is called a contact investigation. During a contact investigation public health workers interview people with active TB disease in order to identify "contacts" or people who may have been exposed to that person. Once identified the contacts will be evaluated for TB disease and provided with appropriate treatment, when necessary. The treatment of people who have already developed a disease is often described as tertiary prevention (Ilongo, 2004: 72).

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In South Africa, prevention is regarded as the third pillar in the TB control and management programme. South Africa government adopted a '3Is' policy as its strategy to prevent or curb the spread and transmission of TB in 2002. The strategy to prevent or curb the spread of TB involves the following three issues namely:

- The Isoniazid preventative therapy (IPT)
- Intensified case finding
- Infection control

The final strategy used for preventing and controlling TB is identifying and treating people with active TB. Each person with infectious TB has the potential to infect many others.

However, the site of the infection is important in determining its capability to spread. The BCG vaccine can prevent the TB bacteria from spreading within the body, thus preventing TB from developing. BCG vaccine is administered to infants in parts of the world where TB is common.

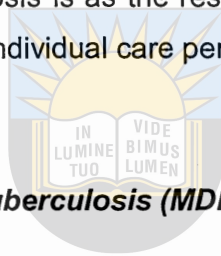
Isoniazid Prophylaxis (INH), preventive therapy with isoniazid has become frequently used as a well-established procedure, especially in the treatment of recent tuberculosis. This method is used in those infected with mycobacterium tuberculosis but do not have TB disease, but which are latent tuberculosis infections. INH prophylaxis is recommended for all household contacts of persons with newly diagnosed active tuberculosis. In addition, isoniazid is recommended for people whose health and defence may be compromised by diabetes, alcoholism, gastrostomy, silicosis, etc. (Yusuf, 2014: 22).

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3.3 DRUG RESISTANT TUBERCULOSIS

3.3.1 What is DR-TB and The Types of DR-TB

Drug Resistant Tuberculosis is caused by mycobacterium tuberculosis strains that are resistant to one or more anti-TB drugs. Drug Resistant Tuberculosis is a man-made problem and occurs when TB is mismanaged, and when the infected persons do not complete their treatment course, due to insufficient supply of TB drugs. Drug Resistant Tuberculosis is as the results of spontaneous mutation as well as poor programmatic and individual care performance.



3.3.1.1 Multi Drug Resistant Tuberculosis (MDR-TB)

MDR-TB (Multi Drug Resistant Tuberculosis) is the name given to tuberculosis when the bacteria that are causing it are resistant to at least isoniazid and rifampicin, two of the most effective tuberculosis drugs (Musasa, 2011: 6).

3.3.1.2 Extensive Drug Resistant Tuberculosis (XDR-TB)

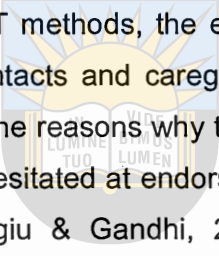
XDR-TB is tuberculosis strain that is resistant to the first and second line drug regimens. Extensively Drug Resistant tuberculosis is defined as strains resistant to at least rifampicin and isoniazid in addition to being resistant to one of the fluoroquinolones, as well as resistant to at least one of the second line injectable tuberculosis drugs amikacin, kanamycin or capreomycin (Kadisong, 2014: 10).

3.3.1.3 Totally Drug Resistant Tuberculosis (TDR-TB)

Totally Drug Resistant TB is defined as tuberculosis strain that is resistant to all the first and second line drugs that are used to treat tuberculosis (Parida, at el., 2015: 1).

According to Ahmed, Velayati & Mohammed (2016: 251), definition of drug resistant patterns of TB beyond XDR is a controversial debate. In 2007 a new acronym was introduced to distinguish the resistant patterns in two isolates that were discovered in Italy (XXDR TB - Extremely Drug Resistant Tuberculosis). It is said that the two isolates were resistant to all first and second line TB drugs and two years later in Iran it was stated that strains that were resistant to all known anti TB drugs were referred to as Totally Drug Resistant Tuberculosis.

The reliability of the current DST methods, the expected negative impact of the word "total" on the infected, contacts and caregivers and the sufficiency of the available evidence are some of the reasons why the different authorities including the World Health Organisation hesitated at endorsing the definitions of resistance beyond XDR TB (Migliori, Sotgiu & Gandhi, 2013: 169; Velayati, Farnia, & Ibrahim, 2013: 71).

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Another important reason for not giving definition for resistance beyond XDR-TB is the fact that there are new anti TB drugs that have been developed and introduced for treatment of resistant TB strains and a reliable DST test has not yet been developed to establish susceptibility of those new drugs (Ahmed et al., 2016: 251; Migliori et al., 2013: 177).

3.3.2 Epidemiology of Drug Resistant Tuberculosis

3.3.2.1 Epidemiology of Drug Resistant Tuberculosis Globally

Drug Resistant Tuberculosis poses a serious threat to control of TB worldwide. Globally, it is estimated that 3.3 % of new cases and 20% of previously treated cases have Drug Resistant TB (Kodisang, 2013: 12).

In 2014, there was an estimated 480 000 new cases of Drug Resistant TB globally. In 2014, 7% of the 123 000 people who were infected with MDR-TB or Rifampicin Resistant TB (RR-TB) lived in European region, India China and South Africa. 110 000 people were on MDR-TB treatment in 2014. The 2015 treatment target of 75 % for MDR-TB infected people only reached 47 of the 127 countries. Globally, only 50% of the MDR-TB infected people were successfully treated, largely due to high mortality rates and lost to follow-up. It is also stated that there were 190 000 deaths from MDR TB. The overall proportion of MDR-TB infected people in the 2012 cohort who successfully completed treatment (cured or treatment completed) was 50%, 16% died, 16% were lost to follow-up, 10% failed treatment and 8% had no outcome information (WHO, 2015: 67).

Furthermore, 9.7% of all global MDR-TB infected people had XDR-TB. In 2013, 3284 people infected with XDR-TB were enrolled on treatment compared to 4044 that were reported to have been enrolled for treatment in 2014. Most cases were reported in India (1262), Ukraine (657), South Africa (562), Belarus (431) and Kazakhstan (318) (WHO, 2015: 64).

Among the 2685 XDR-TB infected people in the 2012 cohort of outcomes reported, 682 (26%) completed treatment successfully, 809 (30%) died, 510 (19%) treatment failed, and 684 (25%) were lost to follow-up or their treatment outcome was not evaluated. Russia accounted for 51% of the XDR-TB infected people for whom outcomes were reported in 2012 (WHO, 2015: 68).

3.3.2.2 Epidemiology of Drug Resistant Tuberculosis in South Africa

India, China and South Africa have the highest number of reported cases of Drug Resistant Tuberculosis cases in world (NDOH, 2014).

There were 15 400 Drug Resistant TB cases in South Africa that were reported and recorded in 2013 (National Department of Health South Africa, 2014: 4; Fana, et al 2013: 60; Kodisang, 2013: 2). A mortality rate of 47% was reported among XDR-TB infected people in South Africa in the 2012 cohort (WHO, 2015: 68)

3.3.2.3 Epidemiology of Drug Resistant Tuberculosis in the Eastern Cape

In South Africa, KwaZulu-Natal is the Province with the highest number of people infected with Drug Resistant Tuberculosis. It was in 2005 at the Church of Scotland Hospital in Kwa-Zulu Natal, Tugela Ferry where a XDR Tuberculosis was first identified in South Africa with a mortality rate of 98% (Ahmed et al., 2016: 253; Semegni, 2013: 15). The province of Western Cape and the Eastern Cape are lying in the second and the third position after Kwa-Zulu Natal with regard to the number of people infected with Drug Resistant Tuberculosis respectively (National Department of Health South Africa, 2014: 4; Fana, et al 2013: 60; Kodisang, 2013: 2).

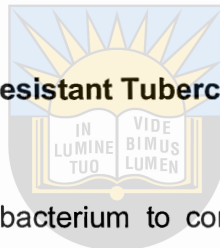
3.3.3 Transmission and Spread of Drug Resistant Tuberculosis

Drug Resistant Tuberculosis is mainly transmitted when a person infected with Drug Resistant Tuberculosis is spitting, sneezing and talking. These droplets float in the air for a long time and people who inhale the air carrying these droplets get infected (Kodisang, 2013: 13; Harries et al, 2004: 23).

3.3.4 Risk Factors and who is at Risk of DR-TB Infection

According to Singh (2014: 18), Drug Resistant Tuberculosis is common among the following groups:

- Treatment defaulters
- Develop TB after being treated and cured before relapsing
- People residing in high Drug Resistant TB prevalence areas
- Close contacts of Drug Resistant TB infected whether diagnosed or not.
- People using drugs that compete or alter metabolism of TB drugs, resulting in reduced serum levels
- Co-morbid conditions associated with malabsorption or rapid transit diarrhoea
- HIV and AIDS infected persons



3.3.5 Development of Drug Resistant Tuberculosis

The ability of the tuberculosis bacterium to constantly and slowly mutate is a natural phenomenon that leads to the development of resistant organisms. Drug Resistant Tuberculosis emerges or develops when the infected people have a high bacterial load in their system (Singh, 2014: 18). According to Colijn, Cohen, Ganesh and Murray (2011: 1) the organism's susceptibility to drugs decreases when the resistant organisms have developed. The development of Drug Resistant TB does not occur overnight, but it results from evolution over a considerable period, as a result of the use of antibacterial agents. The development of Drug Resistant TB can also be as a result of the drug levels, which allowed the development of resistant bacteria (Singh, 2014: 18).

Defaulting treatment and inadequate treatment supply of medication worsen the problem. Another factor that is also contributing to the development of Drug Resistant TB in South Africa Drug Resistant TB is driven by poor rates of treatment completion, as well as by widespread lack of routine testing to determine TB drugs sensitivity (Ogubanjo & Savva, 2011: 5; Fana, 2013: 67).

3.3.6 Molecular Mechanism and Genetic Basis of Drug Resistance.

The exposure to a single anti-TB drug because of irregular intake, poor drug quality, inappropriate prescription and or poor adherence to treatment can result in non-functional monotherapy. This then suppresses the growth of the bacilli susceptible to that drug but permits the multiplication of drug resistant organisms (Airgecho, 2014: 7).

The genetic basis of resistance to most anti-TB drugs has been established (Airgecho, 2014: 7; Zang & Yew, 2009: 1320; Weezenbeek, et al., 1998: 296). Mutation that results in INH resistance to *M tuberculosis* occurs at a rate of 10^7 to 10^9 per cell division and leads to an estimated resistance of 1 in 10^6 bacilli in drug free environment. Isoniazid (INH) inhibits the synthesis of mycolic acids in *M tuberculosis*. It is a pro drug that became active when catalysed by the enzyme catalase peroxidase. It is the three genes, *katG*, *inhA* and *ahpC* that are involved in resistance to INH. It is *katG* that encodes catalase peroxidase that is mainly responsible for INH resistance. Almost 50% of resistant isolates contain mutations in *katG*. In many INH resistant strains it is *katG* that is found to be defective (Zhang & Yew, 2009: 1325).

Resistance to RIF results from missense mutations in the *rpoB* gene, which is responsible for encoding the B subunit of RNA polymerase. The RNA polymerase is an essential enzyme with five subunits that are responsible for catalysing the process of transcription. RIF specifically binds to the B subunit and prevent early steps of transcription which lead to the eventual death of the bacteria. However, the mutation in the *rpoB* gene results in resistance by decreasing RIF binding affinity (Airgecho, 2014: 8; Turett et al., 1995: 1240).

Mutation leading to the resistance of M tuberculosis to RIF is rare and occurs at a rate of 10^{-10} per cell division with an estimated prevalence of 1 in 10^8 cells in drug free environment. However, it rapidly results in the selection of mutants that are resistant to other anti-TB drugs. In most cases it exists in conjunction with INH resistance, and it is called MDR (Turett et al., 1995: 1240; Goble et al., 1993: 529). According to Iseman and Madsen (1989: 348) the spontaneous mutations that result in resistance to both INH and RIF is the product of the individual probabilities, 1 in 10^{14} ($10^6 \times 10^8$).

PZA is also a pro drug that can be converted into an active form presumably by pyrazinamidase enzyme of susceptible organisms. Approximately 72 to 98% of PZA resistance in clinical isolates is correlated with mutations that are scattered through the 558 bp *pncA* coding region and 11 promoter regions. Mutations in gene *pncA*, encoding for the enzyme pyrazinamidase are the major cause of PZA resistance. The rate of mutation PZA is 10^{-3} with a probability of resistance of 1 in 10^6 bacilli (Airgecho, 2014: 8; Scorpio & Zhang, 1996: 664).

Streptomycin (STM) is an antibiotic that interferes with the prokaryotic protein synthesis. Resistance is mainly due to mutations in the *rpsL* locus encoding the S12 ribosomal protein (Airgencho, 2014 8). Approximately 60% of STM resistant clinical isolates show *rpsL* mutation. Almost 10% of resistant strains have mutations in 16S ribosomal RNA which is encoded by *rrs* gene. The mutation rate for STM is 10^{-8} resulting in resistance of 1 in 10^7 bacilli (Bottger and Sander, 1999: 101).

Ethambutol (EMB) is a drug that targets cell walls synthesis. Major mechanism for the acquisition of resistance to the drug is associated with mutation in the *embCAB* operon (Airgecho, 2014:8).

The operon consists of three genes that are responsible for encoding different arabinosyl transferases which are involved in cell wall synthesis. Amino acid replacement at position 306 of emb B has been shown in many studies to be found in EMB resistant organisms and not on susceptible organisms. Mutation rate of EMB is 10^{-7} with a resistance of 1 in 10^5 bacilli Drug resistance is spontaneous and there is no single gene that is responsible and the mutations that result to resistance to various drugs arise independently. It is also of significance to note that mono resistance to INH is common whereas mono resistance to RIF is quite rare. 90% of RIF's resistant strains are also resistant to INH (Airgecho, 2014:8; Ramaswamy & Musser, 1998: 19).

3.3.7 Signs and Symptoms of Drug Resistant Tuberculosis

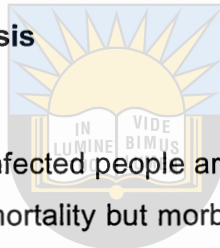
Apart from the systemic effects of Drug Resistant Tuberculosis haematological abnormalities, hypernatremia and psychological disorders are isolated signs that are not related to the area of involvement (National Department of Health South Africa, 2013: 34). In order for community members to be able to seek help early or assist their family members by presenting them early at health care centres for TB diagnosis and treatment, they must be able to recognize the signs and symptoms of Drug Resistant Tuberculosis. If they can do the above, diagnosis and treatment delays can be prevented among Drug Resistant Tuberculosis infected people (Paauw, 2013: 553).

The signs and symptoms of Drug Resistant Tuberculosis are the same as those of Drug susceptible tuberculosis (Fana, 2013: 89; Harries et al., 2004: 24).

- Loss of appetite
- Persistent cough for more than two weeks
- Loss of weight

- Night sweats
- Prolonged fever
- Chest pain
- Haemoptysis
- Anorexia
- Tiredness and
- Weakness

3.3.8 Diagnosis of Tuberculosis



More than 70% of tuberculosis infected people are co-infected with HIV and AIDS in SA. That increases not only mortality but morbidity of those infected as well. It further complicates diagnosis and treatment of tuberculosis among those infected. Early identification and treatment is the primary strategy for the control of the spread of tuberculosis. The sensitivity of the sputum smear diagnosis is poor at best of 10 000 bacilli per millimetre of sputum needed to detect tuberculosis by microscopy (Singh, 2014: 19). The technical demands in the identification and determination of drug susceptible tuberculosis in clinical specimens, couple with non-specificity of clinical features of tuberculosis makes diagnosing Drug Resistant Tuberculosis extremely difficult. The Drug Sensitivity Test (DST) is done to determine the resistance pattern of the TB disease, and thereafter prescription of the correct regimen is made. The resistance pattern of the TB germ is used to determine the Drug Resistant Tuberculosis regimen that will be administered to that specific person (as per sputum results) (Kodisang, 2013: 17).

The clinical appearance of the people that are infected with Drug Resistant TB is the same as that of individuals who are infected with drug susceptible TB and their radiological features are not easily identifiable (Singh, 2014: 20).

The above factors make it difficult to use only one report without any other supporting evidence when determining if a person is infected with DR -TB. The quality of the laboratory tools and techniques that are used is of significance when a diagnosis for Drug Resistant TB is to be made (Singh, 2014: 20).

Drug Resistant Tuberculosis should be suspected in people who continue to have positive acid fast bacilli smears or cultures despite being on adequate treatment. It should also be suspected in close contacts of Drug Resistant Tuberculosis patients, particularly those who are immune-compromised (National Department of Health South Africa, 2011: 23; Singh, 2014: 19). The following are the tools, tests and techniques that are used to diagnose tuberculosis together with their pros and cons in terms of sensitivity, costs, specificity, and turnaround time.



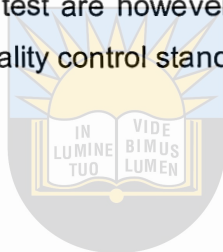
3.3.8.1 Microscopy

Early laboratory diagnosis of tuberculosis relies on the examination of stained smears despite recent developments in the diagnostic microbiology. Microscopy of sputum smears is used to detect cases of pulmonary tuberculosis and Drug Resistant tuberculosis that are most infectious. The sputum examination by microscopy is affordable, quick and easy and it can be performed to all cases that are suspected of having tuberculosis. This is also used to assess response to treatment and to establish cure or failure at the end of the treatment (Swaminathan, Padmapriyadarsini & Narendran, 2010: 1387).

Despite the abovementioned advantages, the AFB sputum microscopy cannot distinguish between viable and non-viable bacilli. In AFB microscopy, Ziehl-Neelsen is the recommended staining method that should be used in most cases. Fluorochrome and Kinyoun staining methods can also be used (Swaminathan et al., 2010: 1387).

3.3.8.2 Nucleic Acid Amplification Tests (NAAT)

Line Probe Assay (LPA) is another type of the Nucleic Acid Amplification Tests. It makes use of molecular technology to identify the presence or absence of specific mutations on the genes of TB bacilli. Since it is known which mutations are responsible for TB bacilli to be resistant to INH and RIF, this testing tool can rapidly and accurately identify Drug Resistant TB (Ahmed et al, 2016: 253). High degree of sensitivity (98%) and specificity (99%), the speed of the test and the potential to perform high volumes of test per day are some of the benefits of this test. The disadvantages of this test are however, the need for well trained staff that is also committed to high quality control standards (Stoltz, 2015: 14).



3.3.8.3 Culture

Mycobacterial culture is used to give an accurate diagnosis of TB. It is however, regarded to be very slow (18 to 24 hours) in its multiplication when it is but compared to other bacteria. The results by culture can take a period of up to eight weeks before they are confirmed as either negative or positive. The mycobacteria also require a special culture media. Lowenstein Jensen (LJ), Middlebrooks and different liquid media are the types of culture media that are available. The time it takes for incubation is eight weeks, as in some instance some tubercle bacilli may need more time for incubation. The results of the culture are also affected or influenced by transportation delays, insufficient decontamination, poor quality culture media, inadequate laboratory technique and incorrect incubation temperature. It is stated that the specimens should be kept at 4°C when they are transported to the laboratory (Airgecho, 2014: 14).

To detect DR Tuberculosis phenotypic methods using egg or agar based LJ media are still used in many parts of the world (Stoltz, 2015: 14; Airgecho, 2014: 14).

Such methods include the proportion, absolute concentration and resistant ratio methods which are fairly well standardised with clinical samples, at least for the major anti-TB drugs. The proportion method is the most preferred choice as it involve estimating the proportion of mutant strains resistant to a given anti-TB drug. This is done by comparing bacterial growth in the drug containing and drug free control media. If the proportion of resistant bacteria is higher than 1%, the strain is considered to be resistant (Stoltz, 2015: 14; Airgecho, 2014: 14).

When the Middlebrook 7H10/11 media is used, the results are interpreted after 21 days of incubation or even earlier if there is clear growth difference between the drug containing and drug free media (Stoltz, 2015: 14).

BACTEC MGIT-960 TB system is a culture method that is based on liquid media. It designed to rapidly detect Mycobacterial growth and drug susceptibility testing of Mycobacterium tuberculosis (Stoltz, 2015: 14; Swaminathan, Padmapriyadarsini & Narendran, 2010: 1387; Airgecho, 2014: 14; Tortoli et al., 2002: 608).

The consumption of oxygen by the growing bacterial causes the oxygen quenched fluorochrome to fluoresce under UV lights. During the DST, the bacterial suspension is inoculated into two MGIT tubes, one of them contain test drug. If the anti-TB drug inhibits growth, the fluorochrome will remain quenched in the drug containing tube, whereas the growth control will grow uninhibited and will have increasing fluoroscene. The degree of fluoroscene is monitored by the instrument which automatically interprets the results as susceptible or resistant (Stoltz, 2015: 14; Airgecho, 2014: 14; Tortoli et al., 2002: 608).

3.3.8.4 Phenotypic Drug Susceptibility Testing

Different anti-TB drugs have different critical concentrations, which also depend on the culture medium used for DST. DST for first line anti-TB drugs has been thoroughly studied and consensus reached on appropriate methodologies, critical drug concentrations, reliability and reproducibility of testing. The accuracy of DST varies with the drug tested. It is most accurate for rifampicin and isoniazid and less accurate for streptomycin and Ethambutol. DST for pyrazinamide requires a different (acidic) culture medium and lacks accuracy, it is seldom performed. The biggest disadvantage of phenotypic DST is the long time lag between sputum sent until results are known. This often leads to delays of effective treatment allowing TB infected people's condition to deteriorate, or even die and thereby increase the potential for further transmission (Airgecho, 2014: 14).

Drug Resistant Tuberculosis is diagnosed through physical examination, radiology, (that is by conducting a chest X-ray) and bacteriology (which is collection of sputum from patients for analysis at laboratory for sputum smear and cultures). The test that is used to diagnose TB in South Africa is 'GeneXpert'. It can detect 15 bacilli per millilitres of sputum in less than two hours (Ahmed et al., 2016: 253).

The 'GeneXpert' essay diagnostic tool kit is better than TB smear microscopy in that it has higher sensitivity and specificity, and it is such features that are enabling it to detect many patients that would not have been diagnosed using TB microscopy. The 'GeneXpert' diagnostic tool kit presents reports that indicate or label results as "tuberculosis detected or not detected". It also gives information about the state of susceptibility or resistance to Rifampicin (Ahmed et al., 2016: 254; Stoltz, 2015: 14).

3.3.9 Treatment of Drug Resistant Tuberculosis

Drug Resistant tuberculosis is highly infectious and difficult to treat. The treatment of Drug Resistant Tuberculosis requires administration of drugs that are very expensive and more toxic than the drug susceptible tuberculosis drugs and has remained unchanged ever since 1960's. Drug Resistant Tuberculosis treatment costs 100 times more than drug sensitive tuberculosis treatment. Drug Resistant Tuberculosis treatment is also very long and those suffering from it are faced with the real possibility of not surviving. Therefore, continuous intensive counselling, education and support are advocated for to promote adherence (Bateman, 2015: 6; Singh, 2014: 21; Kodisang, 2013: 18).

In SA, Primary Health Care facilities where Drug Resistant Tuberculosis patients are treated, nurses provide their medication or treatment, counselling and support (Singh, 2014: 21). The treatment and management of Drug Resistant Tuberculosis requires prolonged therapy and in most cases hospitalisation for a minimum of 4 months depending on one's response to Drug Resistant Tuberculosis treatment. The length of stay is usually determined by how soon the patient gets a negative culture sputum results and this may not be predicted when it will happen. The duration of treatment is from 18-24 months (Fana, 2013: 68; Kodisang, 2013: 18).

Drug Resistant Tuberculosis treatment includes mainly the use of second line drugs, that were not previously used by the patient in past. The majority of these anti- TB drugs are antibiotics which are bactericidal and bacteriostatic. They kill and stop the TB bacteria from growing. The infected can only stop Drug Resistant Tuberculosis treatment when advised to do so by their doctor (Bateman, 2015: 7; Singh, 2014: 21).

After discharge from Drug Resistant Tuberculosis treatment, there is continuous monitoring that is done on the patient for a period of two to three years at the DR-TB Hospital or outpatient's clinic. Discharged patients continue to visit the hospital every six months and take chest X-rays which are examined by the doctors at the DR-TB Hospital (Singh, 2014: 2; Kodisang 2013: 18).

In South Africa Drug Resistant Tuberculosis is managed using DOTS-Plus program and it allows Clinicians to follow a standard method of patient management and treatment (Bateman, 2015: 7; Singh, 2014: 2).

According to Stoltz (2015: 15) MDR and XDR TB anti –tuberculosis drugs are categorized under the following:

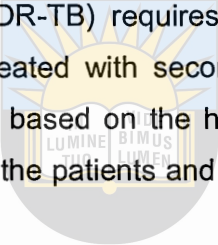
- Aminoglycosides : Kanamycin (Km) Amikacin (Am)
- Polypeptides : Capreomycin (Cm)
- Fluoroquinolones : Moxifloxacin (Mfx), Levofloxacin (Lfx)
- Thioamides : Ethionamide (Eto)
- Serine analogues : Terizidone (T), Cycloserine (Cs)
- Other drugs (class 5) : Clofazimine (Cfs), Linezolid Lzd) Amoxicillin-
: Clavulanate (Amx-Clv) Pyrazinamide

3.3.9.1 Standardised Drug Resistant TB Treatment

The standardised Multi Drug Resistant Tuberculosis (MDR-TB) regimen consists of two (2) phases. The first phase is an intensive phase, which is also called injectable phase, of at least six (6) months with five (5) drugs which are a combination of oral treatment (tablets) and injectable (WHO, 2016, 24; Stoltz, 2015: 15; Furin, 2007: 21).

Kanamycin/Amikacin, moxifloxacin/Levofloxacin, ethionamide, terizidone/ Cycloserine and pyrazinamide are the drugs that are used during the first phase (Stoltz, 2015: 15; Furin, 2007: 21). The second phase that follows is the continuation phase of 18 months of oral treatment with four (4) drugs. The treatment is taken at least six (6) day per week (Ogunbanjo & Savva, 2011: 4). Moxifloxacin, Ethionamide, Terizidone and pyrazinamide are the drugs that are utilised to treat MDR infected people (WHO, 2016, 24; Fana, 2013: 15).

Extreme Drug Resistant TB (XDR-TB) requires an individualised approach in patients who were previously treated with second line anti tuberculosis drugs. Individualised treatment is given based on the history of anti-tuberculosis drugs that were previously received by the patients and the results of drug susceptibility testing (Kodisang, 2013: 19).

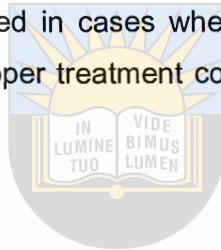
The logo of the University of Fort Hare is a circular emblem. It features a central shield with a sunburst at the top. Inside the shield, the Latin motto 'LUMINE SIMUS' is written. Below the shield, the words 'UNIVERSITY OF FORT HARE' are inscribed. The entire emblem is surrounded by a decorative border.
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XDR-TB is treated with at least four (4) to seven (7) drugs which are expected to be effective for 18 – 24 months. The treatment regimen for XDR-TB consists of at least 6 months intensive phase with capreomycin, moxifloxacin, ethionamide, terizidone, pyrazinamide, P- aminosalicylic acid and Clofazimine (Stoltz, 2015: 15; Fana, 2013: 35). During the 18 months continuation phase Moxifloxacin, Ethionamide, Terizidone, pyrazinamide, P- aminosalicylic acid and clofazimine are administered to the infected person depending on the results of the drug sensitivity test (DST). The results of DST may warrant modifications under certain circumstances (Stoltz, 2015: 15).

The use of multiple drugs assists in prevention of further development of resistance. Low treatment success, less chance of cure and high risk for premature deaths are reported in Drug Resistant Tuberculosis compared to drug sensitive tuberculosis (Kodisang, 2013: 19).

Drug Resistant Tuberculosis treatment can also include non-pharmacological treatment. This may include common operative procedure of the entire lung or just the section of the lung that is infected. Surgery is advised earlier in the course of the disease while the infected persons risk is of morbidity and mortality is lower and is still localised to one lung or lung lobe (Fana, 2013: 37).

It is stated that at least two months of therapy should be given before surgical resection in order to decrease the bacterial infection in the surrounding lung tissue. Surgery can also be used in cases where the infected person relapses after being adherent and on proper treatment course (Ogubanjo & Savva, 2011: 57; Harries et al., 2004: 23).



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Table 2: Second line drugs used to treat Multi Drug Resistant Tuberculosis

DRUG	DOSAGE
Injectables	
Kanamycin (KM)	15 mg/kg intramuscularly once daily
Amikacin (AMK)	15 mg/kg intramuscularly once daily
Capreomycin (CM)	15 mg/kg intramuscularly once daily
Fluoroquinolones	
Ciprofloxacin	750 mg orally twice a daily
Levofloxacin	500 mg orally once daily
Moxifloxacin	400 mg orally once daily
Gatifloxacin	400 mg orally once daily
Other second line drugs	
Ethionamide	500-1000 mg orally once daily
Prothionamide	500-1000 mg orally once daily
Cycloserine (CS)	500-1000 mg orally once daily
Clofazimine (CFZ)	200-300 mg orally once daily

Source: Furin (2007: 21)

3.3.9.2 Medication recommended by the World Health Organisation in 2016 for treatment of Rifampicin Resistant and Multi Drug Resistant TB.

Table 3: Rifampicin Resistant and MDR-TB 2016 recommended medication

A. Fluoroquinolones	Levofloxacin		Lfx
	Moxifloxacin		Mfx
	Gatifloxacin		Gfx
B. Second-line injectable agents	Amikacin		Am
	Capreomycin		Cm
	Kanamycin		Km
	(Streptomycin)		(S)
C. Other core second-line agents	Ethionomide/ Prothianamide		Eto/ Pto
	Cycloserine/ Terizidone		Cs/ Trd
	Linezolid		Lzd
	Clofazimine		Cfz
D. Add on agents (not part of core MDR-TB regimen)	D 1	Pyrazinamide	Z
		Ethambutol	E
		High-dose isoniazid	H
	D 2	Bedaquiline	Bdq
		Delamanid	Dlm
	D 3	p-aminosalicylic	PAS
		Imipenem-cilastatin	lpm
		Meropenem	Mpm
		Amoxicillin-clavulanate (Thioacetazone)	Amx- Clv (T)

WHO (2016: 24)

3.3.10 Drug Resistant Tuberculosis Treatment Outcomes

The different types of treatment outcomes for TB/ DR-TB include treatment completed, cured, relapse, default, failure, lost during follow-up, transfer out and death (Harries, Maher, & Graham, 2004: 23). Successful treatment outcomes refer to patients who have completed treatment and are cured, whereas unsuccessful treatment outcomes include relapse, default, lost during follow up and death (Ogubanjo & Savva, 2011: 57).

3.3.11 Adverse Events of Drug Resistant Tuberculosis Drugs

The second line drugs that are utilised to treat Drug Resistant Tuberculosis have more side effects than the first line drugs that are used to treat drug susceptible tuberculosis. The use of multiple drugs is significant in prevention of the development of additional resistance, but such efforts are complicated by the adverse effects in addition to the limited choices of second line drugs. Treatment side effects can be classified under the following categories: minor side effects, toxic reactions, hypersensitivity reactions, idiosyncratic reactions and other reactions (Singh, 2014: 23; Kodisang, 2013: 21; Ogubanjo & Savva, 2011: 58).

The adverse drug reactions are usually temporary and reversible, but occasionally permanent. Nausea, vomiting, diarrhoea, headache, kidney problems, liver problems/ toxicity, peripheral nerve problems, visual concerns (impaired vision), hearing loss or imbalance, skin reactions and psychiatric symptoms (such as toxic psychosis, depression, suicidal ideation, anxiety) are some of the side effects of the treatment. The visual problems are reversible up to a certain point, and hearing loss is usually permanent (Singh, 2014: 23; Furin, 2007: 22).

Prompt and effective management of (whether mild or serious) adverse drug reactions (ADR's) is important, as its absence can result in mortality, permanent disability and patient non-adherence. In addition, patients may develop anxiety about the treatment side effects if they do not understand what is happening and this has the potential to add on the severity of the adverse effects (Kodisang, 2013: 20; Ogubanjo, & Savva, 2011: 61; Furin, 2007: 22).

Some treatment side effects present soon after treatment is initiated while others manifest at the later stage. Drug Resistant Tuberculosis patients receive multiple drugs, and that makes it challenging to exactly determine which drug is the source of the adverse drug reaction. The following are the strategies that can be used to aggressively manage the adverse drug reactions (Ogubanjo & Savva, 2011: 62).

- Continue treatment regimen in case they are mild and in addition educating, encouraging and providing support to the patients to tolerate the effects until they subside, as many adverse drug reactions disappear with time.
- Reduce the dosage of the subsequent drugs until the adverse reactions subside, or to reduce the dosage of each drug when it is not clear which drug is the source of the adverse effects.
- In case of serious effects or where reduced dosage does not alleviate the ADRs, it may be necessary to remove the drug completely from the regimen or to replace the culprit drug with another drug.

The proper management of drug adverse effects requires educating patients before treatment initiation about the adverse events of the drugs they are about to take; and the importance of adherence to treatment and on time reporting of side effects to healthcare providers. The interruption of treatment may affect the treatment efficacy, and therefore it is of great significance that treatment supervisors encourage patients to report side effects early so that they can be dealt with as soon as possible (Singh, 2014: 23;Kodisang, 2013: 21).

Table 4: Adverse effects of second line drugs

SYSTEM	MILD ADVERSE REACTION	MODERATE TO SEVERE ADVERSE REACTION	LIKELY CAUSATIVE AGENT
Neurologic	Dizziness Headache Fatigue Insomnia	Seizures Peripheral Neuropathy Ototoxicity Optic neuritis	Cycloserine Kanamycin/ Amikacin Capreomycin Fluoroquinolones
Psychiatric	Depression Irritability Anxiety Mood Changes	Psychosis Suicidal ideation	Cycloserine
Dermatological	Change in skin colour Photosensitivity	Anaphylaxis Steven Johnson Syndrome	Clofazimine
Renal & electrolyte		Renal failure Hypokalaemia Hypomagnesaemia	Cycloserine Kanamycin /Amikacin Capreomycin

Source: Furin (2007: 22)

3.3.12 Management of Drug Resistant Tuberculosis Contacts

Close contacts of DR-TB infected people are all the people who are staying in the same house with the DR-TB infected person, or those who spends most of the time together with the infected person in the same house or indoor space (Ogubanjo & Savva, 2011: 103).

The children and the people who are immune compromised contacts are at high risk of infection with Drug Resistant Tuberculosis. In patients who have a compromised immune system, the risk of developing active Drug Resistant Tuberculosis is highest within the first two (2) years following infection. Children who are contacts of Drug Resistant Tuberculosis patients are at a higher risk of developing active Drug Resistant Tuberculosis soon after infection, especially children under two (2) years of age (Singh, 2014: 24; National Department of Health South Africa, 2013: 102; Onyang, 2011: 3).

It is recommended that the close contacts of patients with confirmed Drug Resistant Tuberculosis must be screened and tested for Drug Resistant Tuberculosis. Screened individuals who do not have Drug Resistant Tuberculosis must be routinely screened for Drug Resistant Tuberculosis monthly (Kodisang 2013: 17; Ogubanjo & Savva, 2011: 1).

The purpose of such an intervention is to curb the spread of Drug Resistant Tuberculosis in communities by diagnosing or detecting and treating the close contacts of Drug Resistant Tuberculosis at an early stage. This kind of an intervention is put in place as some studies have revealed that close contacts of DR-TB contacts often have DR-TB (Ogubanjo & Savva, 2011: 103).

3.4 HEALTH EDUCATION, COUNSELLING AND ADHERANCE

One of the growing dangers for public health is the continued transmission of Drug Resistant Tuberculosis by the infected people who are in the community. Treating Drug Resistant Tuberculosis is very costly and lengthy as it can take up to 24 months. The treatment of Drug Resistant Tuberculosis involves the use of numerous drugs which have severe side effects. This results in continuous treatment default or non-adherence. Drug Resistant Tuberculosis treatment requires continuous education, counselling in order to ensure that those who are infected adhere to it (Hirpa et al., 2013: 1; Podewils et al., 2013: 1).

The problem with tuberculosis is not what the disease is, but what the people believe it to be. Stigma against tuberculosis seriously hinders all aspects of tuberculosis control. In a society which discriminates against tuberculosis sufferers, those infected or suspecting infection would conceal their condition and not seek or adhere to the treatment for fear of social rejection. TB control and case detection is hindered resulting in spread of the disease and the development of resistant strains. In addition, the risk of transmission in the community also increases as the infection pool is maintained longer than necessary. The stigma attached to tuberculosis stems from or is reinforced by socio-cultural beliefs of the community regarding the disease, which are often unfounded and lack scientific rationale. Nonetheless, misconceptions once formed are difficult to dispel and if any progress is to be made in reducing the stigma associated with tuberculosis, educating the community about tuberculosis is of paramount importance (Suarez & Ameni, 2013: 1; Podewils, et al., 2013:1).

Health education is a communication activity with an aim of attaining positive health and preventing or decreasing the ill health by influencing the beliefs, attitudes and behaviour of a person or community. Positive health in TB can only be achieved if the persons afflicted with TB are accepted by their communities and experience a satisfactory quality of life equal to that of their peers.

Health education activities have a crucial role to play in tuberculosis control programs and demand equal attention and resources as multi-drug therapy.

According to (Hirpa et al., 2013: 1; Podewils et al., 2013:1) the primary objectives of tuberculosis education interventions that are aimed at the community or grass root level are to inform the community about the following:

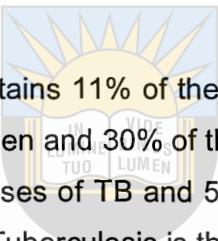
- the availability of free and effective treatment, counter the stigma and promote integration of affected persons and their families; and
- early signs and symptoms of tuberculosis and the treatment available in the area so that new cases are detected by voluntary presentation of suspected cases in the early phases of the diseases

The guidelines for the management of Drug Resistant Tuberculosis recommend that communities members need to be continuously informed about how the disease is spread and how it can be prevented and treated. Furthermore, it is recommended that the potential adverse effects of the medication and the need to adhere to it should be stressed. Successful health education can only be achieved by integrating the socio-cultural beliefs prevalent in the target population with scientific rationale.

Secondly, a multi-disciplinary approach that involves the engagement of healthcare workers, primary care workers, traditional practitioners, community and religious leaders as well as policy makers in all stages of the planning and delivery of health messages will ensure accuracy, better impact, continuity of the programme as well as wider acceptance of the message in communities (Hirpa et al., 2013: 1; Podewils et al., 2013:1).

3.5 TUBERCULOSIS AND HUMAN IMMUNODEFICIENCY VIRUS

HIV/AIDS weakens the immune system of the infected person and thereby increases the chances of activation of the latent tuberculosis infection. HIV positive people have an annual risk of infection with TB of between 5-10% compared to HIV negative individuals who have a similar risk over their life time. It is stated that between a third and two thirds of people infected with HIV will have TB in their lifetime (Yusuf, 2014: 12).

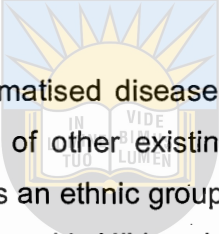


The African continent, which contains 11% of the world's population accounts for almost 27% of the global TB burden and 30% of the global TB-related deaths. It is estimated that 2.4 million new cases of TB and 540 000 TB-related deaths occur annually in Sub-Saharan Africa. Tuberculosis is the leading cause of death among HIV infected people. Tuberculosis is an opportunistic disease among HIV infected people (Yusuf, 2014: 12; Fana et al, 2013: 1; Bekker et al., 2010: 406).

South Africa has the highest number of HIV and AIDS infected people in the World. This is despite the fact that South African population only constitutes 0. 7 percent of the World Population (UNAIDS, 2013). South Africa also has the third highest TB and the second highest number of reported Multi Drug Resistant Tuberculosis cases in the world (NDOH, 2014). SA also has the highest incidence and prevalence of active tuberculosis disease in the world. TB notification figures had increased from 200 case per 100 000 of the population 1994 to 1003 cases per 100 000 of the population in 2012. High HIV and AIDS infections, poor infection control at home and health care centres, poverty and lack of early and correct diagnoses and sufficient treatment are cited as drivers of this misfortune (Stoltz, 2015: 16; Churchyard et al, 2014: 246).

3.6 TUBERCULOSIS AND STIGMA

Stigma can be described as a social problem or phenomenon that is influenced by the manner in which we see or judge and relate to others. Those who are stigmatised are often rejected or not accepted. They are subjected to ill-treatment discrimination, negative attitudes and inhuman practices. They suffer exclusion, rejection, blame and adverse social judgment because of manner in which the health condition that they have is viewed in the community (Chongsuvivatwong et al., 2010: 181; Moller & Erstad, 2007: 107).



Tuberculosis is still a highly stigmatised disease in most parts of the world. TB stigma may also be as a result of other existing client characteristics that are sources of discrimination, such as an ethnic group, and co-infection with HIV. This is so partly due to its association with HIV and AIDS. Currently TB infection is regarded as the marker for HIV and AIDS infection. The degree to which TB is stigmatised varies according to gender, age and different cultures. Some of the literature that is reviewed revealed that in some countries and cultures old people and women suffer more stigma compared to males and young people (Courtwright & Turner, 2010: 35; Moller & Erstad, 2007: 103; Macq, Solis & Martinez, 2006: 347).

So a proper analysis of the various factors that are promoting stigmatisation of those infected with TB need to be conducted in order to come up with proper strategies that can be utilised to minimise the unfavourable effects of TB related stigma. TB related stigma is high and problematic. This is so despite public health awareness and educational interventions which were rolled out in many parts of the world (including South Africa) in which provided formation with regard to the curability and preventability of TB when it is treated in time (Fana et al., 2013: 60).

Stigma is a social problem that is influenced by socialisation and human judgement. It affects our ability to give full acceptance to those whom we believe negative things about. The negative attitudes and beliefs that people hold about TB infected individuals makes it difficult for them to fully accept those infected but rather induce fear of infection and social isolation against them (Moller & Erstad 2007:106; Karim et al., 2007: 140).

There are two types of stigma, enacted and felt stigma. Enacted stigma refers to what people do to unfairly discriminate people infected with TB. Such discrimination results from fear of infection or social prejudice (Karim, 2007: 149). Stigma arises because of fear associated with risk of infection. People reactions, attitudes and stereotypes stigmatise both the disease and person. Such attitudes lead to practices such as social isolation, emotional and in certain instances physical harm or pain to those that are infected. (Karim et al 2007: 139)

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3.6.1 Causes of Stigma and Discrimination Associated With TB

Stigma affects the health seeking behaviour of people who have symptoms that are suggestive of infection with tuberculosis. This is so because stigmatising makes it difficult for people to open up about their health status (Dodor, 2009: 5). Stigma makes people hide their TB or health status out of fear of being discriminated, isolated and rejected by the friends and families (Khan & Dhingra, 2010: 17).

The following are the two pairs of contradictory influences of stigma and discrimination:

- i. feelings of affection and supportive attitudes towards people affected by TB, countered by the fear of transmission of tuberculosis and,

ii. Secondly, the sympathy for people affected by TB considered to be unlucky, contrasted with mistrust of people affected by TB considered to having brought the disease upon themselves

The stigma of TB is powerful because of public fear of infectious diseases. Lack of knowledge about TB fuels fear and many people continue to be uncertain that TB is curable (Miller, 2007: 17). TB stigma makes it more difficult for patients to continue with care, because of their fears of being identified as being infected with TB and as a result they may develop complications and increase the disease spread (Baral et al., 2007: 35).

It has been reported that marginalised groups and the poor have limited access to information sources WHO(2005: 27) and as a result incorrect beliefs about the transmission and curability of TB, which is a reflection of the way society understands the disease, has led to stigmatisation of people with TB. Also, erroneous beliefs that TB is spread through the sharing of eating utensils and sexual behaviour led to social isolation and exclusion of those infected or suspected of having TB infection (Dodor, 2009: 57).

A Study conducted by Auer (2006: 86) among nurse instructors in Manila revealed that the main causes of discrimination and stigmatisation was fear of contracting the disease (58%), association with poverty (40%) and lack of knowledge (34%). Unfounded beliefs about transmission, health staff attitudes and associations with other potential sources of discrimination are also considered to be determinants of stigma and discrimination towards TB and those infected by it (Martinez et al, 2006: 346; Dodor, Neal & Kelly, 2008: 1052; Weinman, et al., 2009: 5) .

3.6.2 The Effects of Tuberculosis Stigma on Tuberculosis Control

TB infected people experience social exclusion in the community and also within their family circle. Literature has revealed that in some cases TB infected people are not allowed to have contact with other family members, they are forced to eat and sleep alone in outside rooms. At community level they are avoided by friends. It is these kinds of behaviours, ill-treatment and discriminatory practices that are affecting TB control program as they serve as a barrier to early health-seeking behaviour in individuals with symptoms suggestive of TB and treatment adherence to those that have been already diagnosed. Stigma makes people want to hide their TB status from community and family or friends, out of fear of being rejected. TB stigma makes it more difficult for patients to continue with care, because of their fears of being labelled as being infected with TB, and as a result they may develop complications and increase the disease spread (Murray et al., 2012: 7; Dodor, 2009: 57; Miller 2007, 57; Promtussananon & Peltzer, 2005: 79; Long et al., 1999: 864).

At community level people infected or suspected of TB infection are expected to queue at certain designated areas when coming for diagnosis and treatment at health centres. The healthcare workers make use of masks, gloves and other protective clothing when dealing Drug Resistant TB infected cases as means for protecting against nosocomial infection. The use of isolation wards by most hospitals when dealing with TB infected people also lead to stigmatisation of TB in the eyes of the community members. The ill-treatment and avoidance of TB infected people by health care workers also sends messages to the community members that TB is a shameful and stigmatised disease. TB suspects avoid seeking help because they fear being identified and stigmatised by the community (Murray et al., 2012: 7; Miller, 2007: 57; Long et al., 1999: 864).

Consequently, by delaying seeking care, these people may develop more serious symptoms and they remain infectious for longer periods and are more likely to transmit the disease to others whom they come into close contact with for longer periods. Stigmatisation induces fear, and this can promote denial, undermine self-esteem and prevent timely diagnosis and effective treatment of TB. Negative attitudes of staff, marked waiting areas and colour- coded cards used in clinics were some of the factors that contributed to delays in seeking a diagnosis and promoted the use of alternative treatments. Stigma and consequent discrimination have a double impact on TB control (Chenyene, 2015: 4; Murray et al., 2012: 6; Miller, 2007: 16).



In a research study that was undertaken in Bangladesh to evaluate the impact of stigma and gender on individuals, different forms of TB related stigma, intensity and impact on patients were discovered. This study revealed that TB related stigma involved the study subjects feeling ashamed, embarrassed, depressed, avoided and rejected (Acha et al., 2007: 406; Vega et al., 2004: 751).

Self-blame and guilt, fear of negative reactions from others, social ostracised, fear of socialising, think less of themselves, low self-esteem, social isolation, self-imposed isolation, concern about disease transmission, fear of contagion to others, efforts to protect others from infectivity, desire to conceal TB disease from others, disease disclosure to protect others. Acha et al., (2007: 140) and Vega et al., (2004: 752) agree that people infected with Drug Resistant Tuberculosis experience both social and emotional pain as a result of stigmatisation by community members, healthcare workers and in certain instances close friends and family members. Literature review also indicates that those infected can also impose TB stigma on themselves. Thus both enacted and felt stigma (Karim et al., 2007: 149).

TB infected people are in most cases subjected to stigmatisation, discrimination and labelling. Also on the micro level negative attitudes and treatment towards TB infected people by community members and health care workers can affect the emotional state and attitude of TB infected people towards their TB treatment (Moller & Erstad, 2007: 25; Kodisang, 2009: 25).

Stigmatisation of TB infected people also impact negatively on the TB control and management program. Individuals delay seeking help when presented with TB symptoms or they are discouraged to present for or to complete treatment or refuse treatment and thus causing the burden of disease and transmission in communities, decreased cure rate and increased mortality from TB (Moller & Erstad, 2007: 25 & Kodisang, 2009: 25).

More health awareness campaigns and educational interventions are needed in order to address the fears and stigma that is related to TB and encourage social support for the infected within the communities.

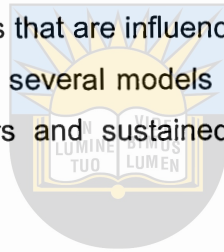
3.7 KNOWLEDGE AND AWARENESS LEVELS, ATTITUDES AND PRACTICES OF NORMAL TUBERCULOSIS AND DRUG RESISTANT TB.

The majority of the literature that was reviewed that dealt directly with community knowledge attitudes and practices of tuberculosis is drawn from the developing countries. On these studies only few studies were found and they were dealing with specific section of the population which is Health Care Workers (HCW) knowledge attitudes and practices towards Drug Resistant Tuberculosis.

So, since there are no studies that directly dealt with knowledge attitudes and practices of community members' regarding Drug Resistant Tuberculosis, the literature for normal tuberculosis is also used for the purpose of this study.

It is in the developing countries that there is high prevalence, incidence of tuberculosis and poor socio-economic challenges that are considered to be fuelling the increasing number of tuberculosis infected people. These studies are considered to be relevant in the sense that the context in which they were undertaken is similar to the conditions found in South Africa.

Human behaviour in health issues is getting more attention than before. Biomedical interventions alone have been proven insufficient to solve health problems. There is a growing need to look at the cultural, social, economic, physiological and political factors that are influencing the spread of the disease. In social and behavioural sciences several models have been developed to explain and enhance health behaviours and sustained behavioural changes, also in different cultural contexts.



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3.7.1 Knowledge and Awareness of Tuberculosis

Tuberculosis had received both national and international attention, but despite so much efforts and exposure, the knowledge of tuberculosis is still not well established in the African Region. According to Nthaita (2009: 81), knowledge about tuberculosis is still continuing to be surrounded by cultural beliefs and superstitions that are hindering the efforts for prevention of the spread of all its forms and promotion of early diagnosis and treatment (health seeking behaviours). The level of knowledge is also influenced by a number of socio-economic and demographic factors.

Most people do not understand that tuberculosis is transmitted by bacteria and health care workers also often fail to give in-depth explanation to patients or the communities about the causes of the disease (Bayouni et al., 2007: 25).

Lack of proper knowledge, lack of awareness on the importance of the signs and symptoms of tuberculosis and negative social or societal attitudes are among the factors that are making those suspected of infection to present themselves late at health care centres or to seek assistance when the disease is at advanced stages of infection (Promtussananon & Peltzer, 2005: 75).

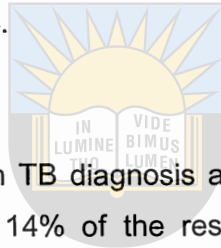
Al –Maniri, Al-Rawas, Al-Ajmi, De Costa, Erikson & Diwan (2008: 177) the research that was done in Oman among Doctors in the private sector had low suspicion and poor knowledge of tuberculosis in the areas of diagnosis, treatment, follow ups and contacts screening than those that are working in the public sector. Gaps were also observed in a study that was conducted among Peruvian healthcare providers to assess their TB knowledge and attitudes (Kiefer et al, 2009: 783).



Knowledge and infection control study conducted in Russia among healthcare workers, revealed knowledge gaps amongst health care workers regarding tuberculosis infection control (Woith, Volchenkov & Larson, 2010: 1491). These results raise concerns about the increased risks of acquisition of nosocomial infection for TB health care workers (Woith et al., 2010: 1491).

Gaps were also observed among frontline TB staffs knowledge in themes relating to treatment and diagnostics of TB in research that was done in Lima Peru. The research also showed that the majority of research respondents agreed that more community involvement was needed to improve TB control and prevention and also that educating communities about TB was an important part of the TB treatment regime (Minnery, et al., 2013: 9).

Another study that was conducted in Jamaica in 2011 to assess knowledge, attitudes and practices on tuberculosis among healthcare workers showed suboptimal performance on TB related knowledge among the survey respondents as less than 40% of the respondents had good knowledge of Tuberculosis (White, 2011: 56). A comparative study to assess knowledge, attitudes and practices (KAP) regarding TB and Revised National Tuberculosis Control Program (RNTCP) among government and private practitioners in district Gwalior, India in 2011 revealed large gaps on knowledge attitudes and practices of TB and Revised National Tuberculosis Control Program among practitioner in both sectors (Dhiraj, et al., 2011: 169).



There was lack of knowledge in TB diagnosis and management among Private practitioners in Pakistan. Only 14% of the research respondent in this study advised sputum microscopy for as a diagnostic method for pulmonary TB diagnosis and more than 40% of study participants indicated that they did not prescribe TB treatment regimen according to TB DOTS category (Ahmed et al, 2009: 30).

In another study which was done in Britain on mechanisms and management of MDR-TB showed a gap in knowledge. The research respondents indicated that recent outbreak of MDR-TB in Britain was as a result of bad clinical practices. This study recommended application or implementation of good clinical practices as means of reducing the impact of MDR-TB in the HIV era.

The knowledge gaps identified in the abovementioned studies are also a huge problem in Africa as witnessed in the following studies or literature.

Loveday, Thomson, Chorpa & Ndlela (2008: 986), revealed that the inadequate knowledge and understanding by clinicians of effective TB diagnosis and treatment actually led to an increase in Drug Resistant Tuberculosis. Poor knowledge levels were also discovered in a study that was conducted to assess knowledge attitude and practices of TB diagnosed patients in Rwanda towards TB infection control (Chinenye, 2015: 16).

Mngesho, Shayo, Makunde, Keto, Mandra & Kamugisha (2007: 63), assessed knowledge, attitudes and practice of TB and its treatment in Mpwapwa District, Central Tanzania and the results showed that poor or low levels of knowledge with regard to the causes and the transmission of tuberculosis and that was likely the cause of the delays in seeking treatment by the respondents. Akpodiete (2015: 664) discovered low or poor knowledge levels among the research participants in a study that was conducted to assess knowledge and attitudes of HCW and patients about MDR-TB in Delta Nigeria.

A cross-sectional study conducted in Nigeria in 2013 showed that there were some knowledge gaps regarding tuberculosis disease management and treatment, especially in infection control (Ukwaja, Alobu, & Onu, 2013: 8). Studies conducted in South Africa among health care workers also revealed that lack of training among them resulted in poor knowledge about Drug Resistant Tuberculosis especially in areas concerning causation, modes of transmission and duration of treatment (Sissolak, Marais, & Mehtar, 2011: 6; Naidoo, Taylor & Jinabhal, 2007: 46).

In South Africa, cross sectional study of 127 PHC facilities showed gaps in knowledge of nurses with regard to TB infection control. The lack of knowledge revealed in this study indicated that the staff was at risk of infection with Drug resistant TB (Engelbrecht & Van Rensburg, 2013: 225).

Knowledge gaps were also reported in a study that was done in KwaZulu-Natal among health care workers as they indicated lack of proper knowledge of the storage of sputum (Loveday et al., 2008: 1045).

Although the majority of the literature discussed above indicated lack of knowledge with regard to tuberculosis among respondents, there were also other studies which were conducted, that indicated good knowledge levels among the respondents. For instance, high tuberculosis knowledge and awareness levels were found in a study that was done to assess community knowledge attitudes and practices about tuberculosis in Itang Special District, Gambella Region, South West of Ethiopia (Bali, Legesse & Medhin, 2013: 6).

Temesgen and Demissie (2011: 5) conducted research in Northwest Ethiopia in 2011 among health professionals to assess their knowledge and practice of tuberculosis infection control. The study showed that 75% of the respondents had good knowledge and that 64% had good practices on tuberculosis infection control. Another study conducted to evaluate awareness, health seeking behaviour and perceived stigma towards tuberculosis among tuberculosis suspects in a rural community in Southwest Ethiopia revealed high tuberculosis knowledge and awareness levels among the respondents (Abebe, et al., 2010: 10).

High tuberculosis knowledge levels were also observed in a study that investigated gender differences in knowledge of tuberculosis and associated health seeking behaviours in a rural area in China (Wang, Fei, Shen & Biaoxu, 2008: 358).

Similar findings were also discovered by Konda, Melo and Gini (2015: 4) in their study where knowledge attitude and practices regarding tuberculosis were assessed among new pulmonary tuberculosis patients in a new urban township in India.

In 2011 in a research undertaken in Maseru Lesotho, to investigate the knowledge, attitudes and practices of healthcare workers about prevention and control of MDR-Tuberculosis it was found that only 47.3% of research respondents had good knowledge about tuberculosis (Adebanjo, 2011: 34).

Another study conducted by Singh (2014: 68) revealed that eighty four percent (84%) of the respondents who were working in the Primary Health Centres within the Nelson Mandela Metropolitan Municipality were knowledgeable regarding to the causes of Drug Resistant Tuberculosis and also the fact that people who do not comply with their normal tuberculosis treatment were at risk of developing Drug Resistant strains of tuberculosis.

A cross sectional knowledge, attitudes and practices study conducted in South Africa in 2014 among health care workers showed that the majority of respondents recognized pulmonary TB as being potentially contagious, and 90.7% recognized airborne spread as the mode of transmission and that only 53.5% considered fever to be a symptom of TB (Bhebhe, Van Rooyen & Steinberg, 2014: 4).

The majority of research respondents in the abovementioned research also understood that sputum examination was a major diagnostic tool; however, only 29 (22.0%) of the study participants were aware of the right place for sputum collection. All the research subjects in this study showed that they were willing to change their habits and practices towards Tuberculosis Infection Prevention and Control methods, with 93.0 % of them reporting favourable attitudes. Only 36.4% of the respondents self-reported incorrect practices. On personal protective measures, 71.3% of the research respondents indicated that they utilised masks, of which 54.4% utilised the N95 respirator (Bhebhe et al, 2014: 5).

3.7.2 Community Attitudes, Beliefs and Perceptions.

Studies that have been conducted in some countries especially in Africa reveal the perceived non biomedical causes of tuberculosis that are rooted in cultural beliefs. Spirits, bewitchment, careless sexual behaviour, God's will, bad luck, stagnant water, have been reported by some studies as cause of tuberculosis. Such beliefs influence care seeking behaviour for Tuberculosis. Traditional healers also claim to be able to cure tuberculosis and people tend to sought care from traditional or faith healers before diagnosis is made and initiation of tuberculosis treatment at a health facility. These deficiencies in knowledge and the wrong perceptions and practices about the cause and cure of tuberculosis have a negative impact on care seeking and treatment adherence.

Community attitudes on or about a disease can either be positive or negative. The studies conducted in New Zealand, Canada, India and Uganda revealed that HCW had positive attitudes towards tuberculosis. Respondents indicated that they enjoyed working with the infected people even when they were not isolated (Miller, 2007: 26; Emili, et al., 2002: 170).

In a study conducted to assess knowledge, attitudes and practices towards TB in Shinile town, Somalia Regional State, Eastern Ethiopia it was discovered that the majority of the research subjects were not discriminating against those infected with TB as they did not show any particular feeling towards them (Tolossa, Medhim & Legesse, 2014: 11).

The research study further illustrated that more than half of the study subjects indicated that TB patients were supported and assisted by the community (Tolossa et al., 2014: 11).

The findings of the abovementioned study are similar to those of the study that was conducted by Konda et al, (2015: 5) but however, in contrast to those of the studies which were conducted in Uganda, Pakistan and Tanzania (Buregyeya, et al., 2011: 940; Mushtaq et al, 2010: 308).

A study that was conducted to assess knowledge, attitude and practices of TB diagnosed patients in Rwanda towards TB infection control also revealed that the majority of the respondents would be afraid, surprised and feel sad, embarrassed and ashamed if they can be diagnosed with TB (Chinenye, 2015: 17). This study also revealed that the majority of the respondents would talk to the doctors and other health care workers about their condition.

In rural Philippines it is commonly believed that Tuberculosis can be contracted by passing a sufferer on the street, sharing food, telephones, beds or other facilities (Yamada, et al., 1999: 54). All of these studies show that knowledge regarding TB is not convincing in some of these poor communities. The attitudes and perceptions towards tuberculosis are generally seen to be negative (Yamada et al., 1999: 54).

According to Bennstam et al., (2004, 308), "the general attitude towards Tuberculosis in Mexico City is stigmatisation". The infected individuals are thought to be dirty and are seen as outcasts or shunned by society.

These prejudices make TB a disease of distance. Contact with tuberculosis victims is avoided creating social and physical distance between people in society.

A research study that was done to investigate knowledge attitudes and practices towards TB in Shinile town, Somalia the respondents stated that they would feel scared, sad and helpless if they found out that they have TB (Tolossa et al, 2014: 10). Konda et al, (2015: 5) and Esmael et al, (2013: 786) also revealed that the respondents stated that they would feel scared, sad and helpless if they discovered that they had TB.

A study conducted in Kudat District (Malaysia) to evaluate people's knowledge about and attitude towards revealed that the respondent believed that tuberculosis was an inherited and or incurable disease that was associated with unclean or undesirable habits or livelihoods (Koay, 2004: 505). The finding of the above study are similar to those of the study by Gibson, Cane, Doering & Harms (2005: 57) in which some communities members believed that tuberculosis was an inherited genetic disease and that the genetic inheritance constituted a mechanism for transmission of tuberculosis.

According to Long, Johansson, Diwan & Winkvist (2001: 124), "different cultures perceive different causes of TB and the disease is categorised in the same group of diseases such as leprosy". There is a belief in some communities, mostly in developing countries, that TB patients remain contagious after completing the course of treatment. Such beliefs results in isolation and abandonment of those that are infected by their families and friends.

In the Kuria community of Kenya, relatives discourage children from having contact with their infected parents. This practice is promoted despite the findings that TB patients desired the support of family members and their communities (Liefoghe, Michiels, Habib, Moran & De Muynck, 1995: 65).

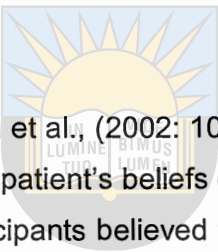
A study conducted among Massai in Tanzania on Tuberculosis knowledge, attitude and practices revealed that the study participants believed that traditional healers could cure tuberculosis (Haasnoot, Boeting, Kuney & Van Roosmalen, 2010: 902). Secondly, this study further revealed that tuberculosis was perceived as a dirty disease, a death sentence and a punishment from God (Haasnoot et al., 2010: 903).

Among the Punjabi community members, there is a widespread belief that pregnancy reactivates TB infection. The belief that TB is given by God as a form of punishment is accepted in many cultures and in Vietnam most families do not allow TB patients to share facilities with other family members (Long et al., 2001: 16). In the Mai Ndome District, Congo, it is common for people to abandon their partners if they are infected with TB. In this society, young people with TB have a very low chance of getting married, even after recovery (Bennstam, Strandmark & Diwan, 2004: 17).

In some studies which were conducted in developing nations it was shown that when TB affects someone, then family and friends no longer see the individual as a person because they only see the TB, the disease within the body (Bennstam et al., 2004: 17). In Burkina Faso and Ethiopia for instance, tuberculosis is highly stigmatised. Studies conducted in these parts of the world revealed that tuberculosis suspects delayed seeking medical help because they first tried other options as they believed that TB was caused by witchcraft, evil eye and Satan (Adebe, et al., 2010: 4; Sanou, Dembele, Theobald & Macq, 2004: 5).

Courtwright & Turner (2010: 9) argue that fear of possible social consequences can affect the willingness of individuals to seek and complete medical attention.

This was confirmed by a study that was conducted among Health Care Workers in South Africa which discovered that Health Care Workers were not supportive of those infected with Tuberculosis but rather subjected them to stigmatisation that resulted in high defaulter rates in all forms of the diseases (Holtz et al., 2006: 651). Secondly, in the study that was conducted to evaluate treatment initiation and adherence in South Africa the research participants felt that patients would stop taking their TB treatment before they get cured because of the fear of what others will say when they see them going to the clinic or healthcare centre to collect their medicine (Cramm, 2010: 34).

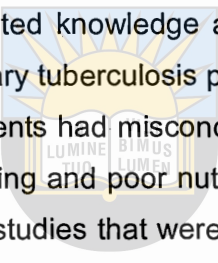


In a study conducted by Edginton et al., (2002: 1075) in a rural district in Limpopo Province, South Africa to explore patient's beliefs effects on tuberculosis control, it was revealed that the study participants believed that tuberculosis was caused by breaking of cultural beliefs or rules which demanded abstinence from sex after the death of a family member or after a woman had an abortion or the death of a family member. Community members in this area attribute TB to spiritual causes such as punishment and sin.

Kelly (1999: 39) suggests that in South Africa many people believe that individuals who are infected with TB are usually co-infected with the deadly HIV/AIDS. Kelly (1999: 39) says that "HIV/AIDS is a stigmatised disease in South Africa and as a result of this TB patients are stigmatised".

A focus group study conducted in the Eastern Cape Province (South Africa) on stigma related to tuberculosis revealed that traditional healers thought that combining Western and Traditional medicine was the most effective method to cure tuberculosis (Moller, Erstad, Zani & Tobi, 2006: 48).

In the community, social beliefs, cultural construction and traditions strongly influence the development of healthy attitudes about behaviours. Beliefs and behaviours come from interpersonal relations, religions, social involvement and interactions. In traditional rural communities of Maharashtra it is a social norm for women to be home bound and men to interact more with the outside world and hence gender differences were observed in that study (Pichamuthu et al, 2014: 83).

Konda et al, (2015: 4), investigated knowledge attitude and practices regarding tuberculosis among new pulmonary tuberculosis patients in a new urban township in India .The majority of respondents had misconceptions about TB being caused by cold air, breathing dust, smoking and poor nutrition. The findings of the above study are similar to those of the studies that were conducted by (Viney, Johnson, Tagaro, Fanai, Linh & Kelly, 2014: 467; Tobin, Ckojie & Isah, 2013: 152; Haasnoot et al, 2012: 904).  *Together in Excellence*

3.7.3 Community Members Practices of Drug Resistant Tuberculosis

Those infected with tuberculosis often endure pain and suffering not only physically but also due to emotional distress that results from stigma imposed on them by society, isolation and rejection by community, friends and family members (Fana et al, 2013: 17; Dodor, 2009: 57).

In a study conducted in the Eastern Cape (South Africa) 95% of the respondents stated that they hide their TB status for fear of what others might say, while 63% delayed going to the clinic for fear of being told that they have HIV infection (Sikwese, 2012: 7; Cram et al., 2010: 4).

A study conducted in Vietnam revealed that social isolation and the negative views that people held about tuberculosis made people hide their symptoms and avoid seeking medical assistance early enough (Sikwese, 2012: 7; Long et al., 2001: 70).

In a study, conducted to evaluate knowledge, attitudes and practices in Itang Special District, Gambella region South Western Ethiopia among community members, it was found that almost 45% of the respondents were consulting traditional healers for treatment of tuberculosis (Bati et al, 2013: 8) Similar findings were also observed from another study conducted in Ethiopia where it was revealed that herbal remedies received from traditional healers were also used to treat tuberculosis. In contrast to the above findings, a study conducted in North part of Ethiopia to assess healthcare seeking behaviour among pulmonary tuberculosis suspects and patients in rural Ethiopia revealed that about half of the respondents consulted medical health providers at health centres and hospitals for treatment of pulmonary tuberculosis (Yimer, Hansen, Yimaldu & Bjune, 2009: 2).

A study to assess knowledge, attitude and practices of TB diagnosed patients in Rwanda towards TB infection control also revealed that although the majority of the respondents would be afraid, surprised and feel sad, embarrassed and ashamed if they could be diagnosed with TB, some of them would not disclose their health status to any one for fear of discrimination (Chinenye, 2015: 17).

Chinenye (2015: 17) further revealed poor TB infection prevention practices among the research respondents. Only 27% of the respondents indicated that they covered their mouth when coughing and 25% admitted to the practice of immunizing family members against TB infection.

3.8 AGE RELATED DIFFERENCES IN COMMUNITY MEMBERS KNOWLEDGE AND AWARENESS LEVELS, ATTITUDES AND PRACTICES OF DRUG RESISTANT TUBERCULOSIS.

A study in Kudat District (Malaysia) to assess knowledge and attitude towards tuberculosis among 205 people aged between 19 and 72 years indicated that 36% of the younger age group (between 19 and 33 years) believed that those suffering from tuberculosis were dirty. The results further indicated that 44% of the research participants believed that they or their families were never going to be infected with tuberculosis, and that 51% was not sure about their risk. There was a thought that patients who were infected with tuberculosis should not mix socially in order to prevent transmission to others (Kaoy, 2004: 505).

Lack or poor and insufficient knowledge and awareness of TB was statistically or significantly associated or related with young people (youth), the educated (low literacy levels) and low income (Konda et al, 2015: 5). The research respondents who had secondary education had significantly higher scores on TB knowledge and that showed that education is an importance determinant of general knowledge. Similar findings were observed in studies that were conducted in Croatia, Ethiopia, Nigeria and Pakistan (Savicevic et al, 2008: 784; Esmael, Ali, Agonafir, Desale, Yaregal, & Desta, 2013: 787; Tobi et al, 2013: 143).

A study conducted in Limpopo Province (South Africa) to explore the perceptions on tuberculosis revealed that teenagers and old people were less knowledgeable and that they also had misconceptions about tuberculosis than youth (Promtussananon & Peltzer, 2005: 79). Old people who are infected by tuberculosis are more stigmatised than younger people (Miller, 2007: 16; Moller et al., 2006: 66).

A study conducted to evaluate knowledge, attitude and practice on Tuberculosis among community in Kajang, Selangor revealed no statistical significant differences between tuberculosis knowledge levels, attitudes and practices of the respondents and age (Noremillia & Rahman: 2015: 64).

In another study that was conducted in Maseru Lesotho, in 2011 on knowledge attitudes and practices of healthcare workers about prevention and control of MDR-TB no age related difference with regard to knowledge attitudes and practices of the respondents were observed (Adebanjo, 2011: 39). Furthermore, a study to assess knowledge and attitudes towards tuberculosis among people living in Kudat District in Sabah no significant association was found between the general knowledge and attitude scores towards tuberculosis; with either age or educational levels of participants were observed (Kaoy, 2004: 2).



According to Chinenye (2015: 2), children below five years of age and the old people above 65 years are vulnerable and at risk of tuberculosis infection. The adults are at high risk of TB because their immune systems become weak as they get older. Moreover, they are likely to live in nursing homes, where mini-epidemics of TB can occur. However, 30% of TB cases that are found among the 15 to 49 year-old adults in Sub-Saharan Africa are related to HIV and a continuous 10% per year increase in TB is projected in countries with high number of HIV infected people. Tuberculosis infection rates are high among 20 to 49 year-old adults (Lawn et al., 2006: 1046).

3.9 GENDER RELATED DIFFERENCES IN COMMUNITY MEMBERS KNOWLEDGE LEVELS, ATTITUDES, BELIEFS AND PRACTICES ON DRUG RESISTANT TUBERCULOSIS.

Literature review is inconclusive with regard to whether there are gender related differences in knowledge and awareness levels, attitudes and perceptions towards tuberculosis among females and males around the world.

Studies conducted in Kenya, Phillipines and Bombay revealed that females especially those who were from the rural areas were less knowledgeable about Tuberculosis than males. They were generally unaware of the symptoms of tuberculosis such as blood in the sputum and associated tuberculosis with drug addiction and gems that are found in dirty drinking water (Christian, Sarol & Tanner, 2000: 651; Liefoghe et al, 1997: 815; Dinish, George & Chacko, 1997: 79).

In a study that was conducted among rural population in Nanded District Maharashtra State India to assess knowledge and attitudes about tuberculosis, it was revealed that men had greater knowledge and better attitudes about tuberculosis (Pichamuthu, Putthawar & Akinola, 2014: 83). Men have a greater public involvement than female and hence greater exposure to information and that leads to more awareness to tuberculosis than women (WHO, 2002).

A study conducted in Kenya revealed that rural women had little knowledge about means of protecting themselves from tuberculosis infection compared to rural men who indicated that completion of tuberculosis treatment helped in the prevention of the spread of tuberculosis to other family and community members (Agboatwalla, 2010: 60; Liefoghe & Baliddawa, 1997: 818).

However, the findings of the above study are in contrast with the findings of the study that was conducted by Gibson et al. (2005) which revealed that females were more knowledgeable about tuberculosis compared to males.

This study further revealed that women were more compliant to tuberculosis treatment and knowledgeable about the disease than men, and that on average more females had a tendency to visit health care institutions than males. This tendency was possibly attributed to family planning and pregnancy related healthcare issues. It was therefore suggested that because of a higher frequency of visiting health care institutions by females they had a higher chance of receiving additional health care information on diseases such as HIV/AIDS, STI and Tuberculosis (Bennstam et al., 2004: 25).

Gender differences with regard to stigma and its social consequences may result in differential health seeking behaviour and access to care between males and females (WHO, 2005: 28). Women considered tuberculosis to be a fatal disease and expressed emotional sentiments of distress, anxiety and sadness when they find out that they are infected. However, most men regard Tuberculosis as a dangerous but curable illness and beside anxiety, their reaction was to start treatment when diagnosed with the disease (Agboatwalla, 2010: 60).

In a study that was conducted among rural population in Nanded District Maharashtra State India to assess knowledge and attitudes about tuberculosis, it was revealed that women had poor knowledge and attitudes about tuberculosis (Pichamuthu et al., 2014: 83). These findings were similar to those of a study that was conducted to assess awareness regarding tuberculosis in a rural population in Dehli India, by Malhotra, Taneja, Dhingra, Rajpal and Mehra (2002: 65) that discovered low knowledge and awareness levels among women compared to men.

Females were also of the opinion that, tuberculosis was contagious and that sharing with a tuberculosis infected persons was the major reason for the spread of the disease, whereas more males attributed the spread of tuberculosis by droplet infection than females (Agboatwalla, 2010: 60; Dinish et al, 1997: 78).

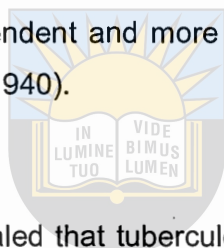
Poor or lack of knowledge and the costs associated with taking treatment were indicated as the main barriers to treatment compliance among men (poor patient compliance), while sensitivity to interaction with health staff and stigma in society (poor health staff and system compliance) were cited to be the main barriers among women.

A study conducted in Limpopo Province, South Africa revealed that the majority of males continued to live their normal lives with their families after diagnosis whilst the majority of the female continued to isolate themselves to protect the other family members from the disease even after full treatment (Edginton et al., 2002: 1080). The main difference between the male and female respondents was that the males seemed to be more concerned with the economic implications of the disease, whilst the female were more concerned with the social implications of the disease. The economic concerns relating to the disease that affected the male respondents in the study included absenteeism from work and the possibility of losing employment opportunities. The study further found that the female respondents were more concerned with the social implications that were associated with the tuberculosis (i.e., social interaction).

On the other hand, a similar study conducted in Limpopo Province (South Africa) to explore the knowledge and perceptions on tuberculosis revealed that males were less knowledgeable and that they had misconceptions about tuberculosis than females (Promtussananon & Peltzer, 2005: 79).

Other studies show that females experience more social problems as a result of the disease than males.

According to Baral, Karki & Newell, (2007: 8) unmarried women often find it difficult to get married, due to discrimination by prospective husbands and in-laws, whereas those who are already married may be divorced because of tuberculosis or if the history of tuberculosis infection is revealed. Secondly, in a study that was conducted in Vietnam it was revealed that unmarried women that were infected with tuberculosis were more likely to have difficulty in finding a marriage partner than unmarried men with the same disease. This study further revealed that tuberculosis is perceived to be an excuse for divorce by couples already experiencing marital problems in Vietnam. Men were also perceived as being more independent and more likely to accept divorce than the females (Gibson et al., 2005: 940).



Further studies in Vietnam revealed that tuberculosis affected both males and females socially and economically but the perceptions held by males generally varied from those held by females. This study further found that insufficient knowledge and individual cost during treatment were the main obstacles to compliance among men while sensitivity to interaction with health staff, stigma, and society were the main obstacles among women (Long et al., 2001: 68).

TB prevalence is high and TB progression rates among women in their reproductive years (15 – 40 years) are high compared to men of the same age. The changes associated with reproduction among females and the barriers in gaining access to diagnostic facilities, investigation of the disease and completion of treatment are considered to be the cause (Agboatwalla, 2010: 6). Additional burden of house work, child care and possibly employment allows them little time to access healthcare services for themselves (Agboatwalla, 2010: 6).

In poor developing nations information or statistics show that more men than are diagnosed with tuberculosis die from the disease than women. This result may possibly be due to working conditions, perceptions and attitudes held by males regarding the disease. Males are believed to be less willing and slower at changing their health behaviours. The poor working and living conditions that males are generally exposed to in developing nations may also account for their higher infection rates of Tuberculosis (Gibson et al., 2005: 938).

Gender differences with regard to stigma and its social consequences may result in differential health seeking behaviour and access to care between males and females (WHO, 2005: 28). Miller (2007: 16) states that females are more stigmatised than males. A focus group study conducted in the Eastern Cape (South Africa) revealed that women are more likely than men to shoulder the blame for illness in the household. Women easily present themselves for testing when people in the household are infected with tuberculosis, and they also resort to cleansing rituals in order to free themselves or members of the household from the cultural manifestation of tuberculosis (Moller et al., 2006: 66). There are more men than are infected with TB in the world than women. Men are also more likely to die of the disease. The observed association relationship of TB with males has been recorded in most countries in Africa, especially where the notification rates are higher for men than for women (Holmes, Hausler & Nunn, 1998: 96).

A study conducted to evaluate knowledge, attitude and practice on Tuberculosis among community in Kajang, Selangor revealed no statistical significance differences between tuberculosis knowledge levels, attitudes and practices of the respondents and gender (Noremillia & Rahman: 2015: 64) . No gender related differences were reported also in a study that was conducted to establish factors associated with unsuccessful treatment outcome of pulmonary tuberculosis in Kota Bharu (Nik Nor, Mohd, Wan, Sharina & Nik, 2011: 13).

In a study to establish knowledge and attitudes towards tuberculosis among people living in Kudat District in Sabah also no significant relationship or association was observed between the general knowledge and attitude scores towards tuberculosis with neither gender nor educational levels of the research subjects (Kaoy, 2004: 2).

Although the above mentioned studies showed no gender related differences, a study that was conducted among high school learners to establish whether relationship existed between TB knowledge and intention to seek healthcare, showed statistical significance between gender and knowledge of TB even though no significant association was observed between gender and intention to seek TB care (Naidoo & Taylor, 2013: 7).

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3.10 CONCLUSION
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In this chapter, the researcher began by providing a general overview about TB and then continued by reviewing the literature pertinent to the TB and Drug Resistant Tuberculosis, knowledge and awareness levels, attitudes and practices of various communities. This was done in order to gain a better understanding of whether people know the extent of the (DR-TB) problem, how it is transmitted and spread, its signs and symptoms, prevention and diagnosis methods and the available treatment choices or options. The literature review was inconclusive or mixed. Some studies have shown knowledge gaps, positive attitudes and gender and age related differences in knowledge and awareness levels, attitudes and practices; while others have found the opposite. The next chapter discusses the research methodology that was used in conducting this study.

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 INTRODUCTION

Research methodology is a step by step process that the researcher follows when conducting research. It involves collection, presentation and interpretation of data. Research methodology assist the investigators and the readers to know the procedure or systems that were used in undertaking of the research study and gives it scientific merit (Burns & Grove, 2001: 26). In this chapter, the procedures and strategies that are used in conducting this study are discussed. They are organised under the following sections: the research area, study population, research questions and objectives, research design, variables, selection criteria, sampling techniques and sample size determination, data collection techniques, pre-test tool, validity and reliability, data management, analysis and its interpretation and ethical consideration.

4.2 DETERMINATION OF THE RESEARCH QUESTION AND AIM

The research question is formulated from a general research problem and answered by using either a qualitative or quantitative approach. A research problem is defined as an area where there is a gap in terms of knowledge or a phenomenon that needs to be dealt with or solved (Brink et al., 2006: 59). People infected or suspected of TB infection usually present themselves late at healthcare centres or hospitals and clinics to look for medical assistance because of poor or insufficient knowledge, lack of awareness about the significance of the signs and symptoms of the disease, and negative attitude and stigma towards those infected by community and health care workers (Koay, 2004: 502).

Despite efforts to strengthen TB control in the Eastern Cape, the incidence of Drug Resistant TB has dramatically increased over the past ten years (Eastern Cape DOH Annual performance plan, 2011-2012: 86). It is noteworthy that the incidence, particularly in Nelson Mandela Bay Municipality (NMBM), continues to be among the highest in the world (WHO, 2015). In light of the fact that Drug Resistant TB infections are increasing in the NMBM, the following research question was asked: What are the knowledge and awareness levels, attitudes and practices of Port Elizabeth community members on Drug Resistant Tuberculosis?

4.3 RESEARCH DESIGN

A research design enables the researcher to indicate what they wish to achieve and the procedures that will be utilised to achieve those objectives (Babbie, 2013: 124). Burns and Grove (2009:696) define research design as a plan that can assist in ensuring that there is maximum control over factors that could affect or hinder the validity of the research findings (Joubert & Ehrlich, 2007: 77). The purpose of the design is to maximize the possibility of obtaining a valid answer to the research question. It is conceived and implemented with the purpose of bringing empirical evidence to a research problem (Burns & Grove, 2006: 270).

A quantitative, descriptive and cross-sectional design was adopted in this study in order to assess gaps in knowledge and awareness levels, attitudes and practices of Drug Resistant Tuberculosis among the respondents by using a four point Likert scale structured questionnaire as a research instrument.

A quantitative research design is a design that gives an appropriate description of the research phenomenon (Brink, Van Der Walt & Van Rensburg, 2012: 112).

Descriptive research give the researcher a chance to get a clear and correct information or picture about the characteristics of a particular individual, event or group in the actual situation. In this study, the population group was residents of Port Elizabeth who were above 18 years on their last birthday.

4.3.1 Quantitative Research

According to Burns and Grove (2009: 717) quantitative research is the “formal, objective, systematic process in which numerical data is used to obtain information about the world”. Furthermore, this method is used to describe variables, examine relationships among variables and determine cause-effect interactions between variables. The researcher also controls the study by imposing conditions on the research situation so that biases are minimized. Quantitative researchers are more concerned about issues of design, measurement and sampling because their deductive approach emphasizes detailed planning prior to data collection and analysis (Brink, Van Der Walt & Van Ransburg, 2006: 11).

In this study, the researcher wanted to establish or assess knowledge levels attitudes and practices among PE community members on Drug Resistant Tuberculosis. Secondly, the researcher wanted to establish if there were any age and gender related differences in knowledge levels, attitudes and practices of Port Elizabeth community members on Drug Resistant Tuberculosis. In order to achieve the above objectives the researcher used a quantitative research design. This method enabled the researcher to make use of numerical data and statistical analysis to make meaning of the world around him, describe variables and examine relationships. This method was used to measure and quantify the results. (Cottrell & McKenzie, 2012: 7).

In the context of this study, the use of quantitative research methodology proved to be reliable. This research methodology enabled the researcher to assess knowledge and awareness levels, attitudes and practices about Drug Resistant Tuberculosis among Port Elizabeth community members. Secondly, it allowed the researcher to establish whether there is any age and gender related differences in DR-TB knowledge and awareness levels, attitudes and practices among PE community members. It also assisted in establishing the effect of the socio-demographic details in Drug Resistant Tuberculosis knowledge and awareness levels, attitudes and practices among PE community members.



4.3.2 Descriptive Research

A study that is not structured formally as an analytical or experimental study, implying that it does not aim specifically to test a hypothesis; it is called a descriptive study (Polit & Beck, 2008: 751). According to Polit & Beck (2008: 752), a descriptive research is research study that is mainly aimed at giving a correct picture of the area or the subject under investigation. The research subjects are investigated as they exist in their original places, for example, in their homes, hospital or at work. In descriptive studies, researcher's aim is to give a correct account of events as they unfold or happen in their natural environment (Stommel & Wills, 2004: 437).

Descriptive studies provide valuable baseline information for future research. In this study, the researcher evaluated knowledge and awareness levels, attitudes and practices on Drug Resistant Tuberculosis of Port Elizabeth community members. This study design was suitable for this study as there were no other studies that were undertaken in Port Elizabeth to assess knowledge, attitudes and practices of community members on Drug Resistant Tuberculosis.

In this study, through the use of structured questionnaires, information regarding knowledge and awareness levels, attitudes and practices of Drug Resistant Tuberculosis among Port Elizabeth residents was discovered which can be utilised by health program planners for rolling out further targeted health interventions.

4.3.3 Cross-Sectional Research

Cross-sectional study design is defined as a study design that involves the collection at a given point in time from either the whole population or sample (Barbie, 2011: 82; Holland & Rees, 2010: 119). It is stated that the collection of information from the different respondents is carried out at a specific point in time (Brink, Van Der Walt & Van Rensburg, 2007: 10).



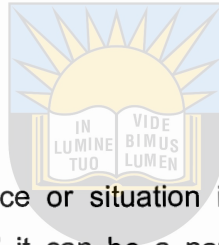
It is further stated that cross-sectional studies allow observation of the population at one point in time. Somekh & Lewin (2005:216), point out that a cross-sectional study involves the collection of quantitative data on at least two variables at one point in time and from a number of cases. Cross-sectional studies provide a prevalent rate at a particular point in time (referred to as point prevalence) or over a period of time (referred to as period prevalence).

In this study, the researcher utilised across sectional research because the information that was collected at a one specific point in time from the research subjects (Port Elizabeth community members). Therefore, the data that was collected from the sample of Port Elizabeth community members was considered to be representative of what was happening at that specific point in time.

4.4 RESEARCH METHODOLOGY

Research methodology is defined as the ways of collecting and processing data, within the framework of the research process and the kind of tools and procedures to be used (Mouton, 2011: 65). It also focuses on the individual steps in the research process and the procedures to be employed. Research methodology has two primary functions, which include control of the acquisition of data and, to corral the data after their acquisition and extraction of meanings from it.

4.4.1 Research Setting



The research setting is the place or situation in which the research study is undertaken or taking place, and it can be a natural or controlled environment. Natural settings are real life study environments without any changes made for the purpose of the study (Burns et al, 2012: 373). Research setting refers to the physical location and conditions in which the data collection process takes place (Polit & Beck, 2008: 766).

This study was conducted in the Nelson Mandela Bay Municipality (NMBM) Eastern Cape Province of South Africa. The Nelson Mandela Bay Municipality is the third largest and most dense populated district in the Eastern Cape Province. In the Nelson Mandela Bay Municipality there were 42 Primary Health Care facilities which rendered Tuberculosis services and almost 3 million patients were receiving such services (Health Systems Trust, 2013: 224).

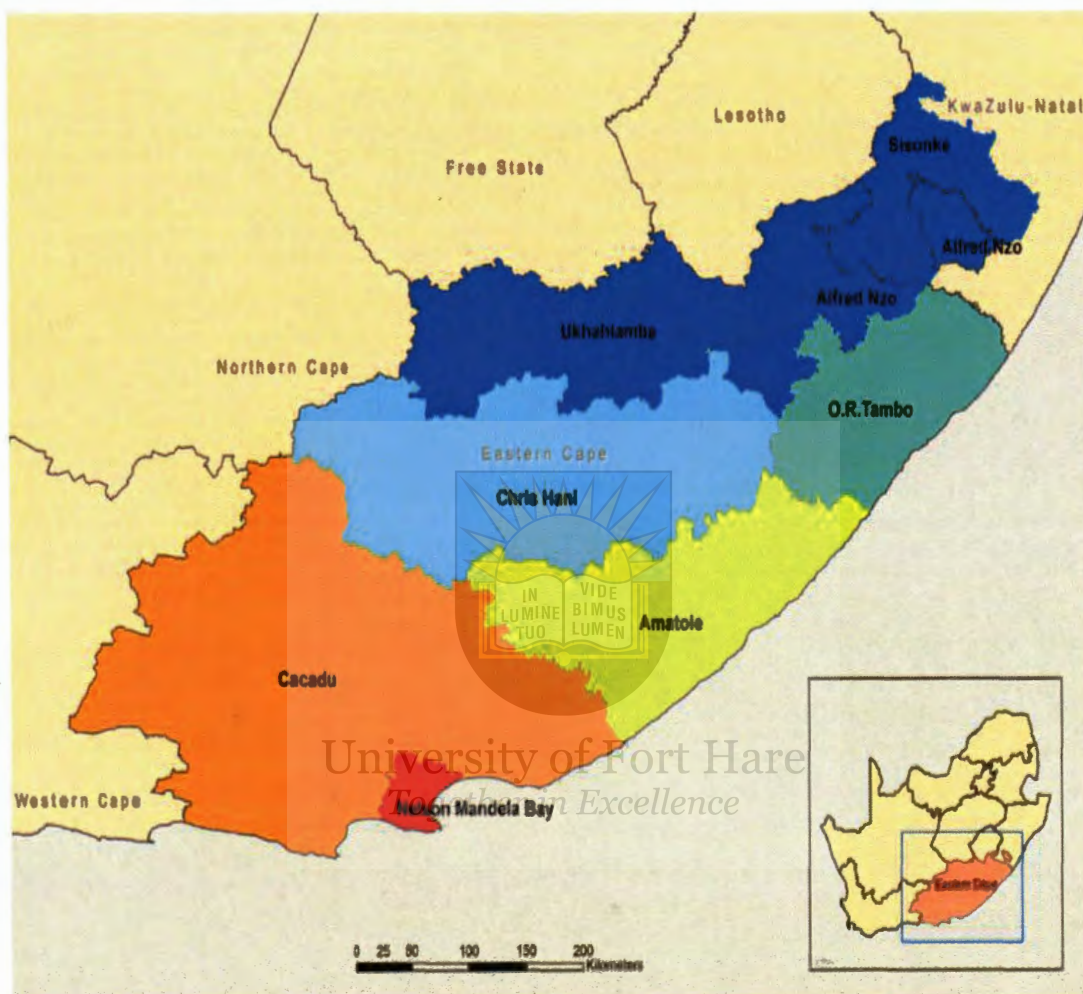


Figure 5: Eastern Cape District Municipalities

Klopper et al., (2013: 453).

NMBM has a population of about 1, 152, 115 and Port Elizabeth is part of this municipality together with Uitenhage and Despatch. The unemployment rate is 37%. Female headed households are at about 41% and it is in Port Elizabeth Kwa-Zakhele where 98% of 580 households used bucket system and that 81% of them used paraffin as their source of energy (Statistics SA, 2013).

4.4.1.1 Study Population

The population is the entire set of individuals that have some similar features. A population is also known as target population (Polit & Beck, 2012a: 274). A target population is also defined as an “aggregate of the cases about which the researcher would like to generalize about” (Trochim, 2006: 32). The accessible population consist of the individuals who meet the inclusion criteria and are available for a particular study (Polit & Beck, 2012a: 274). Somekh & Lewin (2005: 217) refer to a population as a “complete set of units being studied when time, costs and accessibility often prohibit the collection of data from every member or about every item”.



The accessible population was all the residents who met the selection criteria, consented and willing to participate in the study. The research participants were both male and female residents of Port Elizabeth who were 18 years old and above on their last birthday. They should have been staying in Port Elizabeth areas for more than year.

4.4.1.2 Sample and Sampling Methodologies

A sample is a subset of a population selected to participate in a study (Polit & Beck 2006:260). According to Somekh & Lewin (2005: 218), a sample is studied in order to understand the population from which it is drawn. A sample should have the characteristics similar to that of the population under study to allow for generalizability of the results to the population. Nelson Mandela Bay Municipality is the third largest and most dense populated district in the Eastern Cape Province and has a population of about 1 152 115 million. The sample for this study was selected from the residents of Port Elizabeth in the Nelson Mandela Bay Municipality, Eastern Cape.

In this municipality, there is mixture of socio-demographic characteristics such as those who are educated, living in formal settlement, working in well-paying jobs in the formal sector to mention but a few. Some of the residents are living in poverty, low literacy rates, living in informal settlements, and work in the informal sector while others are unemployed and have social, disability and child support grants as their main source of income.

The researcher opted to conduct this study in this area because in 2011 this municipality was declared to be in crisis with TB. Secondly, the institution where Drug Resistant Tuberculosis infected people used their illness to scare off security guards to spent festive season with their families was in this municipality. Thirdly, the move from centralised to decentralised and de-institutionalised Drug Resistant Tuberculosis management and the continuing spread of TB despite efforts to control and prevent its spread in the municipality.

The advantages of selecting a sample is that it is less costly and saves time than when collecting data from the whole population. Sampling enables collection of information or data within a limited time, it saves money and effort and can be utilized to produce better-quality research information (De Vos et al, 2002: 199). According to De Vos et al., (2002: 199) there are two types of sampling, namely the probability sampling and non-probability sampling.

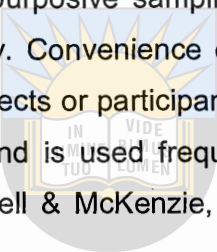
Probability Sampling

A probability sample is one that has been selected using random selection so that each unit in the population has a known chance of being selected (Bryman 2001: 85). Stratified random sampling, simple random sampling, systematic sampling, cluster sampling, and panel sampling are the types of probability sampling methods (De Vos et al., 2002: 203).

Non-probability Sampling

In non-probability sampling, the probability that a given element will be included in a study cannot be specified and in certain instances, certain elements may not have a chance of being selected at all (Polit & Beck, 2012a: 288; Cottrell & McKenzie, 2011: 132).

In this study the researcher used non-probability sampling. A combination of convenience or accidental and purposive sampling method was used to select eligible participants for this study. Convenience or accidental sampling involves the selection of the research subjects or participants on the basis of proximity and accessibility to the researcher and is used frequently to save time and money (Polit & Beck, 2012a: 288; Cottrell & McKenzie, 2011: 132; Cohen et al, 2000: 102).

The logo of the University of Fort Hare is a circular emblem. It features a central shield with a sunburst at the top. Inside the shield, there is a book and the Latin motto 'IN OMNIBUS VIDE LUMEN'. The shield is surrounded by a circular border containing the university's name in both English and Xhosa. Below the emblem, the text 'University of Fort Hare' is written in a serif font, and 'Together in Excellence' is written in a smaller, italicized serif font below it.
University of Fort Hare
Together in Excellence

The use of the abovementioned types of sampling allowed the researcher to select the research respondents based on how easy it was for the researcher to have access to them. This sampling method is not time consuming, its cost less and there is no need to have a list of the population (Cottrell & McKenzie, 2011: 132).

So for the purpose of this study, the researcher collected information from anyone whom he could easily access, met the inclusion criteria and gave consent to participate in the study at that specific given time. Secondly the researcher selected the sample on the basis of knowledge of the population, the usefulness of the units, its elements, and the purpose of the study. Lastly the researcher selected a sample from the residents of Port Elizabeth which was representative of the demographics the population (gender, race, age).

These methods were considered to be most suitable for the purpose of this study, in the sense that Nelson Mandela Bay Municipality is the third largest and most dense populated district in the Eastern Cape Province and has a population of about 1 152 115 million. The researcher also did not have a full list of the population. The research had time and financial constraints and the research or study project was time bound.

4.4.1.3 Selection Criteria

Inclusion criteria

The literature has revealed that TB and HIV and AIDS affect mostly the economically active population in Sub Saharan Africa as it occurs among 15-49 year olds. The researcher included the residents of Port Elizabeth who gave consent to participate in this study and who had stayed for a year and above in Port Elizabeth. Secondly, community members aged 18 years and above on their last birthdays from Port Elizabeth were included in this study.

Exclusion criteria

In this study, the researcher excluded participants if they were below the age of 18 on their last birthday. Secondly, community members who had previously been diagnosed with tuberculosis and those with severe health problems and cognitive impairments and all those who have resided for less than a year in Port Elizabeth were excluded from the study. Respondents who were not willing to give consent to the study were also excluded.

4.4.1.4 Sample Size Determination

Sample size refers to the number of elements that are included in the sample. Having a representative sample in a research study increases the generalizability of the findings of the study (Polit & Beck, 2012a: 267).

Burns et al (2012: 367) states that there are no concrete rules regarding the composition of a sample and its size. However, Polit & Beck (2006: 267) state that sample size is a major issue in conducting and evaluating quantitative research.

According to Welman & Kruger (2009: 67), when determining the size of the sample (n), the size of the population (N) should be factored in and this means that:

i. The smaller the total population, the relatively the larger the sample to ensure satisfactory results. An increase in sample size in proportion to the increase in population from which the sample is drawn, result in a decrease in the standard of error. This means that it becomes relatively unnecessary to draw a sample size that is bigger than 500 (because it has little effect in the reduction of standard error).

ii. Size of the sample does not depends on the population only but also on the variance of the variables, so the larger the variance of the variable, the larger the sample required.

iii. If each stratum of a highly heterogeneous population is relatively homogeneous, a relatively smaller stratified sample than that required for a random sample, may be sufficient. If the strata differ in size and in heterogeneity, the sizes of the respective samples should be adjusted accordingly- the smaller the stratum and or the more heterogeneous it is, the relatively larger the sample to be drawn from it.

iv. Lastly, when determining the sample size, it should be kept in mind that the number of unit of analysis from which usable data will be obtained may be smaller than the one that was originally drawn. This may be so due to refusal to participate in the study, inability to trace respondents or others may not provide all the necessary information.

In this study the sample size was calculated using the formula by Chinenye (2015: 6) for determining sample sizes when the population is greater than 10 000.

$$n = \frac{Z^2 pq D}{d^2}$$

d^2

Where n = Minimum required sample size (when the target population was more than 10 000).

Z = Standard normal deviation (1.96) which is corresponding to 95% confidence level.

P = proportion of target population estimated to have required characteristics being measured (no reasonable estimate a default of 50% or 0.5 is used).

$$q = 1 - p = 0.5$$

$$D = \text{design effect} = 1$$

Then

$$n = \frac{(1.96)^2 (0.5) (0.5) (1)}{(0.05)^2} = 384 \text{ respondents}$$

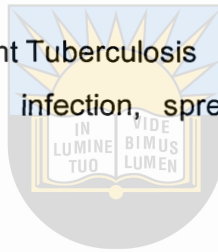
A 10% (38) non-response rate (refusal and incomplete) was factored in on the 384 to make the total sample for the study 422. In this study the sample included Port Elizabeth community members who were accidentally or conveniently and purposively selected to participate in the study in order to measure their knowledge and awareness levels, attitudes and practices of Drug Resistant Tuberculosis.

4.4.2 Study Variables

4.4.2.1 Dependent Variables

The dependent variable in this study was Port Elizabeth community member's knowledge and awareness levels, attitudes and practices of Drug Resistant Tuberculosis.

- Knowledge on causes, transmission, prevention, treatment and diagnosis of Drug Resistant Tuberculosis
- Attitudes towards Drug Resistant Tuberculosis
- Preventative practices of the infection, spread and transmission of Drug Resistant Tuberculosis



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4.4.2.2 Independent Variables

The independent variables are Port Elizabeth community member's socio-demographic, socio-economic and enabling factors.

- Socio-demographic variables such as: age, gender, race, and marital status.
- Socio-economic variables which are: employment status, family income, number of family members, type of dwelling and educational level.
- The enabling factors such as: TV, radio, internet, newspapers, friends, family, teachers and healthcare workers.

4.4.3 Data Collection

Data collection is a process of selecting respondents and collecting the information from the research respondents (Burns et al, 2012: 523). In this research study, empirical data was collected using a structured questionnaire that was either completed by the research assistant or the research subject.

On completion of the questionnaires the research assistants collected the questionnaires from the respondents. On the research instrument demographic information from the respondents as well as information regarding the respondent's knowledge and awareness levels, attitudes and practices of Drug Resistant Tuberculosis was collected. Respondents fatigue was avoided, as the time that was taken to complete the questionnaire was short and ranged between 20 and 30 minutes. The researcher conducted the study from the 01st to the 31st October 2016.

4.4.3.1 Data Collection Instrument

According to Polit & Beck (2012a: 328), quantitative studies get information by measuring the variables. Measurement requires the allocation of numbers to represent attributes that are present in the respondents. For the purpose of this study, the information that was required was collected from the research participants using a four point Likert scale structured questionnaire. The data collection instrument consisted of questions that required the research respondents to tick in an appropriate box to indicate if they agree, strongly agree, disagree and strongly disagree with the statement written on the form. The research instrument was divided into four sections, namely section A, B C and D.

Section A of the research instrument dealt with the socio-demographic or biographical details of the respondents which pertained to age, gender, race, educational status, marital status, employments status, family income, type of dwelling, number of occupants in the household and the main source of TB information. Section B of the research instrument dealt with knowledge and awareness levels of Drug Resistant Tuberculosis. Section C covered attitudes while Section D dealt with community practices.

According to Christensen (2007: 75), structured questionnaires are instruments that are utilised to collect data that is beyond the physical reach of the observer. They are economical, and they can enable the researcher to structure them in such a manner that they met a specific purpose and can also ensure anonymity. Structured questionnaires can also allow the researcher to solicit information on attitudes and beliefs.

Despite taking a great deal of time to develop a well-structured questionnaire, the researcher chose to develop a structured questionnaire, because compared to interviews, questionnaires are less costly and require less time to administer. Questionnaires also offered the respondents anonymity. However, the disadvantages of the questionnaires are poor response rate and possibility of misunderstanding the questions. The reliability and validity of the data collected is affected by the way in which the research instrument is structured.

In this study, the abovementioned cons were managed by ensuring that the research assistants personally issued and collected the data collection instruments. This further ensured that the research assistants were available to simplify any misunderstood question as they were present at the time of issuing and completion of the questionnaires. The research instrument was designed using the relevant literature that was reviewed. In order to ensure increased reliability and validity of the data collected the researcher made use of the following:

- The aims, objective and the purpose of the study were clearly stated
- A pilot study was done and it resulted in minor adjustments to the questionnaire
- Close ended questions were used in the questionnaire
- Unclear and unambiguous language was avoided
- The research instrument was properly and correctly designed

Layout of the research instrument or questionnaire

The research questions on the research instrument were written in English. In order to ensure consistency the researcher asked the same questions to all the research respondents. The questionnaire was divided into four sections.

Table 1: Sections of the questionnaire

SECTIONS	ASPECT COVERED
Section A	Biographical details of the respondents
Section B	Community knowledge and awareness of DR-TB
Section C	Community stigma and attitudes of DR-TB
Section D	Community practices of DR-TB

Research instrument (2016)

Refinement of the questionnaire

The data was collected using a four point Likert scale questionnaire. This questionnaire consisted of close-ended questions in which respondents were asked to tick to indicate whether they strongly agree, agree, strongly disagree and disagree with or about the statement. The researcher with the assistance from the research supervisor used the literature reviewed and information extracted from WHO, Knowledge, attitudes, Beliefs and Practices scales and TB and HIV and AIDS Stigma scale to construct the questionnaires. The use of the four point Likert scale allowed the respondents a chance to apply their minds and be thoughtful in choosing their responses. It also eliminated possibility of misinterpretation of the midpoint.

Competency indicator

The research instrument was submitted to four field experts in order to validate the minimum required scores that would be required to indicate good knowledge level. Two out of the four field experts work at Drug Resistant Tuberculosis Hospitals, one is a Lecturer at a nursing college and the other one the Research Supervisor. A competency score was set at 70% as it was believed that it was the most appropriate given the fact that educational campaigns were carried out in South Africa in order to raise awareness on TB and HIV and AIDS. The above efforts were carried out in order to enhance the validity and reliability of the questionnaire and this study.



4.4.3.2 Pilot study or Pre-test

A pilot study or pre-test is a trial administration of a newly developed instrument to identify problems or assess time requirements. The purpose of the pre-test is not to answer the research question but to identify and prevent problems that may occur during the parent study and also to observe if whether the instrument is well understood (Polit & Beck, 2012a: 738).

The researcher pre-tested the research instrument prior to the study with ten community members. Four of these respondents were peer educators and volunteers at a TB clinic. Recommendations were made with regard to the length and difficulty of the research instrument and grammatical aspects. The research instrument was adjusted in line with the recommendations from the pre-test in order to achieve better clarity.

4.4.4 Data Analysis

The data collected was analysed using MS Excel 2010 version and SPSS software due to its flexibility and excellent capacity for labelling variables. The emphasis was not for computation but to help with interpretation. Data was analysed by using a bivariate descriptive statistical method. The data collected from the respondents was statistically analysed and presented using tables, pie charts and other statistical tools such as Chi-square test. The bivariate descriptive method helps to understand if two variables are in relationship. In this study, the researcher used the Chi-square test to investigate whether there was any gender and age related differences in knowledge levels, attitudes and practices of Drug Resistant Tuberculosis among the respondents.

Each option on the Likert scale was given a numerical value. For instance the 4-point rating scale had a rating from one to four. Consequently, a single score was calculated for each participant and this lead to the overall result. The rating was as follows: 4-point Likert scale: 1= Strongly Agree; 2= Agree; 3= Disagree and 4= Strongly Disagree. For each individual item, responses were coded as correct (1); incorrect (0) and undecided (0) and missing data was not included (Norman & Carr, 2003: 78). Each participant yielded a knowledge score of which the range was 0-25 for knowledge and awareness levels, 0-15 for attitudes, beliefs and misconceptions and 0-15 for practices. Higher scores indicated higher levels of knowledge with regard to Drug Resistant TB.

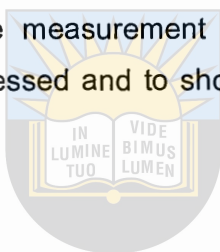
Subsequently, the scores were dichotomized into high knowledge and awareness levels, positive or good attitudes and good practices. All the respondents who scored at least 70 % and above (18 to 25) were coded as having high knowledge and awareness levels, positive or favourable attitudes (11 to 15) and good practices (11 to 15). Those who scored below 70% were coded as having poor knowledge and awareness levels (1 to 17), negative or unfavourable attitudes and poor practices (1 to 10).

In order to make data analysis easy in this study, the researcher grouped or categorized the following variables as such:

- Gender was grouped 1 = female and 2 = male
- Age was grouped as 1 = 18 - 35 (youth) and 2 = 36 years and above (adults).

4.5 VALIDITY AND RELIABILITY

In order to ensure that the results obtained from the research are of high quality, there are some aspects of the measurement procedures and measurement instruments that need to be assessed and to show acceptable levels (Delpont & Roestenburg, 2011: 172).



Validity and reliability are the two most significant aspects in the context of measurement. Polit & Beck (2012a: 336) define validity as the extent to which the research measuring instrument correctly test or measures what the investigator actually wanted to measure. Reliability refers to the accuracy and the precision of the research instrument and procedure. The content validity is the accuracy with which the research instrument test or measure the variables under or issues under study. Content validity seeks to establish whether there is adequate coverage on the literature about the issues that are being investigated in the study (Polit & Beck, 2012a: 331).

A literature review was conducted before constructing the research instrument. The research questionnaire was constructed with the help of the Research Supervisor. A pilot study was done before the actual data collection process to tests its validity. This was done in order to establish if whether all questions that were asked were easily and correctly understood.

Therefore, the pilot study increased the internal validity of the research instrument. The results pilot tests were omitted in the final data analysis. All captured data was cross-checked and proof read by the researcher to ensure accuracy.

Face validity refers to whether the research instrument measures the variables that it claims to measure rather than what it actually measures (Delpont & Roostenburg, 2011: 174). Research instruments that were used in other studies were modified by the researcher with the assistance of the Research Supervisor (Javed et al, 2016: 3; Chinenye, 2015: 11; Tolossa et al, 2015: 7; Isara & Akpodieta, 2015:667; Bati, 2013: 5; Mushtaq, 2011: 5).

The researcher requested assistance from three experts in Drug Resistant Tuberculosis and the Research Supervisor in as far as the assessment of the face validity of this study instrument. The same experts advised that the competency indicator be set at 70%. The pilot study was conducted to establish whether all the questions were clear and understandable. Minor adjustments were made with regard to the length and difficulty of the research instrument and grammatical aspects. The research instrument was adjusted in line with the recommendations from the pre-test in order to achieve better clarity.

4.6 ETHICAL CONSIDERATIONS

Ethics is the science of right and wrong. It refers to a belief of a particular group of individuals, or to the standards of behaviour expected of a group as described in the group's code of professional conduct (Pera & Van Tonder, 2005: 4).

When conducting research, the researcher must ensure the protection of the rights of respondents and institutions in which research is done, while maintaining the scientific integrity of the study. Failure to conduct the research in an ethical manner diminishes the scientific process of the study (Brink et al., 2006: 31). According to Brink et al., (2006: 31), in order to ensure that the research is conducted ethically; the researcher should observe the following:

- Researchers must obtain informed consent from the research subjects.
- Research participants should be told that their participation is voluntarily.
- The research participants should not be harmed in anyway
- Data should be treated confidentially
- Research participants rights to privacy should be respected
- Research participants should be debriefed

In order to ensure that this study was conducted ethically, the researcher observed the following:

4.6.1 Permission to Conduct the Study

The researcher requested permission and obtained approval from the Higher Degrees Committee of the Faculty of Management and Commerce, University of Fort Hare Ethics Committee (Appendix A) to undertake this study.

4.6.2 Ethical Principles for Protecting the Respondents

The following ethical principles were adhered to while conducting this study:

4.6.2.1 There was truthfulness to the study participants

The researcher identified himself and the research assistant to the research subjects. The researcher told the research participants about the reason for conducting the research study. The researcher also showed the research participants all the necessary documentation to identify him together with the ethical clearance letter so that the research participants could have an understanding as to why the research was being conducted.

4.6.2.2 Voluntary participation

The researcher understands the fact that when conducting research, the participants should not be coerced to participate. In this study the participants agreed to participate out of their own will after they were asked by the researcher. The researcher informed the participants that they were not forced or obliged to participate in the study. The purpose of the study was clarified to them in order to enable them to make a sound decision as to whether they were going to be part of the study or not. The research participants were also informed that they had a right to withdraw their participation in the study at any time should they wish to do so, and that they were not to be penalized in any way for doing so.

4.6.2.3 Informed Consent

The researcher provided the participants with accurate information with regard to this study in order to allow them make an informed decision with regard to their participation. The research participants were told that their participation was voluntarily, and that they were not going to get any form of payment for participating in the study, and that they had a right to withdraw from the study whenever they felt uncomfortable. The researcher and research assistants issued the consent forms to the participants who indicated willingness to participate in the study. The content of the informed consent form was explained to them.

They were requested to sign the informed consent form. The questionnaires were written in English as there were no funds to translate them into Xhosa and Afrikaans. The research assistants were fluent in English, Xhosa and Afrikaans and that assisted in clarifying some of the areas when respondents did not understand.

4.6.2.4 Avoid harm to the study participants

The research subjects were informed about the possibility that some of them might suffer from emotional pain when answering the questions on the research instrument. The researcher informed the participants that they will be referred for counseling if they do experience emotional pain either during or after the research session. Efforts were also made not to include embarrassing and psychologically harmful questions in the research instrument. They were also informed about their right to withdraw from the study anytime should they wish to do so without any prejudice.

4.6.2.5 Anonymity and confidentiality

In this study, the researcher did not have a private room to conduct the interview. Data was collected from most of the participants at comfort of their homes. This means that privacy was not totally ensured. Nevertheless, the participants were assured about the confidentiality of their responses, as data collection was conducted in such a manner that no any response would be associated with the given respondents. This was achieved by ensuring that the participants were not asked to give any personal identifying information during data collection. The data collected was stored in a disc and kept in a locked safe which was only accessible to the researcher only. This data will be kept for the duration of five years.

4.7 DISSEMINATION OF RESULTS

This study will be submitted at the School of Public Administration and Governance at the University of Fort Hare, as it is conducted in fulfilment of the requirements of the degree of Doctor of Administration in Public Administration. Secondly, the findings of this study will be presented in a workshop in the area where the study population was drawn. Lastly, the findings of this study will be published in a national or international journal and copies of these journals will be donated to the local library.

4.8 CONCLUSION

This chapter covered the research design and methodology and described the population, sampling and sample size, research instruments, data collection and data analysis; ethical considerations and how the results will be disseminated. In the following chapter, public health ethics and the legislative framework for Management of Drug Resistant Tuberculosis will be undertaken.

CHAPTER FIVE

PUBLIC HEALTH ETHICS AND LEGISLATIVE FRAMEWORK FOR THE MANAGEMENT OF DRUG RESISTANT TUBERCULOSIS

5.1 INTRODUCTION

In the previous chapter discussion with regard to research design and methodology that was followed in conducting this study was provided. This chapter focuses on the legislative and ethical issues that need to be considered when dealing with issues relating to the management of Drug Resistant Tuberculosis in the South African context. The South African National Department of Health is responsible for the control of the spread of all forms of tuberculosis, as a public health issue. In doing this, it needs to ensure that it operates within the human rights and public health ethics. The South African Department of Health also need to ensure that it operates within the context of the Bill of rights, as enshrined in the South African Constitution of 1996 and also in line with other international organization covenants in which it is a member state.

5.2 CENTRALISED DR –TB MANAGEMENT POLICY

In South Africa, Drug Resistant Tuberculosis treatment was provided through small, individualised programmes with specialist clinical support being offered at a dedicated Drug Resistant Tuberculosis hospital (Cox & Ford 2013: 1). The people infected with Drug Resistant Tuberculosis were admitted and hospitalised in a centralised Drug Resistant Tuberculosis hospital. They were only discharged when they obtain two consecutive negative TB cultures from sputum taken at least 30 days apart (National Department of Health South Africa, 2011: 5).

The South African National Department of Health guidelines for Management of Drug Resistant Tuberculosis stipulated that all Drug Resistant Tuberculosis patients should be initially hospitalised for at least six months. The South African Department of Health programme dictates that all laboratory diagnosed Drug Resistant Tuberculosis patients be hospitalised in a centralised Drug Resistant Tuberculosis hospital until they have two consecutive negative TB cultures taken at least 30 days apart. Consequently, patients are hospitalised for several months and waiting lists for patients needing admission to these hospitals are widespread. In addition, the number of patients diagnosed with Multi Drug Resistant Tuberculosis far exceeds the number of beds available per province, with only 2 500 beds available nationally while, as mentioned previously, 7 386 patients were diagnosed in 2010 (National Department of Health South Africa, 2011: 5).

Other challenges that emerged as a result of the implementation of these guidelines in the Management of Drug Resistant Tuberculosis, included delayed initiation of treatment, inadequate bed capacity and poor infection control in hospitals as well as poor adherence to treatment which was often caused by the six months of hospitalisation where patients were forced to relinquish work and home responsibilities (National Department of Health South Africa, 2011: 1).

In 2005 and 2006, of the 2 472 and 2 572 cases of Multi Drug Resistant Tuberculosis that were diagnosed in KwaZulu-Natal laboratories, only 56% in 2005 and 28% in 2006 were treated in hospital. Those patients not treated in hospital were either deceased or remained infectious in the community (Padayatchi et al, 2010: 95). By 2014, in the Eastern Cape Nelson Mandela District, the TB hospital that admits Drug Resistant-TB infected people had the bed capacity to treat 129 DR-TB infected people; however, there were approximately 500 people who were infected with MDR TB in the NM District (Emily Ngcebetsha, Jose Pearson Hospital: Personal communication 2015).

The statistics of the number of people diagnosed and the number treated highlighted the discrepancy between the number of beds available to treat those people who are infected with Drug Resistant Tuberculosis and the actual caseload. In response to this discrepancy and other legal aspects such as forced isolation, forced or involuntary hospital admissions, the National Treatment Plan introduced the policy of decentralised management for Multi Drug resistant Tuberculosis (Padayatchi et al, 2010: 95).

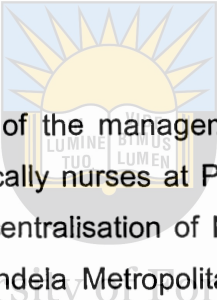
5.3 DECENTRALISED POLICY FOR MANAGEMENT OF DR- TB



The South African Department of Health programme dictates that all laboratory diagnosed MDR-TB patients be hospitalised in a centralised Drug Resistant Tuberculosis hospital until they have two consecutive negative TB cultures taken at least 30 days apart. Consequently, patients are hospitalised for several months and waiting lists for patients needing admission to these hospitals are widespread. In addition, the number of patients diagnosed with DR-TB far exceeds the number of beds available per province, with only 2 500 beds available nationally while, as mentioned previously, 7 386 patients were diagnosed in 2010 (Ndjeka, 2013: 16; National Department of Health South Africa, 2011: 5).

The National Treatment Plan then adopted a policy of decentralised management for MDR TB (Padayatchi et al, 2010: 95). Decentralised management of MDR TB refers to the transfer of responsibility of treating MDR TB patients to lower levels of the system such as PHC facilities. The intention of this was to shorten the number of days between diagnosis and treatment initiation, increasing treatment coverage, reducing the transmission and making it possible for patients to be treated closer to their homes, increasing the acceptability of treatment (National Department of Health South Africa, 2011: 7).

Under this policy framework the centralised and decentralised DR-TB units are responsible for initiating and monitoring treatment of MDR TB cases, in addition to providing support to PHC facilities. The role of the nurse at the PHC facilities would be to identify high risk groups, such as: non converters, re-treatment patients and drug resistant contacts; collect sputum for microscopy, drug susceptibility testing; contact screening and testing; administering injections and medication to all MDR TB patients, monitoring side effects, provide on-going education on adherence, side effects and infection control practices (National Department of Health South Africa, 2013: 18).



The process of decentralisation of the management of MDR TB thus requires health care workers, and specifically nurses at PHC facilities, to have adequate knowledge of MDR TB. The decentralisation of MDR TB care from hospitals to PHC facilities in the Nelson Mandela Metropolitan (NMM) was implemented in October 2011 due to the limited bed space and the growing number of patients with MDR TB. By 2014, the TB hospital that admits MDR TB patients had the bed capacity to treat 129 MDR TB patients; however, there were approximately 500 patients with MDR TB in the NMM district (Ngcebetsha: Personal communication 2014).

With implementation of decentralised policy Primary Health Centres play a significant role in the management of DR TB. Community members who have DR-TB and who do not require hospitalisation are started on treatment as outpatients and then receive care and management by the nurses at the PHC facility. Family members also have a responsibility of provide emotional support and nursing care, reporting any problems or change in patient condition and assisting with early identification and testing of symptomatic contacts (National Department of Health South Africa, 2010: 34). For them to be able to do all the above community members need to have appropriate factual knowledge about the DR-TB.

5.4 THE HUMAN RIGHTS LAWS AND PUBLIC HEALTH ETHICS

Human rights are rights to which everyone is entitled to, no matter who they are, where they live but simply because they are alive (Craythorne, 2011: 26). Public health ethics and human rights share common goals, which are the protection of the individual rights and the protection of the public. Both these values need to be safeguarded and that imply the necessity to balance the rights of the individual with the right to protect the public on the other hand. However, the public health control of Drug Resistant Tuberculosis requires a different approach than that used when dealing with other communicable disease due to the following reasons:

- Its spread is through the air, and therefore it has a potential of causal transmission than other diseases that require sharing of body fluids or intimate contact for transmission.
- An infected person can be contagious for a long period and infect any people
- Transmission to others can be very dire, with significant morbidity to infected persons
- Unlike other communicable diseases it can be cured and its transmission can be successfully prevented.

In the process of preventing and managing the spread of Drug Resistant Tuberculosis from the infected to other members of the public, certain human rights are infringed upon because of the methods that are sometimes used and the decisions that are undertaken in connection with its diagnosis, treatment and control (Weyer et al., 2006: 1). Quarantine and isolation are public health methods and mechanisms that are usually used to protect a population's health. Quarantine and isolation involves the separation from the general public of people that are either affected by or have been exposed to infection by the communicable disease (Bostick, Levine & Sade, 2008: 4).

During the initial outbreak of Drug Resistant Tuberculosis in South African government involuntarily isolated and quarantined those who were infected in order to deal with the outbreak (Singh, Upshur & Padayatchi, 2007: 21). The use of the abovementioned intervention must be balanced against their potential to compromise individual's personal liberty and autonomy and they constitute infringement of human rights which are enshrined in South African Constitution and various international treaties such as the following: (WHO, 2014: 26; National Department of Health South Africa, 2011: 8).

- The South African Constitution (Chapter 2, Bill of Rights)
- The Universal Declaration of Human Rights (UDHR)
- Convention on the Rights of the Child (CRC)
- Convention on the Rights of Persons With Disabilities
- Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW)
- International Covenant of Protection of Civil and Political Rights (ICCPR)
- International Covenant on Economic, Social and Cultural Rights (ICESCR)
- International Convention on the Elimination of All Forms of Racial Discrimination (ICERD)

5.4.1 RIGHTS THAT CAN BE INFRINGED DURING DR-TB MANAGEMENT

5.4.1.1 Just administrative action

This right refers to the right of an individual to be heard before a decision is made which adversely affects individual rights. For an action to be just it must be fair and reasonable. The rules and procedures must ensure that the people who are affected by the administrative action are consulted before that decision is taken and given information about the decision (Craythorne, 2011: 368).

These rights are violated in the management of Drug Resistant Tuberculosis, when those who are infected are not given an option to voice out their concerns and objections to forced admissions (detention) at centralized hospital irrespective of their condition and circumstances and the effect that such an action was going to impact on that person's future and life. Such actions lead to some people using their sickness to scare off security guards and escape from the Centralised Drug Resistant Tuberculosis hospital in the Eastern Cape in order to spend Easter with their families. Other people also lost their wives, husband, jobs and live stocks while they were in hospital. (Singh, et al., 2007: 19)



5.4.1.2 Life

The right refers to the infected person right to receive treatment and the right of the uninfected to be protected from infection (Slagle et al., 2014: 2. TB is spread through the air when the infected coughs or sneezes. The right to life is violated when healthcare workers refuse to treat or care for those infected with Drug Resistant Tuberculosis and when those diagnosed do not receive their treatment on time either due to unavailability or misdiagnoses at health care centres. This right is also violated when there are no protective clothing and poor infection control measures at health care facilities where healthcare is supposed to be provided and thereby exposing people more to risk of infections (King, 2013: 38). Depriving infected treatment due to non-adherence or mainly because they are addicts also constitute infringement on the right to life.

After passing the decentralisation and de-institutionalisation policy Drug Resistant Tuberculosis infected people who were not responding to treatment were released back to the community (Emily Ngcebetsha, Personal communication, 2016). By so doing the right to life and healthcare of the community members was infringed upon as they were being exposed to infectious disease and the duty or responsibility to protect others was completely transferred or dependent on the will or conscious of the infected.

5.4.1.3 Freedom and security of the person.

Every citizen has a right to freedom and security. Involuntary admission at centralised Drug Resistant Tuberculosis hospital deprives those infected of their right to freedom of choice and movement. Drug Resistant Tuberculosis infected people were initially expected to spend a minimum of six months to twenty four months in-hospital depending on achievement of two consecutive negative sputum smears. So the involuntary hospitalisation and forced isolation during management of Drug Resistant Tuberculosis results in the violation of the rights of freedom and security (Bostick et al., 2008: 3).

5.4.1.4 Health care



This is the “right of everyone to enjoy the highest attainable standards of physical and mental health”. This right refers to the right to access to health care services and emergency treatment. It also seeks to encourage abstinence from actions that limit or make unequal access to preventative, curative and palliative health services” (Slagle et al., 2014: 2). This right is violated when the people are refused access to health care and medical assistance because of their socio-economic circumstances or when medical equipment, human resources and medication are not available at health care centres, so that effective and efficient services can be provided to those infected.

The right to health of the public is violated when individuals who are infected with Drug Resistant Tuberculosis are discharged back to the community either because they refuse treatment or are abusive drug addicts who are not compliant to treatment or complete treatment failures. Such individuals can expose other community members to infection especially if they are not practising proper infection control measures.

5.4.1.5 Human dignity

This right refers to the effects of detention and treatment on an individual's dignity. Forced detention as a result of Drug Resistant Tuberculosis lead to broken marriages and families, loss of income for some of those who were employed and loss of assets. South African government policies also stipulated that those hospitalised at state expense lose their social welfare benefits for the duration of their stay at hospital. It is stated under such circumstances some of the infected escape and default treatment while other refuse admission and continue to work or seek employment opportunities using public transport while also infecting others (King, 2013, 37; Singh et al., 2007: 20).



5.4.1.6 Equality

This right refers to fair and equal treatment of all people infected with the disease. This right is violated when there is selective and discriminative application of the admission policy for people infected with Drug Resistant TB. For example this right is violated when certain individuals are allowed to take their Drug Resistant TB in their homes in the comfort of their families and others are not given that option but rather forcefully admitted and detained at centralized Drug Resistant TB and also when others are excluded from receiving due to beliefs that they are unlikely to complete treatment (King, 2013: 38).

5.4.1.7 Freedom of movement and residence

This right refers one's ability to move freely anywhere and anytime without any restrictions imposed on them. Forcefully hospitalisation for management of their condition and that their release was dependent on achievement of three consecutive culture negative sputum's. Achievement of negative culture smears were conditions on which weekend pass out were granted to visit family members and attend to social problems (Singh et al., 2007: 21).

5.4.1.8 Freedom of trade occupation and profession

This right refers to right to be employed and practice one's profession. This right is violated when people infected with Drug Resistant Tuberculosis are forcefully admitted and detained at hospitals and only released after the achievement of the three consecutive culture negative sputum's. This meant that people who were either working or attending schools had to relinquish their jobs and studies for the duration of their hospitalisation despite having no guarantees for cure (Bostick et al., 2008: 4; Singh et al., 2007: 21).

5.4.1.9 Social security



This right refers to social security, including, if they are unable to support themselves and their dependents, appropriate social assistance. Inability to support themselves might results due to dismissals from work due to long periods of absence as a result of Drug Resistant Tuberculosis diagnosis and forced detention at hospital. South African government policy states that those individuals who are hospitalised at state expense lose their social grants for the period of their stay in hospital. The prospects of being deprived of gainful employment and or having welfare benefits suspended for the period of stay in hospital influence some of the infected not to stay in hospital, where their treatment adherence and resistance can be closely monitored by healthcare workers (Singh et al., 2007: 20).

5.4.2. OTHER LAWS IMPACTING ON MANAGEMENT OF DR-TB IN SA

The following pieces of legislation also provide a framework for management of Drug Resistant Tuberculosis and they have an impact in the management of Drug Resistant Tuberculosis in South Africa

5.4.2.1 The Promotion of Administrative Justice Act 3 of 2000

It gives effect to the right to administrative action that is lawful, reasonable and procedurally fair and to the right to written reasons for the administrative action as contemplated in section 33 of the Constitution of the Republic of South Africa. This implies that when managing Drug Resistant Tuberculosis authorities should act in accordance with the laws of the country, and their actions should be reasonable and procedurally fair and those affected should be given reasons as to why such actions are taken. In terms of this Act the forceful isolation and admission of Drug Resistant Tuberculosis was not lawful, reasonable and procedurally fair and right, because some of the patients were not educated and consulted or given any reasons in writing as to why they were treated in such a manner.

5.4.2.2 The Occupational Health and Safety Act 85 of 1993

In terms of this Act the employer must provide and maintain as far as reasonably practicable, a working environment that is safe and without risk to the health of his or her employees as well as other people affected by the operations of business. Employees are also expected to take care of the health and safety of themselves and others who may be affected by their act or omissions. A duty of ensuring that proper preventative measures are in place to ensure that all employees in the work place are protected against accidents and occupational diseases is placed on the employer (Swanepoel et al., 2003: 544).

When managing DR-TB, this right is infringed upon when the employer fails to provide an environment that is safe to the employees by expecting the employees to take care of DR-TB infected people in wards that are overcrowded, have no UV lights and without protective clothing, gloves and N93 masks. DR-TB is spread through the air when the infected person coughs or sneezes (Segmeni, 2013: 46).

So the above mentioned conditions are a futile ground for the spread of nosocomial infections. Being in a well-ventilated area and avoiding close contact with the infected people for a long period are cited as means of preventing infection with TB (Fana, 2013: 45).

5.4.2.3 Compensation for Occupational Injuries and Disease Act 130 of 1993

The Act seeks to provide for compensation for disablement caused by occupational injuries or diseases sustained or contracted by employees in the course of their employment, or for death resulting from such injuries or diseases; and to provide for matters connected therewith. Occupational diseases are further defined as diseases that are mainly caused by factors that are peculiar to the working environment and are therefore 'arising out and during work' with qualification that the actual manifestation of the, may well arise 'after work' (Fana, 2013: 13). In the Act, it is stated that "an occupational disease is any disease mentioned in the first column of Schedule 3 of the Act, arising out of and contracted in the course of an employee's employment. It further specifically states that, if a worker performed any work involving the handling of or exposure to any of the listed substances in use in the workplace, and he or she contracts the corresponding occupational disease, it is presumed that the disease arose out of and in the course of that workers' employment – unless the contrary is proved (Swanepoel, 2003: 563).

Tuberculosis is spread through the air when infected people cough and sneezes. When managing Drug Resistant Tuberculosis infected employees at health care facilities that are responsible for providing care are exposed to risk of being infected with the tuberculosis strains that are resistant. When employees unfortunately get infected with these resistant tuberculosis strains, the Act stipulates that they can claim, as tuberculosis is also categorized under Schedule 3 as an occupational disease.

However, in practice, employees working in the Drug Resistant Tuberculosis institutions are discouraged to apply for such benefits. At times you get told that you can get TB everywhere anytime and there is no proof that you got infected here at work. We are getting nothing in return despite risking our lives for the benefit of the broader community. Not even danger allowance (Bhele, Personal communication, 2016).

5.4.2.4 Employment Equity Act 55 of 1998

The main aims of this Act are to achieve employment equity by promoting equal opportunities and fair treatment in employment elimination of unfair discrimination; and by implementing affirmative action measures to redress the disadvantages in employment experienced by designated groups, in order to ensure their equitable representation in all occupational categories. The Act prohibits discrimination that is based on the following: race, gender, sex, pregnancy, marital status, family responsibility, ethnic or social origin, colour, sexual orientation, age, disability, religion, conscience, belief, HIV status, political opinion, culture, language and birth. Medical and psychological testing are made subject to very stringent requirements. Testing of employees to determine their HIV status is prohibited unless such testing is to be justifiable by the Labour Court (Swanepoel et al., 2003: 129).

5.4.2.5 Basic Conditions of Employment Act 75 of 1997

It gives effect to the provision for the minimum conditions of employment that employers must comply with in their workplace. It seeks to provide a regulatory framework for working time, leave, remuneration and termination of service. The Act makes provision for a minimum of 12 days paid sick leave days per year for employees who might get sick or even infected with Drug Resistant TB, so that they can take time off to have their health checked (London, 2012: 9).

5.4.2.6 Unemployment Insurance Act 63 of 2001

In terms of section 14, 20 and 36 of this Act provisions are made for claims by the employees should they be unable to work as a result of illness (Swanepoel et al., 2005: 395). Drug Resistant TB infected people were forcefully admitted and isolated at centralized Drug Resistant TB Hospitals. The duration of treatment for Drug Resistant TB ranged from six to twenty four months. The situation lead to some being dismissed and losing their jobs and thereby having to apply for their UIF benefits in order to sustain themselves and their families.

5.4.2.7 Labour Relations Act 66 of 1995



This Act promotes economic development, social justice, labour peace and democracy in the workplace. It incorporates the code of good practices that deals with some of the key aspects of dismissal for reasons related to conduct and capacity. Drug Resistant Tuberculosis is spread through the air when the infected coughs and sneezes. In some cases when people are infected with Drug Resistant Tuberculosis they can become incapable of carrying on with some of the jobs due to the diseases itself and in some cases side effects of the anti-TB drugs or treatment. Some of the side effects include loss of sight and hearing (Fana, 2013: 81). The Act makes provision for ensuring that proper procedures are followed and that other alternative or suitable and alternative employment options are tried before an employee is dismissed due to incapacity.

5.4.2.8 Promotion of Equality & Prevention of Unfair Discrimination Act 2000

This Act promotes the principles of equality, fairness, social progress, justice, human dignity and freedom. It further prohibits unfair discrimination and unfair denial of access to healthcare services. It implies that DR-TB infected deserve the same treatment as given to other non DR-TB infected people (London, 2012: 7).

5.4.2.9 Promotion of Access to Information Act, 2000

Guarantees access to any information held by another person that is required for the exercise or protection of any rights. It also promotes the right of access to any information held by the State. In management of Drug Resistant TB, this Act implied that those infected and affected had a right to request their own or family member's medical records or files. It also promotes sharing of information with regard to the medical condition with the person concerned. Some of the drugs that are used to treat Drug Resistant TB have severe side effects, and such information should be shared with the infected and the family members in order to enable them to make sound decision with regard to accepting or rejecting treatment. Loss of sight and hearing are some of those side effects of Drug Resistant TB drugs (Kodisang, 2014: 9). On one hand in cases where such information is not provided legal proceedings can be instituted by the patients or the family against the Department of Health, while on the other hand it can create discomfort and doubt among the patients and sometimes lead to default or refusal to take treatment (Bhele, Personal communication, 2016).

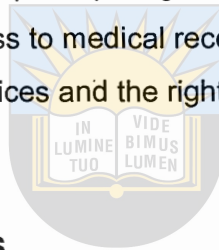
5.4.2.10 Social Assistance Act 13 of 2004 and Regulation

This Act gives effect to section 27 of the Constitution by providing for the rendering of social assistance to people and mechanisms for rendering of such assistance. Dismissals from work due to long periods of absence as a result of Drug Resistant TB diagnosis and forced detention at hospital makes other people qualify for social assistance. South African government policy states that those individuals who are hospitalised at state expense lose their social grants for the period of their stay in hospital. The prospects of being deprived of gainful employment and or having welfare benefits suspended for the period of stay in hospital influence some of the infected not to stay in hospital, where their treatment adherence and resistance can be closely monitored by healthcare workers (Singh et al., 2007: 20).

5.4.2.11 National Health Act 61 of 2003

In terms of Chapter two of the National Health Act 61 of 2003 emphasis is placed on the following rights:

- to emergency medical treatment
- to have full knowledge of one's condition
- to exercise ones informed consent,
- to participate in decisions regarding one's health
- to be informed when one is participating in research
- to confidentiality and access to medical records
- to complain about the services and the rights of health workers to treated with respect



5.5 PUBLIC HEALTH ETHICS

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Public health may be invoked as grounds for limiting certain rights in order to allow the government to take measures dealing with a serious threat to the health of population or individual members of the population. The ethical context of public health is different from that of medicine. Medical ethics strives for a balance in the risk to the individual of the proposed intervention to the same individual while in public health the risk such as loss of privacy is to the individual person, whereas the benefit is both to the individual and the society (WHO).

5.5.1 International Health Regulations

Their purpose and scope is to prevent, protect against, control and provide a public health response to the international spread of diseases. Such response should be provided in ways that are in line with the laws and restricted to public health risk and avoid unnecessary interference with international trade and traffic.

The implementation of such measures should be guided by the following principles:

- Full respect for dignity, human rights and freedom of the person
- Guided by the UN charter and WHO constitution
- Guided by the goal of universal application for the protection of all people of the world from international spread of the diseases.

The management of DR-TB poses a challenge that needs cooperation by all the affected parties and ensuring a balance between the community and individual interest. Limitations on the individual's right to freedom of choice may be necessary in order to protect the entire community. This should be done only when alternative approaches to prevention of the spread of the disease are not likely to be effective.



Secondly, such alternative disease prevention approaches and practices should be carried out in accordance to the following principles:

- Provision of treatment in accordance with the laws
- Ensure that restrictions are necessary and proportional to the need for protection.
- Adoption of least restrictive practices which will allow the common good to be protected
- Base intervention on scientific evidence that failure to implement the measure will result in harm to the well-being of the public and society as a whole.
- Attempting to ensure that those impacted upon by the restrictions receive the support from the community (i.e., job security, financial support for the isolated, provision of food parcels and other necessities to their families, and protection against stigmatisation or unwarranted disclosures of private information).

The decision to isolate and detain people with confirmed DR-TB should be taken after a fair and standard process has been followed in order to achieve favourable outcomes. This can be achieved if the following is done:

- Patients and families should be engaged in decision making process
- Patients and families should give consent
- All patients should be treated with respect and dignity
- Communication should be clear, culturally sensitive and in local language
- Transparency and accountability should be ensured
- There must be impartiality and neutrality in decision making
- Standards should be consistently applied across all people to avoid discrimination based on colour, religion and status.

5.5.2 Ethical Obligations and Challenges in Management of DR-TB

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According to London (2012: 8) the initial outbreak of Drug Resistant Tuberculosis in 2005 presented the following ethical and human rights dilemmas:

- Involuntary confinement versus freedom of residence, profession, occupation and schooling
- Treatment interruption versus the right to receive best available treatment (non-adherence and non-efficacy of treatment)
- Right of others to be protected from infection versus confidentiality
- Right to refuse Drug Sensitivity Test and treatment versus protection of others
- Right to be heard before an administrative decision is made.

In managing Drug Resistant TB the doctors, healthcare workers, community members and the infected have their own ethical and moral obligations or responsibilities. Community have a moral obligation of treating each other in a human, respectful, supportive, non-discriminative and non-derogatory manner.

The infected have a duty of ensuring that they adhere to their treatment regimen and take appropriate steps to prevent infecting others. Health care workers have a moral obligation and a duty to ensure that they provide appropriate care to the infected and affected in supportive, friendly, non-judgemental and non-discriminatory environment. According to Kling (2013: 37) the following are the obligations of a doctor towards the patients:

- Beneficence - to do good
- Non-maleficence – to do no harm
- Autonomy and respect
- Justice – patients' rights, fair distribution of resources, legal and social justice.

In South Africa medical practitioners have a contractual relationship with the patients. The Doctor-patient relationship states that Doctors should not abandon their patients once treatment has commenced. The contract only ends when the patient decides to stop treatment or go elsewhere. Doctors cannot force patients to accept treatment unless doing so it is in the interest of public health and it has been order by a court (Kling, 2013: 37).

5.5.3. Patient Management Related Challenges

According to Weyer et al., (2006: 2) the following factors need to be considered when managing Drug Resistant Tuberculosis infected.

5.5.2.1 Patients

Some of the people infected with Drug Resistant Tuberculosis might refuse treatment, others hospitalization and others both. Others request to be discharged from hospital while they are still highly infectious. They are entitled to do so because of right to freedom of choice movement and right to refuse treatment may not be infringed upon (Fana, 2013: 57).

Termination of administration of treatment to patients should be to those who:

- Habitually interrupt treatment
- Fail to respond to treatment
- Experience drug adverse effects that may cause permanent harm
- Have a concomitant terminal disease

5.5.2.2 Community

The implications of continued employment of the infectious person, discharging of patients who failed treatment back to the community, disclosure of patient's condition to the family, employer and close contacts need to be discussed with all the affected parties in order to get a mutual understanding. This further requires that infection control strategies are implemented in the community to ensure that vulnerable groups (e.g., Children, HIV positive people, diabetics) are protected and that intensive community mobilisation to increase awareness and address stigma is embarked upon. The responsibility to prevent the spread of the disease is placed on the infected person when they are discharged from the hospital (London, 2012: 8; Bostick et al., 2008: 5).

5.5.2.3 Labour

Those who are working in Drug Resistant TB hospitals are exposed to a high risk environment for infection. This is a cause for concern for HCW as it leads to high staff turnover, refusal to work in high risk areas and problem related to retention. Adequate infection control measures should be implemented, and all staff should be protected from nosocomial infection. Occupational health services and compensation for workers who contract the disease should be provided (Kling, 2013: 38; Bostick et al., 2008: 6).

5.6 CONCLUSION

In this chapter, the researcher has discussed the public ethics and the legislative framework impacting on the management of Drug Resistant Tuberculosis. In the next chapter, the researcher will present the research results.



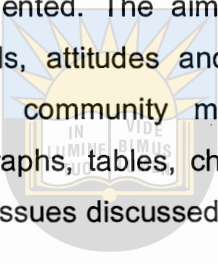
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CHAPTER SIX

PRESENTATION OF RESULTS

6.1 INTRODUCTION

In the previous chapter, public health ethics and legislative framework for management of Drug Resistant Tuberculosis was discussed. In this chapter therefore, data collected is presented. The aim of this study was to assess knowledge and awareness levels, attitudes and practices of Drug Resistant Tuberculosis of Port Elizabeth community members. Data collected was presented through a series of graphs, tables, charts, bivariate and multivariate statistics, in accordance with the issues discussed in the literature, and guided by the research questions.

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6.2 DATA PRESENTATION

6.2.1 Socio Demographic Details of the Study Population

A total of 400 questionnaires out of 422 which were issued for completion to the selected respondents were returned and completely and accurately filled, hence a response rate of 95% for this study. Section A question 1 to 10 covered the socio-demographic profile of the research respondents. This section included questions about gender, age, marital status, educational level, occupational status, monthly income, type of dwelling, the number of people staying with the respondent in the house and lastly sources of TB information of the respondents.

6.2.1.1 Gender of the Respondents

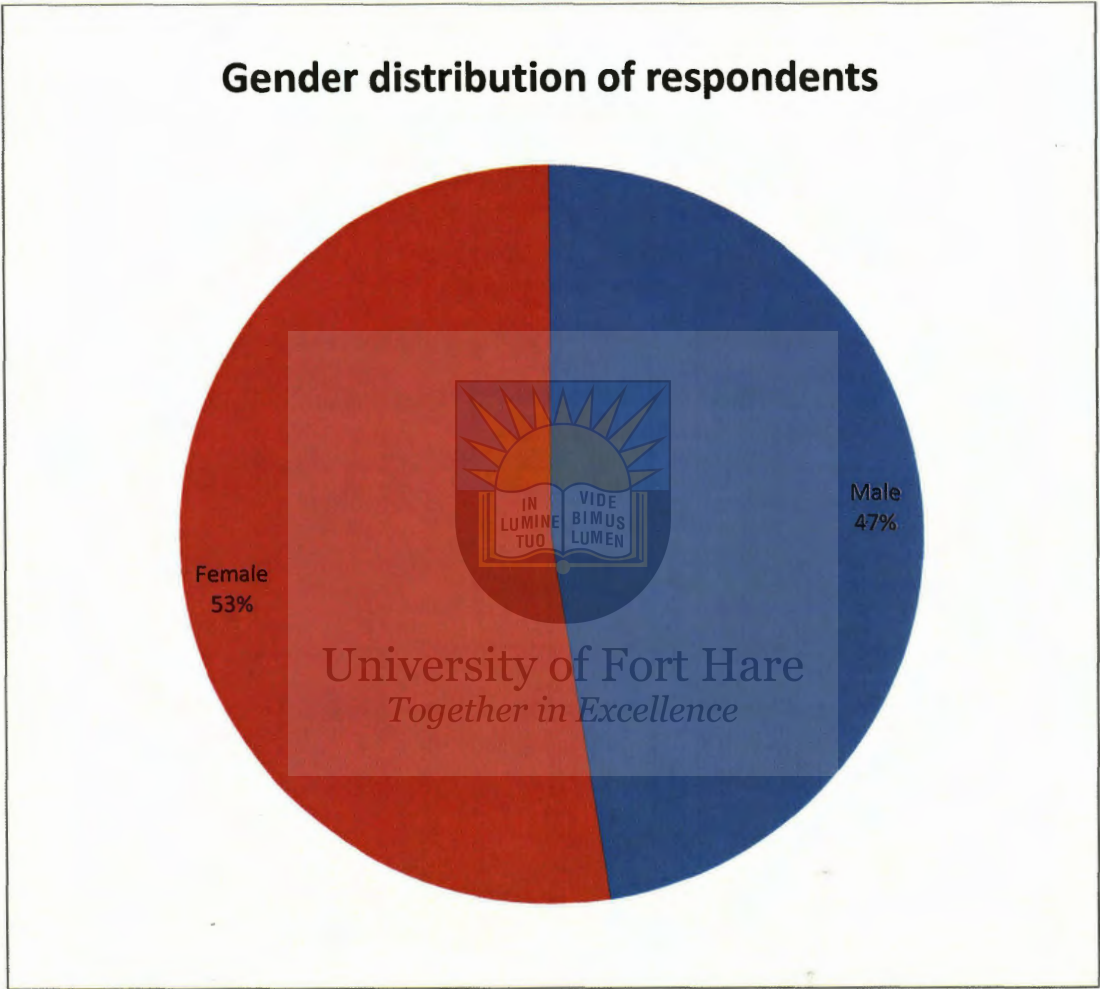


Figure 6: Gender distribution of the respondents (n = 400)
Source: Field study (2016)

Of the 400 study subjects, 190 were males and 210 were females as indicated in figure 6 above. This meant that the majority (53%) of the respondents in this study were females compared to (47%) males.

6.2.1.2 Age of the Respondents

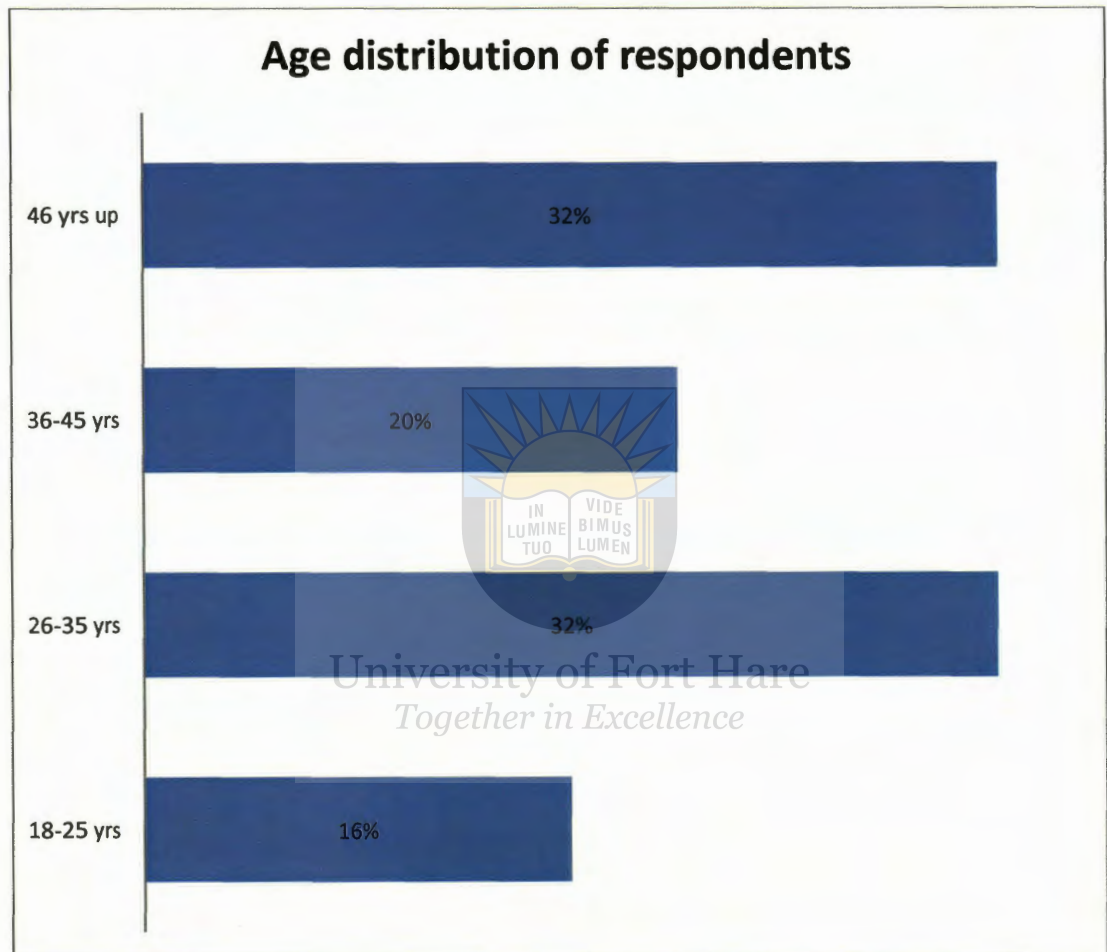


Figure 7: Age Distribution of the Respondents

Source: Field study (2016)

As shown in figure 7 above, the findings revealed that respondents between the ages of 26 – 35 years and 46 years and above were equally represented at 32%. On the other hand, 20% of the respondents were those between 36 to 45 years and lastly those between 18 – 25 years of age were the minority at 16%.

6.2.1.3 Educational Level of Respondents

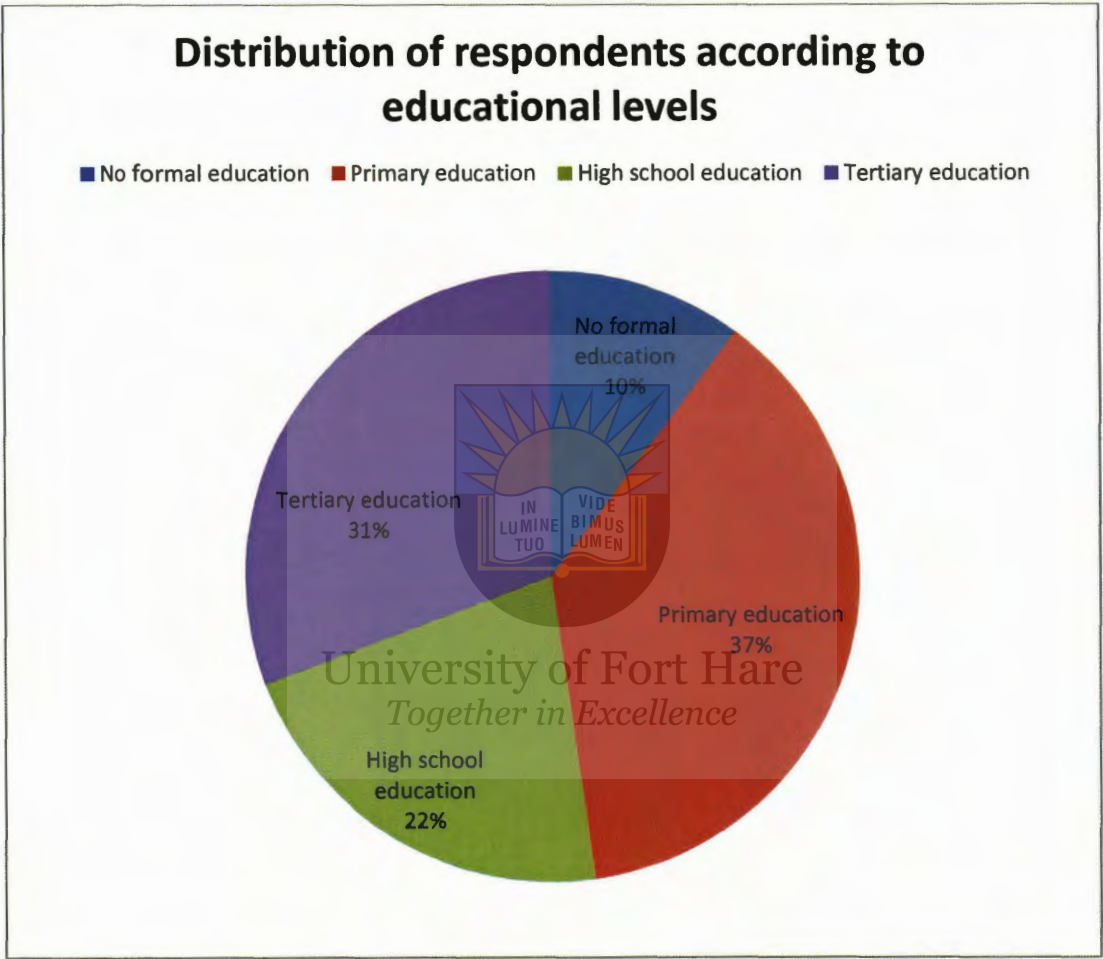


Figure 8: Educational Levels of the Respondents
Source: Field study (2016)

Figure 8 above illustrate that the majority (37%) of the respondents had primary education, 10% had no formal education, 22 % had a high school education while only 31% of the respondents had a tertiary education.

6.2.1.4 Occupational status of the Respondents

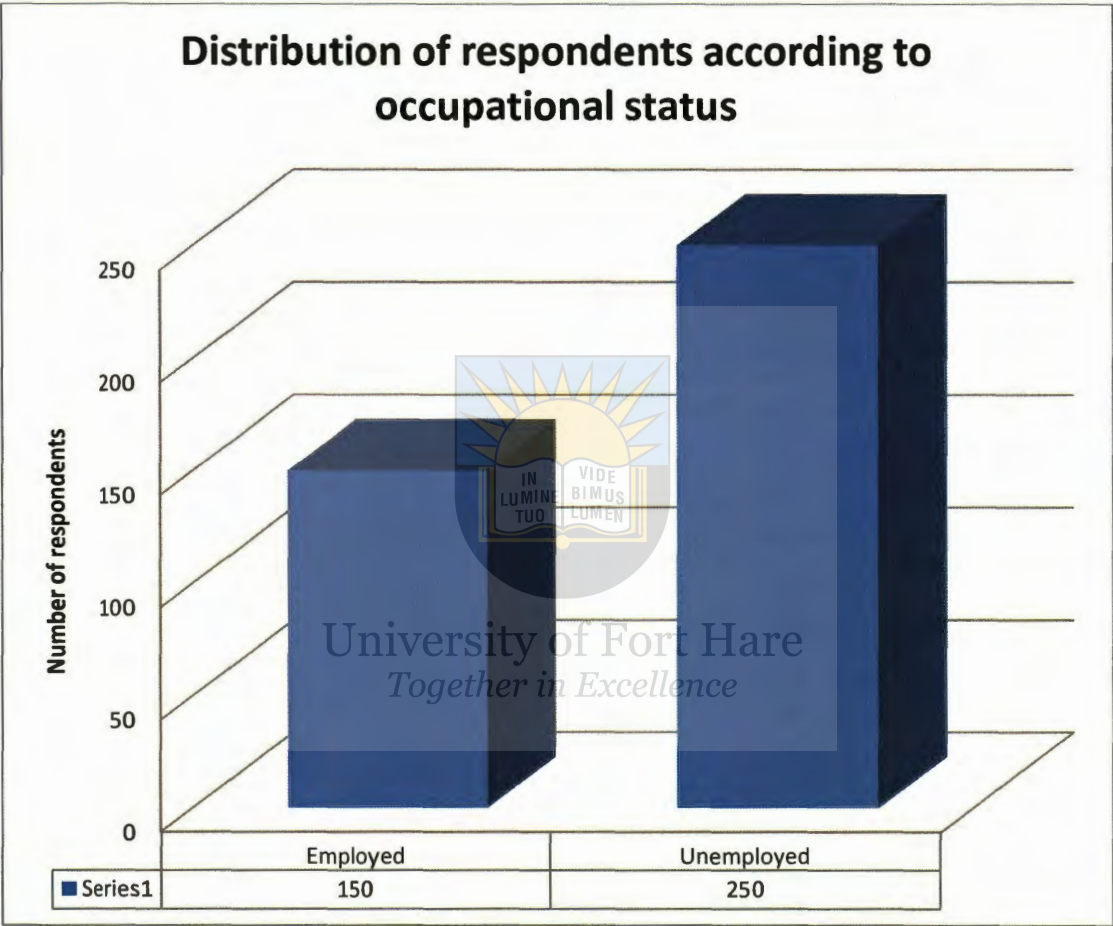


Figure 9: Distribution of respondents according to occupation status
Source: Field study (2016)

Of the 400 research subjects, 250 were unemployed and 150 were employed as indicated in figure 9 above. This meant that the majority (62.5%) of the respondents in this study were unemployed compared to (37.5%) that was employed.

6.2.1.5 Number of Family Members Staying With the Respondent

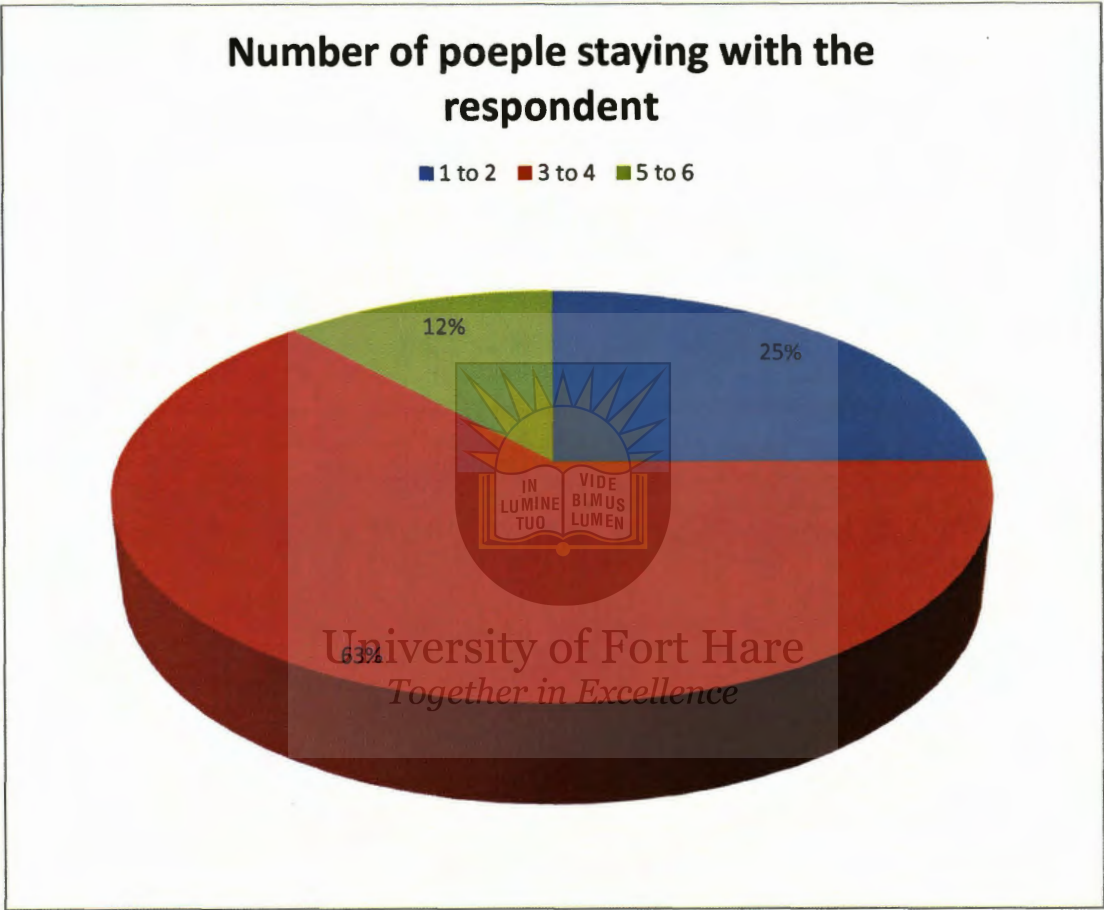


Figure 10: Number of occupants in household
Source: Field study (2016)

As shown in figure 10 the majority (63%) of the respondents indicated that they were staying with 3 to 4 family members, 25% stated that they were staying with 1 to 2 members, while only 12% indicated that they were staying with 5 to 6 family members.

6.2.1.6 Type of the Dwelling or Residence of the Respondents

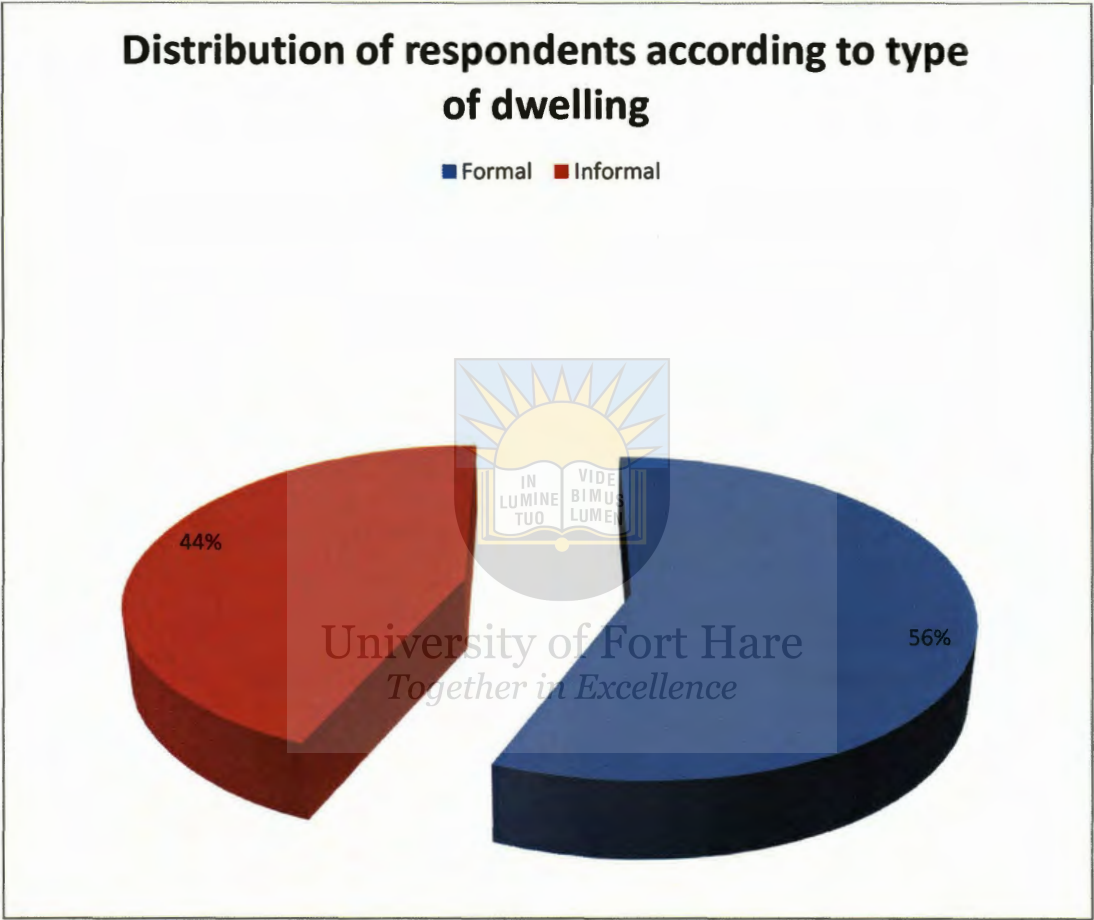


Figure 11: Distribution of respondents according to type of settlement
Source: Field study (2016)

Of the 400 research subjects, 224 were living in formal settlement while 176 lived in informal settlement as indicated in figure 11 above. This meant that the majority (56%) of the respondents in this study were residing in formal residential areas compared to (44%) that were residing in informal settlements.

6.2.1.7 Main sources of Drug Resistant Tuberculosis information

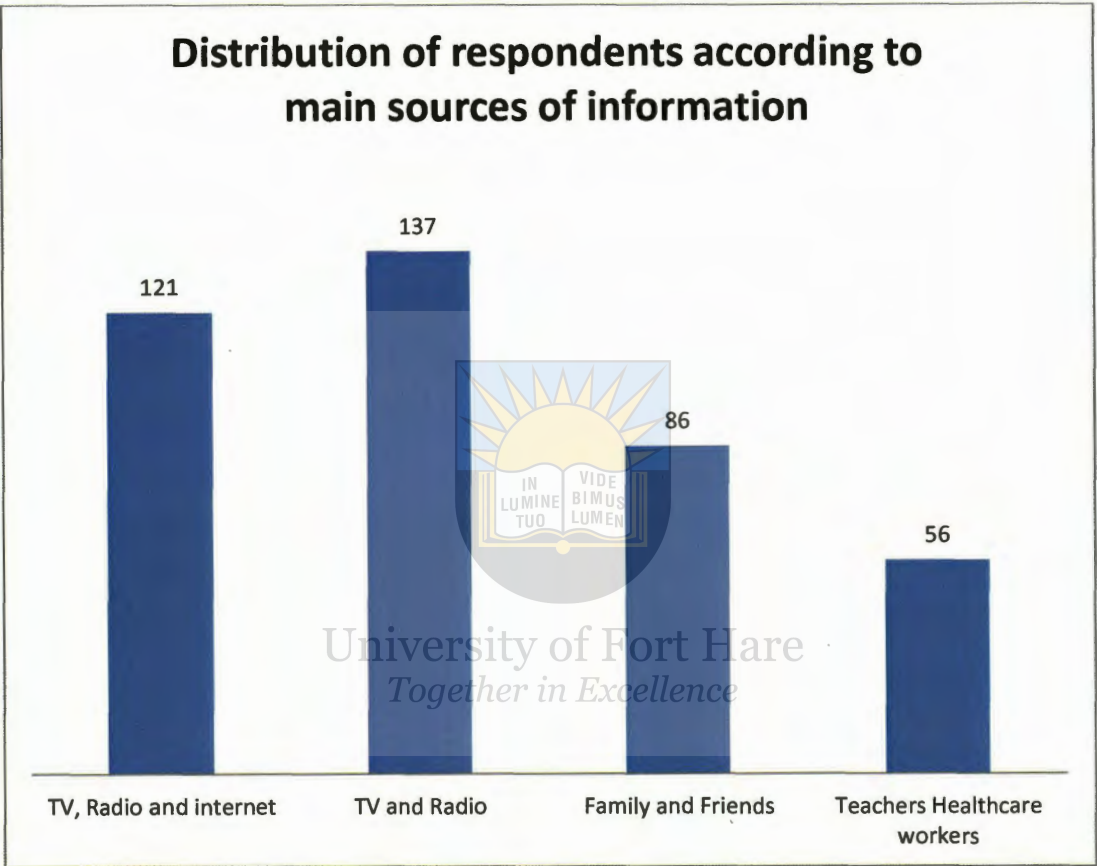


Figure 12: Distribution of respondents according to sources of information
Source: Field study (2016)

As shown in figure 12 above the majority (34%) of the respondents had television and radio as their main source of Drug Resistant Tuberculosis information, 30% indicated that theirs was television, radio and internet while 22% indicated that theirs was family and friends and only 14% indicated that teachers and healthcare workers were their source of Drug Resistant Tuberculosis information.

6.2.1.8 Race, Marital Status and Monthly Family Income of the Respondents

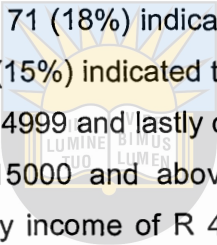
Table 2: Biographical data of the respondents

Variables	Frequency	Percentage
Race		
Black	270	68%
Coloured	93	23%
Indian	12	3%
White	25	6%
Marital status		
Single	218	54%
Married	114	29%
Widow	48	12%
Divorcee	20	5%
Family monthly income		
R 4999 and less	233	58%
R 5000 – R9999	71	18%
R 10000 – R14999	61	15%
R 15000 and up	35	9%

Source: Field study (2016)

Of the 400 study subjects, table 6 above illustrate that 270 (68%) were Blacks, 93 (23%) were Coloureds, 25 (6%) were Whites and only 12 (3%) were Indians. The majority (68%) of the respondents were Blacks while the Indians were the minority with only 3%. Secondly, table 6 above further shows that, of the 400 study respondents 218 (54%) were single, 114 (29%) married, 48 (12%) widowed and 20 (5%) divorced. The majority (54%) of the respondents in this study were single.

Lastly, table 6 above further indicates that 233 (58%) of the respondents had a family income of R4999 and less, 71 (18%) indicated that had a family income of between R 5000 and R 9999, 61 (15%) indicated that their monthly family income ranged between R 10000 and R 14999 and lastly only 35 (9%) indicated that their family monthly income was R 15000 and above. The majority (58%) of the respondents had a monthly family income of R 4999 and less while those who had a monthly family income that ranged from R 15000 and above were the minority with only 9%.



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6.2.2 Knowledge and Awareness Levels of Drug Resistant Tuberculosis

This section will be presented according to themes and knowledge categories.

6.2.2.1 Themes 1: Knowledge, Risk Perception and Causes of DR-TB

Table 3: Respondents knowledge of risk, perception and causes of DR TB

Statement about general knowledge, risk perception and causes of Drug Resistant TB.	F	M	Total
	n =	n =	n =
	210	190	400
	Freq.	Freq.	Freq.
	%	%	%
a. Bacteria resistant to Rifampicin and Isoniazid	191 (91)	172 (91)	363 (91)
b. Anyone can be infected by DR-TB	135 (64)	125 (66)	260 (65)
c. Dust, smoking, poverty and drinking alcohol	62 (29)	62 (33)	124 (31)
d. Incorrect and incomplete treatment regimen	133 (63)	122 (64)	255 (64)
e. DR-TB is dangerous and a problem in my area	210 (100)	190 (100)	400 (100)

Source: Field study (2016)

Table 7 above provides important information with regard to the knowledge and awareness levels about the risk perceptions and causes of Drug Resistant Tuberculosis. The results obtained from this study revealed that an equal percentage (91%) of males and females knew that Drug Resistant Tuberculosis was caused by bacteria that are resistant to Rifampicin and Isoniazid. The findings also reveal that more male respondents (66%) knew that anyone can be infected by Drug Resistant Tuberculosis compared to (64%) of females. Table 7 above further showed that more males (64%) research subjects knew that incorrect and incomplete treatment regimen was also another cause of Drug Resistant TB compared to (63%) of females. In the same vein, 33% of the male respondents correctly indicated that dust, smoking, drinking dirty water and poverty are not causes of Drug Resistant Tuberculosis compared to (29%) females. Table 7 above, further illustrate that all respondents (100%) in this study knew that Drug Resistant Tuberculosis is dangerous and a huge problem in the Port Elizabeth area. Lastly, the above results indicate that males were more knowledgeable and aware than females with regard to general knowledge, risk perceptions and causes of Drug Resistant Tuberculosis.

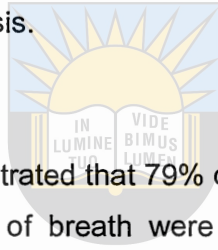
6.2.2.2 Theme 2: Knowledge of Signs and Symptoms of DR-TB

Table 4: Knowledge and awareness of the signs and symptoms of TB

Statement regarding signs and symptoms of DR-TB	F	M	Total
	n =	n =	n =
	210	190	400
	Freq. %	Freq. %	Freq. %
a. Weight loss and loss of appetite	185 (88)	170 (89)	355 (89)
b. Cough that last longer than 3 weeks	186 (89)	154 (81)	340 (85)
c. Nightmares and hallucinations	158 (75)	141 (74)	299 (75)
d. Chest pains and shortness of breath	166 (79)	147 (77)	313 (78)
e. Coughing up of blood	210 (100)	190 (100)	400 (100)

Source: Field study (2016)

Table 8 above provides important details related to knowledge and awareness about the signs and symptoms of Tuberculosis. The results obtained from this study showed that 89% of the male respondents knew that weight loss and loss of appetite are signs and symptoms of tuberculosis compared to 88% of females. The study also revealed that the majority (89%) of female respondents in this study knew that cough that last longer than three weeks is also a sign and symptom tuberculosis compared to male respondents (81%). It is also important to note that the findings in Table 8 above also indicated that more female (75%) than male (74%) respondents knew that nightmares and hallucinations are not the signs and symptoms of tuberculosis.



The results in Table 8 further illustrated that 79% of the female respondents knew that chest pains and shortness of breath were also signs and symptoms for tuberculosis compared to 77% male respondents. The results in Table 8 further indicated that both male and female research subjects (100%) in this study knew that coughing up blood was a sign and symptom of tuberculosis. Lastly, the above results illustrate that females were more knowledgeable and aware than males with regard to the signs and symptoms of Drug Resistant Tuberculosis.

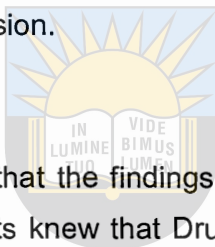
6.2.2.3 Theme 3: Knowledge about Transmission of Drug Resistant TB

Table 5: Knowledge and awareness about transmission of DR TB

Statement regarding the transmission of DR-TB	F	M	Total
	n =	n =	n =
	210	190	400
	Freq. %	Freq. %	Freq. %
a. Witchcraft	135 (64)	125 (66)	260 (65)
b. Through the air when infected coughs & sneeze	180 (86)	165 (87)	345 (86)
c. Hereditary and spread through blood	197 (94)	175 (92)	372 (93)
d. Through hugs and handshake with the infected	24 (11)	22 (12)	46 (12)
e. Touching items in public spaces or areas	80 (38)	83 (44)	163 (41)

Source: Field study (2016)

Table 9 above provides important information related to knowledge and awareness about transmission of Drug Resistant Tuberculosis. As shown in Table 9, the findings illustrate that more male (66%) than female (64%) respondents in this study knew that Drug Resistant Tuberculosis is not spread or transmitted through witchcraft. Moreover, the results also indicated that 87% of the male respondents knew that Drug Resistant Tuberculosis is spread or transmitted through the air when the infected person coughs or sneezes compare to 86% of females. The findings in Table 9 further revealed that 94% of female compared to 92% of male respondents knew that Drug Resistant Tuberculosis is not hereditary and spread through blood transfusion.



It is also of significance to note that the findings in Table 9 above also showed that 12% of the male respondents knew that Drug Resistant Tuberculosis is not transmitted or spread through hugs and handshake with the infected compared to 11% of females. Furthermore, as shown in Table 9 above, the results indicate that 44% of male compared to 38% of female respondents in this study, knew that Drug Resistant Tuberculosis cannot be transmitted or spread by touching items in public spaces or areas. Lastly, the study results showed that male respondents were more knowledgeable and aware compared to their female counterparts with regard to issues relating to transmission and spread of Drug Resistant Tuberculosis.

6.2.2.4 Theme 4. Knowledge about Prevention of Drug Resistant TB

Table 6: Knowledge and awareness about prevention of DR TB

Statement regarding the prevention of DR-TB	F	M	Total
	n =	n =	n =
	210	190	400
	Freq.	Freq.	Freq.
	%	%	%
a. Cover mouth & nose when coughing & sneezing	172 (82)	163 (86)	335 (84)
b. Avoid close contact for long period with infected	189 (90)	166 (87)	355 (89)
c. By avoiding hugs and handshakes	49 (23)	55 (29)	104 (26)
d. By opening windows and wearing	125 (59)	107 (56)	232 (58)
e. Taking traditional medicine & herbal remedies	106 (50)	100 (53)	206 (52)

Source: Field study (2016)

Table 10 provides important details related to knowledge and awareness about prevention of Drug Resistant Tuberculosis. The results obtained from this study showed that 86% of the male respondents knew that the spread and transmission of Drug Resistant Tuberculosis could be prevented by covering mouth and nose when coughing and sneezing compared to 84% of females. The findings also revealed that more female (90%) than male (87%) respondents in this study knew that the spread and transmission of Drug Resistant Tuberculosis can be prevented by avoiding close contact for long period with the infected person.

As shown in Table 10 above, it is also of importance to note that 29% of male compared to 23% of the female respondents in this study knew that Drug Resistant Tuberculosis cannot be spread by hugging and handshakes and therefore avoiding hugging and handshakes was not a prevention method against its spread. Additionally, 59% of the female respondents in this study knew that Drug Resistant Tuberculosis can be prevented by opening windows and wearing mask when with infected people compared to 56% of the male respondents. Table 10 above also revealed that 53% of the male respondents compared to 50% of females knew that taking traditional medicine and herbal remedies cannot prevent the spread of Drug Resistant Tuberculosis. Lastly, the study results illustrated that male respondents were more knowledgeable and aware compared to females with regard to issues relating to prevention of the spread of Drug Resistant Tuberculosis.

6.2.2.5 Theme 5. Knowledge of DR-TB Diagnosis and Treatment

Table 7: Knowledge and awareness about DR-TB diagnosis and treatment

Statement regarding treatment and diagnosis of DR-TB	F	M	Total
	n =	n =	n =
	210	190	400
	Freq. %	Freq. %	Freq. %
a. DR-TB infected remain infectious while on and after completion of treatment	149 (71)	141 (74)	290 (73)
b. DR-TB treatment is provided freely at designated DR-TB centres	191 (91)	179 (94)	370 (93)
c. Psychosis vision and hearing loss are side effects of DR-TB treatment	72 (34)	69 (36)	141 (35)
d. Treatment duration for DR-TB is 6 to 12 months	63 (30)	61 (32)	124 (31)
e. DR-TB treatment outcomes are evaluated by sputum tests and chest X-rays	191 (91)	159 (84)	350 (88)

Source: Field study (2016)

Table 11 above provides important details related to knowledge and awareness about diagnosis, treatment and outcomes of Drug Resistant Tuberculosis. As shown in Table 11, the findings revealed that the 74% of males compared to 71% of female respondents in this study knew that Drug Resistant Tuberculosis is not infectious when you are on treatment or when you have completed treatment.

The findings also illustrate that 94% of the male respondents knew that Drug Resistant Tuberculosis treatment is provided freely at designated Drug Resistant Tuberculosis centres compared to 91% of females. It is also important to note that Table 11 also showed that only 36% males and 34 % females respectively in the study knew that psychosis and hearing loss are side effects of Drug Resistant Tuberculosis treatment. The results in table 11 also revealed that only 32% of the male respondents knew that the duration of Drug Resistant Tuberculosis treatment is not 6 to 12 months compared to 30% of females. The study further revealed that the majority (91%) of the female respondents knew that Drug Resistant Tuberculosis treatment outcomes are evaluated by sputum tests and chest X-rays compared to 84% of male respondents.

Lastly the results indicated that the male respondents were more knowledgeable and aware compared to females with regard to issues relating to diagnosis, treatment and outcomes evaluation of Drug Resistant Tuberculosis.

6.2.2.6 Knowledge and Awareness Levels according to Drug Resistant Tuberculosis Knowledge Categories

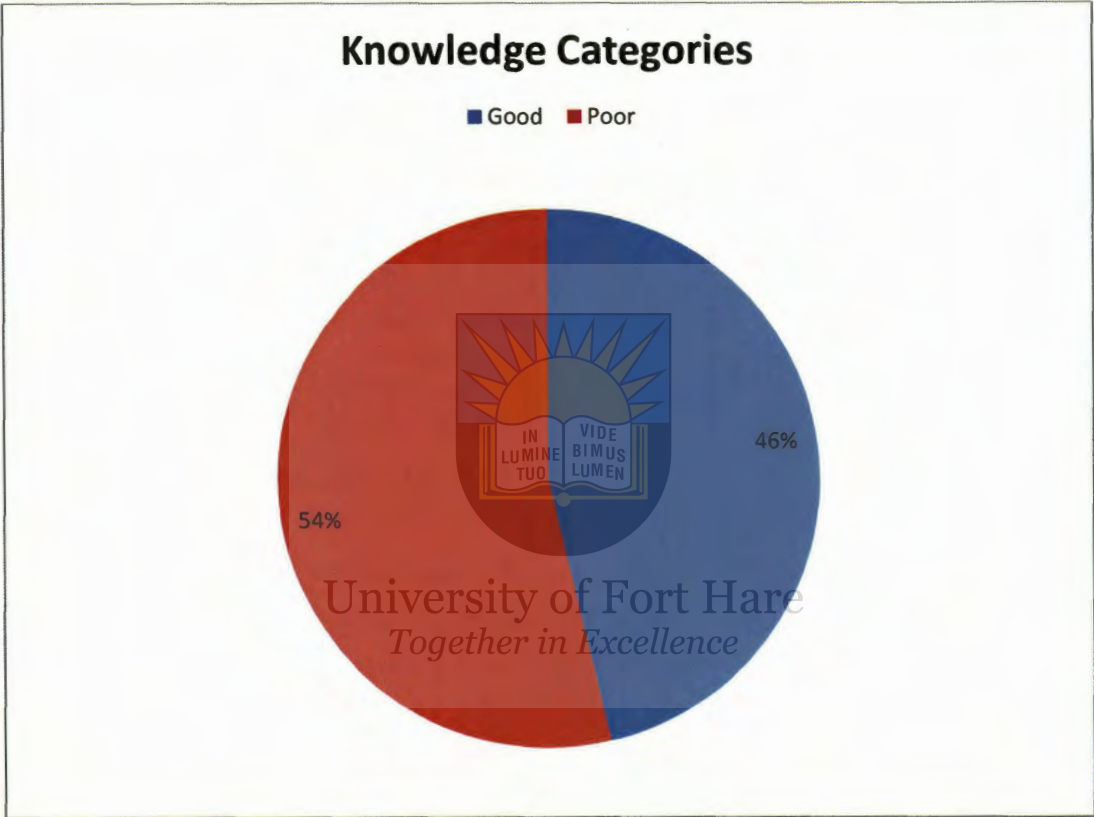


Figure 13: Respondents Drug Resistant TB knowledge categories

Source: Field study (2016)

Figure 13 above provides important information with regard to the knowledge and awareness levels of the respondents about Drug Resistant Tuberculosis according to the knowledge and awareness score categories. The results indicate that the majority (56%) of the respondents had poor knowledge of Drug Resistant Tuberculosis compared to only 44% that had good knowledge and awareness levels.

6.2.3 Community Perceptions, Attitudes and Stigma about DR-TB

6.2.3.1 Respondents Perceptions, Attitudes and Stigma About DR-TB

Table 8: Community perceptions, attitudes and stigma about DR-TB

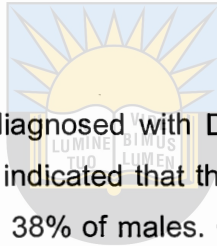
Statements about community perceptions, attitudes and stigma of DR-TB	F	M	Total
	n=	n=	n=
	Freq.	Freq.	Freq.
	%	%	%
3.1. What will be the community reaction if you have DR-TB			
a. they will reject you	50 (24)	42 (22)	92 (23)
b. they will be avoid you but remain friendly	126 (60)	75 (40)	201 (50)
c. they will be supportive and helpful	34 (16)	73 (38)	107 (27)
3.2. How will you react if you told you have DR-TB			
a. I will be fearless and hopeful	115 (55)	68 (38)	183 (46)
b. I will be ashamed and embarrassed	30 (14)	70 (37)	100 (25)
c. I will be surprised and sad	65	52	117

	(31)	(27)	(29)
3.3. Who will you tell or speak to if you have DR-TB			
a. Friends, family members and neighbours	70 (33)	79 (42)	149 (37)
b. Health care workers	14 (7)	79 (42)	93 (23)
c. No one	126 (60)	32 (16)	158 (40)
3.4. What will you do if a family member has DR-TB?			
a. I will support and assist the person	87 (41)	103 (54)	190 (48)
b. I will be friendly but avoid the person	117 (56)	80 (42)	197 (49)
c. I will hate the person	06 (3)	07 (4)	13 (3)
3.5. What will be your greatest fear or challenge if you were diagnosed with DR-TB?			
a. Fear of injection, treatment and its side effects and costs associated with taking treatment.	118 (56)	95 (50)	213 (53)
b. Rejection, ill-treatment degrading and discriminatory practices by community and healthcare workers	79 (38)	81 (43)	160 (40)
c. I do not have any fears or challenges	13 (06)	14 (07)	27 (07)
3.6. Community attitudes and beliefs about DR-TB			

a. Forcefully isolation of DR-TB infected is correct to prevent its spread	97 (46)	91 (48)	188 (47)
b. I can cope with DR-TB and also became a volunteer for DR-TB infected	38 (18)	37 (19)	75 (19)
c. DR-TB infected deserves respect and fair treatment like everyone else.	147 (70)	143 (75)	290 (73)
d. It's a waste of money to treat Drug Resistant TB as its spread cannot be prevented	163 (78)	150 (79)	313 (78)
e. DR-TB drugs are toxic, useless and cannot cure DR-TB	162 (77)	151 (79)	313 (78)
f. It is correct to discriminate and treat badly the DR-TB infected	151 (72)	146 (77)	297 (74)
g. Those who default treatment are to be blamed for the spread of DR-TB	143 (68)	130 (68)	273 (68)
h. I don't mind DR-TB infection as long as I will get disability grant.	104 (49)	100 (53)	204 (51)
i. DR- TB is a disease of the poor and HIV infected	195 (93)	175 (92)	370 (93)
j. Only HIV and AIDS infected people have Drug Resistant TB	146 (69)	154 (81)	300 (75)

Source: Field study (2016)

Table 12 provides information related to respondents perceptions, attitudes and stigma towards Drug Resistant TB. The results obtained from this study showed that the majority (60%) of the female respondents believed that the community will avoid them but remain friendly if it discovered that they have Drug Resistant TB compared to 40% of the male respondents. On the other hand, 24% and 22% of the female and male respondents respectively, indicated that the community will reject them if they discover that they had Drug Resistant TB. However, 38% of males compared to 16% of females indicated that the community will be supportive.

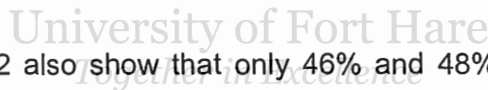


The study also revealed that if diagnosed with Drug Resistant TB the majority (55%) of the female respondents indicated that they will be fearless and hopeful about their condition compared to 38% of males. On the contrary, 31% and 27% of female and male respondents respectively, indicated that they will be surprised and sad if they were to be diagnosed with Drug Resistant TB. Furthermore, 14% of the female respondents stated that they will feel ashamed and embarrassed if they were diagnosed with Drug Resistant TB compared to 37% of males.

The results in Table 12 also showed that 42% of the male respondents indicated that they will talk or speak to no one about their Drug Resistant TB diagnosis compared to 33% of females. The majority (60%) of the female respondents indicated that they will tell or speak to their family friends and neighbours compared to 16% of males. Notably, only 7% of the female respondents stated that they will speak or tell the healthcare workers about their condition compared to 42% of the males. The study also showed that the majority (56%) of the female research subjects indicated that they will be friendly but avoid their family members if they have Drug Resistant TB compared to 42% of males.

The majority (54%) of male respondents stated that they will support and assist them compared to only 41% of females. Almost an equal percentage (3% and 4%) of females and males respectively, indicated that they will hate them.

The study further reveals that 56% of the female respondents stated that their greatest fear or challenge on being diagnosed with Drug Resistant TB is fear of injection, treatment side effects and costs associated with taking treatment compared to 50% of males. On the other hand, 43% of the male respondents stated that they feared rejection, ill-treatment degrading and discriminatory practices by community and health care workers compared to 38 of females. On the contrary, 7% and 6% of male and female respondents respectively indicated that they do not have any fears or challenges.



The results in Table 12 also show that only 46% and 48% of female and male respondents respectively, believed that it is not right to forcefully isolate Drug Resistant TB infected people to prevent its spread. The study further revealed that only 18% and 19% of female and male research subjects respectively believed that they can cope if they were diagnosed with Drug Resistant TB. These respondents further indicated that they were willing to become volunteers for Drug Resistant TB infected campaigns. The study further revealed that the 70% of female and 75% of male respondents knew that Drug Resistant TB infected people also deserve respect and fair treatment like everyone else. The results further show that 72% of females compared to 77% of male research participants believed that it is not right to discriminate and treat badly DR-TB infected people.

The results in Table 12 further indicated that 68% of both female and male respondents believed that people who default TB treatment should not be blamed for the spread of Drug Resistant TB.

In Table 12 it is illustrated that the 78% of female respondents believed that it is not a waste of money to treat Drug Resistant TB infected people and that its spread can be controlled compared to 79% of males. The results in this study also show that 77% of female respondents believed that Drug Resistant TB drugs were useful and a cure to Drug Resistant TB despite their toxic nature compared to 79% of males respondents.

It is also of interest to note that only 49% of female respondents indicated that they do mind Drug Resistant TB infection despite the possibility of getting disability grant compared to 53% of the male respondents. The results indicate that 93% and 92% of female and male respondents respectively knew that Drug Resistant TB is not only a disease of the poor and the HIV positive people. Lastly, the results further showed that 69% of female and 81 % of male respondents in the present study knew that not all HIV and AIDS infected people have Drug Resistant TB.

6.2.2.1 Respondents Overall Attitude Scores According to Attitude Categories

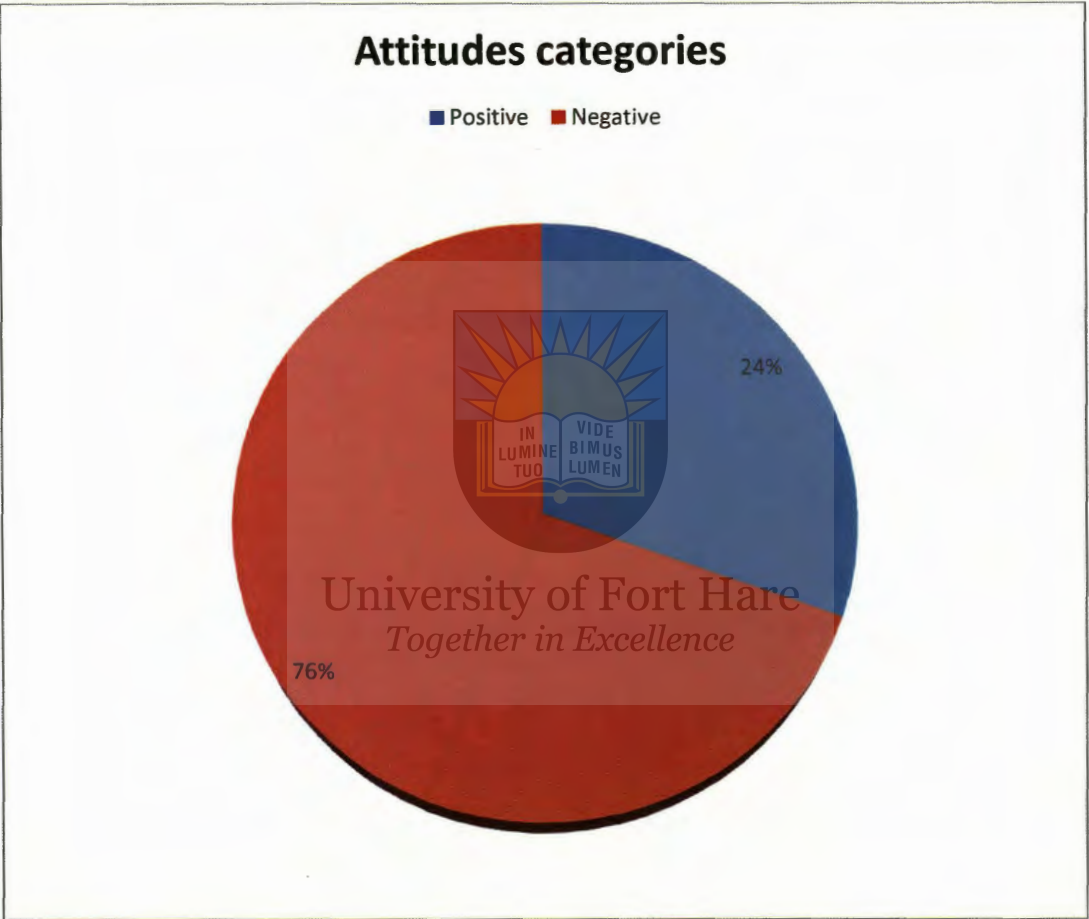


Figure 14: Respondents attitude according to attitude categories
Source: Field study (2016)

Figure 14 above provides important information with regard to the stigma and attitudes of the respondents about Drug Resistant Tuberculosis. The results above reveal that the majority of the respondents 76% (306) had negative attitude (unfavourable) compared to only 24% (94) that had positive attitude (favourable) towards Drug Resistant Tuberculosis.

6.2.4 Community Practices of Drug Resistant Tuberculosis

6.2.4.1 Drug Resistant TB Prevention Practices of the Respondents

Table 9 Drug Resistant TB prevention practices of the respondents

Statements about prevention practices of DR-TB	F	M	Total
	n=	n=	n=
	210	190	400
	Freq. %	Freq. %	Freq. %
4.1. What will you do if you suspect you have DR-TB?			
a. Consult a herbalist	43 (20)	13 (7)	56 (14)
b. Visit Health Care Centre or hospital	155 (74)	113 (60)	268 (67)
c. Just stay at home, rest and pray	00 (0)	29 (15)	29 (7)
d. Initiate self-treatment	12 (6)	35 (18)	47 (12)
4.2. When will you go to a clinic or hospital after getting TB?			
a. When self-treatment does not work	50 (24)	42 (22)	92 (23)
b. As soon as I realise that I have TB	34	73	107

	(16)	(38)	(27)
c. Never	126 (60)	75 (40)	201 (50)
4.3. What should be done to prevent the spread of DR-TB			
a. Covering my mouth when coughing and sneezing	173 (82)	165 (87)	338 (85)
b. By taking prescribed medication only when feeling sick	109 (52)	97 (51)	206 (52)
c. Disposing sputum correctly regularly	185 (88)	160 (84)	345 (86)
d. Performing traditional rituals	165 (79)	151 (79)	316 (79)
e. Stay in a ventilated area and avoid close contact with infected	160 (76)	156 (82)	316 (79)
f. Not spitting indiscriminately	172 (82)	164 (86)	336 (84)
g. Avoiding shaking hands with DR-TB infected people	101 (48)	90 (47)	191 (48)
h. Constantly taking traditional medication or herbs	169 (80)	150 (79)	319 (80)
i. Constantly praying	162 (77)	151 (79)	313 (78)
j. Taking prescribed DR-TB drugs with assistance of	174	164	338

DOT supporter or volunteer	(83)	(86)	(85)
k. Avoid contact with infected person even if he is on treatment	173 (82)	165 (87)	338 (85)
l. Avoid sharing dishes, cups and linen with the infected people	81 (38)	74 (39)	155 (39)
m. Wearing an N 95 protective or surgical mask	186 (88)	161 (85)	347 (87)

Source: Field study (2016)

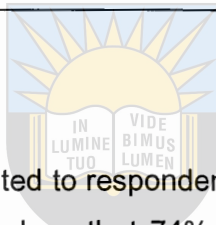


Table 13 provides information related to respondents Drug Resistant Tuberculosis prevention practices. The results show that 74% of the female respondents will visit a health care centre or hospital if they suspect Drug Resistant TB compared to 60% of males. On the other hand, 43% of the female respondents indicated that they will consult an herbalist or traditional healer compared to 13% of males. On the contrary, 6% of female respondents indicated that they will initiate self-treatment compared to 18% of males.

Table 13 further illustrate that 15% of the male respondents indicated that they will stay at home, rest and pray should they suspect Drug Resistant Tuberculosis infection. Furthermore, it is revealed that 60% of the female respondents indicated that they will never go to a clinic or hospital after getting Drug Resistant Tuberculosis compared to 40% of males. In the same vein, 38% of the male respondents also stated that they will go to a clinic or hospital when self-treatment does not work compared to 16% of females. More female (24%) respondents indicated that they will go to a clinic or hospital as soon as they realise the signs and symptoms are that of Drug Resistant Tuberculosis compared to 22% of males.

The following was also observed from data in table 13 above. The spread of Drug Resistant Tuberculosis can be minimised or controlled by covering of mouth when the infected people are coughing and sneezing has indicated by 87% and 82% of male and female respondents. The research further revealed that 88% of the female research participants indicated that the spread and transmission of Drug Resistant TB can be minimised by disposing sputum correctly and regularly by those infected by the disease compared to 84% of males.

This study also revealed that the 52% of female respondents knew that taking of prescribed medication only when feeling sick and stopping it when feeling better is not an acceptable Drug Resistant Tuberculosis prevention practice compared to 51% of males. The research further indicates that an equal percentage (79%) of both male and female respondents knew that performing traditional rituals is not an acceptable Drug Resistant Tuberculosis prevention practice.

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The results also indicate that (82%) of male research participants knew that staying in a well-ventilated area and avoidance of close contact for long periods with the infected person can minimise or prevent the spread and transmission of Drug Resistant TB compared to 76% of females. The study results also show that 87% of the male respondents indicated that Drug Resistant Tuberculosis transmission and spread can be minimised or prevented by ensuring that those infected do not spit indiscriminately compared to 82% of females.

This study further revealed that only 47% of the male research respondents knew that avoiding shaking hand with Drug Resistant Tuberculosis infected is not a preventative practice against the transmission and spread of Drug Resistant Tuberculosis compared to 48% of females.

It is also of significance to note that the results also revealed that only 38% of the female research respondents knew that avoiding sharing of dishes, cups, and linen with the infected is also not a preventative practice against the spread and transmission of Drug resistant Tuberculosis compared to 39% of males.

Table 13 also indicate that 86% of male respondents knew that taking Drug Resistant Tuberculosis drugs with the assistance of DOT supports or volunteers will assist in the prevention of the transmission and spread of Drug Resistant Tuberculosis compared to 83% of females. The results further show that 79% and 80% respectively, of the male and female respondents knew that constantly taking traditional herbs or medication was not an acceptable prevention practices towards the spread and transmission of Drug Resistant Tuberculosis. Lastly, the research revealed that 88% of the female study subjects knew that N 95 or a protective surgical mask can prevent transmission and the spread of Drug resistant Tuberculosis compared to 85% of the male respondents.

6.2.4.2 Respondents DR-TB Practices According to Practices Categories.

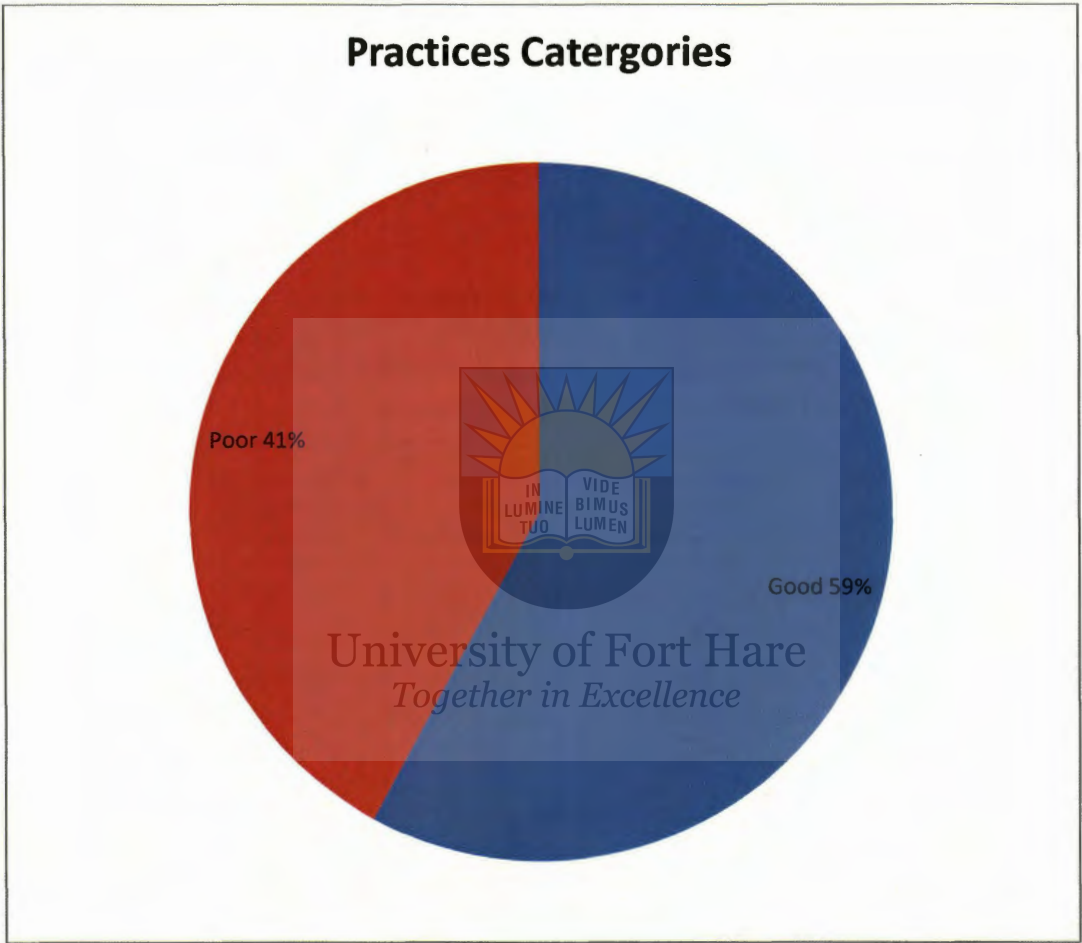


Figure 15: Respondents practices according to practice categories
Source: Field study (2016)

Figure 15 above provides important information with regard to prevention practices of the respondents on Drug Resistant Tuberculosis. The results above reveal that the majority of the respondents 59% (235) had good Drug Resistant Tuberculosis prevention practices compared to 41% (165) which had poor prevention practices.

6.2.5 Age Related Difference in DR-TB Knowledge, Attitude and Practices

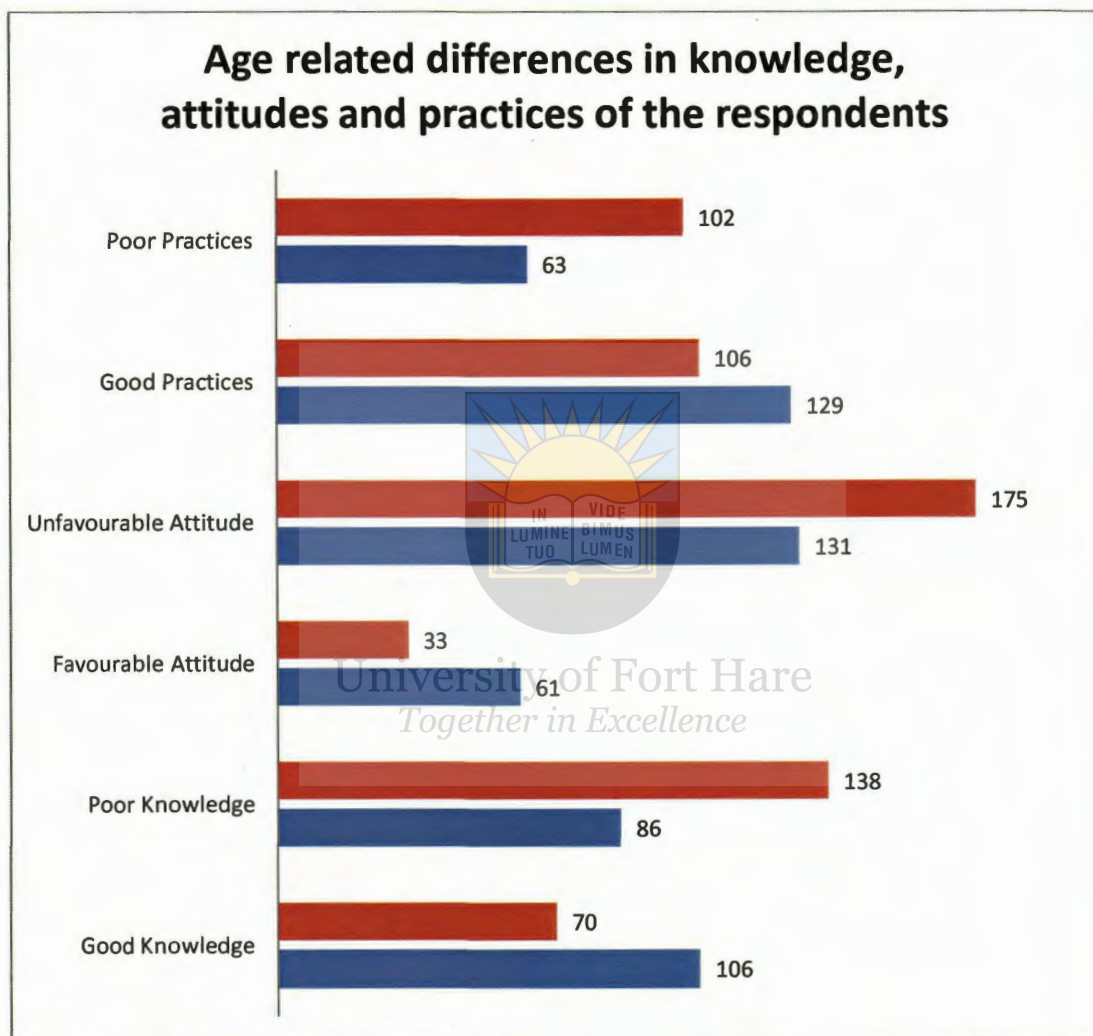


Figure 26: Age related differences in knowledge, attitudes and practices
Source: Field Study (2016)

The results in figure 16 above shows that the youth in this study had good knowledge, favourable attitudes and good prevention practices of Drug Resistant Tuberculosis compared to the adults respondents.

6.2.5.1 Age Related differences in Knowledge and Awareness Levels

The results in figure 16 above illustrate that from the 400 respondents of this study, 176 were categorised as having good knowledge and awareness levels compared to 224 who were regarded as having poor knowledge and awareness levels of Drug Resistant TB. Of the 176, 106 young and 70 adult respondents were categorized as having a good knowledge and awareness level of Drug Resistant TB. The results further show that 138 adult respondents were categorized as having poor knowledge compared to the 86 young respondents.

Table 10: Relationship between age and knowledge and awareness level

Statistic	DF	Value	Prob.
Chi-Square	1	18.8252	<.0001
Likelihood Ratio Chi-Square	1	18.9580	<.0001
Continuity Adj. Chi-Square	1	17.9606	<.0001
Mantel-Haenszel Chi-Square	1	18.7781	<.0001
Phi Coefficient		-0.2169	
Contingency Coefficient		0.2120	
Cramer's V		-0.2169	

Source: Field study 2016

Table 14 above provides statistical analysis about age differences in knowledge and awareness levels of the respondents. Chi-square test is interpreted to find whether there was any relationship or association between the two variables (age and knowledge and awareness levels). The chi-square probability value is <.0001.

6.2.5.2 Age Related Differences in Attitudes

The findings in figure 16 above illustrate that from the 400 respondents of this study only 94 were categorized as having favourable attitude towards Drug Resistant TB and it was comprised of 61 young and 33 adult respondents. The results further show that 306 respondents were regarded as having unfavourable attitudes. Furthermore, 131 young respondents were categorized as having unfavourable attitudes towards Drug Resistant TB from the 306 compared to the 175 adults.

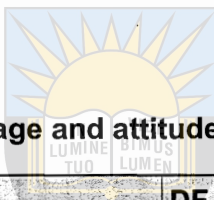


Table 11: Association between age and attitudes

Statistic	DF	Value	Prob.
Chi-Square	1	14.0497	0.0002
Likelihood Ratio Chi-Square	1	14.1770	0.0002
Continuity Adj. Chi-Square	1	13.1789	0.0003
Mantel-Haenszel Chi-Square	1	14.0146	0.0002
Phi Coefficient		-0.1874	
Contingency Coefficient		0.1842	
Cramer's V		-0.1874	

Source: Field study 2016

Table 15 above provides statistical analysis about age related differences in attitudes of the respondents. Chi-square test will be interpreted to find if there was any relationship or association between the two variables (age and attitudes). The chi-square probability value is equal to 0.0002.

6.2.5.3 Age Related Differences in Practices

The results in figure 16 above further indicate that from the 400 respondents, 235 were categorized as having good Drug Resistant TB prevention practices compared to 165 that were regarded as having poor prevention practices. Of the 235 respondents 129 were young and 106 adults respondents were categorized as having a good prevention practices. The results further showed that from 165 respondents who were categorized as having poor Drug Resistant TB prevention practices 63 were youth and 102 were adults.

Table 12: Association between age and prevention practices

Statistic	DF	Value	Prob.
Chi-Square	1	10.8466	0.0010
Likelihood Ratio Chi-Square	1	10.9205	0.0010
Continuity Adj. Chi-Square	1	10.1874	0.0014
Mantel-Haenszel Chi-Square	1	10.8195	0.0010
Phi Coefficient		-0.1647	
Contingency Coefficient		0.1625	
Cramer's V		-0.1647	

Source: Field study 2016

Table 16 above provides statistical analysis about age related differences in practices of the respondents. Chi-square test will be interpreted to find whether there was any relationship or association between the two variables (age and practices). The chi-square probability value is equal to 0.0010.

6.2.6 Gender Related Differences in Drug Resistant Tuberculosis Knowledge, Attitudes and Practices

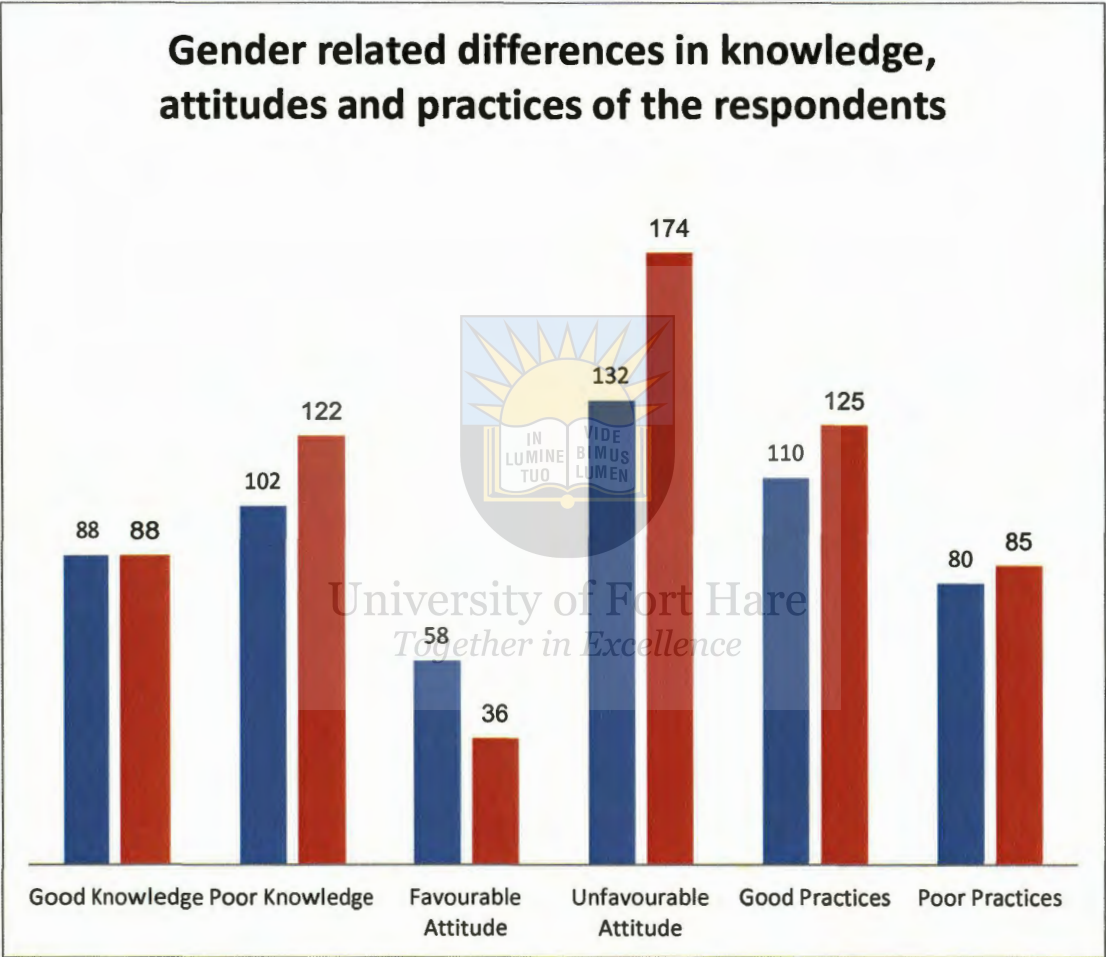


Figure 17: Gender differences in knowledge, attitudes and practices of the respondents

Source: Field study (2016)

The results in figure above 17 show that more males had good knowledge and awareness levels, favourable attitudes but poor prevention practices of Drug Resistant TB than females.

6.2.6.1 Gender Related Differences in Knowledge and Awareness Levels

The results in figure 17 above illustrate that from the 400 respondents of this study, 176 were categorised as having good knowledge and awareness levels compared to, 224 who were regarded as having poor knowledge and awareness levels of Drug Resistant TB. An equal number (88) of both male and female respondents were categorized as having a good knowledge and awareness level of Drug Resistant TB. The results further show that more (122) female respondents were categorized as having poor knowledge compared to (102) males.

Table 13: Association between gender and knowledge and awareness levels

Statistic	DF	Value	Prob.
Chi-Square	1	0.7877	0.3748
Likelihood Ratio Chi-Square	1	0.7877	0.3748
Continuity Adj. Chi-Square	1	0.6188	0.4315
Mantel-Haenszel Chi-Square	1	0.7857	0.3754
Phi Coefficient		0.0444	
Contingency Coefficient		0.0443	
Cramer's V		0.0444	

Source: Field Study 2016

Table 17 above provides statistical analysis about gender related differences in knowledge and awareness levels of the respondents. Chi-square test will be interpreted to find if there was any association between the two variables (gender and awareness levels). The chi-square probability value is equal to 0.3748.

6.2.6.2 Gender Related Differences in Attitudes

The findings in figure 17 above illustrate that from the 400 respondents only 94 were categorized as having favourable attitude towards Drug Resistant TB and are comprised of 58 males compared to 36 females. The results further show that 306 of the respondents were regarded as having unfavourable attitudes. Notably, 132 male respondents were categorized as having unfavourable attitudes towards Drug Resistant TB from the 306 compared to the 174 females.

Table 14: Association between gender and attitudes

Statistic	DF	Value	Prob.
Chi-Square	1	9.9385	0.0016
Likelihood Ratio Chi-Square	1	9.9795	0.0016
Continuity Adj. Chi-Square	1	9.2080	0.0024
Mantel-Haenszel Chi-Square	1	9.9136	0.0016
Phi Coefficient		0.1576	
Contingency Coefficient		0.1557	
Cramer's V		0.1576	

Source: Field Study 2016

Table 18 above provides statistical analysis about gender related differences in attitudes of the respondents. Chi square test will be interpreted to ascertain if there was any relationship or association between the two variables (gender and attitudes). The chi-square probability value is equal to 0.0016.

6.2.6.3 Gender Related Differences in Practices

The results in figure 17 above further indicate that from the 400 respondents in the present study, 235 were categorized as having good Drug Resistant TB prevention practices compared to 165 that were regarded as having Drug Resistant TB poor prevention practices. Of the 235 respondents 110 male and 125 female respondents, were categorized as having a good prevention practices. The results further show that from 165 that were categorized as having poor Drug Resistant TB prevention practices 80 were males and 85 were females.

Table 15: Association between gender and prevention practices

Statistic	DF	Value	Prob.
Chi-Square	1	0.1092	0.7410
Likelihood Ratio Chi-Square	1	0.1092	0.7410
Continuity Adj. Chi-Square	1	0.0524	0.8190
Mantel-Haenszel Chi-Square	1	0.1090	0.7413
Phi Coefficient		-0.0165	
Contingency Coefficient		0.0165	
Cramer's V		-0.0165	

Source: Field study 2016

Table 19 above provides statistical analysis about gender related differences in practices of the respondents. Chi-square test will be interpreted to find out whether there was any relationship or association between the two variables (gender and practices). The chi-square probability value is equal to 0.7410.

6.3 THE EFFECT OF SOCIO DEMOGRAPHIC FACTORS IN DRUG RESISTANT TB KNOWLEDGE LEVELS, ATTITUDES AND PRACTICES.

6.3.1 Effect of Socio-demographic Factors on Knowledge Levels

Table 16: Effect of socio-demographic factors on knowledge

Source		Right	Wrong	DF	T Value	P
		44%	56%			
Family income	Employed	17%	20%	1	0.3896	0.5325
	Unemployed	27%	36%			
Household members	1 to 2	8%	17%	5	57.9456	<. 0001
	3 to 4	25%	38%			
	4 to 6	11%	1%			
Marital status	Divorcee	0%	5%	3	80.8502	<. 0001
	Married	11%	18%			
	Single	33%	21%			
	Widow	0%	12%			
Race	African	29%	39%	3	59.8013	<. 0001
	Coloured	6%	17%			
	Indian	3%	0%			
	White	6%	0%			
Education	No formal	0%	10%	4	250.0705	<. 0001
	Primary	3%	35%			
	High school	12%	10%			

Source		Right	Wrong	DF	T Value	P
		44%	56%			
	Tertiary	29%	1%			
Employment status	Employed	17%	20%	1	0.3896	0.5325
	Unemployed	27%	36%			
Type of residence	Formal	29%	24%	1	21.2757	<. 0001
	Informal	15%	32%			
Source of information	Family & friend	0.25%	21%	3	265.3823	<. 0001
	TV & radio	6.75%	29%			
	TV, radio internet	30	0%			
	Teachers & HCW	8%	6%			

Source: Field study 2016

Table 20 above provides data regarding socio-demographic factors and their effect on knowledge. Chi-square p-value will be interpreted to establish the socio-demographic factors that have an effect on knowledge and awareness levels of the respondents.

6.3.2 Effect of Socio-Demographic Factors on Perceptions and Attitudes

Table 17: Effect of socio-demographic factors on attitudes

Source		Right	Wrong	DF	Value	P
		24%	76%			
Family income	Employed	10%	28%	1	0.8344	0.3610
	Unemployed	14%	48%			
Household members	1 to 2	5%	20%	5	29.6361	<. 0001
	3 to 4	13%	51%			
	4 to 6	6%	5%			
Marital status	Divorcee	0%	5%	3	19.5259	0. 0002
	Married	6%	23%			
	Single	17%	38%			
	Widow	1%	11%			
Race	African	19%	49%	3	25.7746	<. 0001
	Coloured	1%	22%			
	Indian	1%	2%			
	White	3%	3%			
Education	No formal	0%	10%	4	76.9429	<. 0001
	Primary	3%	34%			
	High school	6%	16%			
	Tertiary	15%	16%			
Employment status	Employed	10%	28%	1	0.8344	0.3610

Source		Right	Wrong	DF	Value	P
		24%	76%			
	Unemployed	14%	48%			
Type of residence	Formal	14%	39%	1	2.5168	0.1126
	Informal	10%	37%			
Source of information	Family & friend	1%	20%	3	86.5162	<. 0001
	TV & radio	3%	31%			
	TV, radio internet	16%	14%			
	Teachers & HCW	4%	11%			

Source: Field study 2016

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Table 21 above provides data regarding socio-demographic factors and their effect on attitudes. The chi-square p value will be interpreted to establish the socio-demographic factors that have an effect on attitudes of the respondents.

6.3.3 Effect of Socio-Demographic Factors on DR-TB Prevention Practices

Table 18: Effect of socio demographic factors on prevention practices

Source		Right	Wrong	DF	Value	P
		59%	41%			
Family income	Employed	20%	17%	1	2.9057	0.0883
	Unemployed	39%	24%			
Household members	1 to 2	16%	9%	5	11.8792	0.0365
	3 to 4	34%	29%			
	4 to 6	9%	3%			
Marital status	Divorcee	1%	4%	3	21.5829	<. 0001
	Married	16%	12%			
	Single	37%	18%			
	Widow	5%	7%			
Race	African	32%	35%	3	39.1570	<. 0001
	Coloured	20%	3.5%			
	Indian	3%	0.5%			
	White	4%	2%			
Education	No formal	5%	14%	4	28.1258	<. 0001
	Primary	26%	5%			
	High school	8%	12%			
	Tertiary	20%	10%			
Employment status	Employed	20%	17%	1	2.9057	0.0883
	Unemployed	39%	24%			

Source		Right	Wrong	DF	Value	P
		59%	41%			
Type of residence	Formal	31%	22%	1	0.3079	0.5790
	Informal	28%	19%			
Source of information	Family & friend	11%	10%	3	52.2143	<. 0001
	TV & radio	14%	20%			
	TV, radio internet	20%	10.5%			
	Teachers & HCW	14%	0.5%			

Source: Field study 2016.

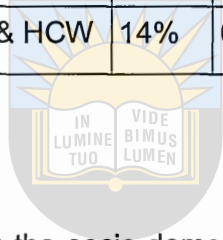


Table 22 provides data regarding the socio-demographic factors and their effect on knowledge. The chi-square p value will be interpreted to establish the socio-demographic factors that have an effect on practices of the respondents.

6.4 CONCLUSION

In this chapter, the researcher presented the results of the empirical study. The data regarding the socio-demographic profile of the respondents, their knowledge and awareness levels, attitudes and practices of Drug Resistant Tuberculosis was presented. Data regarding association between gender and knowledge, attitudes and practices was presented. The results regarding the association between age and knowledge, attitudes and practices were also covered. Lastly, results on the socio-demographic factors that affect knowledge, attitudes and practices were also presented. In the next chapter, the research results will be discussed using the theoretical models that formed the basis of this study.

CHAPTER SEVEN

DISCUSSION OF RESULTS USING THEORETICAL MODELS

7.1 INTRODUCTION

In the previous chapter, the results were presented. In this chapter, the research findings will be discussed within the context of the reviewed literature pertaining to Drug Resistant TB and TB. The theoretical foundations of this study will be used to discuss and explain the results of the study (Health Belief, Social Cognitive and Socio Ecological Models).



7.2 KNOWLEDGE

7.2.1 General Knowledge and Awareness of Drug Resistant Tuberculosis

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In terms of the Social Ecology Models, knowledge falls in the individual level. According to the Health Belief Model on the other hand, knowledge on the nature of the risks and preventative actions to avoid contracting a disease are essential for promoting healthy behaviours towards a disease (Ogden, 2004: 65). Although knowledge alone cannot bring about sustained adoption of healthy behaviours, it plays a crucial motivational role in promoting healthy behavioural change and it is an important starting point in the behavioural change cycle (Harvey, 1997: 58).

Individual's knowledge, attitudes and practices can be influenced by external factors and therefore it becomes of significance to assess individual factors that can influence knowledge. As shown in figure 13, the results suggest that the majority (56%) of the respondents had poor knowledge and awareness about the nature of Drug Resistant Tuberculosis.

It was only 44% of the respondents that had good knowledge and high awareness levels on Drug Resistant Tuberculosis. The findings of the present study were similar to the findings of the following studies (Javed et al., 2016: 6; Malangu & Adebanjo, 2015: 4; Patle & Khakse, 2014: 51) who found out that some of the respondents were poorly informed about the Drug Resistant TB. This is similar reflection as less than a half of the respondents in this study showed good knowledge of the disease. The results above indicate that Drug Resistant Tuberculosis is still a phenomenon which is not yet fully understood by both general community members and health care workers. The above findings justify the intensification of health awareness and educational intervention within this community.



As shown in table 7 and 9, in the previous chapter, the study shows that the respondents had high knowledge about general issues relating to the severity, risk and perceptions on the causes and the various ways in which Drug Resistant Tuberculosis can be transmitted. The above findings were similar to those of the study conducted in Grahamstown East to assess the attitudes and perceptions of community members during the era of HIV and AIDS (Ndoro, 2009: 102). It is also of interest to note that to date, only 29% of female and 33% of the male respondents who correctly indicated that dust, smoking, drinking dirty water and poverty are not the causes of Drug Resistant Tuberculosis.

The above findings are similar to those of a study by Konda, Melo & Giri (2015: 3) where 48. 9% of the respondents cited excessive smoking, 37. 8% drinking alcohol and lastly 33. 3 % dust as the main causes of Drug Resistant TB. Table 7 in previous chapter showed that 63% of female and 64% of male research participants knew that incorrect and incomplete treatment regimen were also the causes of Drug Resistant Tuberculosis.

The results indicate gaps or insufficient knowledge about the causes of Drug Resistant Tuberculosis among the respondents. Poor awareness regarding the aetiology of the disease may have a negative impact on community member's attitude towards health-seeking behaviour and preventative methods, as most people who have various beliefs and misconceptions may not visit health care facilities but opt for various traditional alternatives (Tolossa, 2014: 9). The knowledge about the risk, perception about severity and cause of a disease is an important aspect which affects or influence health seeking behaviour and practices. The success of the Tuberculosis control program in the Nelson Mandela Metropolitan Municipality relies heavily on intensification of educational interventions and increased awareness and knowledge levels at community levels. So the above findings are an indication of a need for an intensive tuberculosis health educational intervention to address this knowledge gap.

Literature review indicates that knowledge of signs and symptoms of a disease has a direct relationship with early presentation for diagnosis and treatment. This in turn affects prognosis. The results in Table 8 showed that the majority of the respondents knew that weight loss and loss of appetite (88% females and 89% males), cough that last longer than three weeks (89% females and 81% males) and lastly coughing up of blood are signs and symptoms of tuberculosis (100% of both males and females). The study further showed that the 79% of female and 77% of male respondents knew that chest pains and shortness of breath were also signs and symptoms for tuberculosis. 75% of females and 74% of male respondents knew that nightmares and hallucinations were not the signs and symptoms of tuberculosis.

The above findings are similar to those of the studies by Chinenye (2015: 9) where it was discovered that 80. 3% of the respondents cited weight loss and cough that lasted for more than three weeks as major signs and symptoms of TB respectively.

In contrast to the findings of the above studies Bati et al., (2013: 3) revealed that only 30. 8 % cited chest pain, 14. 7% weight loss and 9. 9% cough that lasted more than two weeks as major sign and symptoms of TB. Despite high knowledge and awareness about sign and symptoms of Drug Resistant TB gaps were observed in certain areas among the respondents. It is therefore suggested that community educational campaigns be intensified in order to increase awareness of community on signs and symptoms of TB up to the level that all community members know all of them.

Knowledge about route of transmission of the disease is another important factor in the TB prevention and control program. The results in Table 9 showed that the respondents had poor knowledge and awareness of the Drug Resistant TB transmission modes and methods. The results of this study also showed that the majority (86% and 87%) of the female and male research respondents knew that Drug Resistant TB is spread or transmitted through the air when the infected person coughs or sneezes. The above findings were similar to those of the studies that were conducted by Chinenye (2015: 9) and Tolossa et al., (2014: 5) where it was discovered that 86.9% and 51.1% respectively of the respondents stated that TB is spread or transmitted through the air when one infected sneezes or coughs.

The results in Table 9 further showed that the majority (94% and 92%) of both female and male respondents respectively, knew that Drug Resistant TB is not a hereditary disease that is spread or transmitted through blood transfusion. On the other hand, 64% of female and 66% of male respondents knew that Drug resistant TB was not spread or transmitted through witchcraft. The results of this study clearly illustrate that a significant proportion of the study participants still lack general knowledge about certain aspects of the disease. In a study that was conducted by Afolabi, Ezedinachi, Okon & Arikpo (2016: 5) the spread of TB was attributed to witchcraft by 1.3% of the research participants whereas 26.6% of the research respondents cited witchcraft as the cause of Drug Resistant TB.

In a study conducted in Kwa-Zulu Natal to evaluate Multi Drug Resistant Tuberculosis knowledge and attitudes among patients (Maharaj, Ross, Maharaj and Campbell, 2016: 3). Naidoo and Taylor (2013: 4) also discovered that 77.2 % of the respondent knew that TB was not spread through witchcraft.

The research findings also indicate that only 11% of females and 12% of male respondents knew that Drug resistant TB was not transmitted through hugs and handshake with the infected person. However, 4.9 % of the respondents believed that TB can be spread or transmitted through handshakes (Tolossa et al, 2014: 7).

Lastly, the study illustrated that 38% of females and 44% of male respondents knew that Drug Resistant TB was not transmitted by touching items in public spaces or areas. The above findings were similar to those of the study by Naidoo and Taylor (2013: 4) where it was discovered that 73.3% of the respondent knew that TB was not spread through touching items in public places respectively. The respondents still lacked some important knowledge concerning transmission modes and methods of the Drug Resistant TB. This has important implication for the TB program in the area, and if not addressed quickly, it has a potential of increasing diagnosis and treatment delays as well as spread of the disease.

Knowledge on prevention modes and methods of the disease is another important factor in the TB prevention and control program. In South Africa, there have been many World Health Organisation sponsored TB awareness campaigns that are aimed at global prevention of the spread of TB. Such campaigns have been carried out in both rural and urban areas (Fana et al, 2013: 9). Results in Table 10 showed that there were gaps in respondent's knowledge and awareness of the Drug Resistant TB prevention modes and methods despite the above mentioned interventions. The results as presented in Table 10 illustrate that 82% and 86% of the female and male respondents respectively in this study knew that the spread of Drug Resistant TB could be prevented by covering mouth and nose when the infected person coughs or sneezes.

In line with the above findings, 88.1% of the respondents indicated that covering of mouth and nose when coughing and sneezing is a prevention method against the spread of TB (Naidoo and Taylor, 2013: 4). Furthermore, 90% of females and 87% of male respondents also knew that avoiding close contact for long period with the infected person can also assist in preventing infection with Drug resistant TB. In their study, Mukhtar et al, (2012: 25) also found that 77.4 % of the respondents indicated that avoiding close contact for a long duration with the infected person is a preventative method against spread and transmission of TB. The results in Table 10 further show that only 26% of the respondents knew that Drug Resistant TB cannot be spread through hugs and handshakes. Tolossa et al., (2014: 7) also revealed that 2.7% of the respondents regarded avoiding handshakes with the infected person as a preventative method against infection with TB.

It is also important to note that the results of this study in Table 10 showed that 50% of female and 53% of male respondents in this study knew that taking traditional medicine and herbal remedies cannot prevent the spread of Drug Resistant TB respectively. Tolossa et al, (2014: 7) found that 10.5% of the respondents indicated that herbal remedies are treatment method for TB. Another study that was conducted among the Massai in Tanzania also revealed that respondents believed that traditional healers were capable of curing TB (Haasnoot et al., 2010: 903).

In this study, the respondents still lacked some important knowledge concerning prevention methods against Drug Resistant Tuberculosis infection. This has important implication for the TB prevention and control program in the area in that, if people are not aware of the transmission and prevention methods about the disease, they are vulnerable to infection and thereby increase the possibility of its spread.

Knowledge on diagnosis and treatment methods of the disease is another important factor in the TB prevention and control program. Results showed that there were gaps in respondent's knowledge and awareness of the Drug Resistant TB diagnosis and treatment methods. The results in Table 11 indicate that a significant proportion of the respondents still lacked some important knowledge concerning diagnosis and treatment methods of the Drug Resistant TB. Moreover, 91% of female and 94% of male respondents in the present study knew that Drug Resistant TB treatment is provided freely at designated Drug Resistant TB centres. 71% and 74% of both female and male respondents knew that Drug Resistant TB is not infectious while on treatment and after completion of treatment.

The results in Table 11 further illustrate that 91% of female and 84% male respondents knew that Drug Resistant TB treatment outcomes are evaluated through sputum tests and chest X-rays. The above findings are similar to those of the study that was conducted by Mukhtar et al. (2012: 27) where 42% and 78.1% of the respondents indicated that chest x rays was the diagnostic tool for TB and that sputum examination and chest x rays were used to diagnose and evaluate outcomes for TB. It is also important to note that the results above also showed that only 34% of females and 36% of male respondents knew that psychosis and hearing loss are side effects of Drug Resistant TB treatment. Maung, Saw & Oo (2015: 77) found that the 64% and 40% respectively of the respondents in their study knew that hearing loss or deafness and psychosis are the side effects of the Drug Resistant TB drugs or treatment. The above findings are in contrast with those of a study conducted by Singh (2014: 64) where it was discovered that the majority (78%) of respondents knew the side effects of Drug Resistant TB treatment.

The study further indicate that only 30 % of female and 32% of male respondents knew that the duration of Drug Resistant Tuberculosis treatment was not 6 to 12 months respectively.

The above findings are in contrast with those of a study conducted by Singh (2014: 64) where it was discovered that the majority (50%) of respondents knew the duration of Drug Resistant Tuberculosis treatment. Maung et al. (2015: 77) also found that almost all the respondents (97%) in their study knew the treatment duration of Drug Resistant Tuberculosis.

In this study, the respondents still lacked some important knowledge concerning treatment and diagnostic methods against Drug Resistant Tuberculosis infection. This has important implication for the Tuberculosis prevention and control program in the area in that if people are not aware of the treatment and diagnostic methods about the disease, they may delay health seeking and default treatment once they feel better or when they suffer from treatment side effects. This makes them vulnerable to relapse or re-infection hence increasing the possibility of the spread of Drug Resistant Tuberculosis. It also of significance to note that despite the above finding, when all the questions in the questionnaire regarding knowledge and awareness about Drug Resistant Tuberculosis were analyzed, the research respondents only scored high in only two themes out of the 5 that was used to assess the general level of awareness and knowledge regarding Drug Resistant Tuberculosis. This shows that the research subjects had insufficient knowledge or low awareness levels on certain aspects with regard to Drug Resistant Tuberculosis.

Males have a greater public involvement than females and hence the greater exposure to information and that leads to more awareness on tuberculosis than women (Pichamuthu, et al., 2011: 83). It is stated that, it is a social norm for women to be home bound and men to interact with the outside world (Pichamuthu, et al., 2011: 83).

The results further revealed that from 44% of the research respondents who were categorised as having good knowledge in figure 13, there was an equal number (88) of both males and females.

The research further illustrate that males were more aware and knowledgeable than females on four (4) of the five (5) themes that were used to investigate knowledge and awareness about Drug Resistant Tuberculosis. Females only scored higher than males on signs and symptoms theme, whereas males scored higher than females on causes, prevention, transmission and treatment and diagnosis themes. This shows a gap in knowledge and awareness about Drug Resistant Tuberculosis among the respondents especially females.

The findings of this study are in line with those of the studies that were conducted by Pichamutu et al., (2011: 84), Christian et al., (2000: 651), Liefoghe et al., (1997: 815) and Dinish et al., (1997: 79) where it was found that men were more aware and knowledgeable than females on causes, signs and symptoms, diagnosis and treatment of tuberculosis. The additional burden of house work, child care and possibly employment leaves women with little time to access healthcare services for themselves and hence less aware and knowledgeable than males (Agboatwalla, 2010: 6).

The findings of the present study are interesting and in contrast to the research that have been conducted in the Sub Saharan Africa which have shown that females are more knowledgeable and aware about disease than males. These studies argue that women tend to seek health care services more than men, and hence they tend to be more knowledgeable than men. It was also found that most men are reluctant to seek medical help or accompany their sick or pregnant wives or partners to prenatal clinics and thereby miss out on health information that is shared during such visits (Fana et al., 2013: 7; Ditekemena, 2012: 10; Makhunga-Ramfolo et al., 2011: 9; Gibson, 2005: 936). The gap in knowledge and awareness about Drug Resistant Tuberculosis shows health risk. Even if male and young research participants showed good awareness and knowledge levels than females and old respondents, the results show that the group comprised of females and adults was at risk as it generally showed poor knowledge and awareness of Drug Resistant Tuberculosis.

It is also of interest to note that these findings are in contrast with the previous study that showed that youth and males generally showed health risk behaviours (Gwandure & Mayekiso, 2011: 25).

Ignorance, lack of knowledge, stigmatisation, misconceptions and erroneous beliefs are issues that hinder successful TB control initiatives (Bayouni, 2007: 21; Koay, 2004: 502). According to Adebeye et al., (2010: 4), TB suspects usually presented themselves late to seek medical assistance because they first try to seek help from traditional healers because they believed that TB was caused by witchcraft, 'evil eye' and Satan. The study clearly illustrates that a significant proportion of the study participants still lack general knowledge about certain aspects of the disease. The above results further show that community members' had distorted information about Drug Resistant TB. These findings are discouraging considering the fact that in South Africa there were many World Health Organisation sponsored TB and HIV and AIDS awareness campaigns which were aimed at the global prevention of the spread of TB and HIV and AIDS. Some of these medical interventions and educational campaigns are still running or continuing today. These campaigns have been targeted at both rural and urban areas (Fana, et al, 2013: 69; WHO: 2012).

It is clear from the above research findings that level of knowledge and awareness regarding the nature of Drug Resistant TB was not convincing. The poor level of knowledge and awareness regarding Drug Resistant TB that the majority (56%) of the respondents in the present study showed indicate that the respondents are at high risk and susceptible to infection with Drug Resistant TB.

In terms of the Health Belief Model it is stated that people are more likely to engage in preventative behaviour if they have adequate knowledge and if they perceive themselves as susceptible to the disease (Murima, 2013: 38; Pajares, 2002: 236). The results indicate that the respondents' knowledge and awareness about Drug Resistant TB is poor or not adequate.

Secondly, even though they did perceive themselves to be susceptible to infection there were those who perceived others to be at risk and thereby neglecting their own risk. It is therefore clear from the research that the conditions required for the adoption of the preventative behaviour were not met in this study by the respondents. It is therefore, assumed that the respondents in the present study are not going to adopt or engage in health preventative behaviour due to lack or poor knowledge and awareness about Drug Resistant Tuberculosis.

Accurate knowledge is said to be a key component in designing interventions. It is also stated that knowledge on its own does not always fully translate into positive health related behaviour or actions as there are other variables that influence health related behaviour and actions (Pajares 2002: 239). The knowledge gap and other variables or factors may influence or hinder the respondents' attitude and ability to adopt positive health related behaviour and actions or practices. Therefore, respondents' attitudes also need to be considered to provide the crucial link between knowledge and the enacted behaviour and practices.

7.3 COMMUNITY ATTITUDES AND PERCEPTIONS

In terms of the Social Ecology Models, attitudes like knowledge also fall in the individual level. According to the Health Belief Model, an individual's attitudes and perceptions together with other external factors influence the adoption of a positive or negative health-related behaviour or practices.

The results as shown in figure 14 of this study illustrate that the majority (76%) of the respondents had negative or unfavourable attitudes of Drug Resistant Tuberculosis. These findings are similar to those of the study that was conducted by Chinenye (2015: 17) but in contrast to those of the study that was conducted by (Isara & Akpodiet, 2016: 667) where it was found that respondent had positive attitudes of MDR-TB.

7.3.1 Perceived Susceptibility

The proponents of the Health Belief Model, state that positive behavioural change is adopted by individuals who perceive that they are susceptible to a health condition (Harvey, 1997: 75). Perceived personal susceptibility to a disease can influence an individual's enacted behaviour and actions against a disease. It also assumes that where perceived risk is low, unhealthy behaviour manifests and results in further development of the disease and deaths.

As shown in table 7, the results of the current study show that the majority (64% and 66%) of both female and male respondents respectively felt that anyone could get Drug Resistant TB. Furthermore, 86% of the female and 87% of the male respondents indicated that Drug Resistant TB was a condition anyone within their community could contract because the TB germs are in the air and is spread when those infected patients are coughing and sneezing. The findings also show that all the respondents (100%) in this study were aware that Drug Resistant TB is dangerous and a huge problem in their area. Notably, 93% of female and 92% of male respondents knew that Drug Resistant TB was not a disease of the poor only. The research show that perceived susceptibility was high among the study participants.

In a study that was conducted in Grahamstown East to assess attitudes and perception about TB in the era of HIV and AIDS, Ndoro (2009: 102) found that perceived susceptibility was low among research respondents. This leads to disease stigmatisation. Disease stigmatisation allows people to project risk onto others whom they label as 'immoral' while denying that they are also at risk. These individuals convince themselves that they are at lesser risk of getting infected or experiencing negative consequences than those whom they label as immoral allows. As a result of perpetuating stigmatising attitudes towards other labelled 'immoral' individuals, some individuals perceive themselves as not being susceptible to contracting a disease.

Such individuals perceive themselves to be better, with higher morals, than the other labelled individuals who they feel are more likely to contract diseases due to their immoral and devalued status (Karim et al., 2007: 140; Moller & Erstad, 2007: 107).

This study also shows that some of the respondents had low perceived personal susceptibility to Drug Resistant Tuberculosis infection. Research findings in Table 12 also illustrate that about 69% of female respondents knew that it was not only HIV and AIDS infected people that were susceptible to Drug Resistant Tuberculosis compared to 81% of males. It is assumed that some of the research respondents who believed the opposite about the above issue might have done so due to the stigma that is attached to both TB and HIV and AIDS.

Ndoro (2009: 102) also found that perceived personal susceptibility was low among research respondents. The study further indicated that some of respondent in this study did not perceive themselves to be susceptible to Drug Resistant Tuberculosis and this exposes them to the danger of contracting the disease as they might not be willing to adopt positive or preventative practices against the disease. The researcher would have considered the low susceptibility of the respondents to be one of the factors contributing to the continuing spread of the Drug Resistant Tuberculosis despite the efforts to mitigate its spread. Eastern Cape is number two with (782) after Gauteng (922) in terms of TB incidence per 100 000 population. The Nelson Mandela Bay Municipality has a 3rd highest rate of TB treatment defaulters and also ranks under the ten (10) worst metros in the country for deaths caused TB, TB cure and treatment success rate (Pillay, 2015: 2).

The literature reviewed has shown that even when perceived susceptibility is high people still disregard perceived high risk and act in ways that exposes them to infection with disease. Perceived risk is not always explained by health affirming behaviour (Murima, 2013: 46).

Despite high knowledge about the fact that HIV and AIDS infection is spread through unprotected sex people still engage in unprotected sex and thereby expose themselves to HIV and AIDS infection.

7.3.2 Perceived Severity

The most crucial step for the adoption of healthier behavioural options by individuals is to accept that a disease is fatal (Cassie, 2002: 374). It is assumed that if perceived severity of a disease is high among people they will try to adopt better health-related behaviours to avoid and prevent the spread of that disease (Kelly, 1999: 237).

In terms of the Health Belief Model, it is assumed that, if a person acknowledges that there is Drug Resistant Tuberculosis in the community and that it is fatal to all, then such a person is said to be likely to adopt healthy positive related behaviours against such disease by engaging in preventative actions such as going for early testing to detect and treat the disease before it makes a huge damage.

As shown in Table 11, all the respondents (100%) in this study were aware that Drug Resistant Tuberculosis is dangerous and a huge problem in their area. Furthermore, it is illustrated in Table 12 that a large percentage (78% and 79%) of both female and male respondents respectively indicated that it is not a waste of money to treat Drug Resistant Tuberculosis infected people as its spread could be controlled. On the treatment aspects, 23% of female and 21% of male respondents regarded the drugs that are used to treat Drug Resistant Tuberculosis infected as toxic, useless and not able to cure it compared to the majority (77% and 79%) who believed that the drugs were effective. The results of the present study show that perceived severity was high among the research respondents.

This is in contrast to the findings of the study that was conducted in Grahamstown East to assess attitudes and perceptions about TB in the era of HIV and AIDS by Ndoro (2009: 102) where it was discovered that the perceived severity was low among the respondents.

The existing perception among the research respondents, that the drugs used were not a cure for Drug Resistant Tuberculosis among the respondents could possibly be due to the extensive media coverage of the disease that perpetuated a fear among South Africans about the severity of the disease if it was left untreated during early years of the breakout in the KwaZulu-Natal Province where many people died (South African TB Vaccine Initiative, 2006). It is also possible that practices and attitudes such as isolation of patients and wearing of mask and other protective clothing when health care workers are dealing with TB or Drug Resistant Tuberculosis infected people might also have raised fears and created confusion among community members (Fana et al, 2013: 63; News Africa: 2013 and SAPA: 2012).

Secondly, it might also be because of the statements that were issued by the spokesperson of the Eastern Cape Department of Health in 2008 when patients from the Drug Resistant Tuberculosis Hospital in Port Elizabeth used their illness to scare off security guards and fled from the hospital in order to spend festive season with their families (Fana et al, 2013: 63; News Africa: 2013 and SAPA: 2012). In an effort to get them back to hospital the Department applied for a court order and informed the public that the patients were highly infectious and a danger to society as a whole. The number of people who are dying either before being identified and also while on treatment as a result of Drug Resistant Tuberculosis due to late diagnosis of the disease; and due to diagnostic, technological and infrastructural challenges might also be the reasons for the high severity perception among the research respondents (News Africa: 2013 and SAPA: 2012).

7.3.3 Perceived Benefits

Individuals adopt health-promoting behaviours if they believe that these will reduce their chances of acquiring a disease because focus will be on positive outcomes of the action (Murima, 2013: 50). The benefits perceived by the respondents in the study were assessed by identifying the respondent's perceptions of the effectiveness of beneficial preventative measures against Drug Resistant Tuberculosis.

The majority (83% of female and 86% of males) of the respondents in this study felt that assigning DOTS volunteers to assist Drug Resistant Tuberculosis infected people would help them to adhere and complete their treatment. These results show that a large percentage of the respondents believed that assigning DOTS volunteers to assist the Drug Resistant Tuberculosis infected can lead to compliance to treatment and thereby prevent the spreading of Drug Resistant Tuberculosis in the community. This study also revealed that the 52% of female respondents knew that taking of prescribed medication only when feeling sick and stopping it when feeling better is not an acceptable Drug Resistant Tuberculosis prevention practice compared to 51% of males. Treatment default leads to development of more resistant strains of TB which are more severe and require administration of drugs that are more effective for a very long time and have side effects such as psychosis, vision and hearing loss (Ogunbanjo & Savva, 2011: 93).

People infected with Drug Resistant Tuberculosis often endure pain and suffering not only physically but also emotional distress that results from stigma imposed on them by society, isolation and rejection by community, friends and family members. If people adopt positive health actions, they have better chances of being cured and spared of the emotional and physical pain that is associated with TB and Drug Resistant Tuberculosis and its treatment protocol (Dodor, 2009: 57).

Despite the lethal nature of the Drug Resistant Tuberculosis if left unattended, the research indicate that 49% of female and 53% of male respondents respectively in do not mind Drug Resistant Tuberculosis infection. TB infection is regarded as means to access some form of income in the form of disability grant. People deliberately get infected with TB so that they can receive temporary grant and it acts as a perverse incentive (Natrass, 2005: 7).

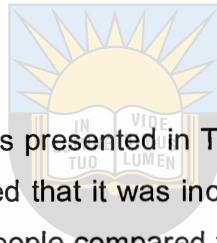
7.3.4 Perceived Barriers

These are factors that are perceived by individuals as hindering the adoption of positive health related action, because of their negative physical, psychological and financial consequences. If individuals perceive that the negative consequences of adopting a healthier related behaviour outweigh the positive benefits of adopting that behaviour, they may not adopt the health related behaviour. To understand why people avoid adopting positive health related behaviours it is very useful to first identify the negative connotations that are associated with the adoption of these health related behaviours (Champion & Skinner, 2008: 26).

There are two forms of barriers that act as impediments for the adoption of positive health related behaviour or actions. These impediments include personal and situational impediments. The personal impediments represent an individual's lack of self-belief, whilst the situational impediments are as a result of structures of health care services that impede the adoption of positive health related behaviours or actions (Bandura, 1986: 395).

In the present study the results in Table 12 illustrate that only 18% and 19% of female and male respondents respectively indicated that they can successfully cope with Drug Resistant Tuberculosis if they were diagnosed with it. Almost 80 % of the respondents believed that they cannot cope.

The results of this study show that the respondents had low levels of self-efficacy belief in coping with Drug Resistant Tuberculosis. This might have been influenced by low literacy levels among the respondents. The results have also shown that almost half of the respondents in the current study had primary or no formal education. It is therefore assumed that this situation makes it difficult for the research respondents to acquire and make sense of health related information. In line with above findings, Ndoro (2009: 102) also discovered low self-efficacy beliefs among the respondents in a study that was conducted in Grahamstown East to assess community attitudes and perceptions towards TB in the era of HIV and AIDS.



The results of the present study as presented in Table 12 illustrate that only 46% of the female respondents believed that it was incorrect to forcefully isolate Drug Resistant Tuberculosis infected people compared to 48% of male respondents. In addition to this, 70% of female and 75% of male respondents indicated that Drug Resistant Tuberculosis infected people deserved respect and a fair treatment like everyone else. The research further showed that 72% of females believed that it was okay to discriminate and treat badly Drug Resistant Tuberculosis infected people compared to 77% of males. The above results highlight the fact that a number of the respondents in the present study had disregard of the basic human rights that are enshrined in the South African Constitution and other pieces of legislation that are governing management and control of Tuberculosis in South Africa. The results also highlight the need for intensification of health education interventions that are not only aimed at increasing the general knowledge but also the (human rights) legislative issues related to the management and control of the Drug Resistant Tuberculosis.

Social isolation, prejudice and negative attitudes or views that people have about the TB make people hide and avoid seeking medical assistance early enough (Sikwese, 2012: 7; Long et al., 2001: 70).

The research also showed that 42% of the male respondents indicated that they would not talk or speak to anyone about their Drug Resistant Tuberculosis diagnosis compared to 33% of females. The findings of the present study are similar to those of Edginton et al. (2002: 1075) in Venda in the Limpopo Province of South Africa where it was discovered that people hide or did not disclose their TB status for fear of isolation. In this culture, there was also a belief that a husband and wife could not have sexual intercourse if one of them was infected and this consequently led them not to disclose their TB status to each other. The fear of isolation as a result of being infected with TB was a form of personal impediment for the adoption of preventative measures against the disease (Edginton et al., 2002: 1075). Comparatively, in the Kuria community of Kenya the relatives of a TB patient would prevent the TB patient from having contact with other people including their spouse and children. That results in people within this culture not seeking TB treatment at a clinic or disclosing their TB status for fear of isolation (Liefoghe et al., 1995: 65). In contrast to the above findings, respondents consulted medical health providers at clinics and hospitals for diagnosis and treatment if they suspected TB (Yimer et al., 2009: 2).

In a study conducted in South Africa by Cassie (2002: 378) it was found that the stigma and discrimination associated with TB in both urban and rural communities played an important role in the spread and control of the TB epidemic. The concept of blame is a crucial determinant for stigma and discrimination to exist. In the present study the results in Table 12 revealed that 68% of both female and male participants believed that if people infected default treatment should not be blamed and seen as the reason for the spread of Drug Resistant Tuberculosis whereas almost a third of the respondents felt that they should be blamed. These findings are in line with those of Ndoro (2009: 102) where it was found that the majority of the respondents (90.4%) blamed TB patients for contracting the disease due to their negligent behaviour.

They further felt that it was mostly the irresponsible people who were non-compliant in their treatment and who should be blamed for the spread of TB (Moller & Erstad, 2006: 75).

A study conducted in Bangladesh on stigma, gender and their impact on individuals showed different forms of stigma, intensity and impact. Features of TB related stigma include the feeling of shame, avoidance, embarrassment, depression, rejection, blame, self-guilt and fear of anticipated negative reactions from others (Karim et al., 2007: 145). The results in table 12 revealed that the majority (60%) of the female respondents believed that the community will avoid them but remain friendly if they discover that they have Drug Resistant Tuberculosis compared to 40% of the male respondents. On the same note, 24% and 22% of the female and male respondents respectively, also indicated that the community will reject them, if it discovers that they had Drug Resistant Tuberculosis.

Findings further show that 43% of the male respondents stated that their greatest fear of being diagnosed with Drug Resistant TB was to experience or to be subjected to the rejection, ill-treatment, degrading and discriminatory practices by community and health care workers compared to 38% of females who held similar sentiments.

The study also show that the majority (56%) of the female research subjects would be friendly but avoid their family members if they have Drug Resistant Tuberculosis compared to 42% of males. Almost an equal percentage (3% and 4%) of female and males respectively, indicated that they will hate them. The present study also revealed that 31% and 27% of female and male respondents respectively, indicated that they will be surprised and sad if they were to be diagnosed with Drug Resistant Tuberculosis.

Mushtaq et al., (2011: 5) also found that 38.6% of the respondents indicated that they will be friendly and avoid their family members if they are diagnosed with TB and also 5.4% also indicated that they will hate the infected.

TB is stigmatised because the disease is associated with poverty, dirt, poor nutrition and bad health practices such as smoking (Barker & Palmer, 2006: 41). Thus, these social factors are associated with perpetuation of stigma and discrimination of the disease. Moller & Erstad (2007: 103) state that stigma and discrimination have a major negative impact on the lives and experiences of both infected and affected. Stigmatising individuals allows the blame for the spread of the disease to be placed on others. These people perceive TB infected people as out-groups and try to avoid any contact with infected people. This attitude of ignorance instead, exposes these individuals to actual risk of contracting the disease (Moller & Erstad, 2007: 103).

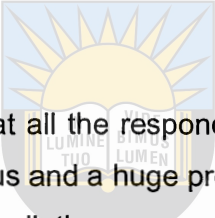
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The results in Table 12 further indicated that 68% of both female and male respondents believed that people who default TB treatment should not be blamed for the spread of Drug Resistant Tuberculosis. Karim et al., (2007: 139) argue that the dual stigma attached to TB and HIV/AIDS has possibly become a barrier for community members to seek treatment. Individuals who do not seek treatment are blamed for placing the rest of the society at risk and as a result of this they do not seek treatment or disclose their status to other people. The possible reason why such people do not disclose their status or seek treatment is because they have fears of possessing a reduced social status and receiving negative reactions. The negative judgmental attitudes towards TB need to be removed so that there can be better TB control to reduce death from TB and the spread of Drug Resistant Tuberculosis.

The results of this study highlight a need intensification of health education interventions that are aimed at reducing stigma

7.3.5 Cues to Action

People are motivated and influenced to adopt positive health-related behaviours by factors that include visible physical symptoms of the disease, and external motivators such as the media and awareness campaigns. When individuals visibly observe the symptoms and the characteristics of a disease within an infected person they are motivated to adopt positive health related behaviours to avoid contracting the disease. The media and health related campaigns can raise awareness on the nature of the disease among people who are not in contact with the disease (Hall, 2011: 5).



The results in table 7 indicated that all the respondents in this study were aware that Drug Resistant TB is dangerous and a huge problem in their area. The results in figure 12 further indicate that all the respondents have heard about Drug Resistant TB from different sources of information. Despite the acknowledgement by all the respondents in this study that Drug Resistant TB is a problem in their area, there were some few respondents who did not perceive Drug Resistant TB infection as an immediate threat to themselves. The results have indicated that 69% of female respondents in this study knew that it was not only HIV and AIDS infected people that were susceptible to Drug Resistant TB compared to 81% of males.

The findings further showed that 93% and 92% of female and male respondents respectively knew that Drug Resistant TB was not a disease of the poor and HIV and AIDS infected. Stigma and discrimination towards the disease and those infected prevent people from disclosing their status. The Health Belief Model suggests that if more people who are infected with a disease come out into the open, more people in the community would become aware of the disease and its negative consequences. Such awareness acts as a cue to action to encourage other members in the community to adopt positive healthier preventative behaviours against the disease.

The initial breakout of Drug Resistant TB in 2006 in KwaZulu-Natal was covered on television, radio station and newspapers. The 2008 escape of Drug Resistant Tuberculosis patients at a Public Hospital which caused a public scare at Port Elizabeth was also well covered and publicized and talked about in the media (Fana et al., 2013: 69).

It is assumed that these events were cues to action to promote the adoption of positive health related behaviours against Drug Resistant Tuberculosis within the community.



7.3.6 Self-Efficacy

Self-efficacy refers to the self-belief by an individual that he/she is able to successfully acquire and sustain new health related behaviours (Murima, 2013: 36). People with a high sense of self efficacy to accomplish a task put great effort, persistence and resilience towards achievement of their goal. People with low self-efficacy discount their successes and do not change their beliefs positively.

The results in table 12 illustrate that only 18% and 19% of female and male respondents respectively indicated that they can successfully cope with Drug Resistant Tuberculosis; if they were diagnosed with it. The research further revealed that only 6% of female and 7% of male respondents indicated that, if they were to be diagnosed with Drug Resistant Tuberculosis they would not have any fear or challenge of it. It is also of significance to note that almost 80% and 90% of the respondents believed that they cannot cope and that they fear being infected with Drug Resistant Tuberculosis. These results show low self-efficacy belief towards Drug Resistant Tuberculosis among the research respondents. The low self-efficacy belief can be attributed to the research respondents low literacy levels and poor knowledge and awareness levels about Drug Resistant Tuberculosis.

However, the findings of the present study were in contrast to those of a study by Senthilingam et al., (2015: 1159) to assess the lives of uncured XDR patients, which revealed that family members of the infected persons indicated that they were not afraid of being infected with XDR-TB because God was protecting them from infection.

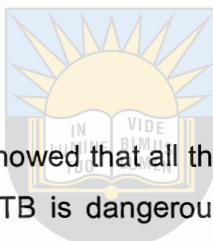
Pajares (2002: 237), argue that "there is no amount of self-belief alone with no skills or knowledge that can ultimately produce success of the adoption of a given behaviour". According to Bandura (1986: 395), skills' training is the most effectively applied intervention when self-efficacy is very low. Individuals with a strong sense of personal agency and high self-efficacy see challenging tasks as opportunities to master challenges rather than threats to be avoided (Bandura, 1986: 394). People need to be educated and trained to acquire skills in order for them to feel confident and competent to successfully engage in health related behaviours. As shown in figure 8 in this study, the respondent's literacy or education levels are low.

About 10% of the respondents had no formal education and another 37% had only primary school education respectively, and this may account for the lack of confidence in their abilities to adopt positive health action or behaviours by protecting themselves against Drug Resistant Tuberculosis. The results also indicated that almost 75% of the respondents stay with 3 to 6 family members in a house and thereby rendering some of the prevention practices a challenge (avoiding close contact for long periods with infected, overcrowded areas, etc.).

The above findings confirm the assumption that people with low self-efficacy belief are unable to successfully acquire and sustain new health related behaviour or may discount their successes and do not change their beliefs positively nor adapt positive health actions.

7.4 COMMUNITY PRACTICES

According to the Health Belief Model, if people perceive Drug Resistant Tuberculosis to be a serious problem they will take appropriate action to prevent it. Perceived susceptibility and severity of Drug Resistant Tuberculosis infection refers to how seriously individuals view the consequences of Drug Resistant Tuberculosis infection both from a medical and social perspective. It is assumed that if perceived severity of a disease is high among people they will try to adopt better health-related behaviours to avoid and prevent the spread of that disease (Murima, 2013: 46).



As shown in Table 7, the results showed that all the research respondents (100%) were aware that Drug Resistant TB is dangerous and a huge problem in their area. Maharaj et al., (2016: 3) found that 96.6% knew that MDR –TB was a huge problem in South Africa. According to Burtcher et al., (2016: 6) TB is a dangerous killer disease that causes nervousness among Kyrgyz people. Furthermore, the study also illustrate that 86% female and 87% male respondents indicated that Drug Resistant TB was a condition that could be contracted by anyone within their community because the TB germs are in the air and is spread when those infected are coughing and sneezing. 94.1% of the study participants stated that MDR is transmitted through the air when the infected coughs or sneezes (Maharaj et al., 2016: 3).

The above findings illustrate that perceived severity and susceptibility was high among the respondents in this study. The above findings are also in line with or meet the preconditions for taking of appropriate health action to prevent contracting or spreading a disease as assumed in the Health Belief Model (Kumar et al., 2012: 230).

The results as shown in figure 15 of this study illustrate that the majority (59%) of the respondents had good knowledge of Drug Resistant Tuberculosis prevention practices. The findings of this study are similar to those of the studies that were conducted by Bati et al., (2013: 8) & Mushtaq et al., (2011: 7) where the study participants had good knowledge of prevention practices towards TB. It is further revealed in Table 13, that when the respondents were asked about how transmission and spread of Drug Resistant Tuberculosis can be prevented, 82% of female and 87% male respondents indicated that by covering of mouth and nose when the infected persons are coughing and sneezing, 88% of females and 85% of males said by wearing an N 95 or a protective mask, 88% of females and 84% of males said by disposing sputum correctly regularly, 82% of females and 86% of males said by not spitting indiscriminately, and lastly 76% of females and 82% of males said by staying in a well-ventilated area and avoiding close contact for long periods with Drug Resistant Tuberculosis infected people.

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In line with the above findings, Naidoo and Taylor, (2013: 4) found that 88.1 % of the respondents indicated that covering of mouth and nose when coughing and sneezing is a prevention method against the spread of TB. To prevent transmission, 98% of the respondents recommended covering of mouth and nose when the infected persons are coughing and sneezing and 15 % recommended proper disposal of sputum (Maun et al. 2015: 77). Mehtar et al. (2012: 28) revealed that 77.4 % of the respondents in their study indicated that the spread of TB can be minimised and prevented by avoiding close contact for a long time with the infected person, while 68.2% stated by wearing a face mask and 43.4 % indicated by staying in a well-ventilated room.

The findings of the present study confirm the assumptions that are made in the Health Belief Model that if perceived severity and susceptibility of a disease is high among people, they will try to adopt better health-related behaviours to avoid or prevent contracting or spreading the disease.

Although the majority of the respondents knew prevention practices of Drug Resistant TB, it is also of significance to note that some of the respondents in this study had low perceived susceptibility, poor knowledge and awareness levels regarding these prevention practices and thereby are at risk of infection with the disease. Table 13 in this study also revealed the following inappropriate Drug Resistant TB prevention practices. For example, it is only 47% of the male respondents that knew that avoiding hugging and shaking hand with Drug Resistant TB infected is not a preventative practice against the transmission and spread of Drug Resistant TB compared to 48% of females. Afolabi et al, (2016: 5) also found similar results as 97. 2% of the respondents indicated that TB can be contracted through hand shake in their study and that avoiding handshake would prevent infection.

Maharaj et al., (2016: 3) & Burtcher et al, (2016: 7) also revealed that 34.7% of the respondents in their study believed that MDR-TB was caused by kissing and touching and therefore avoid kissing and touching the infected persons were means of preventing infection and its spread. Mushtaq et al. (2011: 3) also found that when asked about prevention measures taken to prevent spread of the disease, nearly half of the research respondents mentioned avoid sharing food utensils. In the present study, it is only 38% of the female respondents that knew that avoiding sharing of dishes, cups, and linen with the infected is also not a preventative practice against the spread and transmission of Drug Resistant TB compared to 39% of males.

Burtcher, Van den Bergh, Toktosunov, Angmo, Samieva & Arechaga (2016: 11) revealed that Drug Resistant TB infected patients felt that the treatment or drugs used to cure or manage Drug Resistant TB were even worse than the disease itself. The results in Table 12 in the present study further revealed that the research respondents feared injection, treatment and its side effects, degrading and discriminatory attitudes of both community members and health care workers.

The findings of the present study also revealed that about 52% of female respondents knew that taking prescribed medication only when feeling sick and stopping it when feeling better is not an acceptable Drug Resistant Tuberculosis prevention practice compared to 51% of males.

A study conducted to assess patient's knowledge and attitudes of MDR-TB in Kwa-Zulu Natal, SA revealed that 6.1% of the respondents would stop their medication when they felt better and another 4.2% stated that they would stop the medication if they felt worse (Maharaj et al., 2016:4). The severity of the drugs side effects, lack of social support and other socio-economic needs are some of the factors causing interruption or abandoning of treatment among people infected with Drug Resistant TB (Ogunbanjo & Savva, 2011: 11).

The research findings in Table 13 further indicate that an equal percentage (79%) of both male and female respondents knew that performing traditional rituals is not an acceptable Drug Resistant TB prevention practice. Women are more likely to shoulder the blame for infection in their household. It is stated that they even resort to cultural cleansing rituals in order to free themselves and family members from the cultural manifestation of TB (Moller & Erstad., 2006: 66).

The results further show that 79% and 80% respectively, of the male and female research subjects knew that constant taking of traditional or herbal remedies was not an acceptable prevention practice towards the spread and transmission of Drug Resistant TB. Tolossa et al, (2014: 7) found that 10.5% of the respondents indicated using herbal remedies as treatment and prevention method for TB.

The result of the current study illustrate that some of the respondents have low perceived personal susceptibility, knowledge and awareness levels, negative attitudes and poor prevention practices and thereby at risk of contracting Drug Resistant Tuberculosis.

Knowledge influences attitudes and health seeking behaviour or practices. If incorrect information, misconception and erroneous beliefs are held about a disease, people will not be able to recognize the signs and symptoms of the disease thereby delay seeking help and that will impact negatively on health seeking and TB control (Isara & Akpodiete, 2015: 17).

Cultural beliefs, value and norms also affect health seeking behaviour. The results obtained from this study as shown in Table 13 illustrate that when asked what they will do if they are suspecting that they are infected with Drug Resistant TB, 74% of the female respondents stated that they will visit a health care centre or hospital compared to 60% of males. In addition, 20% of the female respondents indicated that they will consult an herbalist or traditional healer compared to 7% of males. Furthermore, 6% of female respondents also indicated that they will initiate self-treatment compared to 18% of males. In a study that was conducted in Itang South West of Ethiopia, it was found that 45% of the community members were consulting traditional healers for treatment of tuberculosis whereas, in the Northern part of Ethiopia almost half of the respondents were consulting medical health providers (Bati et al., 2013: 8 & Yimer, et al., 2009: 2).

The results of the present study confirm the use and existence of dual health systems (African or traditional and modern or western). The results of the present study further highlight the importance of fostering collaborations with other providers such as traditional and spiritual healers in TB care. In the same vein, 15% of the male respondents in the present study indicated that they will stay at home, rest and pray should they suspect Drug Resistant Tuberculosis infection; while 16.1% and 19.9 % of the respondents respectively indicated that to prevent themselves from infection with TB, they prayed (Tolossa et al, 2014: 7; Mushtaq et al, 2011: 3). Senthilingam et al., (2015: 1159) also revealed that family members of the uncured XDR-TB patients indicated that they won't get XDR-TB because they believed that God was protecting them.

This study further reveals that some of the respondents have faith in spiritual powers and believed that by praying, they will be protected from Drug Resistant Tuberculosis infection. These findings highlight misconceptions and erroneous beliefs that community members have with regard Drug Resistant Tuberculosis. These beliefs and practices need to be properly addressed in collaboration with the different ministries as they might lead to complete disregard of prevention practices against Drug Resistant Tuberculosis.

The findings of the present study in table 13 further reveals that 60% of the female respondents indicated that they will never go to a clinic or hospital after getting Drug Resistant Tuberculosis compared to 40% of males. Mushtaq et al (2011: 4) found that only 0. 87% of the respondents indicated that they would not visit a health facility or doctor. In contrast to the above findings, Tolossa et al. (2014: 10) found that 71% of the respondents would go to the health care facility if they thought they have symptoms of TB. In addition to that, 22% of the male respondents also stated that they will go to a clinic or hospital when self-treatment does not work compared to 24% of females. Similar to the above findings Tolossa et al. (2014: 10) found that 71% of the respondents would go to the health care facility, 32. 2% would pursue self-treatment if they thought they have symptoms of TB. More female (16%) respondents indicated that they will go to a clinic or hospital as soon as they realise that the signs and symptoms are that of Drug Resistant TB compared 38% of males. Mushtaq et al (2011: 4) also found that the majority (79.2%) of the respondents in their study stated they would go to a clinic or hospital as soon as they realise that they have TB signs and symptoms.

These findings highlight the fact that some of the respondents prefer to make use of other alternatives rather than public health institutions. Such preferences might be due to lack of confidence and mistrust with public health institutions and that might impact negatively on TB control program and the continuity of care, decision makers, policy implementers and managers within the TB control program.

7.5 AGE DIFFERENCES IN KNOWLEDGE, ATTITUDES AND PRACTICES

This section covers age differences in knowledge and awareness levels, attitudes and practices of the respondents with regard to Drug Resistant Tuberculosis.

7.5.1 Age Related Differences in Knowledge and Awareness Levels.

The results in Table 13 revealed that $p = < .0001$. This meant that there was a strong correlation between age and knowledge and awareness levels of the respondents with regard to Drug Resistant Tuberculosis. In line with the findings of the present study, knowledge was statistically significant to research participant's age (Mohamed, Yuosif, Ottoa and Bayouni, 2007: 21).

In a study conducted to assess awareness about TB among women who were living in the rural communities of Atlantic coastline of Nigeria it was also found that age was significantly correlated with awareness of TB ($p = < 0.005$) (Afolabi et al., 2016: 1).

The overall knowledge and awareness levels of the research subjects were associated with age. Respondents aged 21-35 years were 3.660 times more likely to have sufficient knowledge of TB than those who are 20 years of age or younger (Mondal et al., 2014: 855).

However, the results of the present study were in conflict with those of a study by Ahmed et al., (2013: 787) where it was discovered that knowledge was not statistically associated to age. Noremilla & Rahmam, (2015: 64), Bati et al., (2013: 8), Fana (2013: 79) also found no statistical significance between knowledge and age in the studies previously conducted.

7.5.2 Age Related Differences in Attitudes

The research findings in Table 14 show that $p = 0.0002$. This meant that there was a strong correlation between age and attitudes of the respondents with regard to Drug Resistant Tuberculosis.

In contrast to the above findings no statistical significance were observed between attitudes and age (Noremilla & Rahmam, 2015: 64; Bati et al., 2013: 8; Adebajo, 2011: 39 and Kaoy, 2004: 2).



7.5.3 Age Related Differences in Practices

The results in Table 15 illustrate that $p = 0.0010$. This meant that there was a correlation between age and knowledge and practices of the respondents with regard to Drug Resistant TB.

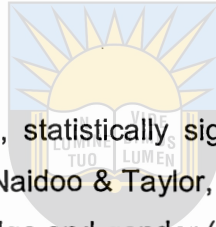
Chinenye (2015: 17) found statistical significance between age and practices. In contrast to the above findings no statistical significant differences observed between attitudes and age (Adebajo, 2011: 39).

7.6 GENDER DIFFERENCES IN KNOWLEDGE AND AWARENESS LEVELS, ATTITUDES AND PRACTICES OF DRUG RESISTANT TB

In this section gender differences in knowledge and awareness levels, attitudes and practices of the respondents with regard to Drug Resistant TB are discussed.

7.6.1 Gender Related Differences in Knowledge and Awareness Levels

The results in Table 16 revealed that $p = 0.3748$. This meant that there was no correlation between gender and knowledge and awareness levels of the respondents with regard to Drug Resistant Tuberculosis. The above findings are similar to the studies that were previously conducted where no significant differences found between knowledge and sex or gender (Noremilla & Rahmam, 2015: 64; Onyeonoro et al., 2014: 8; Ahmed et al., 2013: 787, Nik Nor et al, 2011: 13 & Kaoy, 2004: 2).



In contrast to the above findings, statistically significant correlation was found between knowledge and gender (Naidoo & Taylor, 2013: 7). Fana (2013: 79) also found correlation between knowledge and gender ($p = 0.0043$).

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In their study, Naidoo & Taylor found that the female TB patients were 0.824 times less likely to be informed compared to males. Marinac et al. (1998: 57) also revealed statistically significant differences in gender and knowledge ($p = 0.00311$).

The results further showed that male respondents scored (63%) compared to female respondents (60%). The results of that study also revealed that male had higher knowledge score and proactive attitudes in TB than female respondents. The above findings were similar to those of (Abebe & Demissie, 2012: 1). This could have been influenced by the fact that traditionally, people preferred to enroll boys to school than girls. The limited educational opportunities for women therefore resulted in low education and literacy levels. It is assumed that people stigmatize and discriminate others due to lack of knowledge.

Sagili, Satyanarayana and Chadha (2016: 1) revealed that TB knowledge was not associated (or was independent) with discriminatory and stigmatizing attitudes. Burtcher et al., (2016: 9) also revealed that TB patients expressed disappointment at being subjected to stigma and discrimination by the healthcare workers who they considered to be having a professional understanding of TB.

7.6.2 Gender Related Differences in Attitudes

The findings in Table 17 show that $p = 0.0016$. This meant that there is a strong correlation between gender and attitudes of the respondents. The previous study has revealed that males had higher proactive attitudes in TB than female respondents (Mondal et al., 2014: 860).



In contrast to the above findings, no statistical significant differences were observed between attitudes and gender (Noremilla & Rahmam, 2015: 64). This could be explained by the social conditions which arise from poverty, lack of women education, the traditional beliefs and practices that allow little opportunities for the development of females compared to males. Women are expected to take care of their husbands and children while men are expected to work and be the providers for their families.

7.6.3 Gender Related Differences in Practices

The results in Table 18 illustrate that $p = 0.7410$. This meant that there was no statistically significant relationship between gender and practices of the respondents with regard to Drug Resistant Tuberculosis.

In line with the above findings no statistically significant differences were observed between gender and practices in other studies such as (Noremilla & Rahmam, 2015: 64; Naidoo & Taylor, 2013: 7).

7.7 THE EFFECT OF THE SOCIO DEMOGRAPHIC FACTORS ON DRUG RESISTANT TB ON KNOWLEDGE AND AWARENESS LEVELS, ATTITUDES AND PRACTICES OF THE RESEARCH RESPONDENTS.

7.7.1 Effect of Socio-Demographic Factors on Knowledge Level

As shown in Table 20, the results indicate that knowledge level significantly correlates with the number of family members, marital status, race, education and type of residence and the main source of Drug Resistant Tuberculosis information of the respondents. All the above mentioned socio demographic factors had a chi-square p value of ($p = <. 0001$). The above findings are in line with the findings of (Onyeonoro, Chukwu, Oshi, Nwafor & Meka, 2014: 1) where they revealed that being literate and having better educational background of an individual or the spouse, and being a Christian were all associated with better knowledge of the tuberculosis. Higher educational or literacy levels, higher income, and knowing a person from the community with TB were significantly associated with level of TB knowledge of the research respondents (Pengpid, et al., 2016: 694).

Sex, age, educational status, and TB type are significantly associated with the knowledge level (Mondal, Nazrul, Chowdhury & Howard, 2014: 855). The significant differences in knowledge level among TB patients were also observed by educational level. Respondents with the highest level of education (12 years or more of schooling) were 8.097 times more likely to have sufficient knowledge compared to those who completed 0-5 years of schooling (Mondal et al., 2014: 860).

In contrast to the findings of the present study, Ahmed et al., (2013: 787) found no relationship between knowledge and age, gender or sex in their study. Income and employment status of the respondents were not associated with knowledge ($p = 0.5325$). This meant that knowledge and employment status and family income had no relationship. The above findings are in line with the findings of the study that was conducted by Konda et al., (2015: 565) where it was revealed that knowledge was not associated with occupation of the respondents.

In contrast to the above findings Mohamed et al., (2007: 1) found that knowledge was significantly associated with type of residence of the respondent. Poor knowledge about TB was significantly associated with young age group ($P = 0.037$), less education ($P < 0.001$) and low income ($P = 0.027$) (Konda et al., 2015: 565).



7.7.2 Effect of Socio-Demographic Factors on Attitudes

The results in Table 21 indicate that attitudes were significantly associated with the number of family members, marital status, race, education, and type of residence and the main source of DR- TB information of the respondents. On the above mentioned socio-demographic factors marital status had a chi-square p value of ($p = 0.0002$) whereas the others had a chi-square p value of ($p = < .0001$). This meant there were significant correlations between the socio-demographic factors and attitudes that are mentioned above.

Similar to the finding of the present study, education and literacy levels of the respondents were significantly associated with TB-related attitude in other similar studies (Onyeonoro et al., 2011: 1).

On the other hand Konda et al., (2015: 563) found that negative attitudes and practices regarding TB were significantly associated with less education ($P = 0.002$), low income ($P = 0.008$) and nuclear family ($P = 0.008$).

This study did not revealed any correlation between attitudes, family income and employment status ($p = 0.3610$) and attitudes and type of residence ($p = 0.1126$) of the respondents. In line with the above findings attitudes were also not associated with occupation of the research respondents (Konda et al., 2015: 565). Older age, being a male, having poorer TB knowledge, and not knowing other people in the community with TB were all associated with a community stigmatizing attitude toward TB (Yuosif et al., 2009: 28). Negative attitude towards TB was found to be associated with low income, lack of schooling, unemployment, young age (15–19 years), and residing in rural areas (Onyeonoro et al., 2013: 8).

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However, this research showed that males not only had they had high knowledge and awareness levels, but also had proactive attitudes than females. This was similar with a research study that was undertaken by Mohamed et al. (2004: 6) in Sudan. According to a study conducted in Egypt by Kamel et al. (2002: 4), it was found that female research subjects who had TB had significantly lower scores in knowledge, beliefs and attitudes about tuberculosis than the male research subjects. The research study further revealed significant differences in attitudes between males and females respondents. This is consistent with the findings of other studies which were conducted in Morocco (Ottmani et al., 2000: 3), and in Philippine (Christina et al., 2005: 8), where it was found out that males had proactive attitudes than female research subjects. This could be explained or attributed to the weight of traditions on women, the low educational levels and low economic power or status of women.

Male research subjects had better access to health care, and were loosely attached with traditional beliefs of cause of disease than females research subjects.

7.7.3 Effect of Socio-Demographic Factors on Practices

As shown in Table 22, the results indicate that prevention practices were statistically significant and associated with the number of family members, marital status, race, education, and the main source of Drug Resistant Tuberculosis information of the respondents. Of the above mentioned socio-demographic factors, only number of family members had a chi-square p value of ($p = 0.0365$) whereas all the other socio demographic factors had a chi-square p value of ($p = <.0001$).



In contrast to the findings of the present study, a study conducted by Ahmed et al., (2013: 787) revealed that the research respondent's practices were not associated with age, literacy status and sex. This was attributed to culture, low financial capacity, health perception, stigma, and socio-psychological barriers (beliefs). Konda et al., (2015: 565) also found no statistically significant association between practices and age, sex, marital status, occupation, or type of first health facility visited.

The results of the present study also found that family income and employment status ($p = 0.0883$) and the type of the residence ($p = 0.05790$) of the respondents were not associated with prevention practices. This meant that attitudes and type of residence, family income and employment status had no relationship. In line with the above findings Konda et al., (2015: 565) found no correlation between attitudes and practices; while Ahmed et al., (2013: 787) also found no correlation between age and type of residence.

7.8 DISCUSSION AND INTERPRETATION OF THE EFFECT OF DEMOGRAPHIC FACTORS ON KNOWLEDGE, ATTITUDES AND PRACTICES OF THE RESPONDENTS USING THE SOCIO ECOLOGICAL MODEL.

In this section of the study, the researcher sought to explain the results through the use of Socio Ecological Model. Drug Resistant TB control and preventions is beleaguered by issues that have to do with access to healthcare services, misconceptions, stigma and discriminatory attitudes and practices towards its control and treatment. An understanding and appreciation of the factors which affect health seeking behaviour and prevention practices is important for policy and public health awareness and behavioural change strategies. The research revealed that the research respondents had poor knowledge and awareness levels, negative attitudes but good prevention practices of Drug Resistant Tuberculosis. Secondly, adults had poor knowledge, negative attitude and poor prevention practices compared to young respondents. Thirdly, females also had poor knowledge, negative attitudes and poor prevention practices compared to males.

At individual level the low literacy levels of the research respondents in this study has an effect on their ability to acquire knowledge related Drug Resistant TB. The information on Drug Resistant TB might also be available in a language in which some of the research respondents are not conversant of and this can have a negative effect on adoption of positive health related behaviours and practices. In the same vein, at individual level youth and males were more knowledgeable than adults and females about the Drug Resistant TB. Low literacy levels and lack of knowledge among adult respondents can be attributed to limited access to educational opportunities that existed during the apartheid era. Lack of knowledge among females compared to males can possibly be attributed to the fact that women are home bound and therefore have limited opportunity to socialise and get exposed to information and the world around them.

Better knowledge of males compared to females can also be attributed to the fact that previously in the African culture (Xhosa), it was considered to be a waste of time and money to educate a girl child, as it was believed that their role was to get married, take care of the husband and give birth to as many children as possible. On the other hand, youth are exposed to various sources of information compared to adults such as the internet.

The research revealed that 5% of the research respondents lived alone. It stated that on average a TB infected person infects about 10 to 15 people. It is assumed poor knowledge among the respondents can have negative impact on TB control program as people who lack knowledge might not be in a position to identify symptoms early enough and present themselves at health centres for early diagnosis and treatment.



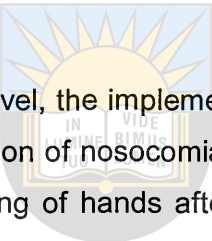
At family level unemployment, poor economic conditions and lack of income might have made it difficult for some of the respondents to continue with their studies. Low literacy levels and lack of knowledge might possibly result in incorrect information being shared among family members with regard to Drug Resistant TB. Incorrect knowledge and misconceptions and erroneous beliefs about Drug Resistant TB might be taught to children by parents at an early age and thereby becoming difficult to change in some cases. Some of the research respondents have indicated that Drug Resistant TB was caused by witchcraft, and that traditional healers can heal it while others believed that they were protected from infection by praying to their living God. Unemployment and lack of income might hinder people from adopting positive health seeking behaviour and prevention practices against infection with Drug Resistant Tuberculosis. Costs of transportation to fetch medication daily, weekly or monthly might prove to be a challenge to some of the research respondents as the results have shown that 63% were unemployed and 58% were living on an income of less than R 5000.00 per month.

Taking Drug Resistant TB drugs daily with balance and nutritious meals might prove to be difficult to some of the respondents due to the above mentioned economic conditions. The results further revealed that 75% of the research respondents lived with three to six family members in a house. In such conditions infection might spread easily even to close contacts of the infected especially if they have poor knowledge of Drug Resistant TB and infection control or prevention measures. Segmeni (2012: 25) states that family also play a crucial supportive role (economically, physical and psychological) during TB treatment.

Practices such as avoiding close contact for a long duration in closed doors with the infected and limiting contact with children and immuno suppressed people might be viewed negatively and in some cases as rejection and stigmatisation by those infected Drug Resistant TB. Low educational attainment is associated with low self-efficacy belief. People with low educational levels lack knowledge about TB and they are at risk of infection with the disease. Such individuals can easily cave into peer pressure or be manipulated. It is assumed that their lack of knowledge about Drug Resistant TB and its severity, lack of employment prospects due to illiteracy, might lead to them caving into peer pressure for economic benefits in the sense of disability grants at the expense of their health (DR-TB infection). The temporary disability grant that is offered to Drug Resistant TB infected might be seen as a source of income by some of the patients.

At community and organisational level again the poor economic conditions in which some of the respondents find themselves in, make them vulnerable to disease. The research showed that the majority of the respondents (56%) stayed in informal settlements where there was overcrowding, lack of running water, electricity and sanitation services. Some of these areas have no tarred roads, healthcare services, churches and schools and such amenities and institutions are also significance as they contribute to shaping of human lives and improving quality of life.

A study conducted by Gelaw (2011: 9) revealed that the burden of TB was high among the poor with deprived living conditions and malnutrition. Portero Navio, Yuste and Pasicatan (2012: 306) also found that the impoverished or people that were living in poor economic situations have a high prevalence of low overall knowledge about tuberculosis. Prevention practices require that proper ventilation, opening of windows and avoiding being in close contact for a long period of time with the infected person. This a challenge to practice especially in informal settlements where there is overcrowding and almost 75% of the respondents stayed with three to six family members.



At organisational and community level, the implementation of the infection control policy at health centres for prevention of nosocomial infections (wearing of mask, isolation of TB infected and washing of hands after dealing with TB infected or suspects) also has a potential of continuing to increase the stigma and discriminatory practices especially among those who lack appropriate knowledge infection prevention practices about the disease. Wearing of mask when dealing with confirmed Drug Resistant TB infected people who are on treatment for months also has a potential of sending confusing or mixed messages to the infected as wells as the public, as it is stated that Drug Resistant TB infected people are not infectious when they are on treatment. This might also result in rise in stigma, discrimination and perceptions of the severity of the disease among those watching.

At community level, knowledge, attitudes and practices can be influenced by the accepted norms beliefs that are held within that community. It is said that in such situations people are more inclined to behave in a manner that is socially accepted within their community. The research results have revealed that some of the respondents believed that if they are infected the community will reject them.

The research results further revealed that some of the respondents believed that it was okay to forcefully isolate, discriminate, treat badly, and not afford fair treatment and respect to those who are infected with Drug Resistant TB. The research has also shown that some of the research respondents believed that Drug Resistant TB is a disease of the poor and HIV positive people. People from different groups will behave in a manner that is socially accepted within their community or that particular group even when they have knowledge. When asked what will be their greatest challenge if they were diagnosed with Drug Resistant TB, the research revealed that the respondents indicated that they feared rejection, ill treatment and degrading and discriminatory practices by community and healthcare staff. Drug Resistant Tuberculosis patients expressed disappointment for being subjected to discrimination and stigmatisation by health care workers as they believed that the healthcare workers had a professional understanding of TB in a study that was conducted to evaluate community perceptions of Drug Resistant TB and Ambulatory Care in Kara Suu District, Osh Province, Kyrgyzstan (Burtscher et al., 2016: 9).

At policy levels the research respondents because of their low literacy levels might find it difficult to understand why some community members who are infected with TB take their Drug Resistant Tuberculosis drugs at primary health centres while others are being admitted at centralised Drug Resistant Tuberculosis centres. On the same note, the temporary social disability grant that is offered to people infected with Drug Resistant Tuberculosis has a potential of working against the aims and the objectives of the TB control program, as some of the research respondents in this study have shown intention to get infected with Drug Resistant Tuberculosis as they see the grant as a source of income. The decentralised and deinstitutionalised Drug Resistant Tuberculosis management policy was aimed at promoting accessibility and acceptability of Drug Resistant Tuberculosis and its treatment within the communities.

The research results have revealed that research respondents indicated that Drug Resistant Tuberculosis infected people were rejected in the community. Some of the respondents also indicated that they will ignore and avoid or hate their family members if they are infected, while others believed it was right to discriminate, disrespect or treat badly and forcefully isolate the Drug Resistant Tuberculosis infected people. Low literacy levels and lack of appropriate knowledge among the research respondents highlight the need for proper health education that will also cover basic human rights as enshrined in the South African Constitution as there is a huge possibility that they will continue being disregarded.

7.9 CONCLUSION

In this chapter, the results of the empirical study were discussed using the Health Belief Model, Social Cognitive Theory and the Socio-Ecological Model as they formed the theoretical foundation of this study. In the next chapter, conclusions will be drawn and recommendations made.

CHAPTER EIGHT

SUMMARY, CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

8.1 INTRODUCTION

This chapter gives a summary of the study. The conclusion of the study based on the findings is outlined. Limitations associated with this research are outlined and finally recommendations of the study are made. Recommendations are divided into two. There are recommendations for the enhancement of the knowledge and awareness levels, attitudes and practices of the community regarding Drug Resistant Tuberculosis; and recommendations for future research.

8.2 KEY FINDINGS OF THE STUDY

The study aimed at assessing community member's knowledge and awareness levels, attitudes and practices regarding Drug Resistant Tuberculosis. Secondly, this study also intended to establish whether there were any age and gender related differences in Drug Resistant Tuberculosis knowledge and awareness levels, attitudes and practices of the community members. The study was conducted in the Eastern Cape at Port Elizabeth in Nelson Mandela Metropolitan Municipality.

In order to solve the main problem as stated in chapter one, literature that is related to both Drug Resistant Tuberculosis and normal TB was reviewed. Google scholar was used to search for articles from different journals. The search provided the researcher with information that was used to establish knowledge and awareness levels, attitudes and practices of Port Elizabeth community members regarding this disease.

The research was conducted using a quantitative research method. A four point Likert scale structured questionnaires with closed ended questions was used to collect data from 400 respondents that were purposefully and conveniently selected from Port Elizabeth area. Data collected was statistically analysed using frequency tables, chi-square test and pies graphs. The results of the study were discussed in accordance to the research questions using the theoretical foundations that underpinned this study and relevant literature.

In this study, the researcher assessed Drug Resistant Tuberculosis knowledge and awareness levels, attitudes and practices among Port Elizabeth community members. Age and gender differences in knowledge attitudes and practices were also assessed. The effects of the socio-demographic factors on knowledge, attitudes and practices were also established.

The continuing spread and transmission of Drug Resistant Tuberculosis in its nature presents problem that cannot be understood at a surface level, but require analysis via multi-level approach that seeks to link human behaviour and the environment, as an individual level approach that focus on the individual's knowledge, attitude and practices. It is against this backdrop that this study was informed by the Health Belief Model, Social Cognitive Theory and Social Ecological Model. Central to the Socio Ecological Model is the concept of reciprocal determinism, which states that the behaviour is shaped by various factors at various levels or spheres of the environment.

Reciprocity is evident in this study where the community member's knowledge, attitudes and practices towards Drug Resistant Tuberculosis is influenced by the socio-demographic factors. Reciprocity was also evident when community member's knowledge attitudes and practices were influenced by staff and community members who are also influenced by their individual knowledge and beliefs concerning the causes, treatment and its efficiency, prevention and transmission methods and modes of Drug Resistant Tuberculosis.

The Health Belief Model was used in this research in order to understand the individuals' knowledge, awareness levels, attitudes and practices of Drug Resistant Tuberculosis. The theoretical rational for this study was based on appreciation of the significance of understanding Drug Resistant Tuberculosis as a social phenomenon that is influenced by other factors that are outside the individual control.

The empirical results provided evidence that the respondents had poor knowledge and awareness levels of Drug Resistant Tuberculosis. Secondly, research revealed that the research participants had negative attitudes towards Drug Resistant Tuberculosis. Thirdly, the findings indicate that the study subjects had good prevention practices of Drug Resistant Tuberculosis. Fourthly, there was correlation between age and knowledge, attitudes and practices. Lastly, there was no correlation between gender and knowledge and practices, but there was a correlation between gender and attitudes. The research also revealed that males had good knowledge, positive attitudes and good Drug Resistant Tuberculosis prevention practices compared to females. The results also show that youth (18-35 years) possessed good knowledge, positive attitudes and good practices than adults (36 years and above).

Even though knowledge and awareness levels were poor, there were areas where knowledge was good especially on theme one and two which were relating to causes of the Drug Resistant Tuberculosis and identification of its signs and symptoms. The results also indicated that from the five themes that were used to assess knowledge and awareness levels of Drug Resistant Tuberculosis, female respondents only scored more than males on one theme (signs and symptoms) compared to four of males (Drug Resistant Tuberculosis risk, perception and cause; transmission, prevention and treatment and diagnosis).

The results also show that respondents had poor or insufficient knowledge, misconceptions and erroneous beliefs regarding Drug Resistant Tuberculosis.

Both spiritual and traditional beliefs were evident among the respondents in this study. The results show that some of the respondents believed that they cannot get Drug Resistant Tuberculosis because God was protecting them. The results also show that others respondents believed that Drug Resistant Tuberculosis was spread through witchcraft, handshakes, sharing eating utensils and linen. Results also showed that some of the respondents believed that traditional remedy could cure Drug Resistant Tuberculosis.

Lastly, the results confirmed that Drug Resistant Tuberculosis was still a highly stigmatised disease and that respondents made use of other alternative places to seek medical assistance.



8.3 CONCLUSIONS

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Conclusions drawn from this study are as follows:

Port Elizabeth community members have poor knowledge and awareness levels, negative attitudes, but good practices of Drug Resistant Tuberculosis. Secondly, there was a correlation between age and knowledge, attitudes and practices on Drug Resistant Tuberculosis. Thirdly, there was a correction between gender and attitudes, but there was no a correction between gender and knowledge and gender and practices of Drug Resistant Tuberculosis.

Knowledge and awareness levels were influenced by socio-demographic factors such as the number of family members, marital status, educational levels, race, employment status and information sources. Family income and employment status had no effect on knowledge and awareness levels. Race, marital and employment status, educational level, and source of information had an effect on the attitudes of the respondents. The number of household or family members, family income, and type of residence had no effect on respondents' attitudes.

Marital and employment status, number of family members, education and information sources had an effect on prevention practices, whereas family income and type of residence or settlement employment status had no effect on prevention practices.

The respondents had poor knowledge in key areas that related to Drug Resistant Tuberculosis prevention, transmission and diagnosis and treatment. Female respondents had little knowledge on key areas that are related to Drug Resistant Tuberculosis causes, prevention, transmission and diagnosis and treatment. Female respondents had good knowledge of sign and symptoms of Drug Resistant Tuberculosis than males. Most of the respondents between the ages 18-35 years old were more knowledgeable compared to the respondents above 36 years.

The respondents were highly knowledgeable and aware about the Drug Resistant Tuberculosis causes, risk susceptibility and its signs and symptoms. They had poor knowledge on issues relating to transmission, prevention and treatment and diagnosis of Drug Resistant Tuberculosis. It is important to note that lack of knowledge has a negative effect on TB control and prevention programs.

The effectiveness of strategies to control the spread of Drug Resistant Tuberculosis depends on capacitating the community members on ways by which Drug Resistant Tuberculosis can be prevented, transmitted, diagnosed and treated. Education and training to the community members are two important tools to help improve the situation.

More health education and awareness campaigns need to be embarked upon and a special emphasis should be given to rectifying myths that the community has about these diseases, basic human rights and providing the factual information especially with regard to the manner in which Drug Resistant Tuberculosis is not transmitted.

Lack of appropriate information has a potential of raising fears of infection, isolation beyond point that is appropriate and stigma and discrimination. Knowledge is the starting point for the adoption of positive health related behaviour or practices even though it is unable to sustain the adoption of positive health behaviours on its own. Attitudes and perception that are held by society are considered to be one of the important elements in the adoption of positive health related behaviours or practices. It is therefore of significance that the attitudes and perceptions that are held by the society regarding Drug Resistant Tuberculosis are understood in order to devise strategies of dealing with those issues that are perpetuating the spread of the disease.

The findings in this study indicate that there is poor knowledge, negative attitudes and good prevention practices among respondents. Knowledge is low possibly due to low literacy levels and low self-efficacy beliefs among the research respondents. The perceived susceptibility, severity and cues to action of the disease are high. This may be because of the media coverage during outbreak of disease in Kwa-Zulu Natal and when the patients who were admitted at a centralised hospital in Port Elizabeth fled from hospital to spend festive with their families.

Perceived barriers are high due to stigma attached to Drug Resistant Tuberculosis. Dual health systems are used. Delay in diagnosis and treatment seeking were influenced by these cultural practices and beliefs. Socio-economic conditions, beliefs about curability and transmissibility of TB treatment duration, side effects and toxicity were barriers to adoption of health behaviours or prevention practices. The perceived benefits were outweighed by social stigma and discriminatory practices. Low self-efficacy in coping with Drug Resistant Tuberculosis was a personal impediment. Situational impediment included staff attitudes and practices that involved use of separate areas for TB patients, wearing of mask and isolation at place of work.

Females and adults were at high risk of infection due to poor knowledge compared to males and youth. They also had negative attitudes and it is highly possible that females and adults perpetuate stigma compared to youth and males due to lack of knowledge. The results show that community members have negative attitudes about Drug Resistant Tuberculosis. The results further showed only few people indicated that they can be Drug Resistant Tuberculosis volunteer.

Also people indicated that they fear rejection, isolation and discriminatory practices should they become infected, that results in non-disclosure. It is therefore evident from these results that there is no culture of support and assistance in this community for Drug Resistant Tuberculosis infected and hence the discrimination, stigmatisation and blame are evident. So without a proper understanding of the local health beliefs and knowledge as well as the behavioural responses to health problems and the factors influencing health seeking behaviour, Drug Resistant Tuberculosis management and control policies may be rendered irrelevant, ineffective and inappropriate. Therefore, in order to understand how people from diverse cultural backgrounds relate to formal health sector, it is of significance that policy makers, including health care providers gain an understanding of the local knowledge and health within the context of cultural beliefs and practices.

8.4 VALUE OF THE RESEARCH

There is an urgent need to provide targeted interventions in order to improve knowledge and understanding of Drug Resistant Tuberculosis in communities and thereby curb its spread in South Africa. This study provided valuable insights with regard to the existing knowledge and awareness levels, attitudes and practices of Drug Resistant Tuberculosis among Port Elizabeth community members.

Secondly, the research provided baseline data which can be of assistance in the future, for the development of health education interventions (advocacy, communication and social mobilization) that are informed by the needs of Port Elizabeth community members.

The Health Belief Model, Social Cognitive Theory and Social Ecology Model were used in analysing and explaining the research findings. The results contributed to the verification of these theoretical models. The research has also contributed to the body of knowledge by confirming and validating some of the studies that were previously conducted in similar areas. This study further demonstrates the significance of understanding the knowledge, attitudes and practices regarding the Management and Control of Drug Resistant Tuberculosis in South Africa. Lastly, the findings of this study provide valuable knowledge and insights to the existing body of knowledge with regard to the social nature of Drug Resistant Tuberculosis in South Africa.

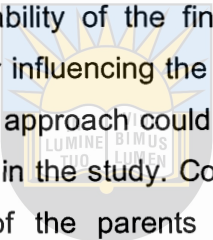
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8.5 LIMITATIONS OF THE STUDY

This section looks at the limitations of this study. The following have been identified as the limitations of this study.

- The study was conducted among community members in a limited area, namely Port Elizabeth area at Nelson Mandela Metropolitan Municipality. It would therefore be difficult to generalize the findings of this research study to the whole of South Africa or the Eastern Cape.
- The study used a quantitative approach and data was collected using a closed ended questionnaire. Social desirability and personal interest might have affected the design of research questions in the research instrument. The responses might be biased in accordance to the design of the research instrument. A mixed method or qualitative approach would have assisted in gaining a better understanding of respondent's beliefs, attitudes and practices.

- The value of the research findings depends on the accuracy of data collected. Data quality can be compromised via unrepresentativeness of the sample. Some community members who left their homes in the morning to go to work and returned in the evening were left out of the study. This shortcoming was further worsened by carrying out the household survey during week days when possibly most working people were at work. Therefore some requisite respondents were lost from the study.
- Restricting the study to respondents older than 18 years limited a range of finding. Younger respondents would have added valuable insights to the study hence enhancing the generalizability of the findings. Despite having ethical considerations as the main factor influencing the selection of respondents older than 18 years old, a consultative approach could have been adopted to include minors from the age of 13 years in the study. Consultation could possibly have been made in the presence of the parents or legal guardians of minor respondents.



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8.6 RECOMMENDATIONS

On the basis of the literature and the empirical review, the researcher would like to make the following recommendations:

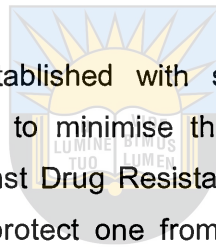
- More knowledge should be provided to community members to combat misconceptions that might lead to poor health seeking and care practices, such stigma discriminatory practices and behaviours. Emphasis should be placed on information regarding how TB is not transmitted and the basic human rights as outlined in the South African Constitution. The lack of this crucial information has a potential of raising unnecessary fears of infection and discriminatory and stigmatising attitudes and practices.
- Accurate knowledge should be provided by ensuring that educational materials that are produced are appropriate for the various levels of literacy.

Health education and awareness campaigns that target population with low literacy levels should be rolled out. Such programs should focus on prevention strategies as well as provision of much needed exposure to knowledge on aetiology, transmission, prevention and treatment and diagnosis.

- To sustain the relevant knowledge about Drug Resistant Tuberculosis among community members, it is recommended that more relevant and factual information regarding these diseases is made more accessible to community members in their home languages. Emphasis should be on maximising early symptoms recognition, health promotion behaviour and reduction of misconception about Drug Resistant Tuberculosis.
- Health promotion and awareness campaigns should continuously highlight the fact that Drug Resistant Tuberculosis is preventable and curable when the infected are diagnosed and put on treatment timely and when they adhere to treatment regimen.
- Development of appropriate culture centred training that seek to build on existing knowledge levels and focus on identification and addressing of misconceptions and erroneous beliefs that act as barrier to positive health seeking action or behaviour and treatment adherence.
- Intensification of educational campaigns and extension of the coverage of outreach and health promotion programs to include schools, churches and workplaces, and encourage changing behaviour of community members by increasing awareness and ensuring that communities are well equipped especially among adults and females.
- Local people affected or those who are living with or those who have been cured with Drug Resistant TB should be involved in facilitation of health educational programs or campaigns. This could possibly create cues to action for the adoption of positive health related behaviour against Drug Resistant TB.

This may increase the general level of awareness that people have about these diseases. Role models that have survived and those that are living with Drug Resistant Tuberculosis should be put forward in awareness campaigns.

- When treating an individual that is infected with Drug Resistant Tuberculosis, the TB control manager and healthcare staff should provide information about the infection control methods, medication and its side effects and need mental care and support services to the infected people and their family members as whole as they have a critical supporting role to play in the successful treatment of the infected person.
- Collaborations need to be established with spiritual healers and various congregational leaders in order to minimise the possibilities of disregarding infection control measures against Drug Resistant Tuberculosis due to beliefs such as prayer being able to protect one from Drug Resistant Tuberculosis infection.
- Collaboration also needs to be fostered with traditional healers. They should receive education and training about Drug Resistant Tuberculosis so that they can be able to refer the infected people for appropriate care at healthcare facilities.
- Healthcare workers should be properly trained in counselling of Drug Resistant Tuberculosis infected people who are in pain. They should be made aware that they are responsible for providing emotional support to the infected. This role is of paramount importance during the treatment of infected person as it has a potential to influence the TB control program outcomes. The respondents indicated that they would feel ashamed, surprised and sad if they were diagnosed with Drug Resistant Tuberculosis and this highlight the need for the integration of mental health services into TB care.
- It is clear from the findings that biomedical interventions are necessary but not sufficient to control spread of Drug Resistant Tuberculosis.



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It is therefore recommended that, health promotion program that are based on understanding the dynamic underpinning the health seeking behaviour of those infected with Drug Resistant Tuberculosis be developed and used as they have a potential to succeed.

Future research is recommended in the following areas:

- A comparative study should be conducted between urban and the most remote areas within the Eastern Cape using qualitative research method.
- A comparative analysis of Drug Resistant Tuberculosis centres of excellence and referral PHC staffs knowledge, attitudes and practices regarding Drug Resistant Tuberculosis.
- An assessment of Drug Resistant Tuberculosis patients knowledge attitudes and practices of Drug Resistant Tuberculosis
- An assessment of the relationship between lack of knowledge about Drug Resistant Tuberculosis social stigma and discriminatory practices.
- Assessment of the type of information that is communicated by families, friends, spiritual leaders and traditional healers with regard to Drug Resistant Tuberculosis.

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ANNEXURES

ANNEXURE A: A LETTER REQUESTING PERMISSION TO COLLECT DATA FOR PILOT STUDY

8 Ncapayi Street

New Brighton

Port Elizabeth

Dear Colleague,

Pilot Study: Research about the knowledge and awareness levels, attitudes and practices of PE community members of Drug Resistant Tuberculosis.

I am currently researching about the knowledge levels, attitudes and practices of community members on Drug Resistant Tuberculosis in fulfilment of the requirements for PhD in Public Administration at the University of Fort Hare.

I would appreciate your assistance in completing the enclosed questionnaire. You may answer all the questions and also mark all those that are ambiguous or difficult to answer. Criticism regarding the length, layout, language and the content will be highly appreciated. You can fax the completed form back to me at 041- 372 8007/9 before the 31st August 2016.

Your inputs will be used to determine whether there are any adaptations needed to be made before the questionnaire can be used to the intended target population.

Please note the following:

Your participation is confidential and there are no right or wrong answers
All personal information that is required in Section A is only required to summarize and correlate the conclusions of the pilot study in a proper manner.

Thank you for your cooperation

Mr T.E. Fana
Researcher

Professor Edwin Ijeoma
Research Supervisor

ANNEXURE B: ETHICS RESEARCH CONFIDENTIALITY AND INFORMED CONSENT FORM



University of Fort Hare
Together in Excellence

Ethics Research Confidentiality and Informed Consent Form

I Fana From the University of Fort Hare, *Department of Public Administration* is asking people from *Port Elizabeth* to answer some questions, which I hope will benefit the *Port Elizabeth* community and possibly other communities in the future.

University of Fort Hare
Together in Excellence

I am conducting research regarding *Knowledge and awareness levels, attitudes and practices of Port Elizabeth community members on Drug Resistant Tuberculosis*. I am interested in finding out more about knowledge and awareness levels, attitudes and Drug Resistant TB prevention practices of community members in relation to efforts to curbing the spread of the disease. I am carrying out this research to help to establish whether there are any gaps in knowledge and awareness levels, attitudes and practices of the Port Elizabeth community members on Drug Resistant TB, so that recommendations can be made on how to create and improve awareness levels positive attitudes and practices regarding Drug Resistant TB among residents of Port Elizabeth

Please understand that you are not being forced to take part in this study and the choice whether to participate or not, is on you. However, I would really appreciate it if you do share your thoughts with me.

If you choose not to take part in answering these questions, you will not be affected in any way. If you agree to participate, you may stop me at any time and tell me that you don't want to go on with the interview. If you do this, there will also be no penalties and you will NOT be prejudiced in ANY way. Confidentiality will be observed professionally.

I will not be recording your name anywhere on the questionnaire and no one will be able to link you to the answers you give. Only the researchers will have access to the unlinked information. The information will remain confidential and there will be no "come-backs" from the answers you give.

The interview will last for about **30 minutes**. I will be asking you questions and I request you to be as open and honest as possible in answering these questions. Some questions may be of a personal and/or sensitive nature. I will be asking some questions that you may not have thought about before, and which also involve thinking about the past or the future. I know that you cannot be absolutely certain about the answers to these questions but I ask that you try to think about these questions. When it comes to answering questions there are no right and wrong answers. When I ask questions about the future I am not interested in what you think the best thing would be to do, but what you think would actually happen.

If possible, I would like to come back to this area once I have completed my study to inform you and your community of what the results are and discuss our findings and proposals around the research and what this means for people in this area.

INFORMED CONSENT

I hereby agree to participate in research regarding *Knowledge and awareness levels, attitudes and practices of Port Elizabeth community members on Drug Resistant TB*. I understand that I am participating freely and without being forced in any way to do so. I also understand that I can stop this interview at any point should I not want to continue and that this decision will not in any way affect me negatively.

I understand that this is a research project whose purpose is not necessarily to benefit me personally.

I have received the telephone number of a person to contact should I need to speak about any issues which may arise in this interview.



I understand that this consent form will not be linked to the questionnaire, and that my answers will remain confidential.

I understand that if at all possible, feedback will be given to my community on the results of the completed research.

.....
Signature of participant

Date:.....

I hereby agree to the tape recording of my participation in the study

.....
Signature of participant

Date:.....

ANNEXURE C: RESEARCH QUESTIONNAIRE



University of Fort Hare
Together in Excellence

School of Public Administration
(SPA)

Faculty of Management and Commerce



Excellence in Public Administration & Community Service

Research Questionnaire

Dear Respondent,

My name is Thanduxolo Elford Fana, a Doctor of Administration: Public Administration student at the University of Fort Hare in the Faculty of Commerce and Management. I am currently conducting a research on the topic: **Assessing knowledge and awareness levels, attitudes and practices of Port Elizabeth community members on Drug Resistant Tuberculosis**. I am kindly requesting 30 minutes of your time for completion of the following questionnaire as honest as possible. Honest completion will help in generating information that will help the researcher to establish the knowledge levels, attitudes, beliefs and practices of the community with regard to Drug Resistant TB. By doing this, areas that may need improvements will be highlighted and means made to address them in an effective and efficient. The information being solicited from you is only for academic purposes and will be treated confidentially. Your name and other private information about you are not required.

THIS QUESTIONNAIRE COMPRISE OF THE FOLLOWING KEY SECTIONS:

- A. Biographical information about the respondents
- B. Community member's knowledge and awareness about DR-TB
- C. Community attitudes, beliefs and misconceptions about DR-TB
- D. Community practices about Drug Resistant Tuberculosis

INSTRUCTIONS

The questionnaire is directed to the residents of Nelson Mandela Bay Municipality

Please answer all questions

Please mark in the appropriate box with a cross or tick

- 1 = Strongly agree (SA)
- 2 = Agree (A)
- 3 = Disagree (D)
- 4 = Strongly disagree (SD)



SECTION A

BIOGRAPHICAL INFORMATION

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1.1. Gender

Male	Female
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1.2. Age last birthday

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1.3. Marital Status

Married	Single	Widowed	Divorced
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1.4. Racial group

African	Coloured	White	Other
---------	----------	-------	-------

1.5. Highest educational Level?

No formal education	Primary education	High school education	Tertiary education
---------------------	-------------------	-----------------------	--------------------

1.6. Are you currently employed?

Employed	Unemployed
----------	------------

1.7. Family monthly income

R4 999 and less	R5 000 to R 9 999	R 10 000 to R14 999	R 15 000 upwards
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1.8. Number of household members

1 to 2	3 to 4	5 to 6
--------	--------	--------

1.9. Type of residence or dwelling

Formal	Informal
--------	----------

1.10. Name your main sources of Drug Resistant Tuberculosis information

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SECTION B
DRUG RESISTANT TUBERCULOSIS AWARENESS AND KNOWLEDGE
LEVELS

2.1. General knowledge of DR-TB, risk and causes	1	2	3	4
a. Organisms or bacteria resistant to Rifampicin and Isoniazid				
b. Anyone can be infected by DR-TB				
c. Dust, smoking, poverty and drinking alcohol				
d. Incomplete and incorrect treatment can cause DR-TB				
e. DR-TB is a dangerous disease and a huge problem in my area				
2.2. The following are signs and symptoms of DR-TB	1	2	3	4
a. Weight loss and loss of appetite				
b. Cough that last longer than 3 weeks				
c. Nightmares and hallucinations				
d. Chest pains and shortness of breath				
e. Coughing up of blood				
2.3. DR-TB can be transmitted in the following ways	1	2	3	4
a. Witchcraft				
b. Through the air when those with DR-TB coughs and sneezes				
c. Through blood as it is hereditary				
d. Through hugs and handshakes				
e. Touching items in public spaces or areas				
2.4. DR-TB can be prevented in the followings ways	1	2	3	4
a. Covering mouth and nose when coughing and sneezing				
b. Avoiding close contact for long periods with DR-TB infected				
c. By avoiding sharing cups and dishes				
d. Open windows and wear mask when with DR-TB infected people				
e. By taking traditional medicines and herbal remedies				

2.5. DR-TB diagnosis, treatment costs, duration and outcomes	1	2	3	4
a. DR-TB infected remain infectious after completion				
b. DR-TB treatment is provided freely at designated DR-TB centres				
c. Psychosis and hearing loss are side effects of DR-TB treatment				
d. Treatment duration for DR-TB is 6 to 12 months				
e. Outcome are evaluated by sputum and Chest X-rays				

SECTION C

COMMUNITY ATTITUDES AND PERCEPTIONS ABOUT DRUG RESISTANT TUBERCULOSIS

3.1. What will be the reaction of the community if you have DR-TB	1	2	3	4
a. they will reject you				
b. they will avoid you but remain friendly				
c. they will be supportive and helpful				
3.2. How will you react if you are diagnosed with DR-TB	1	2	3	4
a. I will be fearless and hopeful				
b. I will be ashamed and embarrassed				
c. I will be surprised and sad				
3.3. Who will you tell or speak to if you have DR-TB	1	2	3	4
a. Friends, family members and neighbours				
b. Health care workers				
c. No one				
3.4. What will you do if a family member has DR-TB?	1	2	3	4
a. I will support and assist the person				
b. I will be friendly but avoid the person				
c. I will hate the person				

3.5. What is or will be your greatest fear or challenge if you are infected with DR-TB?	1	2	3	4
a. Rejection, ill-treatment and discrimination attitudes and practices by clinic staff and community members				
b. Fear of DR-TB drug, side effects costs associated with treatment				
c. I don't have nor foresee any challenges				
3.6. Statements about community perceptions and beliefs about DR-TB	1	2	3	4
A. It is correct to forcefully isolate DR-TB infected to prevent its spread				
B. I can cope with DR-TB and also be volunteer for DR-TB infected				
C. DR-TB infected deserve respect and fair treatment like everyone				
D. It's a waste of money to treat DR-TB as its spread cannot prevented				
E. DR-TB drugs are toxic, useless and cannot cure DR-TB				
F. It is correct to discriminate and treat badly DR-TB infected.				
G. Those who default treatment are to blame for spread of DR-TB				
H. I do not mind DR-TB infection because I will get disability grant				
I. Drug Resistant TB is a disease of the poor and HIV infected				
J. All HIV positive have Drug Resistant TB				

SECTION D

DRUG RESISTANT TUBERCULOSIS PREVENTION PRACTICES

4.1. What will you do if you suspect you have DR-TB?	1	2	3	4
a. Consult a herbalist				
b. Visit Health Care Centre or hospital				
c. Just stay at home, rest and pray				
d. Initiate self-treatment				
4.2. When will you go to a clinic or hospital after getting TB?	1	2	3	4
a. When self-treatment does not work				
b. As soon as I realise that I have TB				
c. Never				
4.3. What should be done to prevent the spread of DR-TB to others	1	2	3	4
a. Covering my mouth when coughing and sneezing				
b. By taking prescribed medication only when feeling sick				
c. Disposing sputum correctly regularly				
d. Performing traditional rituals				
e. Stay in a well-ventilated area and minimise close contact with infected				
f. Not spitting indiscriminately				
g. Avoiding shaking hands with DR-TB infected people				
h. Constantly taking traditional medication or herbs				
i. Constantly praying				
j. Taking prescribed DR-TB drugs with the assistance of DOT supporter				
k. Avoid contact with infected person even if he is on treatment				
l. Avoid sharing dishes and cups with the infected people				
m. Wearing an N 95 protective or surgical mask				

Thank you for taking time to participate in this study

Researcher: Thanduxolo Elford Fana

ANNEXURE D: ETHICAL CLEARANCE CERTIFICATE



University of Fort Hare
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ETHICAL CLEARANCE CERTIFICATE REC-270710-028-RA Level 01

Certificate Reference Number: JE171SFAN01

Project title: Assessing knowledge levels, attitudes and practices of Port Elizabeth community of Drug Resistant Tuberculosis.

Nature of Project: PhD in Public Administration

Principal Researcher: Thanduxolo Fana

Supervisor: Prof E.O.C Ijeoma

Co-supervisor: N/A

On behalf of the University of Fort Hare's Research Ethics Committee (UREC) I hereby give ethical approval in respect of the undertakings contained in the above-mentioned project and research instrument(s). Should any other instruments be used, these require separate authorization. The Researcher may therefore commence with the research as from the date of this certificate, using the reference number indicated above.

Please note that the UREC must be informed immediately of

- Any material change in the conditions or undertakings mentioned in the document
- Any material breaches of ethical undertakings or events that impact upon the ethical conduct of the research

The Principal Researcher must report to the UREC in the prescribed format, where applicable, annually, and at the end of the project, in respect of ethical compliance.

ANNEXURE E: CERTIFICATE OF EDITING

CERTIFICATE OF EDITING

Professional
EDITORS
Group

TO WHOM IT MAY CONCERN

This document certifies that the dissertation whose title appears below was edited for proper English language usage, grammar, punctuation, spelling and overall style by Anthony Masha who is a member of the Professional Editors' Group and whose academic qualifications appear in the footer of this document.

DISSERTATION TITLE

Assessment of knowledge and awareness levels, attitudes and practices of Port Elizabeth community members on Drug Resistance Tuberculosis

RESEARCHER

Thanduxolo Elford Fana

DATE EDITED

March 2017

EDITOR'S COMMENT

All mistakes relating to grammar, punctuation, spelling and overall style have been corrected. The editor was not responsible for conducting a cross-referencing check.

B.A (Ed), Honours B.A. (Social Sciences), Honours B.A (Group Dynamics), Postgraduate Diploma in Education, M.ADMIN (Public Administration), Doctor of Administration in Public Administration (Completed)