



**Relationship between knowledge, risk perceptions and socio-demographic factors
and TB diagnosis in Ntcheu district in Malawi**

By

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**A research report submitted to the Faculty of Health Sciences, School of Public Health,
University of the Witwatersrand, South Africa, in partial fulfilment of the requirements
for the degree of Masters in Public Health-Social and Behaviour Change
Communication.**

Submitted: November 2012

Declaration

I, Robert Mnthenga Chizimba, declare that this research report is my own work. It is being submitted for the degree of Master of Public Health-Social and Behaviour Change Communication at the University of the Witwatersrand in Johannesburg, South Africa. It has not been submitted for any degree examination before at this or any other University.

A handwritten signature in black ink, appearing to be 'R. M. Chizimba', written on a light blue background.

R. M. Chizimba (Mr.)

November 2012

Dedication

I dedicate this work to members of my family: Tamandani my son, Tadala my daughter and my wife Josephine for their moral support and encouragement at the time of my studies.

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Abstract

Aim of the study: The main aim of this study was to determine socio-demographic characteristics associated with being diagnosed with TB by a health care worker among adult males and females aged between 18-49 years in Ntcheu district, Malawi.

Method: This was a descriptive and analytical cross-sectional study. A total of 121 adult women and men were sampled using a three-stage simple sampling technique. The 2008 Population and Housing Census enumeration areas (EAs) were used as a sampling frame. The first stage involved simple sampling of two Traditional Authorities (TAs) out of nine (9). Stage two involved selection of ten villages in each sampled TA. The third level of sampling was a selection of six households from each selected village where the first dwelling was also sampled. A structured questionnaire was developed in English and translated into Chichewa. The questionnaire was administered by a trained interviewer at each respondent's household. Three research assistants were employed to collect data.

Results

The awareness of TB was universal with every participant reporting that they had heard about TB. Of the 121 participants, more than half were male (53.7%; n=65). The median age of the respondents was 28 years (range 18-49 years) and approximately a third of the respondents (34.4%; n=31) had 1-2 children. The study found that higher education ($p=0.01$), higher ownership of household assets ($p=0.01$), higher average monthly household income ($p=0.02$) and higher socio-economic status of the respondents ($p=0.01$) were significantly associated with higher knowledge of causes of TB. It was found that education was also associated with knowledge of the transmission of TB ($P=0.01$). The lower the level of education the lower the knowledge level on the correct modes of TB transmission. There was also an association between knowledge of symptoms of TB and occupation ($p=0.05$). It was found that farmers

were less likely to know symptoms of the disease compared to other forms of occupation namely: business persons, those participants who were employed and those not employed. The study found that women had significantly lower risk perceptions of the disease ($p=0.01$). No association was found between socio-economic and cultural factors of the respondent and self-reported TB diagnosis.

Conclusion

The findings of this study show that a comprehensive health promotion programme is required in order to address significant gaps on knowledge of causes of TB, transmission, symptoms and risk perceptions and other related socio-economic and cultural factors in Ntcheu district.

Acknowledgements

I would like to thank various people and institutions for their various contributions rendered to me in the course of conducting this study and production of this report. Firstly, I am heavily indebted to the members of my family: Josephine (my wife), Tadala (daughter) and Tamandani (son) for their unflinched support and ever-growing encouragement during the time of my studies. I am aware that at times, I was away and detached from them doing assignments, field work and report writing. I, therefore, appreciate and thank them for their endurance and perseverance.

Secondly, I would like to express my deep appreciation to my two supervisors: Dr. Peter Nyasulu and Dr. Nicola Christodifes for their technical guidance and directions provided in my study. I really appreciate their input which was timely, rich and helpful. I would also like to thank Soul City and the University of the Witwatersrand in South Africa for the full scholarship provided to me. I strongly hold that without their financial support my Master of Public Health -Social and Behaviour Change Communication would not have been possible. In addition, I would like to thank the Malawi National Commission for Science and Technology (NCST) under the Health Research Capacity Strengthening Initiative (HRCSTI) for funding my research study which is part of the larger study to be conducted in Malawi entitled: “The Find TB Project” in Malawi.

I would also like to thank the management of Malawi National Statistics Office for provision of free Ntcheu cartographic maps that had well demarcated 2008 Population and Housing Census Enumeration Areas (EAs). I used the maps to select two Traditional Authorities (TAs), ten villages and households where the study was conducted.

Lastly, I would like to thank my three research assistants namely: Mac Donald Kufankomwe, Josephine Tenthani and Wezi Mkandawire for their time, diligence and commitment during data collection.

Acronyms

AIDS	Acquired Immune Deficiency Syndrome
CBO	Community-based Organization
DHO	District Health Office
EA	Enumeration Area
HIV	Human Immunodeficiency Virus
HREC	Human Research Ethics Committee
HSRC	Health Sciences Research Committee
MK	Malawi Kwacha
MPH	Master of Public Health
SADC	Southern Africa Development Community
SPSS	Statistical Package for Social Scientists
TA	Traditional Authority
TB	Tuberculosis
US	United States
WHO	World Health Organization

Chapter 1: Introduction

1.1 Background

Tuberculosis (TB) is the second leading cause of mortality worldwide and remains one of the major global public health challenges like malaria, HIV and AIDS (Jackson, McMenamin, Brewster, Ahmed, & Reid, 2008). In 2001 alone, TB, malaria, HIV and AIDS together claimed 5.7 million lives. From 2001 and subsequent years, TB continued to increase. For example, there were an estimated 8.9 million TB cases in 2004 and about 9.4 million estimated new cases by end of 2008 (Hargreaves, et al., 2011; Lönnroth, Jaramillo, Williams, Dye, & Raviglione, 2009a). By the end of 2010, there were an estimated 14 million new TB cases and about 2 million deaths (WHO, 2010).

TB is still one of the main causes of death in low-income and middle-income countries, especially in Sub-Saharan Africa where the disease is epidemic because of the increased susceptibility due to HIV infection (Maartens & Wilkinson). In Sub-Saharan Africa, studies have shown that the average incidence and prevalence rates of the disease are 363 per 100,000 and 475 per 100,000 respectively (O'Grady, et al., 2011). Studies further show that the HIV and AIDS epidemic is fuelling the spread of TB, and up to 70% of adults with TB are co-infected with HIV in the region (O'Grady, et al., 2011; WHO, 2010). Most of the TB infections in Sub-Saharan Africa occur in the economically productive age group of 15-49 years (A. D. Harries, et al., 1997; O'Grady, et al., 2011).

In trying to combat the disease, the World Health Organisation (WHO) has set global TB targets of 70% for case detection and 85% for treatment success (WHO, 2010). In addition, the WHO also initiated the plan to stop TB by 2015 (Jackson, et al., 2008; WHO, 2010). Despite these targets TB continues to spread and kill millions of people. Improvement in the

control of the disease worldwide, particularly in resource poor Sub-Saharan Africa, is hampered by a number of factors such as delay in diagnosis, case detection and treatment seeking, as well as HIV and AIDS (Long, Johansson, Diwan, & Winkvist, 1999). Early access to TB diagnosis by individuals may prevent new infections and eventually reduce TB deaths (Bates, 2004; Dodor & Afenyadu, 2005; Wu, Chou, Chang, Sun, & Kuo, 2009). In terms of the trend of the epidemic, rapid expansion of the standardized approach to TB diagnosis and treatment have allowed more than 36 million people to be cured of the disease thus averting up to 6 million deaths. Currently, TB incidence rate is falling at less than 1% per year (Hargreaves, et al., 2011; Lönnroth, et al., 2009a).

In Malawi, TB cases have been on the increase. Studies have shown that between 1994 and 2003 the number of notified cases increased by 45%. The TB case detection is estimated at 41% which is far below the target set by the WHO of 70% (A. H. Banerjee, A.D. Nyirenda, T. Salaniponi F.M., 2000).

Studies have shown that low knowledge about TB, low risk perceptions about the disease, stigma and other socio-demographic factors such as age, level of education, occupation, gender and religion, influence early TB diagnosis (Hargreaves, et al., 2011; Lönnroth, et al., 2009a). Despite this evidence, these factors have not been adequately investigated to establish their contribution to TB prevention and control, especially in Malawian. It appears that more attention on TB control is directed at provision of drugs and associated treatment and minimal on cultural, social and economic factors (Steen & Mazonde, 1999). Factors such as knowledge, risk perceptions, stigma, income level, level of education, occupation and gender can influence individual perceptions, attitudes and practices towards TB diagnosis (Hargreaves, et al., 2011; Lönnroth, et al., 2009a). Better understanding of these factors is therefore essential in TB prevention and control (Hargreaves, et al., 2011; Okuonghae & Omosigho, 2011).

1.2 Problem statement

Delay in TB case-finding is a common problem affecting TB prevention and control throughout the world (A. D. Harries, et al., 1997; Westaway, 1990). Globally, studies have shown that individual's delay in TB diagnosis is due to low knowledge, low risk perceptions and other social and demographic factors such as age, education, sex and economic status (A. Banerjee, Harries, & Salaniponi, 1999; Enwuru, Idigbe, Ezeobi, & Otegbeye, 2002; Gibson, Cave, Doering, Ortiz, & Harms, 2005; Jackson, et al., 2008; Westaway, 1990). Better understanding of the relationship between knowledge, risk perceptions, demographic and socio-economic factors and being diagnosed with TB is critical in TB prevention and control. This association should, therefore, be thoroughly investigated.

1.3. Main objective

The main aim of this study was to determine socio-demographic characteristics associated with knowledge of, and risk perceptions for TB, as well as being diagnosed with TB by a health care worker among adult males and females aged between 18-49 years in Ntcheu district, Malawi.

1.3.1 Specific objectives

The specific objectives of the study were:

- a) To describe the socio-demographic characteristics of the study population in Ntcheu district in rural Malawi.
- b) To determine knowledge of causes, transmission, prevention and treatment of TB among adult males and females aged 18-49 years in Ntcheu district, Malawi.
- c) To describe risk perceptions for acquiring TB among adult males and females aged 18-49 years in Ntcheu district, Malawi.

- d) To determine socio-demographic characteristics associated with higher TB knowledge and higher risk perceptions among adult males and females aged 18-49 years in Ntcheu district, Malawi.
- e) To determine whether socio demographic characteristics are associated with being diagnosed with TB by a health care worker among adult males and females aged 18-49 years in Ntcheu district, Malawi.

1.4 Literature review

1.4.1 Global burden of TB

TB continues to spread worldwide, infecting millions of people and causing millions of deaths each year. Globally, TB claims about 2 million deaths and an estimated 14 million new cases (WHO, 2010). The majority of those who get infected and die are in the productive age group of 18-49 years (Bates, 2004). Most of these cases occurred in Asia (55%), followed by Africa (30%). HIV infection has been noted as one of the significant risk factors to TB. About 11–13% of new TB cases worldwide are co-infected with HIV and Africa accounts for 80% of these cases (Anthony D. Harries, et al., 2001; Needham, Bowman, Foster, & Godfrey-Faussett, 2004; WHO, 2010).

1.4.2 Burden of TB in Sub-Saharan Africa

Tuberculosis is a major health problem in many parts of Sub-Saharan Africa, where case rates continue to rise (Guwatudde, Debanne, Diaz, King, & Whalen, 2004; F. Karim, Johansson, Diwan, & Kulane, 2011; S. S. A. Karim, Churchyard, Karim, & Lawn, 2009; WHO, 2010). Studies in the region have shown that case notification rates have been increasing by approximately 10% per year since 1990 and the current average annual case notification rate is estimated at 200 cases per 100,000 persons, with some countries reporting

rates as high as 600 cases per 100,000 persons (Guwatudde, et al., 2004). Within Sub-Saharan Africa region, TB cases are also high in the Southern Africa Development Community (Guwatudde, et al., 2004). TB notification rates in the Community have been increasing, estimated at 10% annually since 1990. HIV infection has been noted as one of the significant risk factors to TB (Bates, 2004; Anthony D. Harries, et al., 2001; Needham, et al., 2004; WHO, 2010).

Another contributing factor to high cases of TB in the region is increased occupational exposure to silica dust especially among miners (Fielding, et al., 2011). For example, in 2008 South Africa was ranked third in terms of total number of incident TB cases which to a certain extent was attributed to occupational risk factors for silica dust exposure. Studies in South Africa further show that since early 1990s, the worsening TB epidemic has been more pronounced among gold-mining workforce than in the South African general population (Fielding, et al., 2011; Qu, et al., 2007). This seems to suggest that silicosis is a significant factor to TB. Silicosis is an occupational disease of gold miners that results from inhalation of silica dust generated during the mining process (Fielding, et al., 2011). However, some evidence shows that the occurrence of pulmonary TB or silico-tuberculosis in miners is due to complex interactions, including silica dust exposure and genetic susceptibility of the individual (Fielding, et al., 2011; Qu, et al., 2007)

1.4.3 TB prevalence in Malawi

Malawi has an estimated 29,000 to 30,000 TB cases each year and experiences about 8,000 deaths per year (Government of Malawi, 2007). TB case notification has increased over the years from 5,000 in 1985 to more than 25,000 cases per year from 1985 to 1990. TB cases have been on the increase with a prevalence increase of 45% in notified cases between 1994

and 2003 (Nyirenda, 2006). It is further estimated in Malawi that 72% of TB cases are HIV positive. The TB burden is also very high in some specific sub-populations in Malawi. In an active case finding study done in 1996 in Zomba Central Prison, the largest prison in Malawi, it was found that of 915 inmates that were screened for pulmonary TB (70% of the total number of inmates), 47 had active TB (5142 per 100,000 inmates) (O'Grady, et al., 2011).

However, the actual prevalence of TB is not known in Malawi as no prevalence studies have been done (Nyirenda, 2006; Simwaka, et al., 2007). Although TB treatment success rates are high in Malawi, case detection rates remain a major challenge in TB management with only 41% of the TB cases being diagnosed and put on treatment by the health system (WHO, 2010). This suggests that approximately 60% of the TB cases (Enwuru, et al., 2002) remain undetected and continue spreading the infection in the communities. In addition, although there are many Malawians who once worked in mines in South Africa, currently no study has been done in Malawi to measure TB prevalence among this group and also measure any association between TB and silicosis.

1.4.4 Knowledge, risk perceptions and other socio-economic and cultural factors in relation to TB diagnosis

a) Knowledge of TB

Studies have shown that knowledge of TB is associated with being diagnosed with the disease and generally access to TB related services (Dodor & Afenyadu, 2005; Gibson, et al., 2005; Jackson, et al., 2008). In Nigeria studies have shown that there is a relationship between the level of knowledge and awareness of being diagnosed with TB (Enwuru, et al., 2002). In this study, those who were diagnosed with TB had demonstrated higher knowledge of causes, symptoms and transmission of the disease. The study also showed

low levels of knowledge and awareness of TB and improper health care-seeking behaviour amongst those who were not diagnosed of TB or did not access any information from health care workers at a facility (Enwuru, et al., 2002).

In Canada and England, community members who knew more about TB were more likely to access TB services and complete treatment (Gibson, et al., 2005). In Ghana and Scotland, low knowledge was associated with negative attitudes about TB, lack of recognition of signs and symptoms of the disease, high stigma and low risk perceptions. Members who had low knowledge regarded TB as incurable, a perception that affected their access to prevention and control services at a health facility (Dodor & Afenyadu, 2005; Jackson, et al., 2008). Due to low knowledge and low risk perceptions in Rwanda, TB diagnosed individuals delayed seeking conventional care, and accessed care only when severe symptoms such as shortness of breath, bloody sputum and weight loss appeared.

Although the results of these studies show clearly that there is a relationship between knowledge or awareness of TB and diagnosis, the studies however, have not indicated whether knowledge or awareness of the disease among respondents preceded the diagnosis. It is not clear in these studies whether knowledge of TB or being aware of the disease influenced participants to seek TB diagnosis; or whether TB diagnosis made participants to become more knowledgeable about the disease and later made them to further seek diagnosis services. This gap, therefore, calls for further and continuous investigations to determine socio-demographic characteristics and other factors associated with being diagnosed with TB.

b) Educational attainment and access to information

Knowledge and information are important for an individual who may be at risk of getting TB and also for those diagnosed with the disease. It was found that due to lack of knowledge and information, individuals regard TB as a dangerous, highly infectious, and incurable which results in stigma and social isolation (Bates et al, 2004). Low educational attainment and differences in access to information were associated with low knowledge and in turn subsequent delays in TB diagnosis and access to other TB related services (Bates, 2004; Johansson, Long, Diwan, & Winkvist, 2000; Long, Johansson, Diwan, & Winkvist, 2001). Due to differences in access to information in Vietnam, women were less likely to recognise early symptoms of TB than their male counterparts, resulting in delay in accessing services and diagnosis (Johansson, et al., 2000; Long, et al., 2001). In Ghana, however, 44% of patients who were not adhering to TB treatment said they were motivated to seek and complete treatment because of proper communication they had from health care workers (Dodor & Afenyadu, 2005). Maternal literacy was also associated with better rates of case notification of TB and early treatment-seeking (Bates, 2004).

c) Risk perceptions towards TB

In a study in Kenya, participants associated TB with smoking, alcohol consumption, hard work, exposure to cold weather and sharing of cooking utensils, and as a result they did not contact health care workers or go to the nearest health facility for relevant diagnosis and care (Long, et al., 1999). In Vietnam men were considered as being at higher risk of getting TB infection than women as they were more exposed to risk factors during working and leisure time, and as a result women did not seek TB services even if they would manifest TB symptoms because they considered themselves not at risk of the infection (Long, et al., 1999).

d) Stigma related to TB

It was found that the belief that TB is incurable perpetuated stigma thus preventing people from accessing services (Bates et al., 2004). The close association between TB and AIDS in terms of symptoms was also found to perpetuate stigma, and as a result people were afraid to access TB services for fear of being diagnosed with HIV. In the Eastern Cape in South Africa, 95% of the people hid their TB status for fear of stigma and discrimination, and 63% delayed in accessing appropriate diagnosis from health care workers for fear of being found HIV positive (Møller, et al., 2011). These studies suggest that perceptions and stigma influence a person's decision to go for TB diagnosis and access other related services.

e) Cultural factors influencing TB diagnosis and access to services

The study done in Kweneng district in Botswana indicates that traditional beliefs that TB was caused by either God, or ancestral spirits affected access to services (Steen & Mazonde, 1999). It was found that traditional beliefs of associating TB with sorcery and witchcraft encouraged secrecy around diagnosis of the disease and as a result it affected early diagnosis and adherence to treatment (Bates et al, 2004).

f) Economic factors

Studies done in Rwanda, Gambia, Ghana, Uganda and rural China have shown that poor people were less likely to access and adhere to treatment compared to rich people, because they could not afford treatment (if treatment was paid for) or transport to get to the nearest clinic (Harper, Ahmadu, Ogden, McAdam, & Lienhardt, 2003; Hudelson., 1996; Jaramillo, 1999; Macfarlane & Newell, 2012; Sun, et al., 2007). In rural poor China, individuals who had no money delayed in accessing further TB examinations(Sun, et al., 2007). In Cambodia, reducing TB treatment fees and abolishing informal fees for

health care workers enhanced affordability of TB related health care services for the poor, although this benefit was temporal (Yanagisawa, Mey, & Wakai, 2004).

Chapter 2 : Study design and methodology

This chapter describes the methodology used in the study. It highlights the study design and presents in detail the study population/sampling and data collection procedures. In addition, the chapter outlines data management and analysis.

2.1 Study design

This was a descriptive and analytical cross-sectional study focussing on knowledge levels, risk perceptions, socio-demographic characteristics among adults in Ntcheu district in Malawi. The analytical component focussed on determining which socio-demographic characteristics were associated with higher TB knowledge and higher risk perceptions among adult males and females aged 18-49 years in the study district. In addition, the analytical component of the study thought to determine whether knowledge and risk perceptions are associated with self-reported TB diagnosis.

2.2 Study site

This study was conducted in January 2012 in Ntcheu district, Malawi. Ntcheu is one of the 28 administrative districts of Malawi with a total population of 474,464. Of these, 226,567 are males and 247,897 females (National Statistical Office, 2008). A total of 227,134 people are aged above 18 years of which 103,440 are males and 123,694 are females (National Statistical Office, 2008). The district is served by nine Traditional Authorities (TAs) namely: Phambala, Mpando, Kwataine, Makwangwala, Champiti, Njolomole, Chakhumbira, Goodson Ganya and Masasa. The district has one hospital, Ntcheu District Hospital, and 36 health centres. Ntcheu is one of the districts with the highest TB incidence in the country estimated at 57/100,000 (National TB Control Programme, 2007). In 2010 alone Ntcheu district registered 525 TB cases (National TB Control Programme, 2010-*unpublished report*). The

district has three main tribes, namely Ngoni, Chewa and Yao. Of the three tribes Ngonis are the predominant tribe and Chichewa is the predominant language.

2.3 Study population

The study population were adult males and females aged 18-49 years. Previous studies done have shown that the greatest mortality and morbidity related to TB in poorer countries like Malawi is concentrated in the economically productive age group of 18-49 years, hence this group was chosen as the study population.

2.4 Sampling and study sample size

The study used a three-stage sampling technique. The first stage involved simple random sampling of two TAs from the nine TAs in Ntcheu using computer generated random of numbers. Based on this process, the TAs Chakhumbira and Makwangwala were randomly selected (See Annex I). Stage two also involved random selection of ten (10) villages from TA Chakhumbira and ten (10) villages from TA Makwangwala. Using the 2008 Population and Housing Census maps obtained from the National Statistical Office in Zomba, all existing demarcated enumeration areas (EAs) in TA Chakhumbira were used. A total of 49 villages from 23 EAs in Chakhumbira formed a sampling frame and using computer generated random of numbers 10 villages were selected. The same process was repeated for TA Makwangwala where a total of 199 villages from 79 EAs formed a sampling frame and 10 villages were randomly sampled. A total of 20 villages were therefore selected, 10 in each TA.

The six households in each village were selected using systematic sampling method. A household in this survey was defined as people eating from the same pot. Names of households in each village were solicited from the village head or his/her representative and were arranged alphabetically. The first dwelling was randomly sampled using computer

generated random of numbers and subsequent households were systematically selected by going to the third dwelling on the right hand side of the main entrance of the previous dwelling until the required sample size of six households in each village was reached. Convenience sampling was used to select a respondent per dwelling, whereby, the first person met or found at a dwelling and who fell within the age group 18-49 years was interviewed. At any dwelling, no sampled person refused to participate in the study. A total of 121 adult males and females aged between 18 to 49 years were interviewed.

The required sample size was determined using the following formula for prevalence surveys:

$$n = \frac{t^2 \times p(1-p)}{m^2} + r$$

Where

n= required sample size

t = confidence level at 95% (standard value of 1.96).

p = estimated proportion of stigma in Malawi which was put at 0.5.

m = margin of error which was put at 10% and,

r = non response rate set at 20%. The non-response rate was put at 20% as it was feared that people would not be willing to participate in this TB study as the disease is closely associated with AIDS which also has some degree of stigma and discrimination in Malawi.

2.5 Data collection

Data were collected in January 2012 by three research assistants through face-to-face interviews in the local language (Chichewa) with participants in their homes using a structured questionnaire (**See Annex II**). The questionnaire included only close-ended items. It was developed in English and then translated into Chichewa. Prior to the study, three research assistants (one male and two females) were recruited and trained in the following

areas: main objectives of the study, TB concepts, ethics and standard operating procedures of data collection. The training took three days to complete, from the 3rd to the 5th of January 2012 in Blantyre. After the training, the entire study process and tools were piloted in TA Nsomba in Blantyre which is about 120 kilometres away from Ntcheu district. The piloting exercise included: sampling of respondents at household level, how to conduct face-to-face interviews, feasibility of completing interviews, timing for questionnaire completion and storage of completed questionnaires. For the questionnaires, the piloting mainly focused on how accurate each research assistant recorded the responses and consistency in following the skip commands. It also involved an assessment of how each assistant completed the consent forms. No technical or logistical gaps were identified during the pretesting exercise and no adjustment was made to the instrument. Although it was planned for the assistants to return to the household where they would not find any eligible respondents three times, such cases were not encountered during the data collection.

2.6 Quality assurance

A checklist was used to assess daily how well the enumerators administered the questionnaires and length of time was taken for each interview. Each interview was on average about 40 minutes in length. Questionnaires were also checked daily in the field for completeness and accuracy; and a daily interview form was used where information on the number of interviews done each day per research assistant was recorded. The interviewers were handing over the questionnaires to the principal investigator daily. Each assistant was interviewing at least six respondents per day and the whole study lasted for a period of about seven days.

2.7 Measurement

The data were collected using a structured questionnaire (**See Annex II and III**) and were administered to the respondents by the three trained research assistants. The questionnaire had items on demographic and socio-economic characteristics of the respondents. Items measuring socio-economic characteristics included: a single item on average monthly household income on a scale of 1-4; a single item that measured access to water on a scale 1-4 e.g. main source of drinking water; a single item that measured sanitation on a scale 1-4 e.g. whether the household had ventilated or unventilated pit latrine; and three items that measured quality of housing on a scale 1-3 e.g. nature of the wall, roof and floor of the house. Another measure of socio-economic status was a list of items that asked about assets e.g. whether the household had a radio, television, cell phone etc. These items were then recoded to create two scores. The first was the socio-economic status (SES) score and comprised items on quality of housing, water and sanitation (Cronbach alpha=0.36) while the second was a measure of ownership of household assets (Cronbach alpha=0.68). The continuous variables (SES and ownership of household assets score) were dichotomized to higher and lower SES.

The tool included items with statements on knowledge of TB causes, transmission, symptoms and risk perceptions. Respondents indicated their agreement with the item on a four-point likert scale. Knowledge of causes of TB included four items: whether TB is caused by a germ; whether it is curable or not; whether it is caused by HIV and; whether a person can have both TB and HIV at the same time. Knowledge of transmission of TB was measured using the following four items: whether TB is passed from a parent to a child; whether TB is an incurable disease or not; whether one can get TB by sharing food and bed; and whether one can get TB through sexual intercourse. Knowledge of symptoms was measured using seven items, and these included e.g. weight loss, chest pains and HIV status. Risk

perceptions were measured using five items: e.g. beliefs that one cannot get TB because is strong; one can get the disease only if he/she is HIV positive; TB is common and any person can get it. These items were then added to create a score for each sub-scale. The internal consistency of the sub-scales was assessed using a Cronbach's alpha – there were as follows: knowledge of causes ($\alpha=0.67$); knowledge of transmission ($\alpha=0.56$); knowledge of symptoms ($\alpha=0.42$); and risk perceptions ($\alpha=0.51$). The distribution of the scale was reviewed for normal distribution. If there was normal distribution, the continuous variables (knowledge of causes, transmission and symptoms and risk perceptions) were dichotomized based on a median split into a higher and lower knowledge or higher or lower risk perceptions.

2.8 Ethical consideration

Ethical clearance (M110955) for the study was granted by the Human Research Ethics Committee (HREC) from the University of the Witwatersrand in Johannesburg, South Africa (**See Annex III**) and another clearance/ethics approval was obtained from the Malawi Health Sciences Research Committee (**See Annex IV**). Written and official authorization from Ntcheu District Hospital (District Health Officer) was sought before the commencement of the study. Before conducting the interviews, respondents were briefed on the study objectives and received a participant information sheet (**See Annex V**). Participation of respondents in the study was voluntary and they were free to refuse to participate without facing any consequences for non-participation. No identifying information was collected. Respondents were asked to sign a consent form and those who could not write were asked to thumb stamp (**See Annex VI**). The consent forms were kept separately from completed questionnaires.

2.9 Data management and analysis

Data were entered into a database using the Statistical Package for Social Scientists (SPSS) and consistency and range checks were done in Excel. Further data cleaning procedures were also conducted to assess inconsistencies and obvious data collection errors. Analysis was

conducted in STATA 10.0. For the first objective, describing the socio-demographic characteristics of the study population, age was treated as a continuous variable and was analysed using median and range. Sex, marital status, religion and occupation were all treated as categorical nominal variables and were analysed using proportions, while number of other dependents a household had was a categorical ordinal variable and was analysed using mean and range. Level of education as categorical ordinal was analysed using proportions. For the second objective, determining level of knowledge of causes, transmission and symptoms of TB in relation to being diagnosed with TB, a knowledge score was obtained which was transformed into a categorical variable of high or low. For the third objective, describing risk perceptions for acquiring TB among the respondents, a risk perception score was calculated which was transformed into a categorical variable of high or low risk perceptions.

For the fourth objective, determining socio-demographic characteristics associated with higher knowledge and high risk perceptions of TB diagnosis, the outcomes were dichotomous variables for the different dimensions of TB knowledge and risk perceptions. The exposure variables were socio-demographic characteristics. A Chi-Square and t-test were used to assess any relationships between outcomes and covariates. For the last objective, determining whether knowledge and risk perceptions were associated with TB diagnosis, the outcome was self-reported TB diagnosis (dichotomous score) and exposure were knowledge and risk perceptions. The t-test was used to analyse the associations. Pearson χ^2 test or Fisher's exact test for small sample sizes were used to ascertain the statistical significance of observed differences at every level.

Chapter 3 : Results

Chapter three describes the results of the study which have been presented in table format. The results presented in this report represent the responses participants gave to the questions asked and the outcomes of the statistical analyses.

3.1 Socio-demographic characteristics

There were 121 participants in the study. The response rate was 100% as every selected respondent was interviewed at his or her household. More males (53.7% [n=65]) were interviewed than females. The median age of the respondents was 28 years (inter-quartile range=15.5 years) which implies that half of the population was aged between 18 and 28 years. In terms of education, 25.6% (n=31) had no education and 20.6% (n=25) had completed secondary school level. The main religion was Christianity (95.8% [n=115]) and Islam was (4.2% [n=5]). Regarding ethnicity, most of the participants were Ngoni (89.3% [n=108]) and 10.7% (n=13) belonged to other tribes. Most of the respondents (62.8% [n=76]) were married. Sixty-two percent (n=72) of the respondents were living with a sexual partner at the time of the study; 63.6% (n=77) were farmers and 14% (n=17) were engaged in small scale businesses. Forty-one percent (n=37) of the study participants had 3-4 children and 47.9% (n=58) had other dependants. Almost half of the study participants (42% [n=45]) had an average monthly household income of less than MK3000 (US\$10.7) which shows that the area is impoverished.

The majority of the respondents had very low aggregated socio-economic scores. This was based on responses to the material their houses were made from, access to water and sanitation in the home. Sixty-six percent (n=80) of the respondents had low scores on ownership of household assets and livestock which implies that they were poor while 33% (n=41) had higher scores indicating that they were relatively better off (mean=21.1, SD=2.2

and range 16-24). Sixty-three percent (n=75) were categorized as people of low social economic status while 36.9% (n=44) were categorised as those of higher socio-economic status (mean=10.2, SD=1.7 and range 7-15). See Table 3.1.

Table 3.1: Distribution of socio- demographic characteristics of the respondents

Socio-demographic characteristics	Frequency	Percentage (%)
Age n=116		
Age group		
18-20	25	21.6
21-25	21	18.1
26-30	20	17.2
31-35	19	16.4
➤ 35	31	26.7
Sex n=121		
Males	65	53.7
Females	56	46.3
Education n=121		
None	31	25.6
Standard/Grade 5	28	23.1
Standard/Grade8	38	30.6
Secondary	25	20.7
Religion n=121		
Moslems		
Christians	5	4.2
	115	95.8
Tribe n=121		
Ngoni		
Others	108	89.3
	13	10.7
Marital status n=121		
Single		
Married	25	20.7
Separated/widowed	76	62.8
	20	16.5
Living with a sexual partner n=121		
Yes		
No	72	61.5
	45	38.5
Number of children the respondent has n=121		
1-2	31	34.4
3-4	37	41.1
≥5	22	24.4
Number of other dependents the respondents has n=121		
	15	12.4
1-2	48	39.7
3-4	58	47.9
≥5		

Socio-demographic characteristics	Frequency	Percentage (%)
Average monthly household income $n=121$		
Under MK3000/month	45	42.1
MK3001-MK5000/month	21	19.6
MK5001-MK10000	17	15.9
>MK10000/month	24	22.4
Occupation $n=121$		
Farmer	77	63.6
Business person	17	14.1
Other	9	7.4
Unemployed	18	4.9
Ownership of household assets $n=121$		
Low	80	66.1
High	41	33.9
Social economic status $n=119$		
Low	75	63.3
High	44	37.0

3.2 Knowledge of causes of TB by socio-demographic characteristics

The study found that all the respondents had heard about TB. Table 3.2 below shows that level of education was significantly associated with knowledge of causes of TB ($p<0.01$). Those with no or low education upto standard/grade 5 were less likely to know the causes of TB. The table shows that 44% ($n=20$) of those who had no education had low knowledge of causes of TB compared to 67% ($n=51$) of those who had education above Standard/Grade 8 ($p<0.01$). This implies that the higher the education the more likely one would know causes of TB. Table 3.2 also shows that socio-economic status of the study participants was significantly associated with knowledge of causes of TB ($p=0.01$). The lower the socio-economic status of the respondent the lower the knowledge levels of TB. The study results further show that ownership of household assets ($p=0.01$) and average monthly household income ($p=0.02$) were significantly associated with knowledge level of TB causes ($p=0.01$). Respondents who had lower scores on aggregated household assets (91% [$n=41$]) had low knowledge of causes of TB compared to those who had higher scores on the ownership of assets (8.9% [$n=4$]). Those whose average monthly income was MK3000

(61.5% [n=24]) were less likely to know the causes of TB compared to those whose average monthly household income (10.3% [n=4]) was above MK10, 000.

No association was found between age, sex, marital status, number of children as well as number of other dependants in a household and knowledge of causes of TB. If any association existed, such association was by chance or was not statistically significant due to the relatively small sample size of the study.

Table 3.2: Knowledge of causes of TB by socio-demographic characteristics of the respondents

Socio-demographic characteristics	High knowledge of causes of TB n (%)	Low knowledge of causes of TB n (%)	p-value
Age n=116			
Age group			
18-20	17 (23.0)	8 (19.1)	<i>p=0.97</i>
21-25	15 (20.3)	16 (14.3)	
26-30	11 (14.9)	9 (21.4)	
31-35	11 (14.9)	8 (19.1)	
>35	20 (20.0)	11 (26.2)	
Sex n=121			
Male	43 (56.6)	22 (48.9)	<i>P=0.41</i>
Female	33 (43.4)	23 (51.1)	
Education n=121			
None	11(14.5)	20 (44.4)	<i>P<0.01</i>
Standard/Grade 5	14 (18.4)	14 (31.1)	
Standard/Grade 8	51(67.0)	11(24.0)	
Secondary	00(00.3)	0(0.0)	
Marital status n=121			
Single	18 (23.7)	7 (15.6)	<i>P=0.56</i>
Married	46 (60.5)	30 (66.5)	
Separated/divorced	12 (15.8)	8 (17.8)	
Ownership of household assets n=121			
Low assets	39 (51.3)	41 (91.1)	<i>P=0.01</i>
High assets	37 (48.7)	4 (8.9)	
Socio-economic status n=121			
Low	37 (49.3)	7 (15.9)	<i>P=0.01</i>
High	38 (50.7)	37 (84.1)	
Number of people in a household n=121			
1-2	8 (10.5)	7 (15.6)	<i>P=0.55</i>
3-4	29 (38.2)	19 (42.2)	
≥5	39 (51.3)	19 (42.2)	

Socio-demographic characteristics	High knowledge of causes of TB n (%)	Low knowledge of causes of TB n (%)	p-value
Occupation n=121			
Farmer	45 (59.2)	2 (71.1)	<i>P=0.20</i>
Business person	14 (18.4)	3 (6.7)	
Employed	7 (9.2)	2 (4.4)	
Unemployed	10 (13.2)	8 (17.8)	
Monthly average household income n=121			
Under MK3000/month	21 (30.9)	24 (61.5)	<i>P=0.02</i>
MK3001-K5000/month	15 (22.1)	6 (15.4)	
MK5001-MK1000	12 (17.7)	5 (12.8)	
>MK10000/month	20 (29.4)	4 (10.3)	
Number of children the respondent has n=90			
1-2	19 (35.9)	12 (32.4)	<i>p=0.18</i>
3-4	18 (34.0)	19 (51.4)	
≥5	16 (30.2)	6 (16.2)	

3.3 Knowledge of transmission of TB by socio-demographic characteristics of the respondents

The scores for the questions related to knowledge of the transmission of TB were also dichotomised into low and high. The level of knowledge on transmission was assessed using aggregated scores, for example, on whether TB is a disease that can be passed from a mother to a child, whether it is transmitted through physical contact from one person to another, whether one could get TB through sharing food, bed or through sexual intercourse. Table 3.3 below shows that level of education was significantly associated with knowledge of transmission of TB ($p<0.01$). The table shows that those with no or low education upto standard/grade 5 were less likely to know the modes of TB transmission compared to those with higher education. All other socio-demographic characteristics did not show any statistically significant association (See Table 3.3).

Table 3.3: Knowledge of transmission of TB by socio-demographic characteristics of the respondents

Socio-demographic Characteristics	High knowledge of TB transmission n (%)	Low knowledge of TB transmission n (%)	p-value
Age n=116			
Age group			<i>p=0.79</i>
18-20	12 (21.8)	13 (21.3)	
21-25	10 (18.2)	11 (18.3)	
26-30	7 (12.7)	13 (21.3)	
31-35	10 (18.2)	9 (14.8)	
>35	16 (29.1)	15 (24.6)	
Sex n=121			
Male	29 (52.7)	35 (54.6)	<i>p= 0.08</i>
Female	26 (47.3)	30(45.5)	
Education n=121			
None	7 (12.7)	24 (36.4)	<i>p < 0.01</i>
Standard 5	12 (21.8)	16 (24.2)	
Standard 8	20 (36.4)	17 (27.8)	
Secondary	16 (29.1)	9(13.6)	
Marital status n=121			
Single	11 (20.0)	14 (21.2)	<i>P=0.35</i>
Married	32 (58.2)	44 (66.7)	
Separated/widowed	12 (21.8)	8 (12.1)	
Occupation n=121			
Farmers	40 (60.6)	37 (67.3)	<i>P=0.53</i>
Business persons	8 (12.1)	9 (16.4)	
Employed	6 (9.1)	3 (5.5)	
Unemployed	12 (18.2)	6 (10.9)	
Ownership of household assets n=121			
Low assets	32 (58.2)	48 (72.7)	<i>P=0.09</i>
High assets	23 (41.8)	18 (27.3)	
Socio-economic status n=121			
Low			<i>P=0.44</i>
High	22 (33.9)	22 (40.7)	
	43 (66.2)	32 (59.3)	
Number of people in a household n=121			
	7 (10.6)	8 (14.6)	<i>P=0.64</i>
1-2	25 (37.9)	23 (41.8)	
3-4	34 (51.5)	24 (43.6)	
≥5			
Monthly average household income n=121			
Under MK3000/month	17 (34.7)	18 (48.3)	<i>P=0.56</i>
MK3001-K5000/month	11(22.5)	10 (17.2)	
MK5001-MK10000	9 (18.4)	8 (13.8)	
>MK10000/month	12 (24.5)	12 (20.7)	

3.4 Knowledge of symptoms of TB by socio-demographic characteristics of the respondents

Scores for knowledge of the symptoms of TB were dichotomised into low and high. The level of knowledge on symptoms was based on the following: whether a person with TB will have loss of appetite, night sweats, HIV, chest pains, weight loss and that will always have these symptoms. Table 3.4 below shows that knowledge of symptoms of TB was significantly associated with sex ($p=0.01$) and occupation ($p=0.05$) of the respondents. In terms of occupation, farmers (70.7% [n=53]) were far less likely to recognise the TB symptoms compared to those who were employed (8% [n=6]) and business persons (6.7% [n=5]). There was no significant association with other socio-demographic characteristics (See Table 3.4).

Table 3.4: Knowledge of symptoms of TB by socio-demographic characteristics of the respondents

Socio-demographic Characteristics	High knowledge of TB symptoms n (%)	Low knowledge of TB symptoms n (%)	p-value
Age n=116			
Age group			<i>p=0.90</i>
18-20	15 (20.8)	9 (20.9)	
21-25	14 (19.4)	9 (16.3)	
26-30	14 (19.4)	7 (14.0)	
31-35	11 (15.3)	8 (18.6)	
>35	18 (25.0)	13 (30.2)	
Sex n=120			
Male	40 (53.3)	24 (53.3)	<i>p=0.84</i>
Female	35 (46.7)	21(46.7)	
Marital status n=121			
Single	16 (21.3)	8 (17.8)	<i>P=0.71</i>
Married	48 (64.0)	28 (62.2)	
Separated/widowed	11 (14.7)	9 (20.0)	
Occupation n=121			
Farmers	24 (53.33)	53 (70.7)	<i>P=0.05</i>
Business persons	11 (24.44)	5 (6.7)	
Employed	3 (6.67)	6 (8.0)	
Unemployed	7 (15.56)	11 (14.7)	
Ownership of household assets n=121			
Low assets	28 (62.2)	52 (69.3)	<i>P=0.42</i>
High assets	17 (37.8)	24 (30.7)	
Socio-economic status n=121			
Low	23 (31.5)	21 (46.7)	<i>P=0.44</i>
High	50 (68.5)	24 (53.3)	

Socio-demographic Characteristics	High knowledge of TB symptoms n (%)	Low knowledge of TB symptoms n (%)	p-value
Number of people in a household n=121			
1-2	6 (13.3)	9 (12.0)	<i>P=0.35</i>
3-4	21 (46.7)	26 (34.7)	
≥5	18 (40.0)	40 (53.3)	

3.5 Diagnosed with TB by a health care worker by socio-demographic characteristics of the respondents

Of the 120 participants who responded on whether they had been told by a health worker that they had TB, 31% (n=37) reported that they had been diagnosed. Table 3.5 below shows that age of the respondent ($p=0.02$) and number of children in a household ($p=0.04$) were significantly associated with having been diagnosed with TB. There was no significantly observed association between TB diagnosis and other socio-demographic factors (sex, education, and marital status, number of other dependants in the household and average household income). See Table 3.5 below.

Table 3.5: TB diagnosis by health care worker by socio-demographic characteristics

Socio-demographic Characteristics	Diagnosed with TB N (%)	Never diagnosed with TB n (%)	p-value
Age n=115			
18-20	2 (5.7)	23 (28.8)	<i>p=0.02</i>
21-25	11 (31.4)	10 (12.5)	
26-30	5 (14.3)	15 (18.8)	
31-35	6 (17.1)	13 (16.3)	
>35	11 (31.4)	19 (23.8)	
Sex n=120			
Male	20 (54.1)	45 (54.2)	<i>P=0.99</i>
Female	17 (46.0)	38 (45.8)	
Level of education n=121			
None	10 (27.0)	21 (25.3)	<i>P=0.89</i>
Standard/Grade 5	8 (21.6)	19 (22.9)	
Standard/Grade 8	10 (27.3)	27 (32.5)	
Secondary	9 (24.3)	16 (19.3)	
Marital status n=121			
Single	7 (18.9)	18 (21.69)	<i>P=0.94</i>
Married	24 (64.9)	56 (62.65)	
Separated/divorced	6 (16.2)	23 (15.66)	

Socio-demographic Characteristics	Diagnosed with TB N (%)	Never diagnosed with TB n (%)	p-value
Number of children respondent has n=89			
1-2	12 (44.4)	19 (30.7)	P=0.43
3-4	9 (33.3)	28 (45.2)	
≥5	6 (22.2)	15 (24.2)	
Number of other dependents in the household n=121			
1-2	8 (21.6)	7 (8.4)	P=0.04
3-4	17 (46.0)	31 (37.4)	
≥5	12 (32.4)	45 (54.2)	
Average monthly household income n=121			
Under MK3000/month	17 (48.6)	27 (38.0)	P=0.68
MK3001-5000/month	6 (17.1)	15 (21.1)	
MK5001-MK10000	4 (11.4)	13 (18.3)	
>MK10000/month	8 (22.9)	16 (22.5)	

3.6 Risk perceptions on TB by socio-demographic characteristics of the respondents

Risk perceptions towards TB were assessed. The aggregated scores on high or low perceptions of risk were done. As shown in Table 3.6 below, sex was significantly associated with risk perceptions about TB ($p=0.01$). Females (65.7% [n=26]) were more likely to have low risk perceptions about TB compared to their male counterparts (32.5% [n=13]). Age, education, marital status, occupation, number of other dependants in the household and monthly average household income had no association with risk perceptions among the respondents.

Table 3.6: Risk perceptions on TB by socio-demographic characteristics of the respondents

Socio-demographic characteristics	High TB risk perceptions (%)	Low TB risk perceptions n (%)	p-value
Age n=116			
18-20	16 (20.3)	9 (24.3)	<i>p</i> =0.96
21-25	15 (19.0)	6 (16.2)	
26-30	14 (17.7)	6 (16.2)	
31-35	12 (15.2)	17 (18.9)	
>35	22 (27.9)	17(24.3)	
Sex n=121			
Male	51 (63.8)	13 (32.5)	<i>p</i> = 0.01
Female	29 (36.3)	29 (67.5)	

Socio-demographic characteristics	High TB risk perceptions (%)	Low TB risk perceptions n (%)	p-value
Education n=121			
None	15 (18.8)	15 (37.5)	<i>P=0.11</i>
Standard/Grade 5	19 (23.8)	9 (22.5)	
Standard/Grade 8	29 (36.3)	8 (20.0)	
Secondary	17 (21.3)	8 (20.0)	
Marital status n=121			
Single	19 (23.8)	5 (12.5)	<i>P=0.12</i>
Married	51 (63.8)	25 (62.5)	
Separated/widowed	10 (12.5)	20 (25.0)	
Occupation n=121			
Farmers	55 (68.8)	22 (55.0)	<i>P=0.17</i>
Business persons	12 (15.0)	5 (12.5)	
Employed	5 (6.3)	3 (7.5)	
Number of people in a household n=121			
1-2	9 (11.3)	5 (12.5)	<i>p =0.66</i>
3-4	30 (37.5)	18 (45.0)	
≥5	41 (51.3)	17 (42.5)	
Monthly average household income n=121			
Under MK3000/month	26 (37.1)	18 (50.0)	<i>P=0.35</i>
MK3001-K5000/month	17 (24.3)	4 (11.1)	
MK5001-MK10000	12 (17.1)	5 (13.9)	
>MK10000/month	15 (21.4)	9 (25.0)	

3.7 Utilization of health care services

The study found that all the respondents (n=121) had visited a health care centre or clinic at a certain point in time prior to the study. Table 3.7 below shows that 29.3% (n=31) had visited a health care centre/facility more than one month but less than six months prior to the study; 23.6% (n=25) had visited a health facility more than a year prior to the study, and 17.9% (n=19) had done so in the week prior to the study.

Table 3.7: Distribution of the respondents in the utilization of health care services

Period utilized health care	Frequency (n=106)	Percentage (%)
Past week	19	17.9
More than one week but less than one month	18	6.9
More than one month but less than six months	31	29.3
More than 6 months but less than one years	13	12.7
➤ One year	25	23.6

3.8 Sources of information

As shown in Table 3.8 below the most frequently mentioned source through which respondents got information about TB was radio (75.2% [n=91] followed by a health centre/clinic (68.3% [n=82]). Newspaper was the least mentioned source of information on TB.

Table 3.8: Sources of information on TB

Source of information	Frequency	Percentage (%)
Health Centre/Clinic	82	68.3
Relative of the respondents	30	24.8
Village headman	15	12.4
Community-based organization	33	27.3
Radio	91	75.2
Television	15	12.4
Newspapers	7	5.6

3.9 Source of information by ownership of household assets

The study found that there is a relationship between ownership of household assets and sources through which respondents get information about TB. Table 3.9 below shows that the lower the ownership of household assets, the lower the chances one would get information about TB from the radio ($P=0.03$).

Table 3.9: Sources of information by ownership of household assets

Ownership of Household assets (n=121)	Received information from radio n (%)	Did not receive information from radio n (%)	P-Value
High	53 (68)	38 (92.7)	$P=0.03$
Low	25 (32)	24 (7.3)	

Chapter 4: Discussion

This chapter discusses the results of the study focusing on the main findings.

4.1 Summary of key results

This study found that the awareness about TB among the respondents was universal as all the participants reported having heard about TB from different sources. However, this general awareness was not translated into comprehensive knowledge about the disease. The study established that there were still important knowledge gaps in terms of causes, symptoms and modes of transmission of the disease. Low risk perceptions were also found among some of the respondents.

Education of the respondents was significantly associated with access to TB information through radio. This finding supports findings from previous studies where, for examples, low educational attainment was associated with low knowledge about TB and in turn subsequent delays in TB diagnosis and access to other TB related services (Bates, 2004; Johansson, et al., 2000; Long, et al., 2001). The results also support what Bates (2004) found where maternal literacy was closely associated with better rates of case notification of TB and early treatment-seeking.

Household assets and average monthly household income of the respondents were significantly associated with knowledge of causes of TB. For example, the study established that the lower the ownership of household assets the lower the chances one would get information about TB from the radio. This implies that the poor would not afford a radio yet it is one of the major sources through which people get information about the disease. These results substantiate earlier findings done in countries such as Rwanda, Gambia, Ghana and Uganda where poor people who could not afford a radio, television and other sources of information about TB were less likely to access and adhere to treatment compared to rich

people who could afford such sources (Harper, et al., 2003; Hudelson., 1996; Jaramillo, 1999; Macfarlane & Newell, 2012; Sun, et al., 2007).

There was also an association between knowledge of symptoms of TB and occupation. Certain occupations (e.g. being a farmer) were significantly associated with low knowledge about TB symptoms. Farmers were less likely to know TB symptoms. This finding correlates with Zhang's (2007) findings in Inner Mongolia, China where farmers failed to understand TB symptoms as a result they tended to seek health care after they had failed to treat themselves. In addition, due to lack of knowledge of symptoms of TB most of the farmers sought care from less qualified village level health care providers instead of seeking appropriate care from conventional health facilities.

Sex of the participants was significantly associated with risk perceptions of the disease as females were found to have lower risk perceptions compared to males. This finding also correlates with previous studies where females were found to have low risk perceptions compared to males (Zhang, 2007). In another study, females blamed on their daily heavy workloads and perceived that they were more vulnerable to hereditary factors than males (Long, et al., 1999).

Age of the respondent and number of children a household had were significantly associated with TB diagnosis. This suggests that the younger the person the less likely one would go to a health facility/clinic for diagnosis or seek any other TB services. This supports earlier findings where young people have been found to be less likely to know TB and access diagnostic services than older people (Zhang et al, 2007, Long et al, 2009). It also augments findings from earlier studies that showed that fewer young people than older people knew that TB was infectious (Zhang et al, 2007).

4.2 Discussion

4.2.1 Rural poverty

The area where the study was done is impoverished and all people are generally poor. This was shown by the fact that 42% (n=45) of the respondents had an average monthly household income of less than MK3,000 and 66% (n=80) of the total respondents were categorized as having low aggregated household assets, indicating overall poor economic status of the respondents in the area. This is largely due to the fact that the area is rural with very few alternative sources of income other than agriculture.

4.2.2 Awareness and knowledge of TB

The awareness about TB among the respondents was universal as all the participants (100% n=121]) reported having ever heard about TB. Although the awareness was universal, significant knowledge gaps about the disease and risk perceptions still existed which may imply that interventions on TB in the study district have resulted in awareness creation rather than developing comprehensive knowledge about the disease. This study found that participants could just indicate what they had heard about TB but had limited knowledge on the causes, modes of transmission and symptoms.

4.2.3 Knowledge of causes of TB and education

The study has revealed that low education levels were associated with lower correct knowledge about TB. Other studies have found that lower educational attainment is associated with low knowledge about TB and in turn subsequent delays in TB diagnosis and access to other TB related services (Bates, 2004; Johansson, et al., 2000; Long, et al., 2001). Studies by Johansson et al (2000); and Long et al (2001) have shown that people with no formal education are less likely to know causes, modes of transmission and ways of TB

prevention and control. The more educated a participant was the more likely she/he was able to articulate various causes of TB and modes of transmission of the disease thus supporting earlier studies (Lönnroth, Jaramillo, Williams, Dye, & Raviglione, 2009b; Westaway, 1990). These findings seem to suggest that with education one is able to know and understand TB.

4.2.4 Knowledge of causes and transmission of TB and household assets and income

In this study, low ownership of household assets and low monthly household income of the respondents were significantly associated with low knowledge of causes of TB. This means that the lower the aggregated household assets and average monthly household income one had the less likely that person knew causes of TB and associated modes of transmission of the disease (Zhang, Liu, Bromley, & Tang, 2007). This could partly be to the fact that due to low economic status (low household income and limited assets) the ownership of the radio was low yet radio has been found in this study to be one of the main sources through which people got information about TB in the area. The study found that respondents with lower ownership of household assets had lower chances of getting information about TB from the radio (Harper, Ahmadu, Ogden, McAdam, & Lienhardt, 2003; Hudelson., 1996).

4.2.5 Knowledge of symptoms of TB and occupation

The study found that there was an association between knowledge of symptoms of TB and occupation. It was established that farmers were far much less likely to recognise the TB symptoms compared to other occupations such as the employed and the business persons (Zhang, et al., 2007). In this study the reason why knowledge is lower among farmers is not clear.

4.2.6 Sex and risk perceptions

In this study, sex of the respondent was significantly associated with risk perceptions about TB. Females were more likely to have low risk perceptions about TB. Women had relatively low risk perceptions for TB compared to men despite potentially having greater contact with health services through antenatal care services which they sometimes attend. This could indicate that there is limited integration of services where information on TB is shared when patients attend non-TB related services. The low risk perceptions about TB among females also seem to indicate huge variation through which females access information about TB compared to their male counterparts. This might mean that due to high engagement in farming activities as well as daily household chores, it is possible that significant numbers of females tend to have limited access to sources of information about TB e.g. radio (Long, et al., 1999). This finding supports earlier studies that indicated that in some settings, men were considered as being at higher risk of getting TB infection than women as they were more exposed to risk factors during working and leisure time, and as a result women did not seek TB services even if they showed TB symptoms (Long, et al., 1999).

4.2.7 Age and number of children at household level

Age of the respondent and number of children a household had were significantly associated with TB diagnosis. This suggests that the older the respondent the higher the likelihood of being diagnosed with TB; and the younger the participant the less likely one would be told of TB diagnosis by a health care worker. This might also mean that as one gets older the more likely she/he is exposed to TB infection leading to TB diagnosis if one visits a health centre or a clinic (Zhang, et al., 2007). The study also established a relationship between number of children a household had and TB diagnosis. The more the number of children in a household the more likely one was diagnosed with TB which implies that increased number of people in a household (overcrowding) is a risk factor of TB. This correlates with previous study

findings in England that indicated a strong positive association between TB mortality and overcrowding (Elender, Bentham, & Langford, 1998). In their study Elender et al (1998) found that overcrowding at household rather than district level is important factor for TB infection suggesting that prolonged contact is a fertile ground for TB transmission. In their survey, they found as a case study that a certain man in Edinburgh who lived in a two bedroom council house with his mother and six siblings, all members of the family were infected and three of them developed TB (Elender, et al., 1998). In Sao Paulo, Brazil, studies showed that districts which had higher TB mortality rates were the ones that registered higher household overcrowding (Antunes & Waldman, 2001). This shows that the higher the number of children a household has, which may lead to overcrowding, the more it becomes a risk factor for TB transmission.

4.3 Implications of the study

The findings of this study have implications on the implementation and interpretation of TB Health Education Awareness Model in Malawi. The Malawi Government through the National TB Control Programme is implementing some TB interventions, however, much of these activities focus on bio-medical component and not addressing demographic, socio-economic and cultural factors which are crucial in preventing and controlling TB. The results of this study will inform development of Health Education Awareness Model which will in the end guide the Government and other partners in designing specific interventions that would reduce people's risk perceptions, and increase people's knowledge on the causes, modes of transmission and symptoms of the disease. With improved knowledge levels and risk perceptions, Malawians will be able to prevent the disease or seek early diagnosis if infected.

4.4 Strengths

- The design of this study was a descriptive and analytical cross-sectional study as such it allowed for assessment of possible relationships, for example, between knowledge of causes of TB as outcome variable and socio-demographic characteristics of the respondents as exposure variables.
- The study was relatively cheap and done within a very short period of time (7 days) where research three (3) assistants had to administer close-ended questionnaires to the sampled respondents unlike other study designs such as cohort studies which take long and become expensive.
- This was the first quantitative community-based study involving community-based respondents done in the area. Most studies done in Ntcheu in particular and Malawi in general have been on treatment (Nyirenda, 2006; Simwaka, et al., 2007).

4.5 Limitations

- Although some associations between variables and outcomes have been established in this study e.g. occupation of a respondent and knowledge of TB symptoms, it is rather difficult to differentiate whether it was occupation per se that influenced one's knowledge or other factors played a part in one's occupation which in turn had an influence on knowledge of TB symptoms. In future study, multivariate analyses should be conducted to identify independent variables associated with the different TB outcomes.
- TB diagnosis was self-reported and this could have resulted in under-reporting as TB is stigmatised in this area. Under-reporting would have biased the results towards the null hypothesis.
- There is possibility of sampling bias playing a role in the findings of this study due to the fact that field work was conducted during the rainy season when most of the older people

were busy in the fields cultivating leading to an over-representation of those aged 18-28years in the sample.

- Internal consistencies for some scales used to gauge knowledge level, risk perceptions and socio-economic status were not optimal.
- This was a cross sectional study and therefore failed to establish whether it was diagnosis that may have influenced knowledge of TB among the study participants; or knowledge of TB among participants may have influenced diagnosis.

4.6 Conclusion

The study highlights socio-demographic and cultural factors that are associated with knowledge of causes, transmission, symptoms and risk perceptions of TB. The results of this study are in line with the findings of numerous studies (Dodor & Afenyadu, 2005; Jackson, et al., 2008; Jaramillo, 1999; Macfarlane & Newell, 2012; Sun, et al., 2007) done on the relationship that exists between knowledge, risk perceptions, socio-demographic and cultural factors and TB diagnosis including access to other TB services. Specifically, results of this study will be utilized in the implementation of the main study which is going to be conducted in Ntcheu district whose main aim will be to assess the effectiveness of the Health Education Awareness Model on early diagnosis in a limited resource setting like Malawi. It is also expected that being one of the first studies of this nature in Ntcheu, the results will inform future similar studies on the relationship between socio-economic and demographic factors in relation to TB diagnosis. The results will be used to inform policy development of health promotion programmes that could address issues as knowledge and risk perceptions but also socio-economic factors that may influence uptake of knowledge of causes, symptoms and transmission of TB in Malawi.

4.7 Recommendations

In line with the findings of this study, there is need to develop comprehensive health promotion programme that could assist in addressing people's risk perceptions, and increase people's knowledge on the causes, transmission and symptoms of TB so that they are able to prevent it and seek early diagnosis. In addition the following recommendations should be considered:

- Interventions to promote early diagnosis should not only look at the health literacy component alone but also other contextual issues such as gender, economic issues and ownership of household assets as they have been proved to be associated with knowledge of TB. Deliberate effort should be made to design interventions that could address challenges females face when accessing TB information since most of them were found to have relatively low risk perceptions about the disease compared to their male counterparts. Such interventions should seriously look at the most accessible and affordable sources of information, time and period for dissemination of such information and formats so that at least every person could access it regardless of sex.
- When designing health promotion programmes addressing TB, the target audience needs to be carefully considered. Attention should also be paid to sub-groups such as those with no education/less educated and farmers as they had shown significant knowledge gaps and low risk perceptions about TB.
- Future health promotion programmes on TB should begin with an understanding of the knowledge base of the target population and relate such knowledge with prevailing traditional norms, beliefs and perceptions about TB. This will assist to address inherent myths and misconceptions (e.g. beliefs that TB is a punishment from God, a person who is strong cannot get TB; and that only those with HIV and AIDS can get TB etc.).

- Multivariate analyses should be conducted in future studies in order to identify independent variables associated with the different TB outcomes. This is because although some associations between variables and outcomes had been established e.g. occupation of a respondent and knowledge of TB symptoms, it was rather difficult to differentiate whether it was occupation that influenced one's knowledge or other factors played a part in one's occupation.
- As this study did not establish significant difference between being diagnosed with TB and socio-demographic characteristics of respondents, there is need to conduct more studies in future that could explore such relationship even further.

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Appendices

Appendix 1: List of nine (9) traditional authorities (TAs) in Ntcheu district from which two (2) TAs were randomly selected

1. Chakhumbira
2. Champiti
3. Goodson Ganya
4. Kwataine
5. Makwangwala
6. Masasa
7. Mpando
8. Njolomole
9. Phambala

The two (2) randomly selected TAs were Chakhumbira and Makwangwala.

Appendix II: English Questionnaire

Relationship between knowledge, risk perceptions and socio-demographic factors and intention to access tuberculosis services in rural communities in Malawi

Study ID: 510893

Post Dot Net X211 Crossroads, Lilongwe Malawi, Cell: +265 888 201 168, Tel: +265 1979 929, E-mail: rchizimba@yahoo.com

(ENGLISH)

Study identification number:	[][][][][]
Visit number:	[]
Interviewer name:	
Date of interview:	__ __ / __ __ / 20 __ D D M M Y
Interview site:	Traditional Authority (TA): Village:
Cluster name:	
Cluster number:	[][]
Start time of interview:	_____h_____

SECTION ONE: BACKGROUND

The first questions I want to ask you are about yourself and your socio-economic status. In some cases without necessarily asking you, I will record information on the nature of your dwelling house. Please try and relax, there are no right or wrong answers. Remember that everything you tell me will be kept secret. Once again, if there is a question you do not want to answer please tell me and we will skip to the next question.

NO	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
101	What is the age of the respondent? ----- Years IF NOT SURE, PROBE USING CALENDER OF EVENTS For example: The 1949 famine; The year that Dr. H. Kamuzu Banda the first President returned to Malawi (1958); The year Malawi became independent (1964)	DON'T KNOW/NO RESPONSE 99	
102	What is your sex?	Male 1 Female.....2	
103	Have you ever attended school?	YES 1 NO.....2	→105
104	What is the highest standard or grade you have completed at school?	Standard/grade 5.....1 Standard/grade 8.....2 Form II.....3 Form IV.....4 NO RESPONSE 99	

105	What is your religion?	Christian.....1 Muslim 2 Buddhist 3 Traditional beliefs 4 Other (specify) _____ DON'T KNOW.. 88 NO RESPONSE.....99	
106	To which tribe do you belong?	Chewa.....1 Lomwe..... 2 Sena..... 3 Yao..... 5 Ngoni..... 6 Tumbuka..... 7 Others (specify)_____ DON'T KNOW.. 88 NO RESPONSE...99	
107	What is your marital status?	Single.....1 Married.....2 Separated.....3 Divorced.....4 Widowed.....5 NO RESPONSE...99	

108	Do you live with your husband/wife boyfriend/girlfriend?	YES.....1 NO.....2 NO RESPONSE...99	
109	What is your occupation?	Farmer.....1 Business person.....2 Teacher.....3 Agriculture field worker.....4 Health worker.....5 Community development worker.....6 Policeman/woman.....7 Full-time student/learner.....8 Unemployed.....9 Pensioner.....10 Others (specify)_____ DON'T KNOW.....88 NO RESPONSE.....99	
110	Do you have children?	YES.....1 NO.....2	→113

111	How many children do you have?	1-2.....1 3-4.....2 5-7.....3 8+ 4 NO RESPONSE 99	
112	Apart from your children, do you have other dependants?	YES.....1 NO.....2 NO RESPONSE.....99	
113	How many people are there in your household?	1-2.....1 3-4.....2 5-7.....3 8+ 4 NO RESPONSE 99	
114	What is your average monthly household income?	Under MK3,000/month.....1 MK3,001-MK5,000/month.....2 MK5,001-MK10,000/month.....3 MK10, 001-MK30,000/month.....4 More than MK30,001 /month.....5 NO RESPONSE.....99	

120	Does your household own the following animals? a) Goats? b) Pigs? c) Cattle? d) Sheep? e) Chickens?	YES.... 1. NO....2. NO RESPONSE ..99 YES.... 1. NO....2. NO RESPONSE ..99 YES.... 1. NO....2. NO RESPONSE ..99 YES.... 1. NO....2. NO RESPONSE ..99 YES.... 1. NO....2. NO RESPONSE ..99	
121	What type of fuel does your household mainly use for cooking?	Firewood.....1 Charcoal.....2 Electricity.....3 Paraffin.....4 Straw.....5 Others (specify)_____ NO RESPONSE.....99	
122	What kind of toilet facility does your household use?	Traditional pit latrine.....1 Ventilated improved pit-latrine.....2 Flush toilet.....3 No facility.....4 Others (specify)_____ NO RESPONSE.....99	
SECTION TWO: KNOWLEDGE OF TUBERCULOSIS (TB)			
I would now like to ask you a few questions about tuberculosis.			
201	Have you ever heard of tuberculosis?	Yes.....1 No.....2 NO RESPONSE.....99	→309

I would like to ask you a few questions about TB and I am going to read out some statements and for each I would like to know if it is true, probably true, probably false or false.						
		True	Probably true	Probably False	False	
202	TB is an incurable disease	1	2	3	4	
203	TB is a disease that gets passed from parent to child	1	2	3	4	
204	TB is caused by a germ	1	2	3	4	
205	TB is passed on by physical contact with someone who is infected	1	2	3	4	
206	TB is caused by HIV	1	2	3	4	
207	TB is caused by witchcraft	1	2	3	4	
208	TB is caused by cold weather	1	2	3	4	
209	You get TB from sharing food with someone who has TB	1	2	3	4	
210	You get TB from sharing a bed with someone who has TB	1	2	3	4	
211	You get TB by having sexual intercourse with someone who has TB	1	2	3	4	
212	A person can have both TB and HIV at the same time	1	2	3	4	
213	A person with TB will have loss of appetite	1	2	3	4	
214	A person with TB will have night sweats	1	2	3	4	
215	A person with TB will have severe cough	1	2	3	4	
216	A person with TB will have HIV	1	2	3	4	
217	A person with TB will have chest pains	1	2	3	4	
218	A person with TB will have weight loss	1	2	3	4	
219	A person with TB will always have symptoms	1	2	3	4	

220	Pregnant women infected with TB should not seek TB treatment because it causes miscarriage and sometimes harms the baby	1	2	3	4	
221	Lactating women infected with TB should not seek TB treatment because it causes drying of breast milk and sometimes harms the baby	1	2	3	4	
222	TB is a disease of older people only	1	2	3	4	
223	Can TB be prevented?	Yes.....1 NO.....2 DON'T KNOW.....88 NO RESPONSE.....99				
224	Can TB be treated?	Yes.....1 NO.....2 DON'T KNOW.....88 NO RESPONSE.....99				→ 226
225	How long does it take to complete TB treatment?	6 Weeks.....1 6-8 Months.....2 For life.....3 Others (specify) _____ DON'T KNOW.....88 NO RESPONSE.....99				
226	What do you think are the consequences of stopping treatment?	You develop resistance to TB drugs.....1 You become more infectious.....2 You become ill more often.....3 You die quickly.....4 Others (specify) _____ DON'T KNOW.....88 NO RESPONSE..... 99				

227	From what sources do you get information about TB?	Clinic/health centre. Yes.....1 NO.....2 NO RESPONSE.....99 Family members Yes.....1 NO.....2 NO RESPONSE.....99 Village headman Yes.....1 NO.....2 NO RESPONSE.....99 Community-based organizations. Yes.....1 NO.....2 NO RESPONSE.....99 Radio Yes.....1 NO.....2 NO RESPONSE.....99 Television Yes.....1 NO.....2 NO RESPONSE.....99 Newspapers Yes.....1 NO.....2 NO RESPONSE.....99 Others (specify) _____	
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228	Where would you prefer to be the sources of information about TB?	Clinic/health centre 1 Family members.....2 Village headman.....3 Community-based organization....4 Radio.....5 Television.....6 Newspapers.....7 Others (specify) _____ NO RESPONSE.....99	
SECTION THREE: ACCESS TO HEALTH SERVICES I would now like to ask you a few questions about access to tuberculosis services.			
301	When was the last time you went to the health centre/clinic	Past week.....1 More than a week but less than one month.....2 More than 1 month but less than 6 months.....3 More than 6 months but less than a year.....4 More than a year ago....5 NO RESPONSE.....99	
302	Why did you go to the clinic the last time?	I took my child.....1 I went for family planning.....2 I went for antenatal care.....3 I went because I was sick.....4 I went for HIV testing.....5 I went to pick up my pills.....6 Others(specify) _____ NO RESPONSE.....9	

303	Where did you go to access the services?	Public hospital.....1 Public health Centre.....2 Private Clinic.....3 Grocery/vendor.....4 Traditional healer.....5 Spiritual healer.....6 Private doctor.....7 Mission hospital.....8 Others (specify) _____ NO RESPONSE.....99				
304	Have you ever been told by a health care provider that you have TB?	YES.....1 NO.....2 NO RESPONSE.....99				
305	If you had a severe cough, night sweats or weight loss would you seek health services	YES.....1 NO.....2 DON'T KNOW.....88 NO RESPONSE.....99				
306	Where would you go to access services first?	Public hospital.....1 Public health Centre....2 Private Clinic.....3 Grocery/vendor.....4 Traditional healer.....5 Spiritual healer.....6 Private doctor.....7 Mission hospital.....8 Others (specify) _____ NO RESPONSE.....99				
SECTION FOUR: RISK PERCEPTIONS ON TUBERCULOSIS I would now like to ask you a few questions about your perceptions on TB. I am going to read out some statements and for each I would like to know if you Strongly agree, Agree, Disagree or Strongly disagree						
		Strongly agree	Agree	Disagree	Strongly disagree	
401	TB is so common, I believe that I could get it	1	2	3	4	

402	I am strong so I don't believe I can get TB	1	2	3	4	
403	I can only get TB if I have HIV and AIDS	1	2	3	4	
404	I believe that I could get TB	1	2	3	4	
405	I don't worry about TB as it is easily treated	1	2	3	4	

FINISH

I would like to thank you very much for helping us. We have talked about some very difficult things today. I appreciate the time you have taken. I realise that some of these questions may have been difficult for you to answer, but we have to ask them if we are to really understand people's knowledge, risk perceptions, demographic and socio-economic factors that influence one's intention to access TB services. We really appreciate your participation in this study. By sharing this personal information with us you are helping us with our research and that will in the end help many other people in the country.

End Time of Interview: _____ h _____

Appendix II
Chichewa Questionnaire

KUGWIRIZANA KWA KUDZIWA, ZIKHULUPILIRO KOMANSO ZINTHU ZOMWE MUNTHU ALINAZO NDI ZOMWE ZIMAMPANGITSA KUTI AKAPEZE THANDIZO LOKHUDZA MATENDA A CHIFUWA CHACHIKULU CHOKOKA MTIMA CHA TB

MAU OYAMBA

" Ine dzina langa ndi.....ndine m'modzi mwa anthu amene tikuchita kafukufuku wokhudza matenda a chifuwa chachikulu chokoka mtima cha TB. Kafukufukuyu ndi mbali imodzi ya maphunziro omwe Bambo Robert M. Chizimba akuchita ku Univesite ya Witwatersrand m'dziko la South Africa, ndipo tikufunsa abambo, amai komanso achinyamata azaka za pakati pa 18-49 kuno ku Ntcheu. Zonse zomwe tipeze tizigwiritsa ntchito ngati mbali imodzi ya maphunziro a Bambo Chizimba komanso Boma ligwiritsa ntchito zotsatirazi pokonza ma pulogulamu ake ophunizitsa anthu za matenda a TB m'dziko muno.

Tisanayambe, ndimafuna kudziwa ngati mwafunsidwa kale ndi wina pa nkhani yomweyi. *(ngati anafunsidwa kale musamfunsenso pitani pa nyumba ina)*

KUPEMPHA CHILOLEZO NDI KUTSIMIKIZIRANA ZA CHINSINSI PAKAFUKUFUKUYU

Chonde muuzeni munthu yemwe mukunfunsayo kuti zonse zomwe mukambirane zikhala zachinsinsi. Muuzeninso kuti ali ndi ufulu wosayankha funso kapena mafunso omwe sangamasuke nawo kuyankha. Komabe muuzitseni kuti kafukufukuyu ndi wofunika kwambiri ndipo kuti ndikoyenera kuti atengenawo mbali. Muuzeninso kuti kukambiranaku kutha kutenga mphindi makumi atatu (30). Pomaliza mupempeni kuti asayinile dzina lake/siginetcha kusonyeza kuti wavomera kutenga nawo mbali. Ngati sadziwa kulemba muuzeni kuti asindikize chala chake pa chi pepala chapadera chomwe muziyenda nacho *(consent form)*

Nambala ya kafukufuku:	[][][][][]
Nambala ya komwe kunapitidwa:	[]
Dzina la ofunsa:	
Tsiku la kafukufuku:	__ __ / __ __ / 20 __ D D M M Y
Dzina la malo komwe kunapitidwa:	Mfumu Yaikilu (TA): Mudzi:
Dzina la dera:	
Nambala ya dera:	[][]
Nthawi yoyambira kafukufuku:	_____h_____

GAWO LOYAMBA: ZOYAMBIKIRA

Mafunso oyamba omwe ndikufunseni akhala okhudzana ndi za moyo wanu, zinthu zomwe muli nazo komanso zomwe mumachita. Penapake ndizitha kungolembe zomwe ndikuziona pakhomu panu pano osakufunsani ayi. Chonde khalani omasuka poyankha mafunso omwe ndikufunseni popeza kuti palibe yankho lolakwikwa kapena lolondola ayi. Zonse zomwe tikambirane zikhala zachinsinsi. Ngati mukuona kuti pali funso lina lililonse lomwe simungathe kuyankha mudiuze, ndipo tililumpha funso limenelo.

	Mafunso	Kachongedwe kake	Pitani ku funso

101	Kodi yemwe mukumfunsayo ali ndi zaka zingati zakubadwa? Ngati munthuyo sadziwa kapena waiyala chaka chomwe adabadwa mkumbutseni potchula zinthu zina zikuluzikulu zomwe zinachitika m'Malawi mbuyomu monga chaka chomwe kunali njala yaikulu kuno ku Malawi 1949; kubwera ka mtsogoleri woyamba wa dziko lino Dr. Kamuzu Banda m'chaka cha 1958, kapena chaka chomwe dziko la Malawi lidalandira ufulu wodzilamulira 1994	----- Ndaiwala/Sindidziwa 99	
102	Kodi yemwe mukunfunsa mafunso, ndi wamkazi kapena wamamuna ? Lembani posanfunsa ayi	Wamamuna.....1 Wamkazi.....2	
103	Munaphunzirapo sukulu?	Inde.....1 Ayi.....2	→105
104	Ngati munaphunzirapo suluku, munalekezera pati?	Sitandade 5.....1 Sitandade 8.....2 Fomu II.....3 Fomu IV.....4 Sindiyankha.....99	
105	Ndinu wa chipembedzo chanji?	ChiKhristu... ..1 ChiSilamu 2 ChiBuddha 3 ChaMakolo..... 4 Zina fotokozani _____ Sindikudziwa.. 88 Sindiyankha.....99	
106	Kodi ndinu wa mtundu wanji?	Chewa.....1 Lomwe..... 2 Sena..... 3 Yao..... 5 Ngoni..... 6 Tumbuka..... 7 Zina fotokozani _____ Sindikudziwa.. 88 Sindiyankha 99	

107	Tandiuzeni moyo wanu wa banja?	Sindinakwatirepo/sindinakwatiwepo 1 Ndili pabanja.....2 Tinalekana ndi amuna/akazi anga.....3 Ndine wosudzuridwa.....4 Amuna/Akazi anga anamwalira.....5 Sindiyankha 99	
108	Kodi panopa mumakhala ndi amuna anu, akazi anu kapena chibwenzi chanu?	Inde.....1 Ayi.....2 Sindiyankha.....99	
109	Kodi mumagwira ntchito yanji?	Mlimi.....1 Wabizinezi.....2 Mphunzitsi.....3 Mlangizi wa za ulimi.....4 Zaumoyo.....5 Mlangizi wa zachitukuko.....6 Wa Police.....7 Mwana wa sukulu.....8 Sindili pantchito ina ili yonse.....9 Ndinapuma pantchito.....10 Zina fotokozani _____ Sindikudziwa. 88 Sindiyankha.....99	
110	Muli ndi ana?	Inde.....1 Ayi.....2	→113
111	Muli ndi ana angati?	1-2.....1 3-4.....2 5-7.....3 8+ 4 Sindiyankha.....99	
112	Kupatula ana anu, kodi palinso anthu ena omwe mumawathandizandi?	Inde.....1 Ayi.....2 Sindiyankha.....99	

113	Kodi m'nyumba mwanumu mukhalamo anthu angati?	1-2.....1 3-4.....2 5-7.....3 Kuposera anthu 8 4 Sindiyantha.....99	
114	Kodi ngati banja mumapeza ndalama zingati pamwezi?	Zosapitirira MK3,000.....1 MK3,001-MK5,000.....2 MK5,001-MK10,000.....3 MK10, 001-MK30,000.....4 Zoposera MK30,001 5 Sindiyantha.....99	
115	Kodi madzi a kumwa mumawatenga kuti?	Pa paipi mnyumba mwathu.....1 Pa paipi pa poloti 2 Ku mjigo.....3 Pachitsime chosatetezedwa.....4 Kumtsinje/kudambo.....5 Zina fotokozani..... Sindiyantha.....99	
116	Kodi nyumba yamunthu mukunfunsayo idamangidwa ndi chiani? (<i>Mungoiwona nyumbayo ndipo mulembe zomwe adamangira</i>)	Njerwa.....1 Dothi/matope.....2 Mitengo.....3 Zina fotokozani.....	
117	Kodi nyumba yamunthu mukunfunsayo panso pake pali chiani? (<i>Mungowona pansipo ndipo mulembe zomwe adamangira</i>)	Matope/yotsira.....1 Simenti.....2 Zina fotokozani.....	
118	Kodi nyumba yamunthu mukunfunsayo adafolera ndi chiani (<i>Mungowona denga lake ndipo mulembe zomwe adafolera</i>)	Udzu.....1 Malata.....2 Mapepala a pulasitiki.....3 Zina fotokozani.....	
119	Kodi m'nyumba mwanumu muli ndi: i) Wailesi? j) Wailesi ya kanema? k) Foni ya m'manja? l) Foni ya m'nyumba? m) Bedi lokhala ndi matelesi? n) Mipando yafofo yokhalira? o) Tebulo ndi mipando yake? p) Filigi?	Inde.....1. Ayi.....2. Sindiyantha ..99 Inde.....1. Ayi.....2. Sindiyantha ..99 Inde.....1. Ayi.....2. Sindiyantha ..99 Inde.....1. Ayi.....2. Sindiyantha ..99 Inde.....1. Ayi.....2. Sindiyantha ..99 Inde.....1. Ayi.....2. Sindiyantha ..99 Inde.....1. Ayi.....2. Sindiyantha ..99 Inde.....1. Ayi.....2. Sindiyantha ..99 Inde.....1. Ayi.....2. Sindiyantha ..99	

120	Kodi m'nyumba mwanumu muli ndi zifuyo izi: f) Mbuzi? g) Nkhumba? h) Ng'ombe? i) Nkhosa/berere? j) Nkhuku?	Inde.....1. Ayi.....2. Sindiyankha ..99 Inde.....1. Ayi.....2. Sindiyankha ..99 Inde.....1. Ayi.....2. Sindiyankha ..99 Inde.....1. Ayi.....2. Sindiyankha ..99 Inde.....1. Ayi.....2. Sindiyankha ..99	
121	Kodi mumagwiritsa ntchito chiani pophika?	Nkhuni.....1 Makala.....2 Magetsi.....3 Parafini.....4 Ndowe/makungwa.....5 Zina fotokozani..... Sindiyankha.....99	
122	Kodi chimbudzi chomwe mumagwiritsa ntchito ndi cha mtundu wanji?	Chokumba.....1 Chokumba koma chokhala ndi mawindo komanso simenti pansi.....2 Chamadzi.....3 Tilibe chimbudzi.....4 Zina fotokozani..... Sindiyankha.....99	
GAWO LACHIWIRI: ZOMWE MUKUDZIWA ZA MATENDA CHIFUWA CHACHIKULU CHOKOKA MTIMA CHA A TB Tsopano ndikufunsani mafunso a zomwe mukudziwa za TB			
201	Kodi munamvapo za TB?	Inde.....1 Ayi.....2 Sindiyankha.....99	→309
Tsopano ndikuwerengerani zina zokhudzana ndi TB, ndipo ndikufuna kuti mudiuze ngati ndi zoona, sizoon kwenikweni, sizabodza kwnikweni ndi zabodza			

		Zoona	Sizoona kwenikweni	Sizabodza kwnikweni	Zabodza		
202	TB ndi matenda osachiritsika	1	2	3	4		
203	Makolo amatha kupatsira TB kwa ana awo	1	2	3	4		
204	TB imayamba ndi tizilombo ta majelemusi	1	2	3	4		
205	Munthu amatenga TB akakhudzana ndi munthu yemwe akudwala matendewa	1	2	3	4		
206	HIV imayambitsa TB	1	2	3	4		
207	TB imayamba chifukwa cholodzedwa	1	2	3	4		
208	Kuzizira kumayambitsa TB	1	2	3	4		
209	Munthu amatenga TB amakadyera pamodzi ndi munthu yemwe akudwala matendawa	1	2	3	4		
210	Munthu amatenga TB akamagonera pabedi limodzi ndi munthu yemwe ali ndi matendawa	1	2	3	4		
211	Munthu amatenga TB akamagonana ndi munthu yemwe akudwala matendawa	1	2	3	4		
212	Munthu atha kukhala ndi TB komanso HIV	1	2	3	4		
213	Munthu yemwe ali ndi TB sakhala ndi chilakolako chofuna kudya	1	2	3	4		
214	Wa TB amatuluka thukuta kwanbiri usiku	1	2	3	4		
215	Wa TB amatsokomola kwambiri	1	2	3	4		
216	Wa TB amakhalanso ndi HIV	1	2	3	4		
217	Wa TB amamva kupweteka pamtima pake	1	2	3	4		
219	Wa TB amakhala ndi zizindikiro za matendewa	1	2	3	4		
220	Amai oyembekezera omwe ali ndi TB sayenera kumamwa makhwala a TB chifukwa zipangitsa kuti adzapite padera pochira komanso nthawi zina makwalawo amapweteka mwana odzabadwayo	1	2	3	4		
221	Amai oyamwitsa omwe ali ndi TB sayenera kumamwa makhwala a TB chifukwa mkaka wa mawere umauma komanso nthawi zina makwalawo amapweteka mwana	1	2	3	4		
222	TB ndi matenda a nthu okalamba okha basi	1	2	3	4		
223	Kodi TB itha kupewedwa?	Inde.....1 Ayi.....2 Sindikudziwa.....88 Sindiyankha.....99					

224	Kodi TB imachiritsika?	Inde.....1 Ayi.....2 Sindikudziwa.....88 Sindiyankha.....99	→226
225	Kodi munthu amatenga nthawi yotalika bwanji kuti amalize kumwa mankhwala ochiza TB?	Masabata 6.....1 Pakati pa miyezi 6 ndi 8 2 Moyo wake wonse.....3 Zina fotokozani _____ Sindikudziwa.....88 Sindiyankha.....99	
226	Kodi zotsatira zomwe munthu yemwe ali ndi TB angakumane nazo atalekezera panjira kumwa mankhwala ochiza TB ndi zotani?	Mankhwala a TB sagwiranso ntchito....1 Munthuyo amakhala ndi tizilombo tambiri toyambitsa TB ndipo kwapafupi kufalitsa tizilomboti kwa ena 2 Umadwaladwala.....3 Amafa msanga.....4 Zina fotokozani _____ Sindikudziwa.....88 Sindiyankha..... 99	

GAWO LACHINAI: ZIKHULUPIRIRO ZANU PA MATENDA A TB

Tsopano ndikufunsani mafunso angapo okhudzana ndi zomwe mumakhulupirira pa za matenda a TB. Ndizikuwerengerani zina zokhudza matendawa ndipo mudiuze ngati mukugwirizana nazo kwambiri, mukugwirizananazo, simukugwirizananazo, simukugwirizananazo kwambiri.

		mukugwirizana nazo kwambiri	mukugwirizananazo	simukugwirizananazo	simukugwirizana nazo kwambiri		
401	TB ndi matenda omwe aliponse, ndimakhulupirira kuti nditha kuwatenga	1	2	3	4		
402	Ndine wolimba/wamphavu ndimakhulupirira kuti sindingatenge matenda aTB	1	2	3	4		
403	Ndikhoza kutenga matenda aTB pokhapokhapo ngati ndili ndi HIV ndi edzi kale						
404	Ndimakhulupirira kuti nditha kutenga matenda a TB	1	2	3	4		
405	Sindidandaula ndi matenda a TB chifukwa amachizika mosavuta	1	2	3	4		

227	Kodi ndi njira ziti zomwe mumamvera mauthenga okhudzana ndi matenda a TB?	Kuchipatala 1 Achibale.....2 Afumu athu.....3 Mabungwe ndi ma CBOs.....4 Pawailesi.....5 Pawailesi ya kanema 6 M' manyuzipepala.....7 Zina fotokozani Sindikudziwa.....88 Sindiyanika.....99	
228	Kodi ndi njira ziti zomwe inuyo mudakakonda kuti muzimvera mauthenga okhudzana ndi matenda a TB?	Kuchipatala 1 Achibale.....2 Afumu athu.....3 Mabungwe ndi ma CBOs.....4 Pawailesi.....5 Pawailesi ya kanema 6 M' manyuzipepala.....7 Zina fotokozani Sindikudziwa.....88 Sindiyanika.....99	
GAWO LACHITATU: KAPEZEDWE KA THANDIZO LOSIYANASIYANA LA TB Tsopano ndikufunsani mafunso angapo okhudza kapezedwe ka thandizo losiyanasinyana la TB			
301	Kodi ndi liti lomwe mudapita kuchipatala kukalandira thandizo?	Sabata latha.....1 Pakatikati pa sabata latha koma osapitirira i mwezi wathawu.....2 Pakatikati pa mwezi wathawu koma osapitirira miyezi 6 yapitayi.....3 Pakatikati pa miyezi 6 yapitayi koma osapitirira chaka chathachi.....4 Chaka chapitachi.....5 Sindiyanika.....99	

302	Ndi chifukwa chiani mudapita kuchipatala nthawi imeneyi?	Mwana wanga amadwala.....1 Ndidapita ku maleredwe.....2 Ndidapita kukaphunzira za zoyembekezera.....3 Ineyo ndimadwala.....4 Ndinakayezetsa magazi kuti ndidziwe ngati ndili ndi HIV 5 Ndimakalandira mankhwala.....6 Zina fotokozani _____ Sindiyankha.....9	
303	Mumapita kuti kulandira thandizo?	Chipatala chachikulu chaboma.....1 Chipatala chaching'ono cha boma.....2 Chipatala cholipiritsa.....3 Kusitolo/golosale/kwa mavenda.....4 Asing'anga.....5 Achipembedzo.....6 Dokotala wolipiritsa.....7 Chipatala cha Mishoni.....8 Zina fotokozani _____ Sindiyankha.....99	
304	Kodi munayamba mwauzidwapo ndi a chipatala kuti muli ndi matenda aTB?	Inde.....1 Ayi.....2 Sindiyankha.....99	
305	Kodi mungapite kuchipatala mutakhala kuti mukutsokomola kwambiri, mukutuluka thukuta kwambiri usiku mukagona, komanso mutamawonda?	Inde.....1 Ayi.....2 Sindikudziwa.....88 Sindiyankha.....99	

306	Ndikuti komwe mungapite kukalandira thandizo?	Chipatala chachikulu chaboma.....1 Chipatala chaching'ono cha boma.....2 Chipatala cholipiritsa.....3 Kusitolo/golosale/kwa mavenda.....4 Asing'anga.....5 Achipembedzo.....6 Dokotala wolipiritsa.....7 Chipatala cha Mishoni.....8 Zina fotokozani _____ Sindiyankha.....99	
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POMALIZA

Ndifuna ndikuthokozeni kwambiri chifukwa chotenga nawo mbali pakafukufuku ameneyu. Ndikudziwa kuti takambirana zambiri, ndipo kuti mafunso ena mwina anali ovutirapo komabe takambirana zonse bwinobwino. Sindikadachitira mwina koma kukufunsani mafunso onsewa ndicholinga choti tipeze zomwe tikufuna pa kafukufuku amenewu. Pondiuza zomwe mumadziwa za TB, zomwe mumakhulupirira komanso kapezedwe ka chithandizo mwathandiza osati in ndekha ayi komanso mtundu wonse wa a Malawi.

Nthawi yomaliza: _____ hr _____

Appendix III: Clearance certificate for Robert Mnthenga Chizimba, Witwatersrand University

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG
Division of the Deputy Registrar (Research)

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
R14/49 Mr Robert M Chizimba

CLEARANCE CERTIFICATE

M110955

PROJECT

Relationship between Knowledge, Risk
Perceptions and Socio-Demographic Factors
and Intention to access Tuberculosis in Rural
Communities in Ntcheu District in Malawi

INVESTIGATORS

Mr Robert M Chizimba.

DEPARTMENT

School of Public Health

DATE CONSIDERED

30/09/2011

M1109550DECISION OF THE COMMITTEE*

Approved unconditionally

Unless otherwise specified this ethical clearance is valid for 5 years and may be renewed upon application.

DATE

03/02/2012

CHAIRPERSON


(Professor PE Cleaton-Jones)

*Guidelines for written 'informed consent' attached where applicable

cc: Supervisor : Ms N Christofides

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10004, 10th Floor, Senate House, University.

I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to a completion of a yearly progress report.**

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES...

Appendix IV: Malawi ethics approval letter Robert Mnthenga Chizimba

Appendix V: Participant information sheet: Individual interviews

Note: This information sheet was also translated into local language.

Study title:

RELATIONSHIP BETWEEN KNOWLEDGE, RISK PERCEPTIONS AND SOCIO-DEMOGRAPHIC FACTORS AND INTENTION TO ACCESS TUBERCULOSIS SERVICES IN RURAL COMMUNITIES IN MALAWI

Introduction:

Hello and welcome. I sincerely thank you for giving me your time. My name is I am a student at the University of Witwatersrand. I am conducting research to determine the relationship between knowledge, risk perceptions and socio-demographic factors and intention to access tuberculosis services in rural communities in Malawi.

Invitation to participate:

You are invited to volunteer to participate in the research study which will be conducted in the village of Traditional Authority (TA)..... in this district of Ntcheu. You should agree to participate in the study only if you fully understand what will be asked and are completely happy with the procedures that will be involved. If you do not understand the information or have any questions, please feel free to ask the interviewer.

What is involved in the study:

This study will require you to participate in individual interviews that will last between 30-45 minutes. With your consent, an interviewer will ask you few questions about tuberculosis to which you will be requested to verbally provide your answers. Your answers are completely confidential. Your name will not be written on this form, and will never be used in

connection with any of the information you tell me. You do not have to answer any questions that you do not want to answer, and you may end this interview at any time you want to.

However, your participation will help us better understand what people know and perceive about tuberculosis and access to services.. I would greatly appreciate your help in responding to this survey. No answer to these questions is neither right nor wrong as these will be your personal knowledge, views and beliefs. We will write down your responses on this form to enable us write a report.

Risks:

The interview will be conducted in a private room within your household. The only potential risks you may face from taking part in this study are:

- You may feel uncomfortable answering some questions that may be addressing some sensitive and personal issues that attach your life.
- You will spend more than 30 minutes responding to our questions thus losing your precious and valuable time which you would have used for your planned activities including daily household chores.

You are however informed that you are free not to answer questions that make you uncomfortable.

Benefits:

You will not get direct benefits from this study. The information collected in this study will be helpful in supporting government efforts to reduce the further spread of TB not only here in Ntcheu but also the whole country. The results of the study will inform development of relevant communication strategies and health campaigns that will aim at educating people on TB and how they would develop positive behaviours towards access to TB services.

Participation is voluntary:

Participation in this research is voluntary. Refusal to participate will involve no penalty or punishment. You will be free to discontinue participation at any time that you feel uncomfortable.

Reimbursements:

You will not be given any money or item for participating in this study.

Confidentiality:

All the information collected in this study will be strictly confidential. However, absolute confidentiality cannot be guaranteed. Personal information may be disclosed if required by law, for example, organizations that may inspect research records for quality assurance and data analysis include groups such as the Research Ethics Committee. The consent forms that you will sign will not be linked to the responses that you will give.

Contact details of researcher/s:

In the event that you want further information regarding your rights as a researcher or complaint regarding this research, you may contact the Chairperson of the University of Witwatersrand, Human Ethics Committee at this number (+27) 11 717 2230/1. Or you can contact the Malawi National Health Sciences Research Committee, P. O. Box 30377, Lilongwe, Malawi, Tel. +265 1-789 400, Facsimile: +265 798 431, E-mail: doccentre@malawi.net.

Information and contact person:

If you have any questions regarding this study, you can contact:

Robert M. Chizimba, Post.Net X211, Cross Roads, Lilongwe, Malawi, Cell: +265-888 201 168, Tel: +265-1-979 929, E-mail: rchizimba@yahoo.com.

Appendix VI: Informed consent form for individual interviews

I hereby confirm that the person seeking my informed consent to participate in this study has given me information to my satisfaction. He/she explained to me the purpose of the study and procedures involved, risks, benefits and my rights as a participant in the study.

I am fully aware that my views will be written down to enable the team take a correct account of our discussions. I have been informed that only the research team and unless otherwise required by the Human Ethics Committee and other human rights organisations will have access to the records of our interview.

I am aware that it is my right to withdraw my consent in this study without any prejudice. I hereby freely and voluntarily give my consent to be interviewed in this study.

Participant's name _____

Participant's signature (if literate) _____ Date _____

Participant's thumb stamp (if illiterate) _____ Date _____

Researcher's name _____

Researcher's signature _____ Date _____

Witness name _____

Witness signature _____ Date _____