



**ASSESSMENT OF THE KNOWLEDGE AND PERCEPTIONS ABOUT
TUBERCULOSIS AMONG PRIMARY SCHOOL CHILDREN IN NTCHEU
DISTRICT, MALAWI**

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A mini-thesis submitted in partial fulfillment of the requirements for the degree of
Master in Public Health at the School of Public Health, University of the Western

Cape.



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August 2012

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KEYWORDS

Tuberculosis

Children

Knowledge

Attitudes

Perceptions

Malawi

Ntcheu District

Schools

School-learners

Survey



ABSTRACT

Background: Case finding in Malawi is based on self-referral of symptomatic individuals who are suspected as tuberculosis (TB) cases in health institutions. Knowledge on TB and attitudes/perceptions about the disease can influence care seeking behaviour and adherence to treatment. Like in other countries, studies in Malawi have been conducted to assess knowledge and attitudes regarding TB in adults. Some studies have even assessed the association between knowledge, attitudes and other factors. In Malawi, prevalent health problems are included in the primary school curricula to create awareness and promote desired behaviour towards the diseases among children attending schools. It is, however, not known how much the school children know about TB. It is also not known what their attitudes or perceptions are regarding the disease.

Methods: This study was conducted to assess the knowledge and perceptions regarding TB among learners in primary schools in Ntcheu District, Malawi. An analytical cross-sectional design was used to implement the study. A simple random sampling procedure was used to sample four schools from two Traditional Authorities of Makwangwala and Ganya in the targeted district. From each school, boys and girls aged 10-14 years were selected to participate in the study. A close-ended questionnaire that was translated into the local language was administered to the learners. Epi info version 3.5.3 was used to capture and analyse the data.

Results: The results showed that knowledge of learners regarding the cause of TB, how the disease is spread, factors that influence its spread and preventive measures was generally high. Almost 90% of the learners knew that TB is caused by a germ. However, there were knowledge gaps on specific aspects related to symptoms, cause, cure, as well as attitudes towards the disease. With regard to symptoms, knowledge was low in relation to fever with night sweats (49%) and enlargement of neck glands (40%). The study also revealed knowledge gaps regarding the real cause of the disease and the prescribed duration of anti-TB treatment with 68% of the learners not knowing the correct duration. The study, however, found no association between class (grade) or age of student and knowledge ($p>0.05$).

Conclusion: The findings of this study have implications on the teaching of TB in schools as well as delivery of TB information, education and communication (IEC) messages. The knowledge gaps identified may have origins in the content of the curricula and/or the available IEC messages. Lack of association between knowledge and class could also mean that IEC may have an important role regarding what learners know. The study has also revealed that traditional beliefs are prevalent among the learners and that TB is stigmatising.

Being the first study to be conducted on knowledge and perceptions among school children in Malawi, the results will inform the development of relevant IEC materials to enhance information about TB and control measures among school going children in these communities. The study also provides a basis for future studies.



DECLARATION

I declare that *Assessment of the Knowledge and Attitudes about Tuberculosis among Primary School Children in Ntcheu District, Malawi* is my own work, that it has not been submitted before for any degree or examination in any other university, and that all the sources I have used or quoted have been referenced accordingly

Dr Susan Kambale

Signed:



Date: 30th August 2012



ACKNOWLEDGEMENTS

I would like to thank:

My thesis supervisors, Dr Ehimario Igumbor and Dr Peter Nyasulu for the support, guidance and motivation throughout this whole research experience.

The District Education Manager, staff of Ntcheu District Education Office, school administration, teachers and pupils at Kadamsana, Chauta, Namitengo, Nsiyaludzu and Chimvano primary schools for granting the permission to undertake the study and participating in the study.

The District Health Officer for Ntcheu, Dr R. Chihana and the district tuberculosis programme staff namely Mr. Rhoniex Nkhata, Mr. Lameck Kanjira and Mr. Robert Sulani for the support in the preparations and implementation of the field testing and data collection.

The data team: Mr. Isaac Singini and Mr. Augustine Mwalwanda for the support with data collection tools and data management processes.

My workplace supervisors: Dr. Felicitas Zawaira and Dr. Bernadette Daelmans for the moral support and encouragement.

My husband Maxwell and daughter Upendo whose enduring support, understanding, patience and encouragement made it possible for me to complete the degree.

TABLE OF CONTENTS

KEYWORDS	ii
ABSTRACT	iii
DECLARATION	v
ACKNOWLEDGEMENTS	vi
CHAPTER 1: INTRODUCTION	1
1.1 Background	1
1.2 Problem Statement	3
1.3 Rationale	3
1.4 Study Aim	4
1.5 Objectives	4
CHAPTER 2: LITERATURE REVIEW	5
2.1 Introduction	5
2.3 Attitudes and Perceptions about Tuberculosis	9
2.4 Factors Associated with Knowledge, Attitudes and Perceptions Regarding TB	10
2.5 Conclusion	11
CHAPTER 3: METHODOLOGY	12
3.1 Study Design	12
3.2 Study Population	12
3.3 Study Setting	12
3.4 Sampling Procedure	12
3.5 Sample size	13
3.6 Data Collection	14
3.7 Dependent Variables	14
3.8 Independent Variables	14
3.9 Data Processing and Analysis	14
3.10 Validity and Reliability	15
3.11 Generalisability	15
3.12 Study Limitations	15
3.13 Ethical Considerations	16
CHAPTER 4: RESULTS	17
4.1 Characteristics of the Study Population	17
4.2 Knowledge on Cause, Spread and Cure of Tuberculosis	20
4.3 Knowledge of Factors Influencing the Spread of Tuberculosis	23
4.4 Knowledge of Preventive Measures against Tuberculosis	23

4.5	Knowledge of Symptoms of Tuberculosis-----	24
4.6	Attitudes Regarding Tuberculosis-----	25
4.7	Socioeconomic Factors Associated with Knowledge and Perceptions-----	26
CHAPTER 5: DISCUSSION-----		28
5.1	Knowledge on Cause of TB-----	28
5.2	Knowledge on Spread of TB-----	28
5.3	Knowledge of symptoms of TB-----	29
5.4	Knowledge on Cure of TB-----	29
5.5	Knowledge of preventive measures against TB-----	30
5.6	Attitudes regarding TB-----	30
5.7	Socioeconomic Factors Associated with Knowledge and Perceptions-----	31
CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS-----		32
REFERENCES-----		34
APPENDICES-----		40
APPENDIX 1: Map of Ntcheu District Showing Traditional Authorities-----		41
APPENDIX 2: Study Questionnaire-----		42
2a: English Questionnaire-----		42
2b: Chichewa Questionnaire-----		50
APPENDIX 3: Data Measurement-----		59
APPENDIX 4: Consent Form (Chichewa)-----		61

CHAPTER 1: INTRODUCTION

1.1 Background

Tuberculosis is a public health problem in Malawi with an estimated incidence rate of 174/100,000 population. This rate was higher than the global estimate of 128/100,000 in 2010 (WHO, 2011). Malawi also has a high TB/HIV co-infection rate, ranking the 9th among countries in the Southern African Development Community (SADC) region (WHO, 2011).

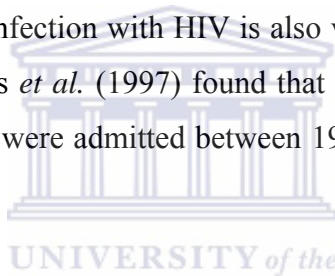
National TB programme data from 2007 – 2011 shows that over 20,000 cases were registered annually and about a third of these were smear positive. According to the data, cure rates ranged between 83% and 88%, rising steadily over the four year period from 2007 to 2010. During the same period, the TB case fatality rate went down from 9% to 7%. The treatment failure and default rates, on the other hand, increased from 1-3% and 1-2% respectively. Furthermore, the data reveals that 64% of the 102,542 TB cases who were tested for HIV between 2007 and 2011 tested positive.

District level data indicate that Ntcheu registered 2043 TB cases between 2007 and 2011, ranging between 548 and 173 per year. The district recorded the highest number of cases in 2007, after which the number steadily declined to 173 in 2010 and then rose to 189 in 2011. Fourty nine to 53% of the cases who were registered in the district during this period were new smear positive TB patients. Ninety nine percent (n=2020) of all TB patients (all TB types) underwent HIV testing and counseling 56% of whom were found HIV positive. In terms of treatment outcomes, 84% (n=718) of all the smear positive TB cases that were registered in Ntcheu District between 2007 and 2010 got cured and 12% (n=101) died. The district recorded a treatment failure rate of 1-6%.

Tuberculosis (TB) is common among children in Malawi. A prospective hospital-based audit at a major referral hospital found a very high TB infection prevalence of 45% among childhood contacts (≤ 5 years old) (Sinfield *et al.*, 2006). Furthermore, children < 15 years old accounted for 11.9% of all registered cases in a hospital-based nationwide survey of TB (Harries *et al.*, 2005). Salaniponi *et al.* (2004) also reported a prevalence

of 9-12% among apparently healthy school-going children aged 6-11 years old; the prevalence being higher in children without Bacilli Calmette-Guerin (BCG) scar. District programme data indicate that children aged 0-14 years comprised 5 to 9% of all the reported TB cases in Ntcheu between 2007 and 2011. Furthermore, 41% of all the TB cases in this age group tested HIV positive.

Treatment outcomes of childhood TB cases are poor in Malawi. Harries *et al.* (2005) reported very high death rates (17%), default (13%) and unknown treatment outcomes (21%). This study also found that only 45% of the children completed treatment. Care-seeking for children at very high risk of developing active TB is another concern in Malawi. A study at a referral hospital (Nyirenda *et al.*, 2006) found a low attendance of 7.7% at a child TB contact clinic which is worrisome in a country where case finding is based on self-referral. Co-infection with HIV is also very high among children infected with TB in Malawi. Harries *et al.* (1997) found that 64% of 105 of smear positive TB cases aged 0-14 years who were admitted between 1993 and 1996 at a referral hospital tested positive for HIV.



Malawi launched the national Tuberculosis control programme in 1964 with the aim of reducing ill health due to TB until the disease is no longer a public health problem in the country. Three of the nine programme objectives include: to positively influence health –seeking behaviour of TB suspects through health promotion; to improve and maintain equitable case finding and good diagnostic practices and to provide care and support for TB/HIV patients and prevent TB in HIV positive persons. Tuberculosis control methods in Malawi include BCG vaccination, case finding, diagnosis of pulmonary TB, diagnosis of extrapulmonary TB and tuberculin test to achieve these objectives. Strategies include establishment of community sputum collection points, mass health education, establishment of walk in services, active case finding to all contacts of index pulmonary TB cases, provision of intermittent prophylactic therapy (IPT) to all under five children of index TB patients who have no active TB disease and active case finding in high risk groups for example prisons and people living with HIV and AIDS (Ministry of Health [MoH], 2007).

Case finding in Malawi is based on self-referral of symptomatic individuals who are suspected as TB cases in health institutions. Knowledge and attitudes can influence care seeking behaviour and adherence to treatment. The Government of Malawi includes prevalent diseases in the school curricula to equip pupils with the necessary knowledge and skills to enable pupils understand the effects, modes of transmission and practice the required health promoting behaviours on the specific diseases. Studies have been conducted to assess knowledge and attitudes regarding TB in adults in Malawi (Brouwer, et. al., 1998; Nyirenda, et.al., 2003; Salaniponi, et.al., 1999; Salaniponi, et.al., 2000). Documentation is, however, lacking on school children's level of knowledge and their perceptions about TB.

1.2 Problem Statement

Tuberculosis is a common health problem among children in Malawi and treatment outcomes of children with TB are poor. Furthermore, care seeking for child contacts of TB patients is poor (Nyirenda *et al.*, 2006). Interventions to address this situation may rely on children's knowledge of the problem. Evidence is, however, lacking on how much the children know about TB and how accurate their knowledge is in Malawi. The primary school curriculum aims to address key health and development health problems facing the country. The Malawi Growth and Development Strategy (MGDS), a medium term national development strategy, highlights high incidence of tuberculosis cases as a health challenge. Children learn about tuberculosis in schools but there is no documentation on how much the school children know about the disease. Their perceptions regarding the disease have also not been documented.

1.3 Rationale

Tuberculosis is a public health problem in Malawi and continues to be common among children. This study was conducted to find out how much the children know about the disease as well as their perceptions about it to provide valuable information that could be used to help strengthen the teaching of TB in schools. The findings can also inform

the development of complementary educational programmes targeting this population group. In addition, the findings form a basis for future research to explore factors that may be responsible for the knowledge gaps and misconceptions about the disease.

1.4 Study Aim

The aim of the study was to assess the knowledge and perceptions regarding tuberculosis among learners aged 10-14 years in primary schools in Traditional Authority (TA) Makwangwala and TA Ganya in Ntcheu District, Malawi.

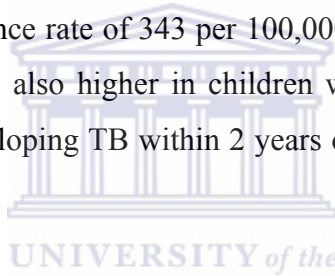
1.5 Objectives

- To assess the level of knowledge of school children aged 10-14 years about TB in 4 primary schools in TA Makwangwala and TA Ganya in Ntcheu District in April 2012.
- To describe perceptions of school children aged 10-14 years regarding TB in 4 primary schools in TA Makwangwala and TA Ganya in Ntcheu District in April 2012.
- To determine socioeconomic factors associated with knowledge and perceptions of school children aged 10-14 years regarding TB in 4 primary schools in TA Makwangwala and TA Ganya in Ntcheu District in April 2012.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

Tuberculosis (TB) is one of the global health problems. It is the second leading cause of death from infectious diseases worldwide, and, accounting for about 7-8 million cases and 1.3 to 1.6 million deaths per year. The disease was declared a global public health emergency in 1993 (WHO, 2011). Children account for a significant proportion of the global burden of TB. The World Health Organisation (WHO) estimates that children < 15 years old accounted for 11% of all the TB cases that occurred globally in 2005 (WHO, 2008). Childhood TB accounts for about 20-40% of cases in high burden countries (Marais *et al.*, 2006) with the majority of children aged <15 years old reported to have smear positive TB in 2007 in Africa and South East Asia (Swaminathan & Rekha, 2010). The WHO African Region has the highest burden of childhood tuberculosis with an incidence rate of 343 per 100,000 per year (WHO, 2008). The risk of developing active TB is also higher in children with about 40-50% of infants and 15% of older children developing TB within 2 years of infection (Khan & Starke, 1995 in Newton *et al.*, 2008).



Infection with TB occurs by inhalation of *Mycobacterium tuberculosis* in respiratory droplets from an infectious case of pulmonary TB. About 5% of infected individuals develop active disease within 5 years of primary infection while 95% develop a latent infection that can later progress to disease depending on the immune status and the risk of progression is higher in children (WHO, 2008). Poor socioeconomic factors including poverty, poor housing and overcrowding are associated with increased transmission of tuberculosis.

Household contact with a sputum positive adult has been found to increase the risk of TB infection and clinical disease in children (Singh *et al.*, 2005; Sinfield *et al.*, 2006). Altet *et al.* (1996) found an association between passive smoking in children and development of active pulmonary disease following infection (OR: 5.29; 95% CI 2.33-12.82; $p < 0.00005$). A study of culture confirmed infants in South Africa (Hesseling *et al.*, 2009) found a 24 times higher likelihood of pulmonary TB and a 17.1 fold higher

risk of disseminated TB in HIV-infected infants compared to infants who were not infected with HIV.

Malawi has a high burden of tuberculosis. With an estimated incidence rate of 174/100,000 population, the country is ranked 10th in Sub-Saharan Africa (WHO, 2011). The country is also among the countries with very high TB/HIV co-infection rate in the SADC region (WHO, 2011). Sinfield *et al.* (2006) found a TB infection rate of 45% among childhood contacts ≤ 5 years old in Malawi. A local study among all new TB patients in a rural district hospital (Zachariah, Spielmann, Harries & Salaniponi, 2003) also found a co-infection rate of 77% (n=912). People who are infected with HIV are 20 to 27 times more likely to develop tuberculosis disease in their lifetime than those who are not HIV positive (WHO, 2010).

In 2006, the WHO launched the Stop TB strategy with the goal of reducing the global burden of TB by 2015 in line with the Millennium Development Goal targets. The strategy highlights empowering people, communities and the general public with TB knowledge as a key approach, thus recognizing people's potential to contribute to the realization of the goal.

The Malawi national tuberculosis control programme has been operational for over 45 years. Enhancing health promotion to positively influence health-seeking behaviour of TB suspects and improving and maintaining equitable case finding and good diagnostic practices are among the national programme objectives. The primary school curriculum also aims to address key health and development health problems facing the country. The Malawi Growth and Development Strategy (MGDS), a medium term national development strategy, highlights high incidence of tuberculosis cases as a health challenge. Unlike HIV and AIDS, TB has not been addressed comprehensively in the curriculum. In the current syllabus which is in use since 2007, TB is only mentioned in a sentence at the end of the chapter in the subject of agriculture in standard 7 as one of the diseases that can affect farm animals. On the other hand, HIV and AIDS is included as a topic/theme under the core element of health promotion in the life skills subject in

standards 6, 7 and 8 and the content covers effects of HIV and AIDS, modes of HIV transmission, preventive measures, home based care, antiretroviral treatment and conducting a campaign. HIV and AIDS has also been integrated by including it in suggested teaching and learning activities in social and environmental sciences (standard 7) and expressive arts (standard 6, 7 and 8). The absence of TB in the primary school curriculum as a health problem that affects people in Malawi is a major gap in a country where both TB incidence and TB/HIV co infection rates are high with an incidence rate of 174/100,000 in the general population and TB/HIV co-infection rate of 64% among smear positive children aged 0-14 years (WHO, 2011; Harries, *et al.*, 1997).

2.2 Knowledge about Tuberculosis

A number of theories and approaches have suggested ways that are effective for achieving patient compliance and other health related behaviour change. An example is the health belief model which emphasizes factors that can enhance or hinder people from taking appropriate action to protect their health and highlights perceived susceptibility, perceived severity, perceived social acceptability, cues for action, perceived self-efficacy and access as key determinants (Elder *et al.*, 1999). This model seems to have been adopted by WHO as reflected in its knowledge, attitudes and practices (KAP) surveys guidelines for TB which also state that such surveys should include questions to identify which of these factors influence respondent's perceptions and actions regarding TB.

Studies have been conducted in different settings and targeted different groups to assess knowledge and practices about TB. A study of treatment partners of paediatric patients in the Philippines (Backay-Domingo & Ong-Lim, 2009) found relatively lower knowledge regarding symptoms of TB compared to curability, how infectious the disease is and route of transmission. Mfinanga *et al.* (2008), conducted a study of smear positive adult patients in Tanzania and found that knowledge of transmission was

good but that of symptoms was not comprehensive. In Zambia, Mweemba *et al.* (2008) found average knowledge and high knowledge about treatment in 49% and 17% of the participants, respectively. In a community based study of pastoral communities in Ethiopia, only 2 out of 8181 participants knew that TB is caused by bacteria/germs. A study of people newly diagnosed with pulmonary TB in five government hospitals in Malawi revealed that over 40% did not suspect that they had TB until the diagnosis was made (Salaniponi *et al.*, 1999). In another study in Malawi, less than 50% of patients admitted in the TB ward in all non-private hospitals in Malawi knew the correct duration of the intermittent phase or the total length of anti-tuberculosis treatment (Nyirenda *et al.*, 2003). The findings from the studies in the three African countries seem to suggest that there could be gaps in knowledge regarding the cause, symptoms and treatment of Tuberculosis. A systematic review of 58 observational studies of patients receiving treatment for active TB disease identified low awareness of TB as a risk factor for prolonged delay in diagnosis in some of the studies (Storla *et al.*, 2008).

There is lack of data on school children's knowledge of tuberculosis globally and none is available in Malawi. Nonetheless, documentation of a cross-sectional study that used cluster sampling of secondary school students aged 11-14 years in rural areas in Southern Iran is available (Bani Hashemi *et al.*, 2012). This study found that close to 70% of the students believed that tuberculosis is a serious disease and two thirds said anyone can get sick from TB. Almost all the participants knew how TB is transmitted. Close to half of the students knew that coughing out blood is a symptom of TB but <2% knew that fever, chest pain and shortness of breath could be signs of TB. Fourty one percent knew that TB can best be treated using drugs. The scope of the study in Iran and the age group is similar to this current work although association between socioeconomic factors and knowledge were not tested in that study. In addition, the study in Iran targeted secondary school students and made no reference to the TB content in the curriculum. Bond *et al.* (2010) found wide ranging knowledge about TB in Zambia. Younger children being less sure about diagnosis, duration of TB treatment and the link between TB and HIV in the evaluative phase of a school based TB strategy to address symptoms, testing and stigma in the home.

2.3 Attitudes and Perceptions about Tuberculosis

Studies that have been conducted in some African countries reveal perceived non biomedical causes of TB that are rooted in cultural beliefs. Spirits, bewitchment, careless sexual behaviour, God's will, bad luck, stagnant water have, for example, been reported by some studies in Malawi, Ethiopia and Botswana (Banerjee *et al.*, 2000; Abebe *et al.*, 2010; Steen & Mazonde, 1999). Such beliefs may influence care seeking behaviour for TB. For example, a study of TB patients in Botswana found that 34% sought care from traditional or faith healers before initiation of TB treatment at a health facility (Steen & Mazonde, 1999), while another study in Malawi found that 32% had visited a traditional healer before the diagnosis of TB was made (Claessens, Gausi, Weismuller, Salaniponi & Harries, 2002). A study in Malawi reveals cultural explanations of factors that can hinder cure from TB (Salaniponi *et al.*, 2000). Traditional healers also claim to be able to cure tuberculosis (Brouwer *et al.*, 1998). Such deficiencies in knowledge and the wrong perceptions about the cause and cure of tuberculosis can have a negative impact on care seeking and treatment adherence.

Stigma is a very important issue in the prevention and control of TB. Studies by Mengesho *et al.* (2007) and Baraal *et al.* (2007) suggest that the association of TB with HIV infection could explain TB related stigma. Another study in Ethiopia (Deribew *et al.*, 2010) found a high likelihood of prejudice among people who had inadequate knowledge of HIV and AIDS (OR 2.3, 95% CI 1.4-3.6). Zou *et al.* (2009) has highlighted the influence of religious beliefs on HIV related stigma. Courtwright & Turner (2010) argue that fear of possible social consequences can affect the willingness of individuals to seek and complete medical attention. This was confirmed by a study on treatment initiation and adherence in South Africa where participants felt that patients may stop taking their TB treatment before they get cured because of the fear of what others will say when they see them go to the clinic to collect their medicine (Cramm, 2010). Half of the TB suspects in a study in Ethiopia felt that people would feel less of them if they knew they had TB, 40% said they would feel embarrassed and 30% thought that other people would avoid them (Abebe *et al.*, 2010). In the same

study, participants perceived negative prospects on marital, social and sexual relationships.

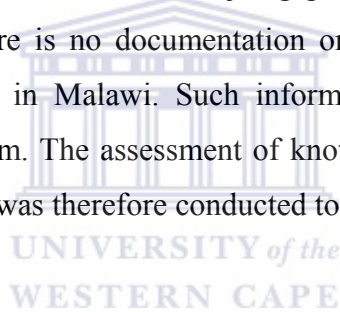
The study of school children by Hashemi *et al.* (2012) found that most students could talk to health staff about their disease if they knew or suspected that they had TB while 42% said they would talk to their parents and 6.2% indicated that they wouldn't talk to anyone about it. Fifty three percent of the students said they would fear ejection by their society while 30% said they would fear disability that would be caused by the disease. The study by Bond *et al.* (2010) in Zambia suggests that children were not very comfortable to talk about TB with adults in their respective homes.

2.4 Factors Associated with Knowledge, Attitudes and Perceptions Regarding TB

Some studies in Malawi and other African countries have documented factors associated with TB knowledge, attitudes and perceptions. In the study of newly diagnosed pulmonary TB patients in Malawi, Salaniponi *et al.* (1999) found that lack of schooling and not knowing another person with TB were significantly associated with lack of awareness before sputum smear results (OR 2.10, 95% CI 1.60-2.77, $p < 0.05$; OR 1.77, 95% CI 1.38-2.28, $p < 0.05$). The 2010 Malawi Demographic and Health Survey (National Statistical Office [NSO] & ICF Macro, 2011) also revealed differentials in knowledge of spread of the disease and attitudes on curability of the disease by sex, educational level and wealth quintile level. A case control study in Kenya found that low education, low income, inadequate knowledge on TB, stigma and use of herbal medicines were significantly associated with TB treatment default (Muture *et al.*, 2011). A household survey in Zambia however found that educational levels were not significantly associated with treatment compliance (Kaona, Tuba, Siziya & Sikaona, 2004). Common reasons for non compliance to TB treatment in this study included patients beginning to feel better, lack of knowledge on the benefits of completing the TB treatment course, running out of drugs at home and TB drugs being too strong. The studies of school children in Zambia and Southern Iran did not determine factors associated with knowledge and perceptions.

2.5 Conclusion

Tuberculosis is a public health problem and is common among children in African countries including Malawi. Care seeking for TB childhood contacts is also a challenge in Malawi. Based on the literature reviewed, there seem to be gaps in knowledge in terms of the cause, mode of transmission and treatment in Malawi. Certain cultural and religious beliefs also influence the knowledge and perception about TB and there is evidence that TB is stigmatised. Case finding in Malawi is based on self-referral of symptomatic individuals who are suspected as TB cases in health institutions. The content of the primary school curriculum aims to equip pupils with the necessary knowledge, skills and attitudes to prevent and control diseases that are prevalent in Malawi. There seems, however, to be a major gap in the TB content in the primary school curriculum and there is no documentation on the knowledge and perceptions about TB among children in Malawi. Such information would provide a basis for strengthening the curriculum. The assessment of knowledge and perceptions regarding TB among school children was therefore conducted to provide such information.



CHAPTER 3: METHODOLOGY

3.1 Study Design

The study design was analytical cross-sectional. This design was the most appropriate choice as the study intended to measure the levels of knowledge and perceptions about TB among the primary school children as well as determine associations between variables.

3.2 Study Population

The study population comprised of learners (boys and girls) in standard 5-8 (senior primary school) who were aged between 10 – 14 years attending primary school in Traditional Authorities Makwangwala and Ganya in Ntcheu District in April 2012.

3.3 Study Setting

Primary schools in Traditional Authority areas of Makwangwala and Ganya in Ntcheu District (see Appendix 1). Ntcheu is a rural district with an estimated population of 499,936 persons of whom 64,207 are aged between 10-14 years (NSO, 2008). The district is situated about 181 Kilometres from Lilongwe, the capital city of Malawi.

According to TB programme data, the number of TB cases in Ntcheu over the five year period from 2007 to 2011 was 2043, ranging between 548 and 173 per year. The district recorded the highest number of cases in 2007, after which the number steadily declined to 173 in 2010 and then rose to 189 in 2011. Five to 9% percent of all the reported cases during this five year period were children aged 0-14 years.

3.4 Sampling Procedure

The study was conducted in Ntcheu District in Malawi. This district was selected on the basis of high prevalence of TB. Of the 9 TAs in the district, TAs Makwangwala and Ganya and the corresponding the primary schools where the study took place were selected using simple random sampling strategy. This was part of a big study entitled “Effectiveness of Health Education and Awareness Model on Early Tuberculosis Diagnosis in Resource-Limited Settings: A Cluster Randomised Controlled Trial in Ntcheu District, Malawi” which was underway in the area.

The sampling frame comprised of all primary schools under the TAs of Makwangwala and Ganya. The schools were identified using the 2008 National Statistics Enumeration Areas (EAs). The schools under each TA were arranged in alphabetical order and assigned numbers, then two schools in each TA were randomly selected. A sample size of 115 was then estimated (see below). Based on the sample size, 28-29 children (7 to 8 per class) who had attended classes on the dates of data collection were randomly selected and interviewed at each of the 4 schools. Learners in junior primary (below standard five) and those in standards 5 to 8 but outside the age bracket of 10-14 years were not included in the study.

3.5 Sample size

Based on the estimated population of 64,207, regardless of sex and using the formula for sample size calculation for prevalence surveys by Bartlett *et al.* (2001), the sample size (n) was calculated as follows:

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


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The following assumptions were made:

- The highest level of knowledge of tuberculosis among the learners was 60%. The 60% estimate was based on the 2010 Malawi Demographic and Health Survey finding that 67.7% of individuals aged 15-19 years knew that TB can be cured (NSO & ICF Macro, 2011). Since the population in the school children study was younger, it had been assumed that the learners would be less knowledgeable than those in the age group 15-19 in the general population.
- The lowest level of knowledge of TB among the pupils (p) was 50%.
- Margin of error (m) of 10%.
- Non-response rate (r) due to lack of interest in the study or other factor was 20%.
- t = Confidence level at 95% (standard value of 1.96).

Therefore:

$$n = \frac{(1.96)^2 \times (0.5)(1-0.5)}{(0.1)^2} = 96$$

The minimum sample size was therefore 96 pupils. Accounting for 20% non-response rate, the total number of pupils targeted for inclusion in the proposed sample was 115.

3.6 Data Collection

Data were collected by interviewing learners using a close-ended questionnaire which was translated into the local language (Appendix 2). The research instrument was designed and adapted from the literature. It was simplified to make it easy for the study population to understand. Questions that required more advanced knowledge for the study population were not included in the tool.

3.7 Dependent Variables

Knowledge: The focus was on the cause, mode of transmission, symptoms, risk factors, where to get help if sick with TB, ways of preventing TB and curability of TB. Variable definitions are presented in Appendix 3.

3.8 Independent Variables

Demographic characteristics: Age, sex, religion, tribe.

Socioeconomic characteristics: Name of school, class (i.e. whether in standard 5, 6, 7 or 8), guardian's occupation.

Perceptions: Perceived susceptibility to TB, perceived benefits and perceived barriers for disclosing the illness.

Variable definitions are presented in Appendix 3.

3.9 Data Processing and Analysis

The data collected were entered in Epi Info version 3.5.3. During data collection, the filled questionnaires were checked for completeness, legibility and missing values that

could be corrected. Consistency and range checks programmes were also built in the database to control data entry errors. Data was collected from 16-17th April 2012.

Descriptive statistics such as frequency, percentage and range were used primarily to summarise and describe data. Analytical statistics were used to assess association between dependent and independent variables. Pearson chi-square test was used to determine this association. All statistical tests were performed at 5% significance level and estimates were calculated at 95% confidence interval. Definition and measurement of variables are presented in Appendix 3.

3.10 Validity and Reliability

In this study, the questionnaire was translated into Chichewa a locally spoken language which is also taught in schools. A different person translated the study tool back to English to ensure the same meanings are maintained. Training of data collectors on the questionnaire was done by TB and information and communication experts. The tool was pretested at Kadamsana Primary School within TA Makwangwala among learners who were similar to the intended participants from the sampled schools prior to data collection. The pilot test was done on 11th April 2012. Lessons learnt in the pretest were used to modify the questionnaire accordingly.

3.11 Generalisability

The study was conducted in 4 out of 59 primary schools in two out of the nine Traditional Authority areas in Ntcheu District. The results may, therefore, not fully represent all primary school learners in the whole district.

3.12 Study Limitations

Unequal number of boys and girls participated in the study. This was because gender considerations were not taken into account in the methodology.

The study tool was translated into the local language. Interpretation of some of the questions for example isolation of patient, TB is a communicable disease and avoiding contact with a person suffering from TB may have varied due the absence of very exact words in Chichewa.

The study was conducted in only 4 out of 59 primary schools in 2 out of 9 TAs in Ntcheu District. This may affect generalisability of the results.

3.13 Ethical Considerations

The study was approved by the National Health Sciences Research Committee in Malawi and the University of the Western Cape's Senate Research Committee and Ethics Committee.

A written consent was obtained from each of the study participants before commencing the data collection (copy of consent form is attached as Appendix 4). It was explained to the participants that participation was voluntary and that anonymity and information confidentiality would be maintained throughout the study. An information meeting was also held with the parent teachers' association committee to explain the objectives and procedures of the study in advance of data collection.

To maintain confidentiality of participants' information, a coding system was used to ensure anonymity and individual identifiers were all removed. All information that was provided by respondents was kept confidential under lock and key, and the data was used for research purposes only. The results will be shared with the school administration, district education division office, the Basic Education Directorate in the Ministry of Education Science and Technology, Ntcheu District Health Office and the National TB Control programme.

CHAPTER 4: RESULTS

4.1 Characteristics of the Study Population

A total of 116 learners from four primary schools took part in the study. Three records were however excluded from the analysis because the ages were out of range for this study due to errors during data collection: 2 learners were aged 16 years and one learner was aged 6 years. Therefore, 113 learners were included in the analysis.

4.1.1 Distribution of Boys and Girls between Classes

Almost equal proportions of learners participated in each class (Table 1).

Table 1: Frequency Distribution of Learners by School and Class

Characteristic	N	(%)
School		
Chauta	29	26%
Chimvano	29	26%
Namitengo	30	27%
Nsiyaludzu	25	22%
<i>Total</i>	<i>113</i>	<i>100.0</i>
Class		
Standard 5	28	25%
Standard 6	28	25%
Standard 7	28	25%
Standard 8	29	26%
<i>Total</i>	<i>113</i>	<i>100.0</i>
Boys		
Standard 5	14	27%
Standard 6	13	25%
Standard 7	9	18%
Standard 8	15	29%
<i>Total</i>	<i>51</i>	<i>100.0</i>
Girls		
Standard 5	14	25%
Standard 6	15	25%
Standard 7	19	25%
Standard 8	14	26%
<i>Total</i>	<i>62</i>	<i>100.0</i>

There were, however, relatively more girls than boys in standard seven in the study. The enrollment in standards 5 to 8 in the four schools showed that 47% of learners in standard seven were girls. This reflects the fact that gender was not taken into account in the sampling methodology.

4.1.2 Demographics Characteristics of Learners

4.1.2.1 Sex and Age Distribution

Fifty five percent (n=62) of the learners were female. There were more boys than girls aged 10 to 11 years and more girls aged 13 to 14 years (Table 2).

Table 2: Age and Sex Distribution of Learners

Age	Sex		Total n(%)
	Male n (%)	Female n (%)	
<= 11 years	11(61)	7(39)	18(16)
12 years	11(44)	14(56)	25(22)
13 years	10(34)	19(66)	29(26)
14 years	19(34)	22(54)	41(36)
Total	51	62	113

The median age of the learners was 13 years (Figure 1). The age distribution for the different sexes was the same with median 13 years, interquartile range 3 years. This pattern could be close to the actual age distribution of learners in standard 5 to 8 in the selected schools because the official age for enrolling in standard 1 in Malawi is six years.

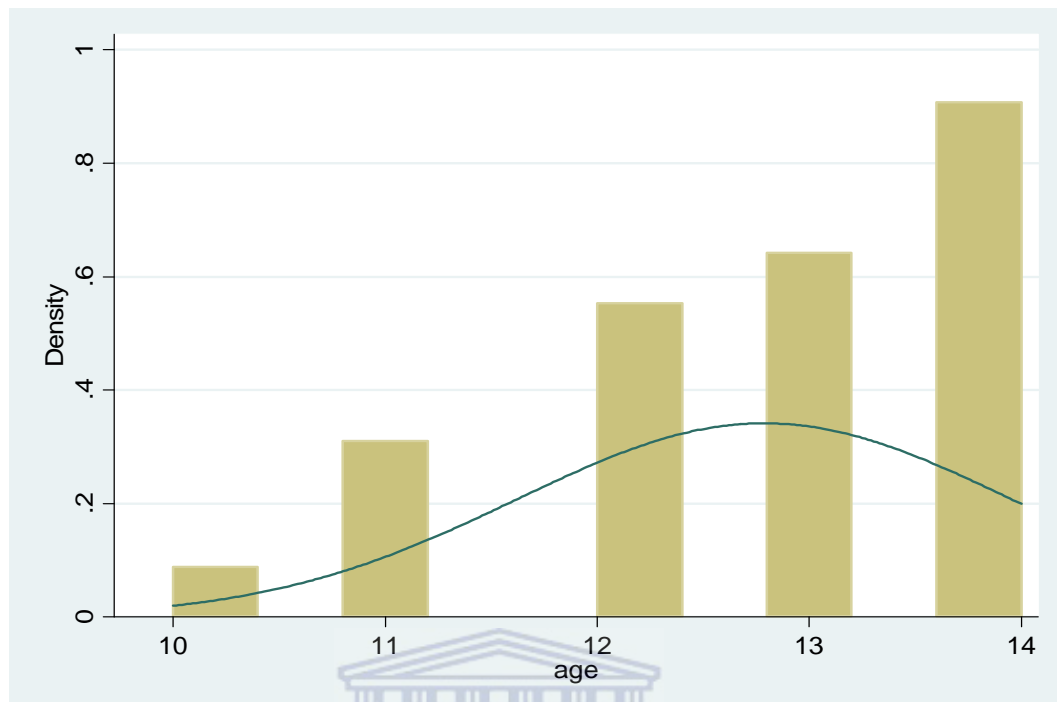


Figure 1: Age Distribution of Learners

4.1.2.2 Distribution by Tribe and Religion

The predominant tribe was Ngoni (82%) followed by Chewa (12%). The rest were Yao (5%) and Lomwe (1%). This is expected because the predominant tribe in Ntcheu district is Ngoni. Ninety six percent of the learners were Christians and 4% were Muslims.

4.1.3 Distribution by Guardians' Main Occupation

Farming was the main occupation for 62% (n=70) of the learners' guardians, followed by formal employment (26%, n=29).

4.1.4 Exposure to TB Information or Infection

Ninety-nine percent of the learners (n=112) had heard about TB and 50% (n=56) indicated that they had ever known anyone suffering from tuberculosis. The three main sources of TB information for the learners were learning at school (49%, n=55), health worker (23%, n=26) and radio (16%, n=18). Other sources were relative (n=9), friend (n=2) and others. It is not surprising that almost all the learners had heard about TB

because of the numerous channels that are used to convey messages about tuberculosis.

4.2 Knowledge on Cause, Spread and Cure of Tuberculosis

4.2.1 Knowledge on Cause

Eighty eight percent of the learners said TB is caused by a germ. Other relatively commonly mentioned causes were bad luck, spirits and hereditary (Figure 2). This variation in knowledge on the causes of TB could be a reflection of the prevailing beliefs in the society where the school children live.

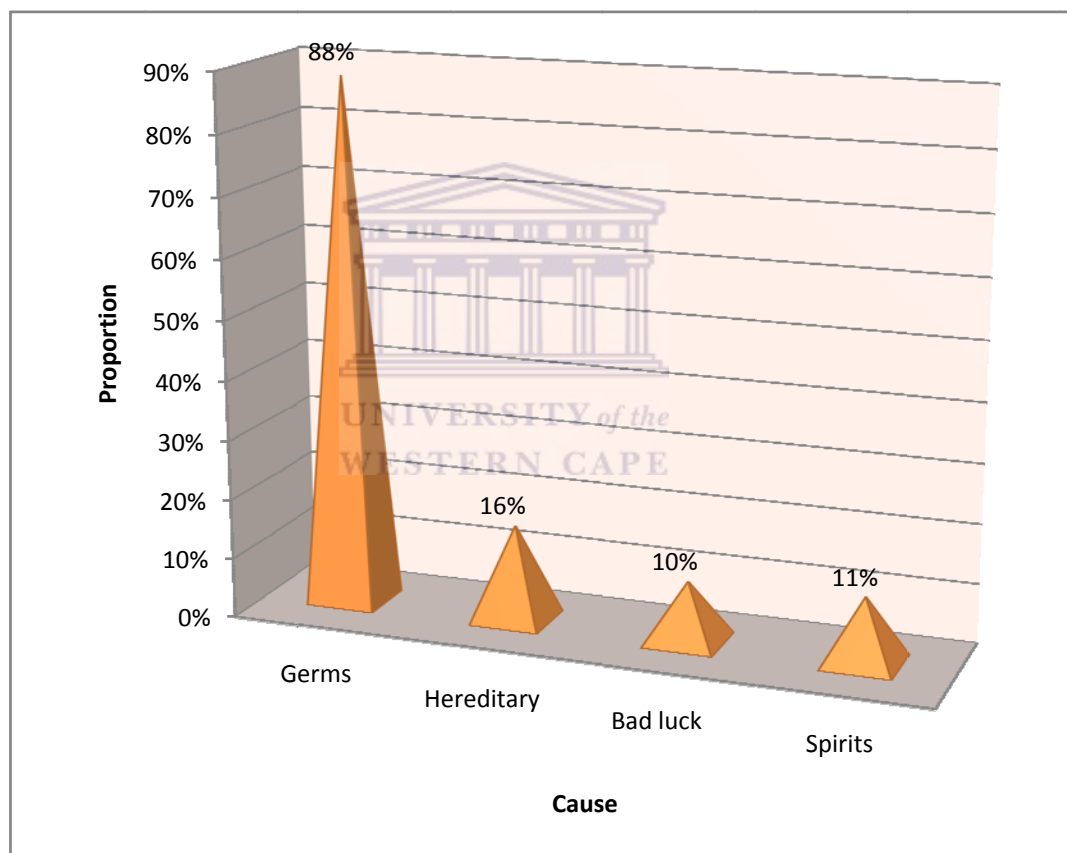


Figure 2: Cause of Tuberculosis

Guardian's occupation was associated with knowledge regarding the cause of tuberculosis ($p=0.01$) with learners whose guardians' main occupation was business having the lowest level of knowledge (Figure 3).

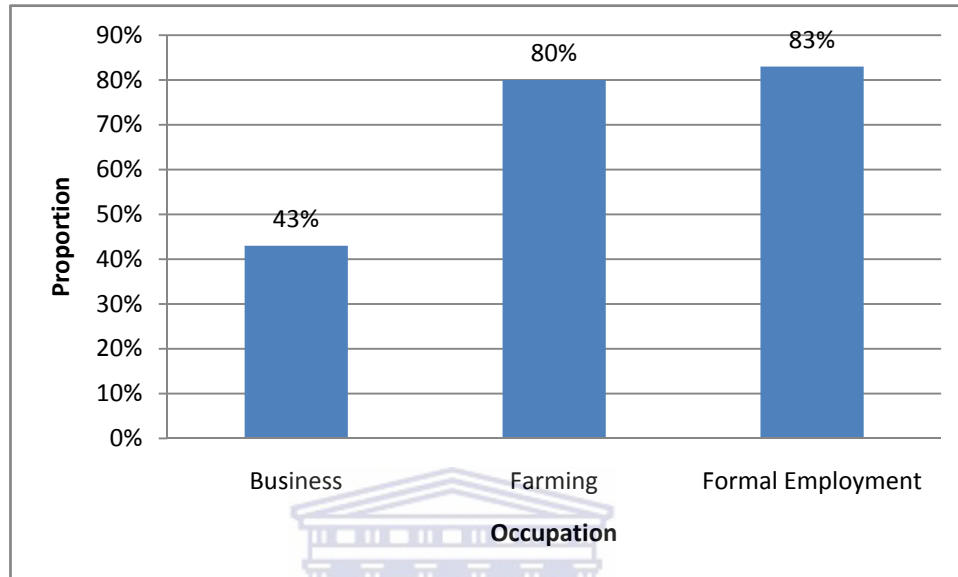


Figure 3: Knowledge of Cause by Guardians' Occupation

4.2.2: Knowledge of Spread of TB

Seventy one percent of the learners ($n=80$) indicated that tuberculosis is a communicable disease. Eighty one percent ($n=92$) said TB is spread by droplets through coughing and sneezing. This is the most basic information one ought to know regarding the spread of TB and is key for the prevention and control of the disease.

Variations in knowledge that TB is a communicable disease were noted among the schools (Figure 4). Less than a quarter of all the learners who knew were from Namitengo Primary School.

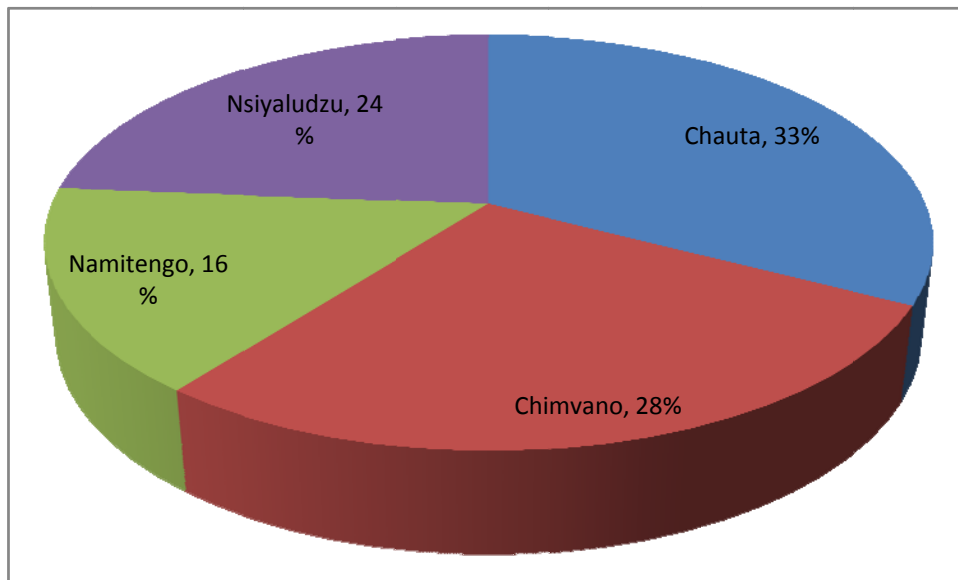


Figure 4: Knowledge by School

Sex and name of school were associated with knowing whether TB is communicable or not (Table 3). Female learners were almost 3 times less likely than their male counterparts to be knowledgeable (OR 2.95).

Table 3: Factors Associated with Knowledge of Spread

Exposure Variable	Chi-square	p-value
Sex (Female=Exposed)	6	0.01
Name of School	16.62	<0.001

4.2.3: Knowledge on TB Cure

Ninety Seven percent of the learners (n=109) stated that TB is curable and (95%, n=110) said that effective drugs against TB are available. There was however variation regarding how long anti-TB treatment should be taken with 68% indicating that it should be taken for 2 to 5 months (Figure 5). TB treatment is supposed to be taken for 6-8 months. None of the socioeconomic factors was associated with the knowledge that TB can cause death.

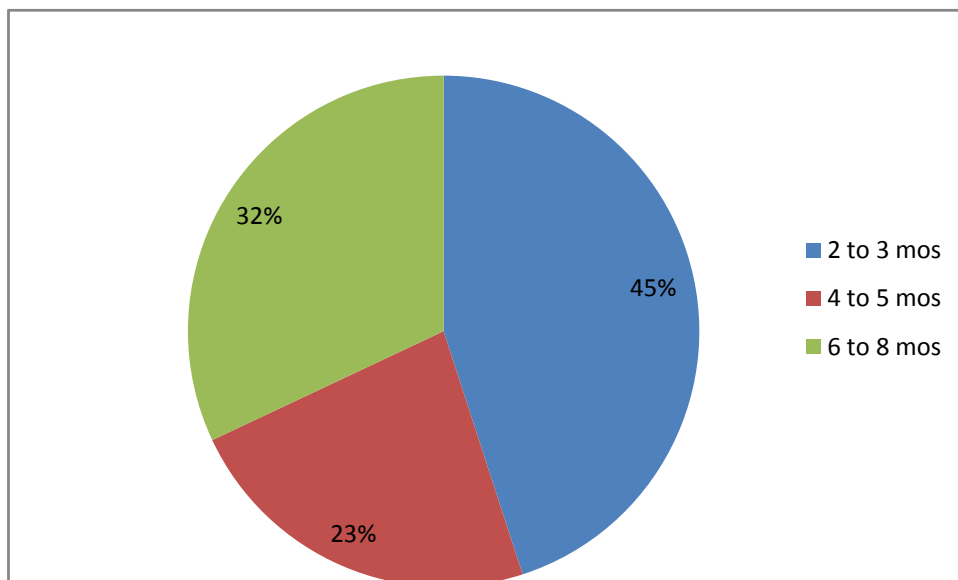


Figure 5: Knowledge on Duration of Anti-TB Treatment

4.3 Knowledge of Factors Influencing the Spread of Tuberculosis

Fifty two percent (n=59) of the learners and 69% (n=78) respectively felt that contact with a person suffering from TB and overcrowding conditions favour the spread of TB. It was noted during the study that avoiding contact can sometimes be misunderstood/misinterpreted as meaning discrimination. That needs to be addressed during education sessions.

4.4 Knowledge of Preventive Measures against Tuberculosis

Ninety two percent of the pupils (n=103) stated that taking prophylactic drugs is a preventive measure against TB. Eighty percent (n=90) indicated that vaccination with BCG (80%, n=90) is a preventive measure. However only 64% said isolation of patient is a preventive measure (Figure 6). Just like ‘avoiding contact’ it was noted that ‘isolation’ needs to be properly explained as a preventive measure because of the possible confusion with discrimination. None of the socioeconomic factors i.e. class, sex, age, school, guardians’ occupation or religion was associated with neither knowledge of BCG vaccination nor isolation of patient as preventive measures

($p > 0.05$).

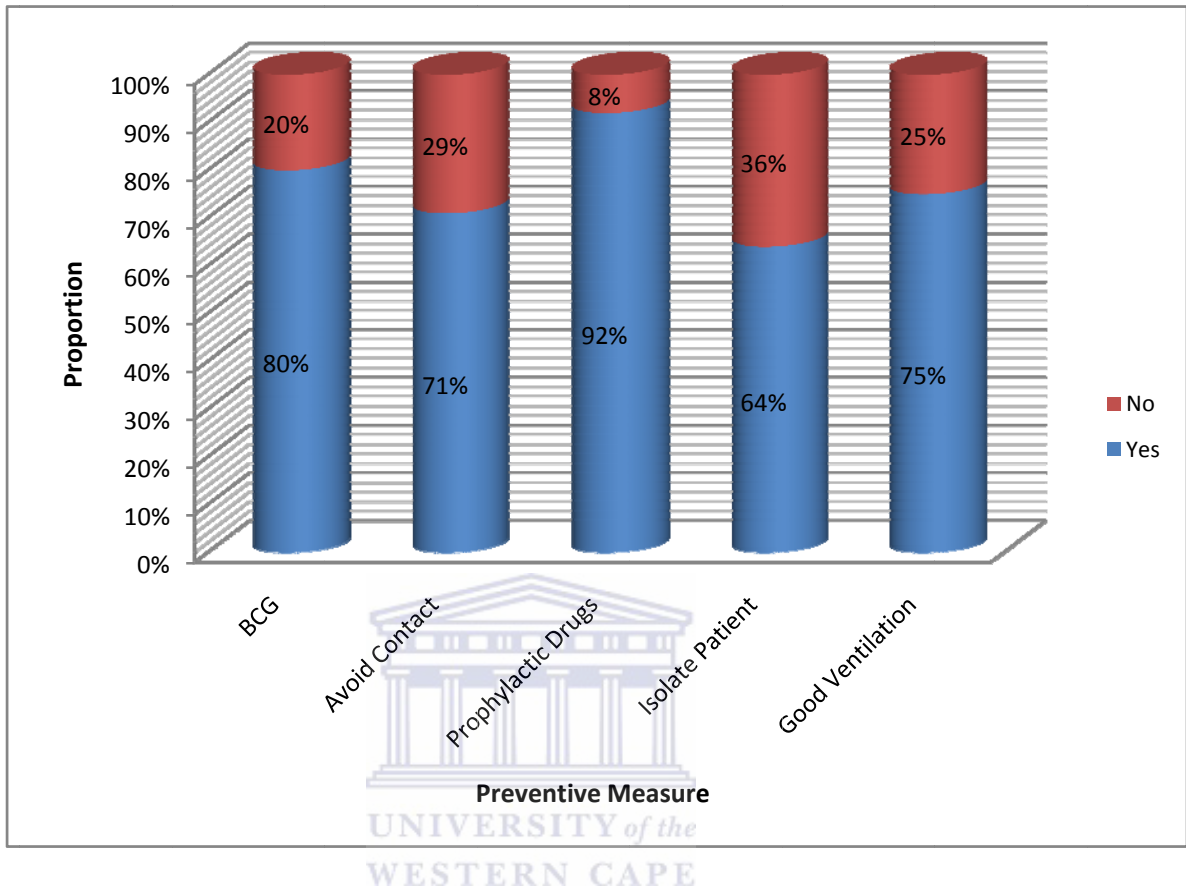


Figure 6: Distribution of Knowledge of Preventive Measures

4.5 Knowledge of Symptoms of Tuberculosis

Knowledge of symptoms of TB varied among the learners (Figure 7). Most learners (>86%) knew that coughing out blood, cough with sputum and shortness of breath are symptoms of tuberculosis while fewer (40%) knew that enlarged neck glands is a symptom of TB. This symptom is probably not often mentioned during educational sessions.

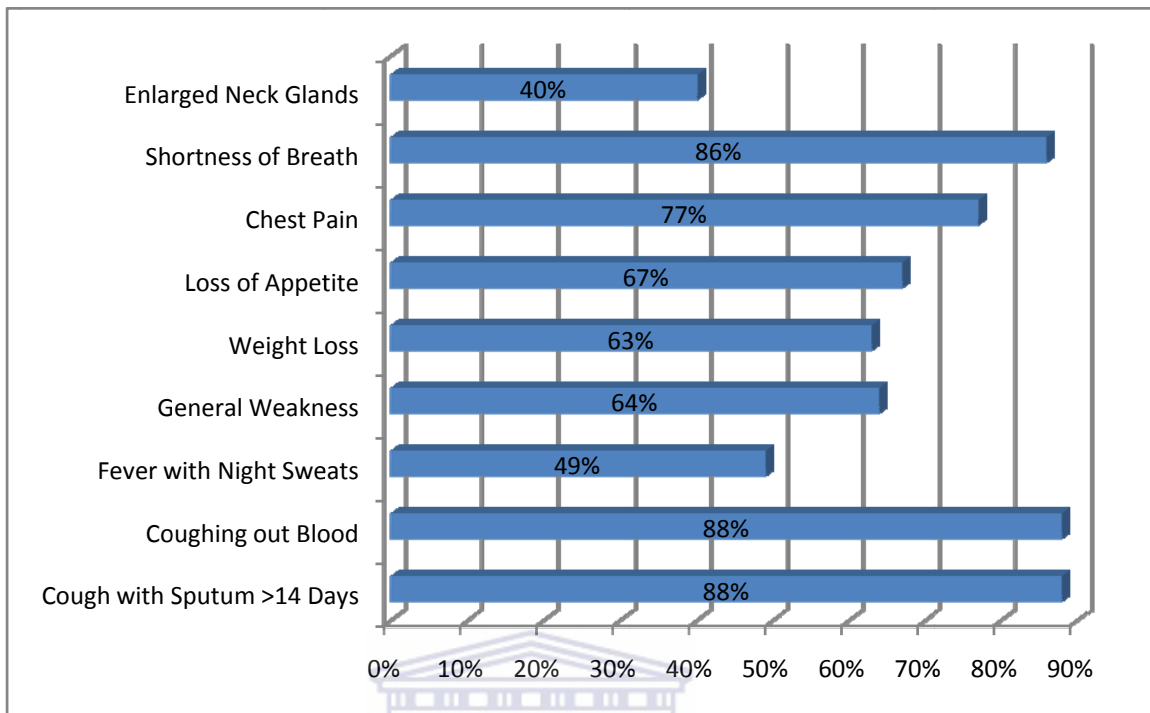


Figure 7: Distribution of Knowledge of Symptoms of Tuberculosis

4.6 Attitudes Regarding Tuberculosis

Ninety six percent (n=109) stated that anyone can get tuberculosis while 3% (n=4) mentioned that only people with HIV can get TB. There was no association between class, age, sex, school, guardian's occupation or religion with knowledge of what kind of people get TB as well as learners' perceptions on how people in their communities relate with people suffering from TB ($p>0.05$).

More learners felt that people in their communities generally feel negative about a person suffering from Tuberculosis (65% versus 48%). Forty two percent (n=48) felt that most people in their communities avoid people suffering from TB. This could imply that stigma is an issue in the community.

Ninety three percent of the learners reported that they would talk about their illness with their mother, father or health worker if they knew or suspected that they had tuberculosis. Only 1% reported that they would talk to their teachers about their illness (Figure 8).

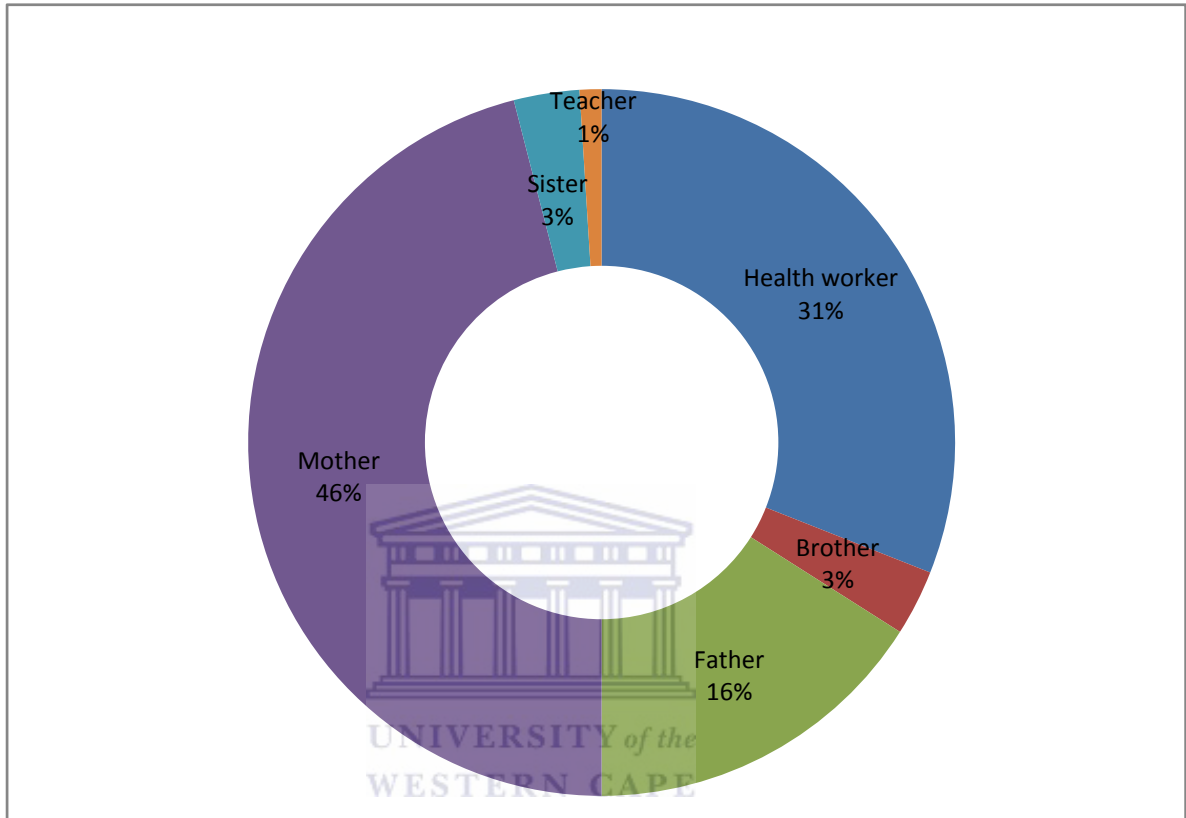


Figure 8: People Learners would talk to if they had TB

Regarding care seeking, all (100%) learners said that people suspecting TB should seek care at a health facility

4.7 Socioeconomic Factors Associated with Knowledge and Perceptions

There was significant difference between learner's knowledge of TB and guardians occupation χ^2 9.80, $p=0.01$. No significant differences were observed by learner's religion, name of school, learner's age, class and sex. There was no significant difference between learner's perception about tuberculosis and socioeconomic factors (Table 5).

Table 5: Association between Socioeconomic Characteristics and Knowledge and Perceptions towards Tuberculosis among Primary School Learners

Factor	Learner's Knowledge ¹				Learner's Perception ²			
	Yes N (%)	No N (%)	Chi ²	p	Yes N (%)	No N (%)	Chi ²	p
Learner's sex								
Male	41(80.4)	10(19.6)			26 (41.9)	36 (58.1)		
Female	45(72.6)	17(27.4)	0.94	0.33	22 (43.1)	29 (56.9)	0.02	0.9
Learner's class								
Standard 5	20(71.4)	8(28.6)			10 (35.7)	18 (64.3)		
Standard 6	20(71.4)	8(28.6)			15 (53.6)	13 (46.4)		
Standard 7	20(71.4)	8(28.6)	3.94	0.27	11 (39.3)	17 (60.7)	2.07	0.56
Standard 8	26(89.7)	3(10.3)			12 (41.4)	17 (58.6)		
Learner's age								
<=11years	14(77.8)	4(22.2)			8 (44.4)	10 (55.5)		
12 years	20(80.0)	5(20.0)			17 (41.5)	24 (58.5)		
13 years	20(69.0)	9(31.0)	1.13	0.77	13 (44.8)	16 (55.2)	0.17	0.98
14 years	32(78.0)	9(22.0)			10 (40.0)	15 (60.0)		
Name of School								
Chauta	26(89.7)	3(10.3)			16 (55.2)	13 (44.8)		
Chimvano	20(69.0)	9(31.0)			12 (41.4)	17 (58.6)		
Namitengo	22(73.3)	8(26.7)	4.10	0.25	10 (33.3)	20 (66.7)	3.02	0.39
Nsiyaludzu	18(72.0)	7(28.0)			10 (40.0)	15 (60.0)		
Learner's religion								
Christian	82(75.2)	27(24.8)			46 (42.2)	63 (57.8)		
Muslim	4(100)	0	1.30	0.25	2 (50.0)	2 (50.0)	0.1	0.76
Guardians Occupation								
Business	6(42.9)	8(57.1)			5 (35.7)	9 (64.3)		
Farming	56(80.0)	14(20.0)	9.80	0.01	31 (44.3)	39 (55.7)	0.37	0.83
Formal employment	24(82.8)	5(17.2)			12 (41.4)	17 (58.6)		

¹TB is caused by a germ has been used as a proxy measure of learner's knowledge

²TB patients mostly rejected by community members has been used as a proxy for learner's perception

CHAPTER 5: DISCUSSION

The study aimed to assess the knowledge and attitudes regarding TB among primary school learners in Ntcheu District, Malawi. Based on a sample of 113 learners in standard 5 to 8, drawn from four schools in 2 TAs, the study found that knowledge of learners regarding TB was generally high. This means that learners have access to TB information. The study, however, found that there are gaps with regard to knowledge on specific aspects related to symptoms, cause, cure, as well as attitudes towards the disease. The study found that not all learners knew that fever with night sweats and enlargement of neck glands are symptoms of TB. The study also revealed knowledge gaps regarding the real cause of the disease whereby learners indicated that one can get the disease through spirits, from parents (hereditary) and bad luck. Knowledge on how long anti-TB treatment should be taken was also low. Furthermore, the findings suggest that TB is stigmatising which may result in poor uptake of care and support.

5.1 Knowledge on Cause of TB

Knowledge on the cause of TB varied despite the fact that almost all the learners had heard about the disease. Even though the majority of the learners indicated that TB is caused by germs, others said that TB is a sign of bad luck or inherited from parents or caused by spirits. This variation in the knowledge on causes of TB could be due to the prevailing beliefs on TB in the communities where the children live. A study done by Banerjee *et al.* (2000) in the same district of Ntcheu found similar results among adults. This situation shows that this is a common problem among both children and adults in Ntcheu. Any interventions to address this problem will require targeting both adults and children.

5.2 Knowledge on Spread of TB

Knowledge on how TB spreads was high among the learners with the majority of them indicating that it is communicable and spreads through droplets when a patient coughs or sneezes. This finding could be an indication that the information which the learners got about TB had good coverage on how the disease is spread. Knowledge on how the disease is spread can help the learners take the necessary precautions to protect

themselves from getting it. The learners were also aware that overcrowding influences the spread of the disease.

The knowledge on the dynamics of TB transmission was however varying among the schools. Namitengo Primary School had the least proportion of learners amongst the schools who knew that TB is communicable. This may imply that some schools are less privileged on access to information regarding TB. Children who learn at such schools may be put at a disadvantage of not getting the required information about TB. It is important to ensure consistency in the content of TB messages both in schools, radio messages as well as during health talks in health facilities and communities.

5.3 Knowledge of symptoms of TB

Knowledge was assessed on nine symptoms: cough with sputum longer than 2 weeks, coughing out blood, fever with night sweats, general weakness, weight loss, loss of appetite, chest pain, shortness of breath and enlarged neck glands. Knowledge was high on cough with sputum for >14 days, coughing out blood and shortness of breath. Knowledge was, however, low regarding enlargement of neck glands and fever with night sweats. The low knowledge regarding fever and night sweats appears surprising taking into consideration that almost all the learners had heard about TB. This situation may mean that it is difficult for the learners to relate fever with night sweats with TB because of other conditions that may present with this symptom, for example, malaria.

5.4 Knowledge on Cure of TB

Consistent with knowledge on how TB is caused and spread, the majority of the learners indicated that TB is curable. Variations were, however, observed on the duration required for taking anti-TB treatment with only 32% of the learners knowing the correct duration. A study by Nyirenda *et al.* (2004) among adult TB patients admitted in non-private hospitals in Malawi also found that less than 50% knew the correct duration of anti-TB treatment. Another study by Harries *et al.* (2005) also found that only 45% of children with TB completed treatment. This finding, therefore, reveals a major gap in knowledge on TB treatment not only among children but also adults. This situation implies that the information shared on TB is deficient of the prescribed

duration for TB treatment. None of the socioeconomic factors was associated with lack of knowledge that TB can cause death.

5.5 Knowledge of preventive measures against TB

Knowledge about prevention of TB was generally high with regard to measures such as vaccination with BCG, avoiding contact and taking prophylactic drugs. Knowledge was, however, low with regard to isolation of a TB patient. During the study, however, it was noted that, 'avoiding contact' and 'isolation' was possibly confused with discrimination in the local language. The confusion on these terms may have contributed to the result. These terms therefore need to be properly explained to learners to convey the accurate meanings. In this study, none of socioeconomic factors was associated with knowledge of preventive measures.

The high proportion of learners who were able to indicate the preventive measures against the spread of TB may be an indication that they are well informed about TB prevention. In a study by Salaniponi *et al.* (2004), it was found that TB prevalence was lower among children with a BCG scar. Knowing preventive measures can help learners take the necessary precautions to protect themselves and others from contracting the disease.

None of the socioeconomic factors was associated with neither knowledge of BCG vaccination or isolation of patient as preventive measures. There was also no association between any of the socioeconomic factors with knowledge of the kind of people that get TB.

5.6 Attitudes regarding TB

Most learners said that anyone can get tuberculosis while 3% said that only people with HIV can get the disease. This finding shows that the information about TB which the learners received contained aspects concerning their risk of getting the disease. The small proportion of learners that said that only people with HIV can get TB contrasts the finding by Bond *et al.* (2010) among pupils in Zambia that found that learners were less sure about the link between TB and HIV. From a different perspective, however,

one could view the low numbers of learners which indicated that only people with HIV can get TB as a reflection of lack of knowledge of the association between TB and HIV.

The study also found that TB is highly stigmatising. This was evident from the finding that 65% of the learners said that people in their community feel negative about a person suffering from tuberculosis. This situation is worrisome because stigma can cause TB patients to seek treatment and care from inappropriate providers.

The study also found that the learners would talk to their parents or health workers about their condition if they suspected to have TB. Only 1%, however, said they would talk to their teacher. This finding suggests that learners are generally not free to their teachers concerning their health related matters. Learners ought to regard teachers as their confidants on health issues. To address this problem, there has to be a deliberate effort to include improving the teacher/learner relationship on health matters.

Despite that all learners indicated that one should seek care for TB at a health facility and that 97% said the disease is curable, only 31% indicated that they would consult a health worker if they suspected having TB. This may mean that they are dependent on their guardians on care seeking behaviours. This agrees with the study by Nyirenda *et al.* (2006) that found low attendance at a child TB contact clinic.

5.7 Socioeconomic Factors Associated with Knowledge and Perceptions

There was significant difference between learner's knowledge of TB and guardians occupation. This may imply that more people in formal employment discuss health related matters with their children at home. Even though one third of learners in standards 5 and 6 were less knowledgeable about TB compared to those in standard 8, this was not statistically significant. Learners' knowledge may therefore be the same across all the four classes. Learner's perception of TB was not associated with any of the socioeconomic factors tested, showing that none of the socioeconomic factors investigated influences the learners perception about TB.

CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS

The findings of this study have implications on the teaching of TB in schools as well as delivery of TB IEC messages. The knowledge gaps identified may have origins in the content of the school curricula or content of IEC messages. The varying knowledge on TB among the schools could be due to inconsistencies on what or how much the learners are actually taught in school. Lack of association between knowledge and class could also mean that IEC may have an important role regarding what learners know. As revealed in the causes stated, traditional beliefs are prevalent among the learners. Stigma about TB and poor relationship between teachers and learner concerning health matters have also been revealed by this study.

In line with the findings of this study, the following recommendations should be considered:

- The Ministry of Education, Science and Technology should review the curriculum to comprehensively address TB as a prevalent health condition. The content should include the effects of TB, cause of TB, mode of transmission, prevention and treatment.
- The Ministry of Health and non governmental organisations should advocate for the inclusion of TB in the primary school curriculum.
- The Ministry of Health should conduct Health education sessions on TB in schools to complement the knowledge on TB that learners acquire in class.
- Non governmental organisations should support the Ministry of Education, Science and Technology to promote interventions on teacher and learner relationship on health matters.
- The Ministry of Health and the Ministry of Education, Science and Technology should strengthen interventions to address stigma both at community level and in schools to encourage access and uptake of treatment and care for TB.
- The study found that girls were less likely than boys to know that TB is communicable (OR 2.95). In Malawian society it is mostly females who take care of the sick and one could therefore expect their knowledge levels to be presumably higher. Further studies are therefore required to explore this.

Being the first study to be conducted on knowledge and perceptions among school children in Malawi, the results will inform the teaching of TB in this population group. The study also provides a basis for future studies.



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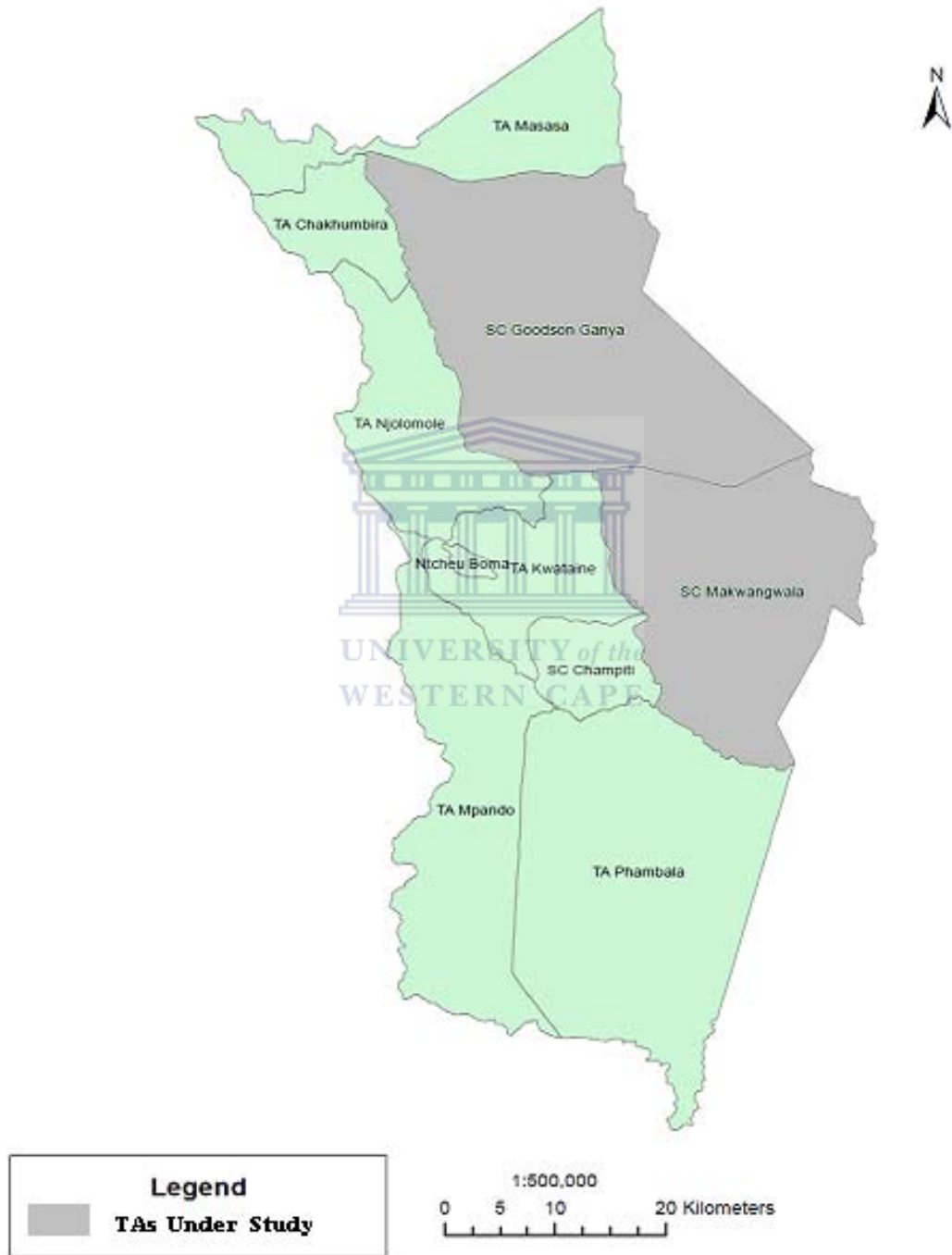
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APPENDICES



APPENDIX 1: Map of Ntcheu District Showing Traditional Authorities



APPENDIX 2: Study Questionnaire

2a: English Questionnaire

**Interview Questionnaire for TB Education Study
Knowledge, Awareness and Perceptions about Tuberculosis.**

Code ___/___/___/___/___ Date _____ Name of School _____

Interviewer's Name _____

Instruction: Please tick the appropriate box except for questions 1 and 3 where you have to write on the dotted lines.

A. Demographic characteristics

1. Age in years,

.....years

2. Sex,

Male

Female

3. Residence

Village.....; TA.....

4. Educational level,

Standard 5

Standard 6

Standard 7

Standard 8

5. Religion

Christian

Muslim

Traditional beliefs

Other. Specify.....



Code __/__/__/__

6. Tribe

- Ngoni
- Chewa
- Lomwe
- Sena
- Yao
- Tumbuka
- Other. Specify.....

7. Have you ever heard about the disease called Tuberculosis (TB)?

- Yes No

8. If you have heard about TB, where did you hear about the disease?

- I learned at school
- From a health worker
- Radio
- From a relative
- From a friend
- Other source. Specify.....

9. Do you know anyone who is suffering or has suffered from TB?

- Yes No

10. Have you ever received treatment for TB?

- Yes
- No

Please also answer questions 11 and 12 if your answer to question 10 is Yes.

Code ___/___/___/___/___/

11. If you have, what type of health facility did you attend?

- Tertiary
- District
- Other. Specify.....

12. If you have received treatment for TB, what type of TB was it?

- Pulmonary
- Extra-pulmonary

B. Knowledge about Tuberculosis

1. Is TB a communicable disease?

- Yes No

2. Is TB a hereditary disease?

- Yes No

3. Is TB caused by spirits?

- Yes No

4. Is TB caused by bad luck?

- Yes No

5. Is TB caused by witch craft?

- Yes No

6. Is TB caused by a germ?

- Yes No

7. Is TB spread by droplets through cough and sneeze?

- Yes No

8. Is TB Curable?

- Yes No



Code ___/___/___/___/___

9. Are effective drugs against TB available?

Yes No

10. For how long should a TB patient take d Anti-TB drugs?

For 2 to 3 months

For 4 to 5 months

For 6 to 8 months

11. Would there be a problem if a TB patient skips treatment for a day or two?

Yes No

Please also answer questions 12 if your answer to question 11 is Yes.

12. What would be the problem if a TB patient skips treatment for a day or two?

The patient may not get well

The TB germs can develop resistance

The patient can die

Other. Specify

13. Can TB cause death?

Yes No

C. Factors favouring Tuberculosis transmission

1. Contact (living in the same household) with a TB patient

Yes No

2. Overcrowding

Yes No

3. Smoking

Yes No

Code __/__/__/__

4. Inadequate diet
Yes No
5. Chronic alcoholism
Yes No

D. Measures for prevention of Tuberculosis

1. BCG vaccination
Yes No
2. Avoiding contact (living in the same household or room) with a TB patient.
Yes No
3. Taking drugs that protect against contracting TB (Prophylactic drugs)
Yes No
4. Isolation of TB patient
Yes No
5. Clean environment
Yes No
6. Good ventilation
Yes No



E. Knowledge on symptoms of Tuberculosis

1. Cough with sputum for more than 14 days
Yes No
2. Coughing out blood
Yes No
3. Low grade fever with night sweats
Yes No

Code __/__/__/_/

4. General weakness

Yes No

5. Loss of weight

Yes No

6. Loss of appetite

Yes No

7. Chest pain

Yes No

8. Shortness of breath

Yes No

9. Enlargement of neck glands

Yes No



F. Perceptions about Tuberculosis

1. What kind of people can get TB?

People with HIV/AIDS only

Poor people only

Anyone

2. The person I would talk to about my illness if I knew or thought I had TB is:

My mother

My father

My sister

My brother

My friend

My teacher

Code __/__/__/__

A health worker

I would not tell anyone

3. I think that

People would love me if they knew I had TB

People would reject me if they knew I had TB

4. In my community,

Most people reject a person suffering from

Most people show love to a person suffering from TB

5. Where should people go when they suspect that they have TB

To the health facility

To the traditional healer

Other. Specify.....



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G. Socioeconomic Factors

1. What is your guardian's occupation?

Farmer

Businessman/business woman

House worker

Employed by government, NGO or private sector

Other. Specify.....

2. What is the main source of energy for cooking in your household?

Firewood

Charcoal

Electricity

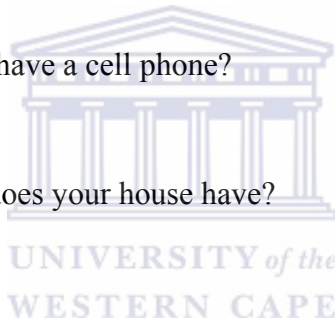
3. Does your household own a bicycle?

Yes

No

Code ___/___/___/___/___/

4. Does your household own a radio?
Yes No
5. Does your household own a television set?
Yes No
6. Does your household own an ox-cart?
Yes No
7. Does your household own a car?
Yes No
8. Does your household have livestock?
Yes No
9. Do any of your parents have a cell phone?
Yes No
10. What kind of roofing does your house have?
Grass
Iron sheets
Other. Specify.....
11. What is the main water source used by your household?
Tap water
Protected well
Unprotected well
Borehole
Dam
River/Stream
Other. Specify.....



2b: Chichewa Questionnaire

MAFUNSO OKHUDZA KUDZIWA, KUZINDIKIRA NDI MAGANIZO ANU PA MATENDA A CHIFUWA CHACHIKULU (TB)

Nambala ___/___/___/___/___ Tsiku _____ Dzina la sukulu _____
Dzina la ofunsa mafunso _____

Chongani m'bokosi loyenera kupatula funso nambala 1 ndi 3. Poyankha funso nambala 1 ndi 3, lembani pa mizere yatimadonthoyo.

A. Demographic characteristics

1. Ndili ndi zaka za kubwadwa:.....

2. Ndine

Mnyamata Mtsikana

3. Ndimakhala ku

Mudzi wa.....

Mfumu yayikulu (TA).....

4. Ndili kalasi iyi:

Sitandade 5 Sitandade 6 Sitandade 7 Sitandade 8

5. Chipembedzo changa

Chikhilisu

Chisilamu

Cha makolo

Chipembedzo changa sichinatchulidwe pa funsoli.

Chitchuleni.....

Nambala ___/___/___/___/___

6. Mtundu wanga

Ngoni

Chewa

Lomwe

Sena

Yao

Tumbuka

Mtundu wanga sunatchulidwe pa funsoli. Utchuleni.....

7. Kodi munamvapo za matenda otchedwa chifuwa chachikulu (TB).

Eya Ayi

8. Ngati munamvapo za matendawa, kodi munamva kudzera njira iti/ziti mwa njira ziri m'munsizi?

Ndinaphunzira ku sukulu

Ndinamva kwa a zaumoyo

Ndinamva pa wailesi

Ndinamvakwa wachibale

Ndinamvakwa mnzanga

Kumene ndinamva sikunatchulidwe pa funsoli.

Kutchuleni.....

9. Kodi mukudziwa munthu wina aliyense amene akudwala kapena anadwalapo matenda a chifuwa chachikulu (TB)?

Eya Ayi

10. Kodi munadwalapo TB ndi kulandira mankhwala a matendawa?

Eya Ayi

Nambala___/___/___/___/

Ngati yankho lanu ku funso nambala 10 ndi Eya yankhaninso funso 11 ndi funso 12.

11. Kodi chithandizo cha TB munakalandira ku chopatala chanji?

Ku chipatala chachikulu kwambiri (Zomba Central/Queens/ Mzuzu Central)

Ku chipatala chachikulu cha ku boma (Any district hospital)

Mtundu wa chipatala chomwe ndinakalandira chithandizo sunatchulidwe pa funsoli. Utchuleni.....

12. Kodi munadwala TB ya mtundu wanji?

TB yokhudza mapapo TB yokhudza ziwalo zina

B. Zomwe mukudziwa zokhudza matenda a TB

14. Kodi TB ndi nthenda yopatsirana?

Eya Ayi

15. Kodi TB ndi nthenda ya kuchibadwa?

Eya Ayi

16. Kodi munthu amadwala kapena kupezeka ndi TB chifukwa cha mizimu?

Eya Ayi

17. Kodi munthu amadwala kapena kupezeka ndi TB chifukwa cha tsoka?

Eya Ayi

18. Kodi munthu amadwala kapena kupezeka ndi TB chifukwa cholodzedwa ndi amfiti?

Eya Ayi

19. Kodi timayambitsa TB ndi tizilombo ting'ono ting'ono tosaoneka ndi maso?

Eya Ayi

Nambala__/_/_/_/_/

20. Kodi TBimafalika kudzera mu mpweya wa munthu wodwala matendawa akatsokomola kapena kuyetsemula?

Eya Ayi

21. Wodwala matenda a TB amatha kuchira?

Eya Ayi

22. Kodi mankhwala ochiritsa matenda a TB alipo?

Eya Ayi

23. Kodi wodwala TB azimwa mankhwala kwa miyezi ingati?

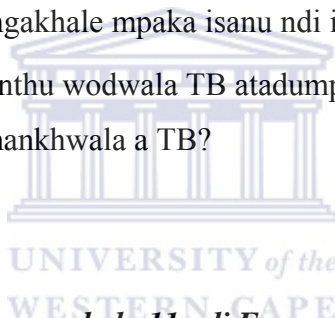
Iwiri ngakhale mpaka itatu

Inayi ngakhale mpaka isanu

Isanu ndi umodzingakhale mpaka isanu ndi itatu

24. Kodi pali vuto ngati munthu wodwala TB atadumphitsa tsiku limodzi kapena masiku awiri osamwa mankhwala a TB?

Eya Ayi



Ngati yankho lanu ku funso nambala 11 ndi Eya, yankhaninso funso nambala 12

25. Mukuganiza kuti chingachitike ndi chiyani munthu wodwala TB atadumphitsa kumwa mankhwala kwa tsiku limodzi kapena masiku awiri?

Sangachire

Tizilombo tingapime

Angamwalire

Chomwe chingachitike sichinatchulidwe pa funsoli. Chitchuleni.....

26. Kodi munthu angathe kumwalira chifukwa cha matenda a TB?

Eya Ayi

Nambala___/___/___/___/

C. Zinthu zomwe zingathandizire kuti matenda a TB afalike

6. Kukhala moyandikana kwambiri kapena kukhala nyumba/chipinda chimodzi ndi munthu yemwe akudwala TB

Eya Ayi

7. Kukhala mothithikana

Eya Ayi

8. Kusuta fodya

Eya Ayi

9. Kudya zakudya zosakwanira/zoperewera magulu

Eya Ayi

10. Kumwa mowa mwa uchidakwa

Eya Ayi

D. Njira zopewera kufalika kwa matenda a TB

7. Katemela wa chifuwa chachikulu (BCG)

Eya Ayi

8. Kupewa kuyandikana kwambiri ndi munthu wodwala TB kapena kumusiya m'chipinda cha yekha

Eya Ayi

9. Kumwa mankhwala oteteza ku TB

Eya Ayi

10. Kudwazika munthu wodwala TBm'chipinda cha yekha.

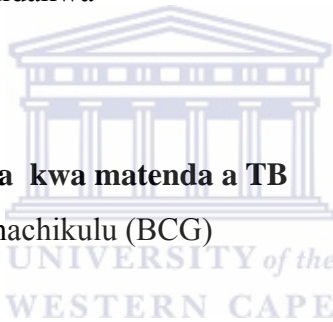
Eya Ayi

11. Kukhala malo aukhondo

Eya Ayi

12. Kukhala/kugona mnyumba ya mazenera/mawindo okwanira bwino

Eya Ayi



Nambala ___/___/___/___/

E. Zomwe mukudziwa zokhudza zizindikiro za TB

1 Kutsokomola kupyola masabata awiri

Eya Ayi

2 Kutsokomola makhololo osakanizana ndi magari

Eya Ayi

3 Kutentha thupi - kutuluka thukuta usiku.

Eya Ayi

4 Kufooka thupi

Eya Ayi

5 Kuonda/kutsika sikelo

Eya Ayi

6 Kusakhala ndi chilakolako cha chakudya

Eya Ayi

7 Kumva chibayo/kupweteka mchifuwa

Eya Ayi

8 Kupanga befu

Eya Ayi

9 Kutuluka zotupa mkhosi/mwanabere

Eya Ayi



Nambala ___/___/___/___/___/

F. Malingaliro anu okhudza matenda a TB

1 Ndi anthu otani omwe angadwale TB?

- Anthu okhawo amene ali ndi kachilombo ka HIV kapena wodwala EDZI
- Anthu osauka okha
- Munthu wina aliyense atha kudwala TB

2 Amene ndingamuuze/ndingawauze za matenda anga nditapezeka ndi TB ndi:

- Mayi anga
- Bambo wanga
- Mchemwali wanga
- Mchimwene wanga
- Mzanga
- Aphunzitsi anga
- A za umoyo/a dokotala
- Sindingauze munthu



3 Ndimaganiza kuti nditapezeka kuti ndadwala TB, anthu omwe angadziwe za matenda anga

- Angamandionetse chikondi
- Angamandisale

4 Kumudzi komwe ndimakhala

- Anthu ambiri sawonetsa chikondi kapena amamusala munthu wodwala TB
- Anthu ambiri amasonyeza chikondi kwa munthu yemwe akudwala TB
- Koti azipita sikunatchulidwe pa
funsoli. Kutchuleni.....

Nambala ___/___/___/___/

5 Ndikuganiza kuti anthu omwe akudwala kapena akuganiza/akuganiziridwa kuti akudwala TB:

Azipita kuchipatala

Azipita kwa asing'anga a zitsamba

G. Socioeconomic Factors

1. Kodi amene amakupatsani chisamaliro chambiri pa moyo wanu watsiku ndi tsiku amagwira ntchito yanji?

Ya ulimi

Amapanga bizinezi

Analembedwa ntchito pa nyumba ya anthu ena

Amagwira ntchito m'boma kapena ku kampani kapena mabungwe oti si a Boma

Ntchito imene amagwira sinatchulidwe pa funsoli.

Itchuleni.....

2. Kodi kunyumba komwe mumakhala nthawi zambiri mumaphikira:

Nkhuni?

Makala?

Zophikira zogwiritsa ntchito moto wa magetsi?

3. Kodi kunyumba komwe mumakhala muli ndi njinga?

Eya Ayi

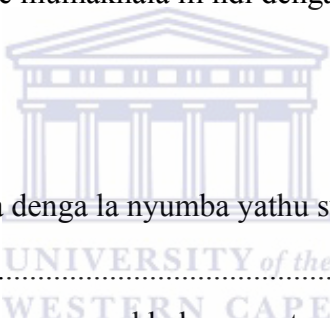
4. Kodi kunyumba komwe mumakhala muli ndi wailesi?

Eya Ayi

5. Kodi kunyumba komwe mumakhala muli ndi wailesi ya kanema/TV?

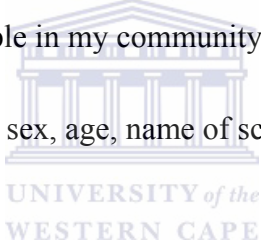
Eya Ayi

Nambala __/__/__/_/

6. Kodi kunyumba komwe mumakhala muli ndi ngolo?
Eya Ayi
7. Kodi kunyumba komwe mumakhala muli ndi galimoto?
Eya Ayi
8. Kodi kunyumba komwe mumakhala muli ndi ziweto?
Eya Ayi
9. Kodi amene amakupatsani chisamaliro chambiri pa moyo wanu watsiku ndi tsiku ali ndi telefoni ya m' manja?
Eya Ayi
10. Kodi nyumba yomwe mumakhala ili ndi denga lotani?
La udzu
La malata
Mtundu wa denga la nyumba yathu sunatchulidwe pa funksoli.
Utchuleni.....UNIVERSITY of the WESTERN CAPE
11. Kodi kunyumba komwe mumakhala mumatunga kuti madzi nthawi zambiri?
Kumpope
Ku chitsime chotetezedwa
Ku chitsime chosatetezedwa
Ku mjigo
Ku damu
Kumtsinje
Kumene timakatunga madzi nthawi zambiri sikunatchulidwe pa funksoli. Kutchuleni.....

APPENDIX 3: Data Measurement

Objective	Variables	Analysis
<p>To assess the level of knowledge of school children aged 10-14 years about TB in 4 primary schools in TA Makwangwala and TA Ganya in Ntcheu District in April 2012.</p>	<p>Knowledge on cause, spread and curability: Categorical variables (Is TB a communicable disease? Is TB caused by a germ? Is TB spread by droplets through cough and sneeze? Are effective drugs against TB available? For how long ant-TB drugs should be taken; Can TB cause death?).</p> <p>Knowledge of factors Influencing spread: Categorical variables (Contact with TB patient; overcrowding).</p> <p>Knowledge of preventive measures: Categorical variables (BCG vaccination; avoiding contact with TB patient; taking prophylactic drugs; isolation of TB patient; good ventilation).</p> <p>Knowledge of symptoms: Categorical variables (Cough with sputum >14 days; coughing out blood; low grade fever with night sweats; general weakness; loss of weight; loss of appetite; chest pain; shortness of breath; enlargement of neck glands).</p>	<p>Proportions</p>

<p>To describe perceptions of school children aged 10-14 years regarding TB in 4 primary schools in TA Makwangwala and TA Ganya in Ntcheu District in April 2012.</p>	<p>Categorical variables (What kind of people can get TB; how people in my community relate with people with TB, where people should go if they have TB)</p>	<p>Proportions</p>
<p>To determine socioeconomic factors associated with knowledge and perceptions of school children aged 10-14 years regarding TB in 4 primary schools in TA Makwangwala and TA Ganya in Ntcheu District in April 2012.</p>	<p>Outcomes: (i) Knowledge (Is TB a communicable disease? Is TB caused by a germ? Can TB cause death? Can TB be prevented by isolation of TB patient? Can TB be prevented by BCG vaccination?) (ii) Perceptions (What kind of people can get TB, how people in my community relate with people with TB).</p> <p>Exposure: Class, sex, age, name of school, guardian's occupation, religion.</p> 	<p>Odds ratio; Chi square</p>

APPENDIX 4: Consent Form (Chichewa)



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CHIKALATA CHA CHILOLEZO

**MAFUNSO OKHUDZA KUDZIWA NDI KUZINDIKIRA ZA CHIFUWA
CHACHIKULU (TB)**

Tikupanga kafukufuku wodziwa ndi kuzindikira za chifuwa chachikulu (TB) mu dera lino. Mukupemphedwa kutenga nawo mbali mwa kufuna kwanu kuti tidziwe kuti “ndi anthu angati omwe akudziwa za chifuwa chachikulu (TB) ngatinso akuzindikira zovuta zake zokhala ndi chifuwa chachikulu popanda kulandira chithandizo cha mankhwala.

Mafunsowa atenga pafupifupi mphindi makumi awiri (20). Dzina lanu silidzalembedwa pa chikalata cha mafunsochi, ndipo mayankho anu sadzadziwika.

Kutenga nawo mbali mukafukufukuyu ndi kodzipereka ndipo mutha kusintha maganizo ngakhale mutasayina kale chikalata cha chilolezochi.

Ngati mukufuna kutenga nawo mbali, chonde sayinani chikalata chachilolezochi.

Ngati mungakhale ndi mafunso okhudza kafukufukuyu, chonde funsani kwa Mr. Isaiah Dambe, National TB Program, Lilongwe, Malawi; kapena Dr Susan Kambale, World Health Organisation, P.O Box 30390, Lilongwe 3, telefoni 0888852638. Mukhozanso kufunsa kwa Dr Peter Nyasulu, School of Public Health, Witwatersrand University, South Africa.

Zikomo kwambiri chifukwa cha thandizo lanu

Saini ya wotenga mbali

Tsiku
