Knowledge, attitude and practice on tuberculosis in selected health facilities in rural and urban areas of Machakos district, Kenya

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other University.

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The Thesis has been submitted for examination with our approval as university supervisors.

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DEDICATION

I dedicate this Thesis to my daughter Sandra, who gave me the peace to work on this study even at her tender age.

To my husband Patrick Muoki, who at the most trying times of this world remained on my side, smiling, laughing and sometimes even crying with me.

To my mother, Regina Kimwele, who fought against the economic hurdles of this world to see her daughter attain the greatest gift of all, EDUCATION.

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ABBREVIATIONS AND ACRONYMS

ACSM   Advocacy, communication and social mobilization

AIDS   Acquired Immune Deficiency Syndrome

ARV   Anti-Retro Viral

DLTLD   Division of leprosy, Tuberculosis and lung disease

DOTS   Directly Observed Treatment Short Course

HIV   Human Immunodeficiency Virus

IEC   Information Education and Communication

KEMRI   Kenya Medical Research Institute

LTBI   Latent TB Infection

MDR-TB   Multidrug Resistant TB

NLTP   National Leprosy and Tuberculosis Program

NGOS   Non –governmental organizations

TB   Tuberculosis

XDR-TB   Extensively Drug Resistant TB

ABSTRACT

Tuberculosis is a major public health problem with a rapid increase in incidence and prevalence. Kenya continues to treat more and more TB patients each year. However, widespread co-infection with HIV (close to 48 percent of new TB patients) makes TB treatment difficult. While the number of new cases appears to be declining, the number of patients requiring re-treatment has increased.

The main objective of this study was to establish the level of knowledge, attitude and practice (KAP) on TB among outpatients in selected health facilities in rural and urban Machakos District Kenya, after a health intervention. A cross sectional study was conducted at out-patient clinics in selected health facilities in rural and urban Machakos. A questionnaire was used to gather information on knowledge, attitude and practice on Tuberculosis from the respondents and statistical significance at 0.05 level was used as a standard measure of significance. A total of 211 outpatients were interviewed, 84 in urban and 127 in rural health facilities. Chest pain, coughs and weight loss were reported as the common symptoms of TB. Most of the respondents (90.5%) indicated that TB transmission was airborne while 94.3% stated that TB was curable and that medicines for treating TB were available locally. Majority of the respondents (67.3%) indicated that the community had a negative attitude towards TB patients while 89.6% stated that HIV positive people should be concerned about TB. The majority of respondents (86.3%) normally went to government clinics or hospitals for treatment in the event of sickness. Majority of the respondents (45%) were young adults between 20-29 years. There was significant association between place of residence and overall score on TB knowledge/awareness (P= 0.012) where urban residents had a higher knowledge/awareness score compared to their rural

counterparts. For this study whoever scored 0-5 scores was considered to have poor knowledge, 6-10 had moderate knowledge and whoever scored above 10 had good knowledge. Similarly, relationship between knowledge on whether TB was infectious after a few weeks on treatment was statistically significant (p=0.005). The main question testing attitude was the perception of the respondents towards TB disease whereby the response was either positive or negative. Patients residing in urban residence were 2.24 times more likely to have knowledge on whether TB was infectious after a few weeks of treatment. However, there was no significant relationship between overall score on good practice and place of residence (P=0.061), although urban residents scored low compared to their rural counterparts. Scores on practice were awarded 1 for every variable listed whoever scored 3 and above was classified as having good practice. The study recommends more campaigns on Tuberculosis focusing more on rural areas where awareness levels were lower than the urban areas. The campaigns should also utilize Radio more than other media because of its effectiveness, there should be monitoring and evaluation of the campaigns in order to rate the level of success

CHAPTER ONE

1.0 INTRODUCTION

1.1   Background information

Worldwide, Tuberculosis (TB) is one of the most common infectious diseases. The World Health Organization (WHO, 2004) estimates that one-third of the world's population is currently infected with the TB bacillus. Some of the infected populations have a condition known as Latent TB infection (LTBI) .This is a situation where a person is infected with TB bacteria but is not feeling sick nor showing any symptoms. They are also asymptomatic and are non infectious. Such persons usually have a positive reaction to the Tuberculin skin test, (https://safe.umdnj.edu/-umd_apps/chs_images/glossary3.html).

In Kenya, the number of reported TB cases increased tenfold from 11, 625 in 1990 to 110,251 cases in 2008. The average annual increase over the past ten years is 10% for all forms of TB. Case notification rates (CNR) increased from 53/100,000 population for all forms of TB to 329/100,000 population in 2008 (DLTLD, 2008).

People co-infected with HIV and TB are at an especially high risk of death. According to the WHO,(2004) "HIV and TB form a lethal combination, each speeding the other's progress." Because HIV weakens the immune system, its victims are much more likely to develop active TB once infected with the TB bacillus. In Kenya, 15% of all adult AIDS deaths are due to TB, a figure that exceeds both African (11%) and global (9%) rates (WHO, 2004).

Strains of TB that are resistant to at least one drug have been documented in every country surveyed by the WHO. In 2004, WHO reported almost 500,000 cases of multi-drug resistant TB (MDR-TB), which is characterized by resistance to the two most powerful anti-TB drugs (Rimphazin and isonizad). MDR-TB requires a longer course of treatment with drugs that are more expensive and have more side effects. Recently, extensively drug resistant TB (XDR-TB) has been documented in 37 countries worldwide. Resistant to at least three of the six classes of available second-line drugs, XDR-TB's mortality rate may be as high as 50% (WHO, 2004).

The XDR-TB has received increased media scrutiny in the United States, fed in part by the detention and isolation of two XDR-TB patients, one by county health officials in Phoenix and the other by the CDC in Atlanta (Peter et al., 2007). Because MDR-TB is caused by inconsistent or partial treatment, patients' failure to complete medication regimens because they feel better, incorrect prescriptions, and unreliable drug supplies, the emergence of MDR-TB and XDR-TB indicates weaknesses in the global public health community's response to TB, thus the need for mass communication to inform the communities of the grave dangers due to tuberculosis.

Kenya is one of the 22 high burden countries in the world and notified 115,234 TB cases in 2006 (WHO, 2006). The country has made great strides in the fight against TB but the disease burden still remains high. In the 2007 WHO report, Kenya was ranked tenth among the twenty-two countries that collectively contribute about 80% of the world's TB cases. It is estimated that Kenya is only able to detect 50% of the prevailing TB cases (WHO, 2007). Efforts are thus being made to increase the case

detection rate by interventions aimed at increasing awareness in the communities so as to decrease the delay in health seeking. One of these interventions is to strengthen advocacy, communication and social mobilization activities (WHO, 2006).

1.2 Problem statement

Tuberculosis is a major killer disease particularly among HIV infected people with weakened immune systems. A quarter of a million TB deaths are HIV associated with most of them in Africa. The disease is a leading killer especially in Africa. If left unchecked within 20 years, it will kill a further 35 million people (WHO, 2005). Global TB incidence is still growing at 1% a year due to the rapid increase in Africa. Intense control efforts are helping incidence decline or stabilize in other regions. Two billion people, equal to a third of the world's total population, are infected with the TB bacilli. One in 10 people infected with the TB bacilli become sick with active TB. Each person with active TB infects 10 to 12 people every year (WHO, 2005).

The ten-fold increase in TB cases in Kenya is attributable to a combination of several factors including HIV infection, poverty, crowding and malnutrition among others .The case notification rate increased from 110 per 100,000 population in 1987 to 329 per 100,000 in 2006. This increase applies to all forms of TB, but the increase in smear-negative pulmonary TB (largely associated with HIV) is disproportionately large. In addition, most TB patients are between the ages of 15 and 35 years old—also the age group most affected by HIV.

According to an earlier study, the HIV epidemic explains about 41% of the 94.5% increase of registered TB patients in the period 1990-1994 and 20% of all registered TB patients in 1994 (NLTP, 2004). The HIV prevalence among TB patients was 52% in 2006 hence the need for an active advocacy, communication and social mobilization campaign to avert a catastrophe (NLTP, 2007).The upward trend in TB burden can also be attributed to knowledge gaps, cultural beliefs, or behavioral patterns that may facilitate understanding and action as well as pose problems or create barriers for TB control efforts.

To avert the threat of a devastating health catastrophe in Kenya, a robust advocacy, communication and social mobilization (ACSM) thrust has been ongoing from 2004 to empower individuals and communities to seek TB diagnosis and treatment early and improve treatment compliance. There has been no documented study about the effectiveness of these campaigns ever since the interventions were initiated. Machakos District is one of the leading Districts in which TB advocacies has been quite intensive for a long time.

1.3   Justification for the study

The data collected will enable programme managers to set TB programme priorities (e.g. to address the most common problems or to identify specific subgroups whose needs may differ from other groups), to estimate resources required for various activities, to select the most effective communication channels and messages, to establish baseline levels and measure change that results from interventions, and for

advocacy (e.g. to show the magnitude of a challenge, which in turn, may inform resource needs). The data will also provide national TB programme managers and their staff with the fundamental information needed to make strategic decisions and improve TB interventions.

1.4   Objectives

1.4.1   General objective

To determine the level of knowledge, attitude and practice (KAP) on TB among out patients in selected health facilities in rural and urban Machakos District Kenya, after a health education intervention.

1.4.2   Specific objectives

- To determine the knowledge about TB disease among outpatients in the selected health facilities in rural and urban Machakos District after the intervention of a health education programme.

- To assess the attitude (perception) on TB disease among outpatients in the selected health facilities in Rural and Urban areas of Machakos District after the intervention.

- To determine the practices towards TB disease among outpatients in the selected health facilities in rural and urban areas of Machakos District after the intervention.

CHAPTER TWO

2.0   LITERATURE REVIEW

2.1   Global TB burden

Tuberculosis is a worldwide pandemic though the highest rates per capita are in Africa (a quarter of all TB cases). Half of all new cases are in six Asian countries namely; Bangladesh, China, India, Indonesia, Pakistan and The Philippines (WHO, 2005). Six million people die every year due to HIV/Aids, TB and Malaria; of those nearly two million deaths are due to TB. The disease is curable but it kills 5000 people every day MDR-TB was present in virtually all 109 countries recently surveyed by WHO and partners in 2005 (WHO, 2005).

According to the 13th annual tuberculosis report of the World Health Organization published on World TB Day, March 24, 2009 — there were an estimated 9.27 million new cases of tuberculosis worldwide in 2007. Although this figure represents an increase from 9.24 million in 2006, the world population has also grown, making the number of cases per capita a more useful measure of the problem; this figure peaked in 2004 at 142 per 100,000 and fell to 139 per 100,000 in 2007. An estimated 1.32 million people who were not infected with the human immunodeficiency virus (HIV) died of tuberculosis in 2007, as did an estimated 456,000 people who were HIV-positive (WHO, 2009).

Some 22 high-burden countries collectively account for 80% of the global tuberculosis burden (WHO, 2009). In 2007, the countries with the highest prevalence were India (with 2.0 million cases), China (1.3 million), Indonesia (530,000), Nigeria

(460,000), and South Africa (460,000). Of the estimated 1.37 million cases in HIV-positive persons, 79% were in Africa and 11% in Southeast Asia. Disturbingly, there were an estimated 500,000 cases of multidrug-resistant (MDR) tuberculosis in 2007 (including 289,000 new cases). Of these, 131,000 were in India, 112,000 in China, 43,000 in Russia, 16,000 in South Africa, and 15,000 in Bangladesh; 55 countries had reported cases of extensively drug-resistant (XDR) tuberculosis by the end of 2008. These last figures are a reason for considerable concern and highlight a potential threat to the ability to treat tuberculosis, both in individual patients and in the context of a treatment program (WHO, 2009).

2.2   TB in Kenya

The Republic of Kenya covers an area of 582,646 sq. kms, bordering Somalia to the north east, the Indian Ocean to the east, Ethiopia and Sudan to the north, Uganda to the west, and Tanzania to the south. About 80% of its land is arid or semi-arid and sparsely populated. The Central Bureau of Statistics estimated the population for 2006 to be 35,041,832 based on 1999 census. Life expectancy has dropped from 56.8 years in 1992 to 51 years in 2004 due to the AIDS epidemic. In 2005, the HIV prevalence stood at 6.7%, while the number of TB cases notified in 2006 was 115, 234 (NLTP, 2007)

The TB/HIV co-infection rate stood at 52% in 2006. The DLTLD has committed itself to achieving WHO's international target of 70% case detection and 85% cure. Likewise the Kenya government abides by the Millennium Development Goal of halving and reversing the prevalence and mortality of TB by 2015. Additionally, poverty, malnutrition, and overcrowding still exist in Kenya's urban slums and

institutions such as prisons. These factors also contribute significantly to TB transmission and act in synergy with HIV to compound the situation. A large proportion of TB cases in Kenya occur among the slum dwellers, which has a case notification rate of 733 per 100,000 in Nairobi and 800 per 100,000 in Mombasa. In 2004, 20% of reported TB cases in the country were from Nairobi, where 70% of the city's 3 million people live in slums (NLTP, 2004).

An important predictor of utilization of Directly Observed Treatment Short Course (DOTS) services, or case detection, was the level of poverty. Variance in poverty explained almost 18% of the differences in case detection rates between districts and 63% of variance between provinces. Districts with higher levels of poverty in their rural areas had significantly lower case detection rates. Unexpectedly, a district with higher levels of poverty in the urban areas had significantly higher case detection rates. This may be explained by the small opportunity costs (e.g. transport, time away from work) faced by urban patients relative to their rural counterparts and the availability of free TB care in the public sector. Poverty was similarly important in explaining the variance in treatment success rates, with higher levels of poverty in both urban and rural areas having lower rates. Several districts have poverty incidence of at least 70% in rural areas and relatively low case detection and treatment success rates. The districts with high incidence of rural poverty and low case detection rates include Kilifi, Kuria, Kisii, Bondo, Homa Bay, and Rachuonyo (NLTP, 2006).

2.3   National TB policy

The Kenya National Leprosy and Tuberculosis Program (NLTP) was established in 1980. Under the Ministry of Health (MOH), NLTP is responsible for directing and

coordinating TB control activities. The central unit formulates TB control policy, guidelines, and strategies; identifies and mobilizes resources; coordinates the procurement and distribution of TB drugs and other commodities collects and collates TB-related data; and coordinates training and supervision at the provincial and district level (NLTP, 2006).

Tuberculosis is one of the priority areas in the National Health Sector Strategic Plans of 1999 to 2004 and 2005 to 2010. The institutional framework for TB control and treatment is part of the broader primary health care strategy of the Government of Kenya, falling under its program to control endemic diseases. Provincial and district TB and leprosy coordinators sit on respective provincial and district health management teams.

The delivery of DOTS is integrated into the general health services provided at health care delivery points. As at end of 2006, TB services were available in 1,801 public, NGO, and private health care facilities. The majority of these health care facilities were treatment centers (approximately 1 per 20,000 inhabitants), and smear microscopy services were available at around 777 centers (approximately 1 per 46,000 inhabitants). The remaining facilities send samples to the district level, (NLTP, 2006).

The DLTLD gets support from the government and other partners namely, Global Fund, Global Drug Facility, CIDA, USAID, WHO and the President's Emergency Plan for AIDS Relief (PEPFAR) and collaborates with John Snow, Inc., Family Health International, and the Centers for Disease Control and Prevention among

others. Kenya has been selected as one of the first tier countries to implement the Intensive Support and Action Countries initiative of the Stop TB Partnership. Tuberculosis control in Kenya is based on elements of WHO's DOTS strategy, developed in the 1980s and early 1990s, piloted in 1993 and implemented as a nation-wide strategy in 1997. The DOTS strategy has five key elements:

- Political commitment to sustain TB control over the long term by providing human, financial, and other resources.

- Case finding through a quality-assured network of laboratories for bacteriology.

- Standardized drug therapy using short course regimens with direct observation of treatment in at least the first two months of treatment.

- Uninterrupted supply of high-quality anti-TB drugs.

- Standardized case recording and reporting so that the treatment outcome of every patient is known and programs can be evaluated through cohort analysis.

The World Health Organization had established DOTS targets to detect 70% of the smear positive cases and to successfully treat 85% of these cases as at 2005. Kenya's case detection rate had remained between 45 and 50 percent as at 2007, while the treatment success rate had remained at slightly over 80% in the last five years as at 2007. The current reported death rate among TB patients is indicated as 5% but could be lower (WHO, 2007). The standard treatment for newly diagnosed smear-positive pulmonary TB patients is two months of a four-drug regimen (rifampicin, isoniazid,

pyrazinamide, and ethambutol) followed by six months of ethambutol and isoniazid only. The six months regimen is gradually being introduced in the country.

To address emerging challenges on TB control, DLTLD has launched several new approaches to increase access to DOTS and expand coverage. These efforts include: community based DOTS; a public-private mix for DOTS; collaboration between the HIV and TB control programs; development of a communication strategy designed to increase health seeking behavior and urban TB control (NLTP,2005).

2.4   TB/HIV collaborative activities

Human Immunodeficiency Virus is the most powerful factor known to increase the risk of TB in dually infected persons. The risk of developing active TB disease is 10 times greater for an individual infected with HIV compared to a person who is HIV-negative. In 1994, a survey of HIV seroprevalence in TB patients in Kenya revealed 40 % HIV seroprevalence in newly diagnosed TB patients. It is now estimated that 52% of TB patients in Kenya are infected with HIV (NLTP, 2006).

In addition to the biological correlation between TB and HIV, there are socioeconomic factors such as poverty, overcrowding, malnutrition and cultural factors that are associated particularly with the spread of HIV in Africa. The HIV program planners have regarded the TB DOTS program as a model that could be adapted not only for the delivery of HIV treatment but also as a model for program organization. There are high levels of stigma associated with HIV and TB especially with regard to screening, testing and treatment adherence.

There is clear evidence that the HIV epidemic is augmenting the TB epidemic in Kenya and thus TB and HIV/AIDS programs must collaborate in order to fight the two diseases.

The reliance of smear microscopy on DOTS strategy favors the smear positives. There is also a large proportion of the TB-infected population that is smear-negative or has extra-pulmonary TB, and diagnosis depends on either a chest x ray or the clinical acumen of the health worker. To increase case detection, the following recommendations for activities needed to control TB in Kenya have been outlined in the 2006-2010 strategic plans:

- Control of the HIV epidemic and prevention of new infections through the implementation of all of the accepted prevention interventions;

- Screening persons infected with HIV for TB—referral of newly diagnosed HIV-positive individuals for TB screening;

- Screening TB patients for HIV, and offering HIV-infected TB patients both cotrimoxazole (to prevent common opportunistic infections) as well as ARVs and

- Delivery of collaborative TB/HIV services.

The goal of the TB/HIV services is to reduce the burden of TB in people living with HIV/AIDS and HIV/AIDs in TB patients. To coordinate implementation, a National TB/HIV Steering Committee has been established and led the development of similar committees at the provincial and district level. A national plan has been developed to

harmonize TB/HIV collaborative efforts. This will contribute to more effective control of the disease (NLTP, 2004).

2.5   Health education and literacy

Health literacy has to do with how well people understand and are able to use health information to take action on their health. More than just the ability to read and write, health literacy includes the ability to listen, follow directions, fill out forms, calculate using basic math, and interact with professionals and health care settings. It can also include making sense of jargon or unfamiliar cultural norms. Health literacy requires people to apply critical thinking skills to health-related matters (Kurtner *et al.*; 2006).

Health literacy has been defined as "the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions" (Kurtner *et al*; 2006). A person's health literacy is influenced by a number of factors, including basic literacy skills, the communication skills of health professionals, and the situations one encounters in the health care system. These issues affect how a person finds a doctor, reads instructions for medicine, or takes other health-related action. Also, to take such action people often need a realistic understanding of health and disease. People with low health literacy skills often lack such knowledge (Kurtner *et al.*, 2006).

Health education is defined as the principle by which individuals and groups of people learn to behave in a manner conducive to the promotion, maintenance or restoration of health (Bindari and Smith ,1992). The ultimate aim of Health Education is Positive Behavioral Modification.

A comprehensive health education curriculum consists of planned learning experiences which will assist students to achieve desirable understandings, attitudes and practices related to critical health issues including, but not limited to, the following: emotional health and a positive self-image; appreciation, respect for, and care of the human body and its vital organs; physical fitness; health issues of alcohol, tobacco and drug use and abuse; health misconceptions ; effects of exercise on the body systems and on general well-being; nutrition and weight control; sexual relationships, the scientific, social and economic aspects of community; communicable and degenerative diseases including sexually transmitted diseases; disaster preparedness; choosing professional medical and health services; and choices of health careers (Bindari and Smith ,1992).

Health education is a learning process through which an individual adopts a behavior that is beneficial to health. It is important to mention that one of the obstacles against tuberculosis control is a behavioral problem. Lack of community awareness leads to delay in diagnosis and spreading of infection in healthy contacts. In addition, poor compliance to treatment has adverse effect on success rate as well as leading to the development of resistant strains of tuberculosis bacilli. Stigmatization of tuberculosis (TB) patients increases the fear from the disease. Also the importance of contact examination must be emphasized upon as this will help in increasing the case detection. Health education of the community is important so as to understand and play its dual role in tuberculosis control. From all of these it is obvious the strong

need to continue the health education efforts made by the National Tuberculosis Programme, (NTP) (Bindari and Smith, 1992).

2.6 Theoretical Framework on TB

2.6.1 Advocacy, communication and social mobilization (ACSM)

The ACSM activities are a means to an end, not an end in them. They address key barriers to accessing TB care and completing treatment, and thus support the achievement of national TB programme goals and objectives. Advocacy Communication and Social Mobilization is increasingly being acknowledged as an essential strategic component of TB control. There is an urgent need for ACSM planning as TB programme managers realize that the ambitious goals of the TB control community will not be met without prioritization of communication activities. The new *Global plan to stop TB 2006–2015* and the Stop TB Strategy launched by WHO in 2006 position ACSM as an important component of the TB Control programmes that must be promoted for wider use. Advocacy Communication Social Mobilization activities create greater social commitment and support behavioral change in order to ensure access to treatment and care for all, particularly poor, vulnerable and hard-to reach populations. For example, **advocacy** activities that contribute to TB control objectives might include educating religious leaders and political representatives, reforming legislation or policies, or influencing mass media through dissemination of media packages and training of journalists, with the goal of stimulating allocation of additional resources focused on TB control (WHO, 2006).

Communication activities might include disseminating accurate information and dispelling myths about TB, or educating and encouraging people with TB and their

family members to be more actively involved in care and to support community approaches to facilitating treatment completion (WHO, 2005).

Organizing **social mobilization** events and community participation can raise TB awareness, promote health-seeking behavior, inspire dialogue, and heighten community concern and action for TB control. Any ACSM strategy has to focus on individual and social change to meet four important TB control challenges:

✓ Mobilizing political commitment and resources for TB

✓ Improving case detection and treatment adherence

✓ Combating stigma

✓ Empowering people affected by TB and their communities.

This involves massive social mobilization campaign targeting the general population. Advocacy, communication and social mobilization are three distinct sets of activities, all of which have the shared goal of bringing about behavioral change. One of the major distinctions is their audiences: advocacy primarily works with public leaders or decision-makers; communication generally targets individuals or subpopulations in the public; and social mobilization aims to secure support from the broad public and specific communities. The lines between the three categories are often blurred, and interventions under one area may influence beneficially or facilitate processes in the other areas (WHO, 2006).

2.6.2 Advocacy, Communication and Social Mobilization (ACSM) for TB in Kenya

Several activities through the support of Global Fund for Advocacy have been ongoing since the year 2004. The Global Fund remains a substantial source of funding for TB control in Kenya; the funds have been instrumental in introduction of TB/HIV activities and community TB. The funds are also aimed at strengthening surveillance for MDRTB and initiating treatment of MDRTB.

The grant also has an advocacy, communication and social mobilization component that is expected to raise the awareness level on TB among the population through but not limited to mass media. A lot of information, education and counseling materials including guidelines and posters have been developed, printed and distributed using this support (NLTP, 2007).

Most of the funds from Global funds for TB on ASCM activities are with Non-Governmental Organizations (NGOS).The ACSM central unit (the center for TB control activities) roles remain coordination of implementation of activities and to ensure quality of services. The activity areas are; supportive supervision, training on ACSM, development, production and distribution of Information, Communication and Education (IEC)materials, preparation and conducting world TB day commemoration, development and airing of Radio and TV spots, participating in Nairobi international show, participating in civil servants celebration week and review and development of TB/HIV Advocacy strategy (NLTP,2007).

This also includes peer to peer education in workplaces, theatre dramas in schools, churches and communities, sensitization meetings for religious, civic and local leaders

and through mass media-advertisements on radio, television, print media and radio programs.

These activities were intended to increase the awareness on TB and its impact on the communities. It was expected to lead to improved health seeking behavior and hence increased tuberculosis case detection (NLTP, 2005).

CHAPTER THREE

3.0   MATERIALS AND METHODS

3.1   Study design

It was a comparative study designed to compare the level of knowledge, attitude and practice (KAP) on TB among out patients in selected health facilities in rural and urban Machakos District Kenya, after a health education intervention. The nationwide health education campaign was sponsored by Global fund through the National Leprosy and Tuberculosis programme. It commenced in 2004 and ran for four years. This study was done in 2010/2011, five years from the commencement of the campaign.

3.2   Study site

This study was conducted in health facilities in rural and urban Machakos. Machakos has four divisions namely; Kalama, Kathiani, Athi River and Central Machakos. In every division one health facility was selected for the study. Urban population was represented by Machakos Provincial Hospital. The other health facilities outside Machakos Central were considered rural in this study and were those in Kalama, Kathiani and Athi River divisions.

3.3   Study population

The study population were outpatients attending selected health facilities in Machakos District. Comparisons were made between outpatients attending Machakos Provincial Hospital which represented urban population and those attending rural health facilities within Machakos District. All health facilities outside Machakos Town were considered as rural. The inclusion criterion was:

✓ Adults 18 years old and above

✓ The respondent would have stayed in the locality for at least six months

✓ Able and willing to give written informed consent

The exclusion criterion was:

✓ All respondents refusing to consent

✓ Healthcare workers in the selected health facilities

✓ Very sick patients unable to communicate

3.4   Sample size estimation

The sample size was estimated using the formula (Feinstein, 2002):

$$n_i = \frac{\{Z_{1-\alpha/2} \ \sqrt{[2P(1-P)]} + Z_{1-\beta} \ \sqrt{[(P_1(1-P_1) + P_2(1-P_2)]}\}^2}{(P_1 - P_2)^2}$$

Where;

n= Sample size required for each rural and urban groups

n= 214

At 95% confidence, $Z_{1-\alpha/2} = 1.96$

At 80% power, $Z_{1-\beta} = 0.842$

P_1= Proportion of TB knowledge in Urban population

P_2= Proportion of TB Knowledge in Rural population

$P = \dfrac{P_1 + P_2}{2}$

It was assumed that 50% (P_1) of urban population had some knowledge on TB. It was also assumed that 30% (P_2) of rural populations had knowledge on TB.

The sample size (n) for urban and rural was 93 each and a minimum of at least 81 from either rural or urban,15% was added to either n as a margin of error to make a total of 107 in each population making the sample size 214 for urban and rural. n for rural was subdivided into three divisions representing outpatients in rural health facilities selected.

3.5   Sampling

To select the health facilities, purposive sampling was used where the health facilities with the highest number of outpatients was selected in each division,the data on these health facilities was sought from existing records. Central Machakos was selected to represent Machakos Provincial Hospital, Kalama Divison was represented by Muumandu Health Centre, Kathiani was represented by Kathiani District Hospital and Athi River Division was represented by Athi River Health Centre.

At each health facility outpatients in attendance were selected through systematic random sampling. Every nth outpatient was interviewed depending on the number of outpatients attending the selected health facilities. In each health facility, every third outpatient was interviewed until the required number was achieved.

3.6   Data collection

A questionnaire (Appendix 1) was developed, pre-tested and administered to respondents. It sought information about knowledge, attitude and practices on TB by the community members in the study area.

TB Knowledge and awareness was assessed using nine knowledge assessment variables namely:

✓ Transmission of TB.

✓ Signs and symptoms of TB.

✓ Duration of cough suspicious of TB.

✓ The importance of treatment to TB patients.

✓ Whether TB is curable.

✓ Whether TB medicine is free.

✓ Local availability of TB medicine.

✓ Where the medicines for TB treatment are sourced.

✓ How long TB treatment takes.

Knowledge score on each of the nine variables was generated. The maximum score was 14 since some questions had more than one answer. Those who scored 0-5 had poor knowledge, 6-10 had moderate knowledge and those with scores above 10 were considered to have good knowledge.

Attitude towards TB was assessed using five attitude assessment variables. The main question testing attitude was the perception of the respondents towards TB patients; the response was either positive or negative.

✓ Perception towards a person with TB

Other questions related to attitude were;

- ✓ Whether TB is infectious after few weeks of treatment.

- ✓ Whether HIV positive people should be concerned about TB.

- o Reasons for positive response.

- o Reasons for negative response.

The overall assessment of attitude was based on the response of the perception question. Attitude towards TB in urban and rural set up was categorized as either positive or negative.

Health seeking practices on treatment of TB was assessed using four variables namely:

- Where one went when sick or for treatment of a general health problem.

- How often one usually sought healthcare at a clinic or hospital.

- What one would do if one had symptoms of TB.

- If one had symptoms of TB, at what point one would go to the health facility.

Scores on good practice were computed by awarding 1 for every variable listed. Overall score on good practice was determined by aggregating the four variables. Whoever scored 3 and above was classified as having good practice and vice versa.

3.7   Data management and analysis

Data was cleaned and analyzed using Epi-Info version 3.3.2 software.

Descriptive analysis: All variables were subjected to descriptive data analysis. Descriptive statistics such as mean, standard deviation and range were used to summarize continuous variables while categorical variables were summarized using proportions.

Bivariate analysis: Relationship between the dependent variable (Place of residence) and all independent categorical variables (Knowledge, attitude and practice) was determined using Pearson's Chi-square test while the strength of association was assessed using the odds ratio (OR).

Multivariate analysis: Five factors related to place of residence at $P<0.05$ in bivariate analysis were considered for multivariate analysis. Binary Logistic regression was used to determine factors predictive of place of residence. Backward conditional method was specified, where three successive iteration were performed yielding the final model with three factors.

Analysis of overall TB knowledge and awareness was done based on knowledge scores calculated using the knowledge variables. The knowledge score ranged between 0 to 14.

Every respondent who scored 9 or more points out of a total of 14 was considered to be adequately knowledgeable as far as TB knowledge and awareness was concerned otherwise one was considered to have inadequate knowledge.

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Analysis of individual attitude towards TB was categorized as either positive or negative. The perception of a person with TB in the community was used as the reference question to assess attitude.

Scores on practice were computed by awarding 1 for every variable listed. Overall score on good practice was determined by aggregating the four variables. Whoever scored 3 and above was classified as having good practice and vice versa.

3.8   Ethical Consideration

Permission to conduct the study was sought from the KEMRI Ethical Review Committee. Participants were enrolled voluntarily and informed consent (Appendix 2) was obtained. All data was handled confidentially and no names were included in the report.

3.9   Study Assumptions

Conditions in the three rural health facilities were considered similar.

CHAPTER FOUR

4.0   RESULTS

4.1.   Demographic and economic profile of study subjects.

4.1.1   Distribution of respondents by Age and Sex

A total of 211 patients attending selected health facilities in rural and urban Machakos were interviewed. Among them 43.1% were males while 56.9% were females (Table 4.1). The patients mean age was 32.6 years ranging from 17 to 80 years. About half of the respondents (45.0%) were between 20 and 29 years, while about one quarter (23.2%) were between 30 to 39 years. Very few patients (4.3%) were aged 60 years and above.

Table 4.1: Age and sex distribution of patients attending selected health facilities in Machakos District

Characteristics	Number (n)	proportion%
Sex:		
Male	91	43.1
Female	120	56.9
Age (years):		
<20	13	6.2
20 - 29	95	45.0
30 - 39	49	23.2
40 - 49	26	12.3
50 - 59	19	9.0
60 and more	9	4.3

4.1.2 Occupation of respondents

A vast majority (88.2%) of the study patients had some form of occupation. About one quarter (28.0%) were formally employed, another 28.0% were business people, 28.4% were farmers while 3.8% had other unspecified forms of occupation. A small proportion (11.8%) of the patients was unemployed (**Table 4.2**).

Table 4.2   Occupation of respondents

Occupation;	N=211	%
Formal employment	59	28.0
Business	59	28.0
Farmer	60	28.4
Others	8	3.8
Unemployed	25	11.8

4.1.3 Residence

Analysis of residence of the study participants revealed that majority (60.2%) resided in rural homes, while 39.8% resided in urban homes (**Table 4.3**).

Among the 211 patients, 30.8% had stayed in their current residence since birth, while 69.2% had moved in from other places.

Duration of residence ranged between 0 to 80 years. Median duration of residence per study patient was approximately 10 years. Majority of the patients (56.4%) had stayed in their current residence for 0 to 10 years, 12.3% had stayed for 11 to 20 years, 13.3% for 21 to 30 years, while 19.0% had stayed for 30 and more years.

Table 4.3 Residence of respondents

Residence;	N=211	%
Rural	127	60.2
Urban	84	39.8
Duration of residence stay in years;	**N=211**	**%**
0 - 10	119	56.4
11 - 20	26	12.3
21 - 30	28	13.3
30 and more	38	18.0

4.2 Exposure to TB information

The respondents received news and advertisements through radio, television and print media. Out of these three media, the radio was the most common media and was accessed by 62.1% of the respondents **(Fig 4.1).**The most popular radio channel was Musyi FM radio being listened to by 30.8% of the participants. This was closely followed by Citizen Radio with 30.3% audience among the study participants, KISS FM was third with 19.4% audience, and KBC with 13.7% audience. The rest had less than 5.0% of the respondents as listeners. Sixty six participants (31.3%) received TB advertisement through TV, the most popular being KBC (11.4%), followed by NTV (8.5%), KTN (6.6%), and Citizen (5.7%). A very small proportion of study participants (5.2%) received TB advertisements through print media. The advertisements were found in books, newspapers, hospital and dispensary notice boards, magazines and posters.
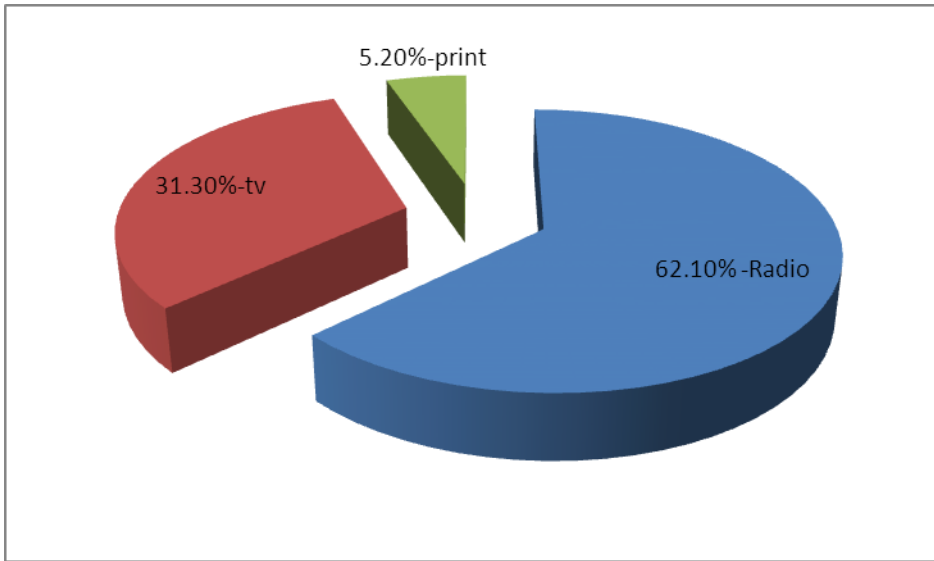
Figure 4.1 Exposure to TB information
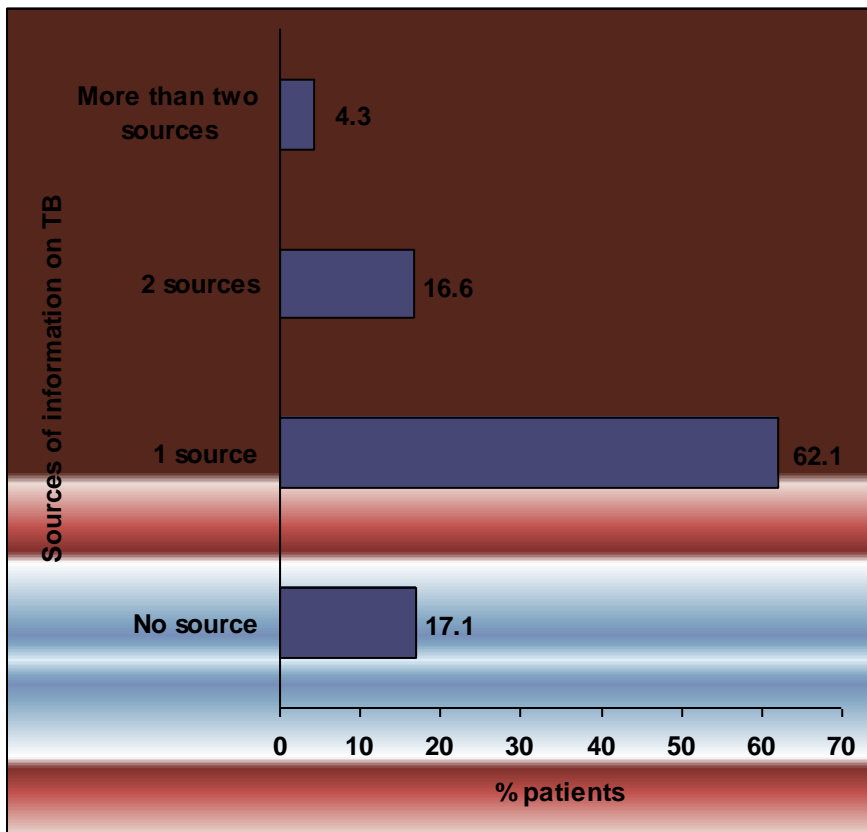
Figure 4.2: Sources of information on TB disease

4.3. Exposure to TB information in relation to residence.

Access to TB education was investigated to see how exposed patients accessed information about TB disease. Association between residence and advertisement on TB disease via radio was not statistically significant (P=0.361). The majority of patients (64.6%) who had a chance to listen to radio advertisement on TB resided in rural compared to 58.3% of those that resided in urban settlement. A person in rural settlement was 1.3 times more likely to listen to TB advertisement in radio compared to one residing in an urban settlement.

Association between residence and advertisement on TB disease via TV was statistically significant (P<0.001). About a fifth of patients who had a chance to watch TV advertisement on TB resided in rural compared to 50.0% of those that resided in urban settlement. A person residing in rural settlement was less likely (OR=0.23) to watch TB advertisements on TV compared to one residing in urban settlement.

TB advertisement on billboards was not significantly associated with place of residence (P=0.933). However, 8.7% of the patients who resided in rural area received TB advertisement via billboards compared to 8.3% of those who resided in urban settlement. There was equal likelihood of receiving billboard advertisement on TB in rural and urban settlements.

Print advertisements on TB was not significantly related to place of residence (P=0.119). An assessment revealed that 3.1% of the patients residing in rural settlement had a chance to come across an advertisement on TB in print media compared to 8.3% of those residing in urban. This implies that a patient residing in

rural settlement was less likely (OR=0.36) to come across print media advertisement compared to one residing in urban settlement.

Similarly, other unspecified forms of advertisement were not significantly associated with place of residence (P=1.000).

Table 4.4: Relationship between residence and exposure to TB educational activities

| Variable | Rural (127) | | Urban (84) | | | 95% C.I of OR | | |
	n	%	n	%	OR	Lower	Upper	P value
Radio								
Yes	82	64.6	49	58.3	1.30	0.71	2.38	0.361
No	45	35.4	35	41.7	1.00			
TV								
Yes	24	18.9	42	50.0	0.23	0.12	0.45	<0.001
No	103	81.1	42	50.0	1.00			
Print								
Yes	4	3.1	7	8.3	0.36	0.08	1.42	0.119
No	123	96.9	77	91.7	1.00			
Billboard								
Yes	11	8.7	7	8.3	1.04	0.35	3.14	0.933
No	116	91.3	77	91.7	1.00			
others								
Yes	2	1.6	1	1.2	1.33	0.09	37.61	1.000
No	125	98.4	83	98.8	1.00			

4.4   Residence and overall exposure to TB advertisement

Considering all forms of advertisement together, there was a significant association between residence and accessibility to media advertisement on TB. About one fifth of the patients who resided in a rural settlement did not have access to media advertisement on TB compared to 10.7% of those that resided in urban settlement. About 63.0% of those in rural had access to one source compared to 60.7% of those in urban. Only 13.4% of those in rural residence had access to two sources compared to 21.4% of those in urban residence. A small proportion (2.4%) of those in rural residence had access to more than two sources compared to 7.1% of those in urban residence. (**Table 4.5**).

Table 4.5: Relationship between residence and overall exposure to media advertisement on TB

Sources of information on TB disease	Rural (127)		Urban (84)			95% C.I of OR		
	n	%	n	%	OR	Lower	Upper	P value
No source	27	21.3	9	10.7	6.60	1.01	39.49	0.043
1 source	80	63.0	51	60.7	3.14	0.66	16.69	0.159
2 sources	17	13.4	18	21.4	1.89	0.33	11.56	0.477
More than two sources	3	2.4	6	7.1	1			

4.5   Knowledge and awareness of TB among the respondents

Majority of the patients (92.9%) knew at least one mode of TB transmission with the most frequent response being airborne. When asked to identify the signs and symptoms of TB, the three most frequently identified were; coughing (89.6%), chest pain (67.3%) and weight loss (38.9%). Other symptoms mentioned were night sweats (22.7%) and productive cough (17.1%). Majority of the patients (73.9%) were able to identify multiple signs and symptoms while 26.1% were able to identify only one symptom (**Figure 4.3**).
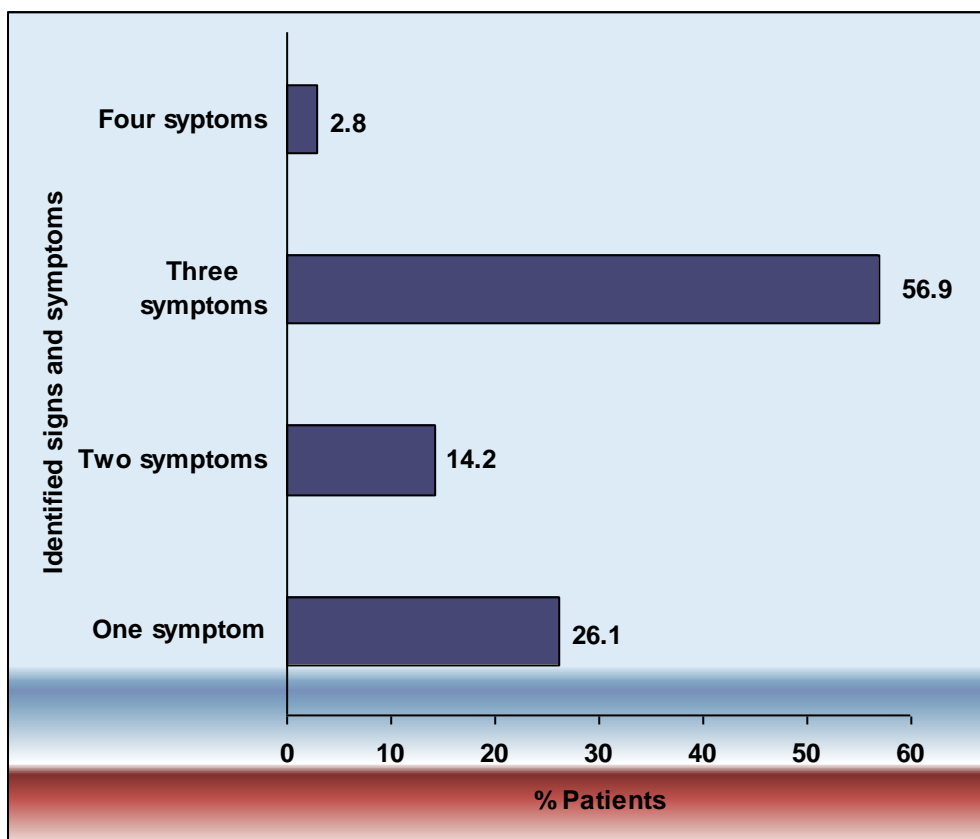
Figure 4.3: Frequency of identified signs and symptoms of TB

4.6. TB knowledge and awareness summary

Slightly over 50% of the patients were aware of the duration of cough suspicious of TB. On assessing the reason why it is important for people with TB to be treated, a high proportion (75.8%) felt that it helps to prevent / stop TB transmission, 45.5% said it helps infected people to get cured, while 21.8% felt that it prevents death. Eight of them (3.8%) could not identify a particular reason.

It was encouraging to find out that 94.3% of the patients were aware that TB is curable. When asked whether TB medicines are free, 90% of them correctly said yes. Majority of the patients (88.2%) were aware that medicines for treating TB are locally available. When asked where the medicines on TB treatment is available, 48.3% said in district hospitals, 24.6% said local dispensary while 15.3% said local health centers. Twenty five of the patients (11.8%) were not aware that medicines for treating TB are locally available.

Table 4.6. TB knowledge and awareness summary results

Variables	N=211	%	Variables	N=211	%
1) TB transmission			5) curability of TB		
Correct;			Yes	199	94.3
Airborne	191	90.5	No	12	5.7
Droplet	5	2.4	6) whether TB medicine are free		
Incorrect	15	7.1	Yes	190	90.0
2) Signs and symptoms of TB			No	21	10.0
Chest pains	142	67.3	7) whether medicines for treating TB are locally available		
Cough	189	89.6	Available	186	88.2
Weight loss	82	38.9	Not available	25	11.8
Night sweats	48	22.7	8) Where the medicines on TB treatment are sourced		
Productive cough	36	17.1	Local dispensary	52	24.6
Heavy bleeding	1	0.5	Local health center	32	15.3
Others	1	0.5	District hospital	102	48.3
3) Duration of cough suspicious of TB			Not applicable	25	11.8
Correct (3 - 4 weeks)	115	54.5	9) How long TB treatment takes		
Incorrect	96	45.5	Correct (6 months)	69	32.7
4) Importance of treatment to people with TB			Incorrect	142	67.3
To get cured	96	45.5	Overall TB knowledge and awareness		
To prevent/stop TB transmission	160	75.8			
To prevent death	45	21.3	Poor (0-5)	12	5.7
			Moderate (6-10)	142	67.3
Don't know	8	3.8	Good (>10)	57	27.0

4.7.   TB knowledge and awareness in relation to residence.

Relationship between knowledge on mode of TB transmission and place of residence was not statistically significant (P=0.541), though a higher proportion of the respondents that correctly identified modes of TB transmission (93.7%) resided in rural areas compared to 91.7% of those residing in urban area.

Generally, knowledge on signs and symptoms of TB was significantly associated with place of residence (P<0.001). Majority of those who identified more signs and symptoms resided in urban area compared to those residing in rural area. When identification of only one symptom was considered as the reference category, the odds of identifying correct signs and symptoms associated with TB for urban residents compared to rural residents increased gradually from 1 for one symptom, to 1.93 for two symptoms (P=0.214), to 4.5 for three symptoms (P<0.001), to the highest 22.5 for four symptoms (P=0.003).

There was no significant relationship between knowledge on duration of cough suspicious of TB and place of residence (P=0.102). However, a higher proportion of those in rural area (59.1%) correctly identified duration of cough suspicious of TB compared to 47.6% of those in urban area.

The association between knowledge on reasons for TB treatment and place of residence was statistically significant (P=0.030). A significantly higher proportion of those who resided in urban areas knew three reasons for TB treatment than those who resided in the rural areas.

On the issue of curability of TB disease, there was an association between knowledge on curability of TB and place of residence (P=0.025). However, majority of the

respondents (38.6%) that correctly indicated that TB is curable resided in rural area compared to 23.8% of those residing in rural areas.

There was significant association between knowledge on cost of TB medicine and place of residence (P=0.003). Majority of those in urban area (97.6%) correctly indicated that TB treatment was free compared to 85.0% of those in rural area.

Relationship between knowledge on local availability of TB treatment and place of residence was not statistically significant (P=0.395), though majority of the patients (90.5%) that correctly indicated that TB treatment is locally available resided in urban settlement compared to 86.6% of those residing in rural settlement.

Similarly, relationship between knowledge on source of availability of medicines on TB treatment and place of residence was not statistically significant (P=0.395), despite a higher proportion of the respondents (90.5%) that correctly indicated the source of availability of medicines on TB treatment residing in urban settlement compared to 86.6% of those residing in rural settlement.

In general, overall TB knowledge / awareness scores was significantly associated with place of residence (P=0.002). Considering a score of 0 – 5 referring to poor knowledge to be the reference category, patients from urban residence were 2.63 times more likely to score 6 -10 which referred to moderate knowledge compared to those from rural settlement (P=0.339). The likelihood increased to 6.88 times for a score of 11 – 15 which was considered as good knowledge. (P=0.010) (**Table 4.7**).

Table 4.7: Relationship between TB knowledge / awareness and place of residence

	Urban (n=84)		Rural (n=127)			95% C.I of OR		
Variable	n	%	n	%	OR			P value
Mode of TB transmission								
Correct	77	91.7	119	93.7	0.74	0.26	2.12	0.574
incorrect	7	8.3	8	6.3	1.00			
Number of signs and symptoms of TB reported								
4 symptoms	**5**	**6.0**	**1**	**0.8**	**22.50**	**2.10**	**570.73**	**0.003**
3 symptoms	**60**	**71.4**	**60**	**47.2**	**4.50**	**1.96**	**10.53**	**<0.001**
2 symptoms	9	10.7	21	16.5	1.93	0.61	6.15	0.214
1 symptom	10	11.9	45	35.4	1.00			
Duration of cough suspicious of TB								
Correct	40	47.6	75	59.1	0.63	0.36	1.10	0.102
incorrect	44	52.4	52	40.9	1.00			
Reasons for TB treatment								
3 Reasons	**21**	**25.0**	**14**	**11.0**	**2.88**	**1.26**	**6.60**	**0.005**
2 Reasons	13	15.5	15	11.8	1.66	0.68	4.06	0.224
1 Reason	48	57.1	92	72.4	1.00			
Don't know	2	2.4	6	4.7	0.64	0.09	3.70	0.717
TB curability								
Correct	**20**	**23.8**	**49**	**38.6**	**0.50**	**0.27**	**0.92**	**0.025**
Not curable	3	3.6	9	7.1	1.00			
Cost of TB medicine								
Free	**82**	**97.6**	**108**	**85.0**	**7.21**	**1.63**	**31.85**	**0.003**
Not free	2	2.4	19	15.0	1.00			
Local availability of TB treatment								
Available	76	90.5	110	86.6	1.47	0.60	3.57	0.395
Not available	8	9.5	17	13.4	1.00			
Source of availability of medicines on TB treatment								
Correct	76	90.5	110	86.6	1.47	0.60	3.57	0.395
incorrect	8	9.5	17	13.4	1.00			
Duration of TB treatment								
Incorrect	64	76.2	78	61.4	1.00			
Overall TB Knowledge / awareness scores								
Good (11 – 15)	**33**	**39.3**	**24**	**18.9**	**6.88**	**1.23**	**50.29**	**0.010**
Moderate (6 – 10)	49	58.3	93	73.2	2.63	0.51	18.17	0.339
Poor (0 - 5)	2	2.4	10	7.9	1.00			

Figure 4.9: Overall TB knowledge / awareness scores by place of residence

Overall TB knowledge and awareness levels among the study participants was significantly different between residence (P=0.025). A higher proportion, 76.2% of the patients in urban settlement had adequate knowledge compared to 61.4% of those residing in rural settlements.
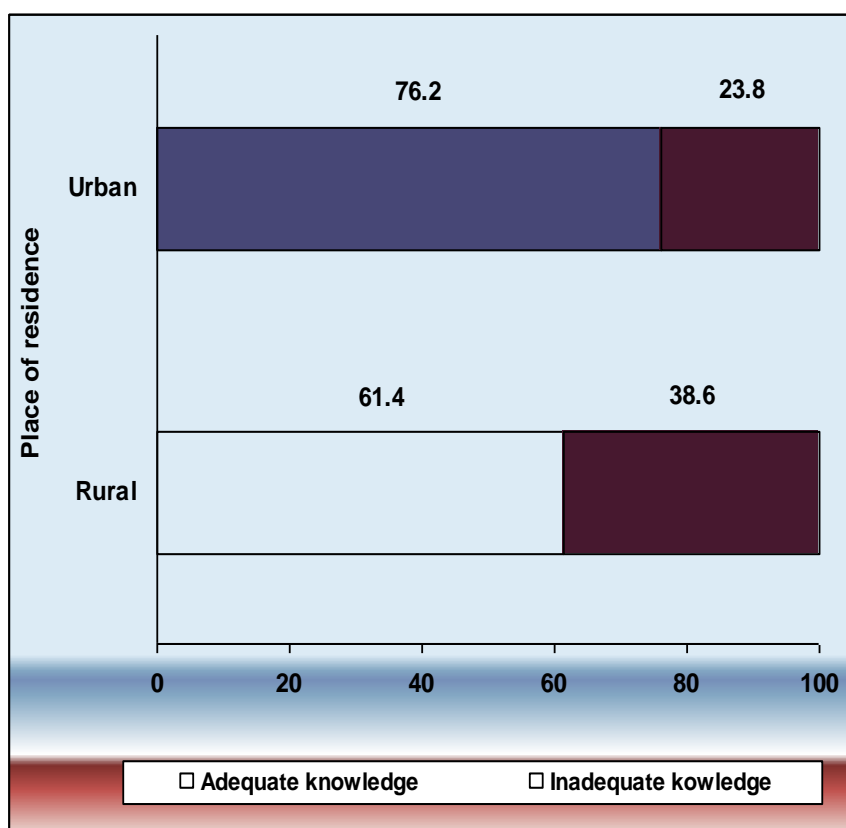
Fig.4.4   Overall TB knowledge and awareness

4.8.   Attitude towards TB patients among the respondents

Majority of the patients (78.2%) did not know that TB is not infectious after a few weeks of treatment. When asked about perceptions towards TB patients, 67.3% indicated that they had a negative perception while 28.9% indicated that they had a positive attitude. Eight patients (3.8%) were not sure about their attitude.

Most of the patients (89.6%) indicated that HIV positive people should be concerned about TB. Among them, 85.3% felt that a person with HIV is more likely to develop

TB. Among those who indicated that HIV positive people should not be concerned about TB, 2.4% felt that a person with HIV is not more likely to develop TB than an HIV negative person.

Table 4.8: Attitude towards TB patient's summary results

Attitude assessment variables		
Perception towards a person who has TB.(n=211)		
Negative	142	67.3
Positive	61	28.9
Not sure	8	3.8
Whether TB is infectious after a few weeks of treatment. (n=211)		
Yes	165	78.2
No	46	21.8
Whether HIV positive people should be concerned about TB.(n=211)		
Yes	189	89.6
No	22	10.4
If yes, give reasons as to why		
Whether a person with HIV is more likely to develop		
TB (n=189)	180	85.3
Don't know	9	4.2
If no, give reasons as to why		
Person with HIV is not more likely to develop		
TB(n=22)	5	2.4
Don't know	17	8.1

Overall, taking into account that perception was the main question relating to attitude, then the majority (two thirds) of the respondents had a negative attitude towards TB patients.

4.9. Attitude towards TB in relation to residence.

Relationship between those who thought that TB is still infectious after a few weeks of treatment and place of residence was statistically significant (P=0.005). Majority of the respondents who indicated that TB is still infectious after treatment (88.1%) resided in urban areas compared to 71.7% of those residing in rural area. Patients leaving in urban settlements were 2.93 times more likely to report that TB is still infectious compared to those residing in rural settlement.

By using the community perception towards a person who has TB to be the reference category, there was no significant association between negative community attitude and place of residence (P=0.821). However, majority of the patients from urban residence indicated that their community had a negative attitude towards TB patients (70.2%) compared to 65.4% of those from rural settlement. The same was true for communities with positive attitude towards TB patients. (P=0.937). However, majority of the patients from rural residence indicated that their community had a positive attitude towards TB patients (30.7%) compared to 26.2% of those from urban settlement.

Opinion on whether HIV positive people should be concerned about TB was not significantly associated with place of residence (P=0.084). However, majority of the patients (94.0%) from urban residence indicated that a person with HIV is more likely to develop TB compared to 86.6% of those from rural settlement. A patient residing in

the urban area is 2.44 times more likely to think that a HIV positive person should be concerned about TB compared to one from the rural residence.

Table 4.9: Relationship between patient's attitude towards TB and place of residence

Variable	Urban (84)		Rural (127)		95% C.I of OR			P value
	n	%	n	%	OR			
Whether TB is infectious after a few weeks of treatment								
Yes	74	88.1	91	71.7	2.93	1.29	6.78	0.005
No	10	11.9	36	28.3	1.00			
Perception towards TB patients								
Negative	59	70.2	83	65.4	1.18	0.23	6.55	0.821
Positive	22	26.2	39	30.7	0.94	0.17	5.58	0.937
Not sure	3	3.6	5	3.9	1.00			
Opinion on whether HIV positive people should be concerned about TB								
Yes	79	94.0	110	86.6	2.44	0.80	7.93	0.084
No	5	6.0	17	13.4	1.00			

4.10. Health seeking practices on treatment of TB

When asked where they normally go for treatment in the event of sickness, majority of the patients (86.3%) indicated that they normally go to government clinic or hospital (Table 4.8).

The frequency of seeking healthcare at a clinic or hospital varied as follows; 10.4% said they do whenever they feel sick, 51.7% visit the facility twice a year or more

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while 16.6% normally visit the facility once per year. About a third of the patients indicated that they visit the facility at an interval of more than a year.

An assessment of what the patients would do if they realized they had symptoms of TB varied significantly. Most of the patients (94.8%) said that they would go to a health facility while the rest (5.2%) would opt for other incorrect options.

In case patient experience symptoms of TB, 59.2% of them said that they would go to a health facility as soon as they realize that the symptoms might be related to TB while 30.8% said they would do the same when symptoms that look like TB signs last for 3 to 4 weeks. The rest (10%) indicated that they would first opt for other options before visiting the health facility.

Table 4.10: Health seeking practices on treatment of TB summary results

Health seeking practices	N=211	%
Plan for treatment of a general health problem		
Government Clinic or Hospital	182	86.3
Private Clinic	22	10.4
NGO clinic	2	0.9
Traditional healer	4	1.9
Pray	1	0.5
Frequency of seeking healthcare		
Twice a year or more	109	51.7
	35	16.6
Once per year		
Less than once a year but at least 5 years	17	8.1
Once in past 5 years	6	2.8
When sick	22	10.4
Others	22	10.5
What would be done if symptoms of TB were present		
Go to a Health Facility	200	94.8
Go to a Pharmacy	4	1.9
Pursue other self-treatment options	2	0.9
Go to a traditional healer	4	1.9
Commit suicide	1	0.5
When to visit a health facility once TB symptoms set in		
As soon as one realizes that one's symptoms might be related to TB	125	59.2
When symptoms that look like TB signs last for 3 to 4 weeks	65	30.8
When own treatment does not work	19	9.0
one would not go to the doctor	2	0.9

4.11   Scores on good practice

Scores on good practice was computed by awarding 1 for every variable listed in Table 4.8. Overall score on good practice was determined by aggregating the four variables. Distribution of the overall scores is shown in **Figure 4.6**. About 62% of the patients scored less than 3 scores, this indicated poor practice, 38% scored 3 points and above this indicated good practice.
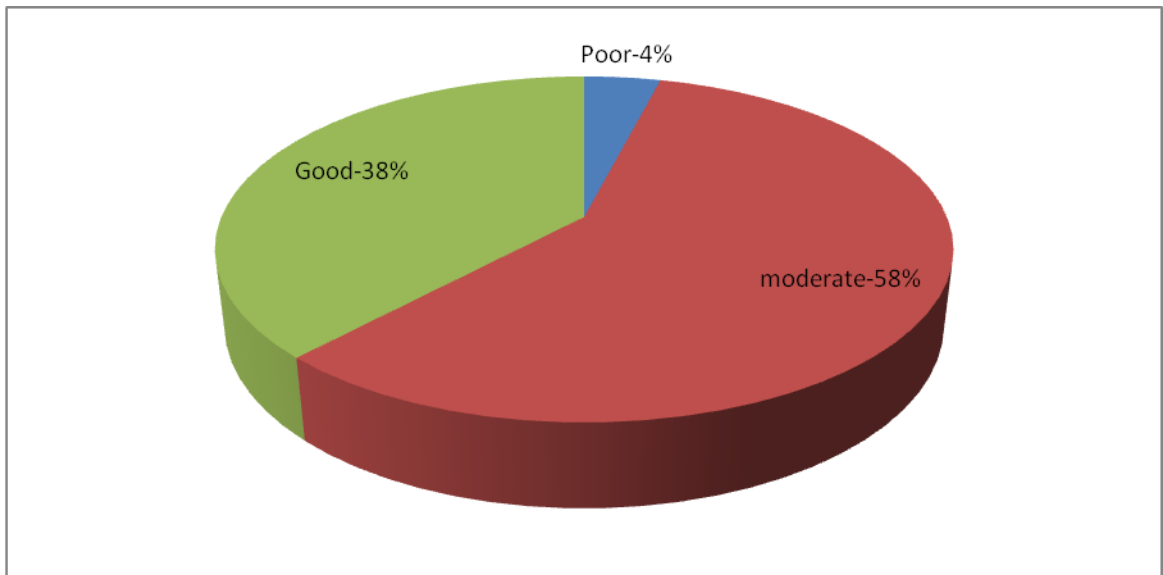
Figure 4.5: Overall score on good practice.

From Figure 4.6, good practice was considered as 3 to 4 scores.

In general, analysis of scores on good practice was based on the four practice variables. Whoever scores 3 and above was classified as having good practice. 38% had good practice. However there was no significant association between practice and place of residence (P=0.236). Majority of patients who scored more than 3 points came from the rural residence (40.9) compared to 29.8% from urban residence (**Figure 4.6**).

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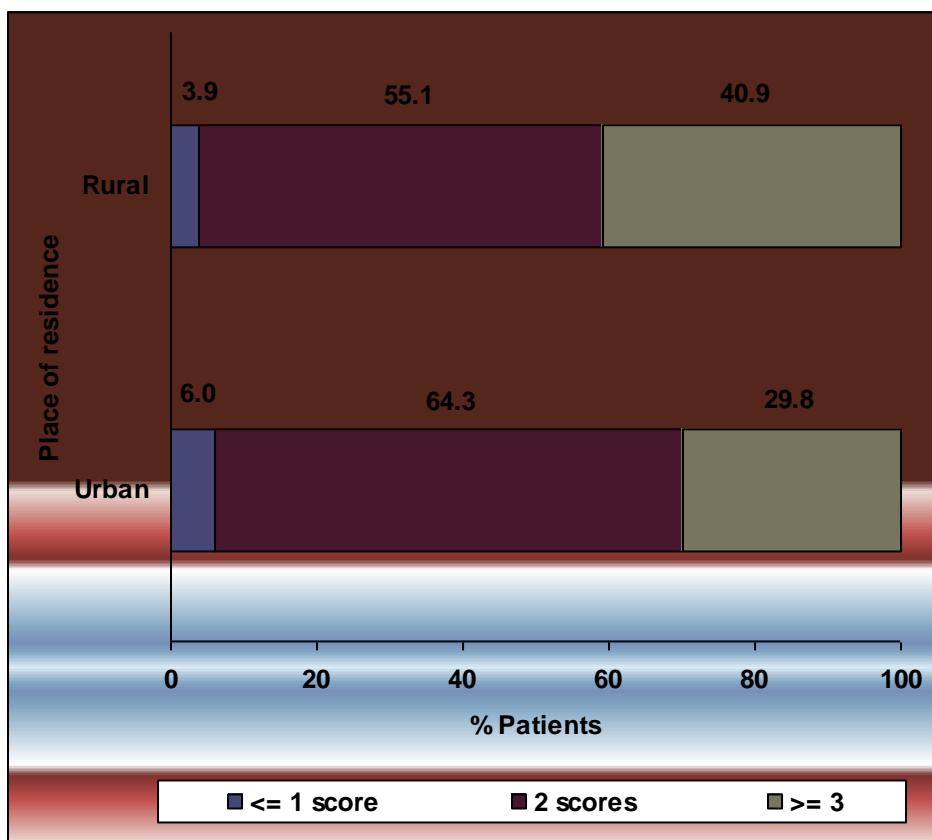
Figure 4.6: Overall scores on good practice by place of residence

Figure interpretation

1 score   2 score
Rural- 55.1%   Rural- 3.9%
Urban - 6.0%   Urban- 64.3%

3 scores
Rural- 40.9%
Urban- 29.8%

4.12. Multivariate analysis

Binary logistic regression was used to model place of residence (0=Rural, 1= Urban) using five candidate predictor variables, namely;

- No of sources of information on TB disease (0= No source, 1= 1 source, 2= sources, 3= More than 2 sources)

- Overall score on TB knowledge/awareness (1= 0 – 5 scores, 2= 6 – 10 scores, 3= 11 – 15 scores)

- Whether TB is infectious after a few weeks of treatment (0= Don't know, 1= Knows)

- Attitude on whether HIV positive people should be concerned about TB (0= No, 1= Yes)

- Overall score on good practice (1= ≤ 1, 2= 2 scores, 3= ≥ 3 scores)

The resulting outcome model is shown in **Table 4.11**. Three factors predicting place of residence were identified.

Table 4.11: Logistic Regression predicting place of residence using Overall TB knowledge/awareness score, whether TB is infectious after a few weeks of treatment, and Overall score on good practice.

Predictor variables	β	S.E. (β)	df	OR	95.0% C.I for OR Lower	Upper	P value
Overall score on TB knowledge/awareness[1]			2				0.012*
Moderate (6 – 10 scores)	1.45	1.01	1	4.27	0.59	30.68	0.150
Good(11 – 15 scores)	2.30	1.05	1	9.95	1.28	77.25	0.028*
(Attitude)Whether TB is infectious after a few weeks of treatment Knowledge [2]							
infectious	0.80	0.41	1	2.24	0.99	5.03	0.050*
Overall score on good practice score[3]			2				0.061
Moderate(2 scores)	-1.07	0.88	1	0.34	0.06	1.94	0.227
Good(3-4 scores)	-1.66	0.90	1	0.19	0.03	1.12	0.066

[1] - Reference category used, **'0 – 5 scores'**

[2] - Reference category used, **'Don't Know'**

[3] - Reference category used, **'≤ 1 score'**

*Significant at 0.05 level.

Table 4.11 shows beta coefficient (β), standard error of beta (S.E. (β)), adjusted odds ratio and P value for each of the factors associated with place of residence.

Adjusting for other factors, overall score on TB knowledge/awareness and whether TB was infectious after a few weeks of treatment, associated significantly with place of residence.

In general, there was significant association between place of residence and overall score on TB knowledge/awareness (P= 0.012). Using $0-5$ scores to be the reference category, a patient residing in urban settlement was 4.5 times more likely to have moderate knowledge($6-10$ scores) compared to one residing in rural settlement. Similarly, using $0-5$ scores to be the reference category, a patient residing in urban settlement was 9.95 times more likely to have good knowledge ($11-15$ scores) compared to one residing in rural settlement. Urban residents were more knowledgeable about TB than their rural counterparts.

Similarly, relationship between knowledge on people who have/had TB and place of residence was statistically significant (OR= 2.24 ($1.00-5.03$), P=0.050). A patient residing in an urban settlement was 2.24 times more likely to have knowledge on whether TB is curable after a few weeks of treatment compared to one residing in a rural settlement. This implies that the urban residents knew more on whether TB was infectious after a few weeks on treatment compared to their rural counterparts.

There was no significant relationship between overall score on good practice and place of residence (P=0.061). However, when the score of < 1 score is considered to be the reference category, patients from urban settlement had poorer health seeking practice in relation to TB than their rural counterparts.

CHAPTER FIVE

5.0   DISCUSSION

5.1   Demographic characteristics of the respondents

Among the 211 respondents interviewed, 74.4% were below 40 years. Only about one tenth (13.3%) of the patients were aged over 50 years. Though the respondents were spread across the adult age, the majority of the patients were relatively young adults. Tuberculosis is among the three greatest causes of death of women aged 15-44 years, this will rob the world's poorest countries an estimated $1 to $3 trillion. In some countries loss of productivity attributable to TB approaches 7% of GDP (Gross Domestic Product), (TB Alliance, 2011).

There was a higher proportion of females than males among the patients indicating that females appear to have a better health seeking practice than males. According to a study done in Norway, sex inequalities can lead to poorer access to health care and delays to diagnosis of tuberculosis in women (Thorson and Long, 2009). In a population-based survey, health-seeking behavior was assessed in adults with long-term cough. The prevalence of cough was 1% and 2% in men and women, respectively. Women took more health-care actions than men, but chose less qualified providers and reported lower health expenditure per visit. Delay before seeking hospital treatment was longer for women (41 days) than men (19 days; $p=0\cdot04$), and more men (27; 36%) than women (14; 14%; $p=0\cdot0006$) reported giving a sputum sample at hospital. Sex-sensitive strategies for tuberculosis control were needed and should take into account sex differences in health-care seeking behavior as well as a possible sex bias among health-care providers (Thorson and Long, 2009).

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In a study done in Pakistan on health seeking practices in women, among the general population, only 16.0% (men 17.1% vs. women 15.0%) knew the prolonged cough with the duration of 3 weeks or longer was a symptom for suspicious TB. Fewer women than men knew the local appointed health facility for TB diagnosis and treatment as well as the current free TB service policy. Moreover, women were less likely to learn information about TB and share it with others on their own initiatives. On the contrary, after the onset of the prolonged cough, women (79.2%) were more likely to seek health-care than men (58.6%) did. However, a large part of women preferred to visit the lower level non-hospital health facilities at first such as village clinics and drugstores (Wang *et al.,* 2008).

Majority of the study participants in the current study had a short stay in the locality of ten years and less. Most of the respondents (88%) had a form of occupation and this translated to economic empowerment and the ability to seek health care services in the event of infirmities. This aspect is recognized by the first Millennium Development Goals of eradicating extreme poverty and hunger by halving between 1990 and 2015 the proportion of people whose income is less than a dollar a day (MDGs, 2003). The high proportion of those employed differs with a study done in Pakistan where it was observed that most of those who were sick were the poor and the unemployed (Beaubien, 2010).

5.2   Knowledge about TB among the respondents

The main mode of transmission of TB information was by radio. There were also billboards strategically located to inform the residents of TB. Posters were also found in the health facilities. The most popular radio channel was *Musyi FM*. This channel

transmits in the local language (Kikamba) and was more effective because it reached the poor and illiterate masses. This is similar to a study done in India where radio shows proved to be very effective in reaching out to the masses where awareness campaigns were initiated by the World Diabetes Foundation in collaboration with the largest media house in India (World Diabetes Foundation, 2008).The awareness campaign initiated in February 2008 proved to be vital in reaching out to the semi-urban and rural areas in 14 Indian states (World Diabetes Foundation, 2008). A similar case scenario was applied in this study in that the Machakos social mobilization campaign was conducted by the Global Fund and was also done in the other parts of Kenya. Comparing this study with the Indian survey, results in Machakos seemed to be impressive, after assessing the level of knowledge using the parameters in the study. A study done in Kenya after the 2008 elections found community and religious radio stations as tools of communication and a force to reckon with as they form a very vibrant way of instant communication with their target audience being in direct touch with the common mwananchi (Njoki, 2011).

Unlike newspapers and television that are not common in the village setting, the radio is available in almost every household. Indeed household members in the larger part of rural Kenya listen to the radio together as friends, neighbours or villagers which make it a unifying factor. Even the uneducated, semi-literate and the old people in rural areas are comfortable listening to the radio because the content being aired touches their lives and that of their communities (Njoki, 2011).

With billboard campaigns, the best way to keep the message fresh in the eyes of consumers is to move the physical location of that message at regular intervals. It is

also imperative to change the displayed message at regular intervals. Even on television, companies tend to change their commercials every few months to keep their message fresh in the minds of consumers (Gadri, 2009).

Different TB educational activities had different kind of reception in both rural and urban set-ups. For example, TV was more common in urban than rural set ups. Urban population socio-economic status was higher than that of their rural counterparts hence their access to Television. The level of development also mattered as urban centers have access to electricity. Rural electrification has not been effective enough in these parts of Machakos making it harder to access Television. It was also noted that majority of the respondents had a good knowledge on duration of cough suspicious of TB. This was an indication that there was likely to be no delay in seeking treatment in the event of prolonged coughing. To minimize non-compliance to treatment, WHO recommends that patients should be informed at the initiation of treatment that they will be contacted if they do not show up for their appointments. In addition, they should be given a choice about the process by which communication will take place e.g. telephone or letter instead of home visits (WHO, 2010).

Majority of the respondents indicated that TB was still infectious after treatment meaning that health education should be reinforced to enhance treatment and social acceptance of the infected population.

Overall, knowledge regarding TB was found to be good in urban set-up and moderate in rural residence. In the current study, it was evident that the print media and billboards never had a big impact in conveying health education to the residents.

Urban residents had access to almost every communication media used in this study. Respondents' perceptions about the disease indicate the sociocultural trends prevalent in society as well as lack of correct information on the disease. Several important trends regarding basic knowledge as well as the social perceptions pertaining to gender differences and urban–rural disparity have been highlighted through this study.

5.3   Tuberculosis attitude among the respondents

Diagnosis of TB is associated with social stigma in many countries. Tuberculosis patients are exposed to a great deal of ostracism from the community. The infected may have a fear of aversion and such stigmatization may lead to reluctance in seeking treatment. In a study done in Pakistan, majority of patients and their relatives felt that dishes of TB patients should be kept separate from the rest of the family members hence isolating them further from their families Agboatwalla *et al.*, 2003). These misconceptions were compounded by the fact that the patients received inadequate education from their physicians. A majority of them received no information on ways to prevent the spread of disease. High proportions were unaware that TB was not infectious after a few weeks of treatment. Many respondents felt that preventive measures should be practiced for an indefinite or long period of time (Agboatwalla *et al.*, 2003).

In the current study, the community had a negative attitude towards TB patients, majority of the outpatients from urban residence indicated that their community had a negative attitude towards TB patients. In a study done in Pakistan, people believed that TB can be treated by traditional healers. It was also believed that infection with TB reduces chances of getting married (Agboatwalla *et al*, 2003).

Some of the respondents said that they would delay seeking treatment for more than six weeks of onset of symptoms. Considering that a person infected with TB infects an average of 10-15 people in a year, the community should be made more aware of TB symptoms and the need for early diagnosis and prompt treatment with compliance.

The urban population had more knowledge on whether TB is still infectious after a few weeks of treatment than the rural population. This was a unique observation because it was widely expected that the intervention campaign would have been effective in both communities enough to at least drive home the basic truth that TB is not infectious after a few weeks of treatment. Another aspect noted in this study was that majority of the respondents indicated that HIV positive people should be concerned about TB.

A study done in Pakistan indicated that 47.9% of the respondents interviewed believed that TB patients were stigmatized. If a close family member was diagnosed with TB, 72.2% would be supportive or be friendly but would avoid them. Generally, the quality of life of patients was perceived as normal (Mushtag *et al.,* 2010). This ties in with the current study in that majority of the patients from rural residence indicated that their community had a positive attitude towards TB patients.

According to a study conducted in Ethiopia, participants attribute the cause of TB to hard work and malnutrition and therefore initially tended to seek treatment through traditional medicine. Beliefs concerning the cause of the disease are a crucial determinant of subsequent health seeking behavior (Liefooghe *et al.*, 1997). A study

from Sudan shows that lack of awareness of the fact that TB is caused by an airborne, infectious agent increases domestic transmissions and delay TB patients from seeking biomedical diagnosis (Mohammed *et al.*, 2007). The most worrisome finding in the study is the fact that Somali pastoralists consider persistent cough a normal phenomenon, not as a potential symptom of TB. Tuberculosis is only considered when persistent cough is accompanied with blood and severe weight loss (Gelel and Sagbakken, 2010). A similar finding has been reported from Addis Ababa, Ethiopia (Sagbakken *et al.*, 2008). This reflects a lack of awareness of the contagious nature of the disease, which is a serious public health concern that warrants an urgent intervention through enhanced health education.

In recent years, Somali communities living in the Wajir, Mandera and Garissa districts of northern Kenya have treated curable diseases like TB as dangerous diseases that lack treatment thus those suffering from the diseases are regarded as cursed people.For many years, the Somali communities have valued their cultural beliefs and regarded these as traditional law that must be adhered to by everybody within society; otherwise they'll be cursed and disowned by the community (Abjakata, 2010).

Mr. Bashey said: "Right now we are grappling to address the TB cases in the region. The prevalence rate is too high and we cannot cope with offering treatment, though we are trying. The TB problem in the north is fuelled by community attitudes and cultural beliefs that have contributed to the massive spread of the disease.

"The pastoralist communities have ignored medical beliefs that the disease is curable and can be prevented. Instead they believe the disease is contracted by people who

were either born out of wedlock or who have made mistakes against the communities, their parents or their elders.

A TB patient in the Sankuri area of Garissa refutes that the diseases is caused by a curse or one born out of wedlock. She said "I don't believe what my community is saying about the disease. I have not done anything wrong to warrant a curse and I was born from a respectable family in our village and I was not born out of wedlock. It's a wrong belief and it's causing a problem."

The patient said that once she was diagnosed with the disease her family disowned her and she was chased from the family home. She did not know anything about the disease and at first subscribed to the belief that the disease was meant for those who have a curse. This is closely related to the current study where a majority of urban respondents indicated that their community had a negative attitude towards TB patients.

The patient is among thousands of community members who suffer silently due to cultural beliefs that are outdated and based on wrong notions. These people have been forced to leave their family homes and go to TB villages that are managed by the Kenyan Government with support from key donors like World Bank and international Development Association (IDA).

The program brought various stakeholders together under the Pastoralist TB Awareness Campaign that is funded by Stop TB Partnership .The stakeholders were carefully selected from various sectors of the community (Abjakata, 2010).

In one of the community forums, pastoralists were shocked to hear that the disease is curable. They heard it from religious and women leaders who are respected at the

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grass roots level and the same message was reinforced by medical officials (Abjakata, 2010).

5.4   Practices on TB among the respondents

In both set ups, majority of the residents visited hospitals when sick, a significant majority indicated that they would go to a health facility if they realized that they had symptoms of sickness. Health care service delivery cannot make a desirable change unless the community has an opportunity to access the right information on a timely basis. According to a study done in Pakistan, Tuberculosis kills more women than all causes of maternal mortality combined (Agboatwalla *et al.,* 2010). In 1998, about three-quarters of a million women died from TB and over 3 million contracted the disease, accounting for about 17 million disability adjusted life years (Agboatwalla *et al.,* 2010).

A number of studies have shown that in high prevalence countries women in their reproductive years (15–40 years) have higher rates of progression to disease than men of the same age. In the current study, most of the respondents were women with a 56.9% turn out. This may be related to the physiological changes associated with reproduction. As TB affects women mainly in their economically and reproductively active years, the disease has a severe impact on their children and families. Women also face obstacles to gaining access to diagnostic facilities, investigation of the disease and completing treatment. In addition, the added burden of housework, childcare and employment allows them very little time to access health care and TB care for themselves (Agboatwalla *et al,* 2010). These studies could bring in a new

perspective in the Machakos study in that majority of the respondents interviewed were female and majority of the respondents were within the 15-40 years age bracket.

Gender, culture and personal experience are generally said to influence health-seeking behaviour. Several authors agree that the human element in TB control has often been overlooked and suggest that there would be significantly better control if more attention were given to the health culture of the population. Local surveys on knowledge and attitude towards TB like the current one greatly benefit the planning, health education and implementation of TB control programmes. Research has shown that several health interventions have failed because they were designed without ascertaining any knowledge of the health behaviour of the target population. For successful TB control, it is important to target women and to elicit the beliefs and knowledge of women regarding TB as well as their health-seeking behaviour, in the present study, no specific segment of the population was purposely targeted.

The disparity in health-seeking behaviour between the urban and rural population was quite apparent in this study; it was assumed that urban respondents generally frequented private clinics while the rural respondents, especially males, visited government public hospitals more frequently. Females were assumed to be more likely to discuss their medical problems with their husbands or other family members while the males were assumed to chiefly discuss these issues with their doctors. Reportedly, rural males followed the advice of the doctor regarding when anti-TB treatment should be stopped. This health-seeking behaviour explains the better knowledge level of the rural males. It was an assumption that doctors played a limited role in providing health education in urban areas. They did not participate in

continuing medical education programmes and were unaware of the recent trends in disease and they did not have time to give health education messages to their patients. Since public health programmes such as directly observed treatment short-course (DOTS) are not implemented through the private system, many are not even aware of these strategies.

In the rural areas, most public health strategies are implemented at the public health facilities, where the doctors are well versed in the public health programmes and provide health education messages to all patients. The DOTS strategy is the recommended treatment for TB in Kenya. This strategy involves supervised administration of TB drugs and may require daily visits of the TB patient to a health facility for administration of the drug or supervised drug administration at home in the presence of the health worker. According to the findings in this study, both rural and urban respondents were willing to visit health facilities. Health-related beliefs and practices play a very important role in the success of any health intervention strategy. For the success of DOTS in Kenya, it is important to ascertain the willingness of the patients to take the TB medicines.

According to statistics from China which has the largest Tuberculosis epidemic only after India, One group of special concern are work migrants, most often poor men, who leave the countryside to join the wage economy in towns and cities all over China. Some come from areas such as Henan Province where huge numbers of peasants were infected with HIV from scandalous plasma-donor practices in the 1990s. Many male migrants are at risk of unprotected sex when away from home. And men are also at higher risk of tuberculosis than women in China because the

male-to-female ration of adults with pulmonary tuberculosis is about 2:1 or more, reflecting a real risk excess rather than differential detection or notification. So several factors converge in young male migrant workers to put them at risk of both HIV and tuberculosis, and this convergence has been of great concern (Wikipedia).

With this "floating" migrant population making up 10% of the total being poorer and having more tuberculosis than average, China has far more than its share of tuberculosis (disease burden) in the world. This problem is compounded because China's internal work migrants often live and work in circumstances that promote transmission of tuberculosis and impede its diagnosis and treatment. They are usually so poor that the cost of adequate diagnosis and treatment is prohibitively expensive.. Indeed, they may not be able to get treated at all unless they return to their home village in the poor interior, because subsidized management of tuberculosis (and other social welfare) is only available through facilities in the area where they were registered at birth. Those born in rural zones are not allowed to switch registration to become urban residents. They have been allowed to leave their area (temporarily) or work since 1992 and now number more than 100 million. China's rapid economic growth depends on them, but if they get tuberculosis, they have to return home for treatment (Wikipedia). This differs with the current study in that 88.2% of the respondents had a form of occupation which translated to economic empowerment and improved access to medical care.

Going home for rural healthcare in China is not ideal either. Over the past 30 years, that part of the health system has run down because government funding has fallen while everything else has become more expensive. Health facilities attempted to make

up shortfalls by charging ever larger fees for diagnosis and treatment, especially for a difficult disease like tuberculosis (Wikipedia).

In another study done in Ethiopia, lack of access to formal health services as well as traditional beliefs leading to self-treatment were barriers to prompt bio-medical diagnosis of TB among pastoralist TB patients in Ethiopia. This study highlights that limited access to TB control programs is the most important barrier in early seeking of biomedical diagnosis of TB among pastoral communities with nomadic pastoralist being the most affected (Gelel *et al*, 2010).

Due to the long distance to TB clinics, pastoralist TB patients in the study sacrificed a large number of livestock to meet the high financial expense of seeking TB care. Such heavy financial burdens may discourage TB patients from seeking biomedical diagnosis, and instead encourage the use of traditional methods. Somali pastoralists in Kenya were reported to prefer traditional health care over formal health services. This was because traditional healers were easily accessible for them whereas modern health facilities were only hardly accessible due to long distance but also lacked the necessary services (Duba *et al*, 2001, Maalim 2006). In Blantyre, Malawi, 37% of smear positive TB patients consulted a traditional healer prior to diagnosis (Brouwer *et al.*, 1998), which has led to some attempts to involve traditional healers in the diagnostic process (Banerjee *et al.*,2000). These findings tie in with the current study in that of the total respondents interviewed, 1.9% indicated that they would visit traditional healers for a general health problem. To achieve equity and to reach the Millennium Development Goals, regional TB control programs need to identify disadvantaged groups in their society, establish priorities for action based on needs,

and to employ targeted interventions to improve access to TB care for pastoral communities.

CHAPTER SIX

6.0   CONCLUSIONS AND RECOMMENDATIONS

6.1   Conclusions

✓ Despite the health education intervention, only about a quarter of the respondents had a good knowledge and awareness about TB. Urban residents had a significantly higher knowledge level than the urban ones (39.3%).

✓ Similar with the situation of knowledge and awareness two thirds of the respondents had a negative attitude towards TB patients. There was no significant association between negative community attitude and place of residence.

✓ Less than half of the respondents had good practice relating to TB (40.9%).There was no significant difference in practice in relation to TB among the patients residing in the rural and urban areas.

6.2   Recommendations

✓ There should be more awareness campaigns about TB.The campaigns should focus more on rural areas where awareness levels are lower than the urban areas in this study.

✓ Campaigns should utilize the radio more than other media since radios are widely listened to. Vernacular radio station (musyi FM) proved to be very effective in delivering campaign messages to the population.

✓ Rolled out campaigns should be monitored and evaluated in order to rate the level of success.

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Appendices

Appendix 1-Questionaire

A comparative study on Knowledge, attitude and practice on Tuberculosis in rural and urban Machakos, 2008

Socio-demographics.
1. Name: _____
Sex: a. Male   female
2. Age: _____
3. Division: _____
4. Occupation: 1.Farmer 2. Business 3.employed 4. Other_____
5. Residence: a. rural b. urban
6. Duration of stay in Machakos_____

Exposure to TB educational activities
1. How often do you read a daily newspaper?
a. Daily b.weekly c. Monthly d.other
2. Which Daily newspaper do you normally read?
a.standard b.daily nation c.kenya times d.other
3. How often do you listen to the radio?
a. Daily b.weekly c.monthly d.other
4. Which channel do you normally listen to?
a. Kbc b.musyi fm c.citizen d.kiss fm e.other_____
5. Have you come across any advertisement(s) on TB disease in the various channels?
a. Yes b.no
6. If yes state the channel.
a.. Radio (specify station/s) _____
2. TV (specify station/s) _____
3. Print (specify) _____
4. Billboard (specify)
5. Other (specify)

TB knowledge and awareness
7. How is TB transmitted?
a. Airborne   b.Sexually   c. Droplet   d.Water Borne
E.Physical Contact   f.other   - if other specify _____

8. What are the signs and symptoms of TB?
Tick all which the respondent mentions
a. Cough   b. Chest Pain   c. Productive Cough
D.Night Sweats   e. Weight Loss   f.other
9. What duration of cough is suspicious of TB?
Tick only one below
a. One Week   b.Two Weeks   c. One Month
d.One Year   e.No Response   f .Don't Know
10. Why is it important for people with TB to be treated? (Multiple responses)

a. To prevent / stop TB transmission

b.To get cured

c. To prevent death

d.Don't know / no response

11. Is TB curable? Yes / no

12. Are TB Medicines free? Yes / no

13. Are medicines for treating TB available locally?   Yes / no

If yes where?

a. Only in district hospital   b. Local dispensary

c. Local health centre   d. Private Pharmacy

14. How long does TB treatment take?

a. A week   b. a month   c. 6 months   d. 8 months   e. One year

f.More than one year   g. Don't Know/ no response

Attitude

15.   After a few weeks of treatment, is TB infectious?

a. Yes   b.no

16.   How do you treat a person who has TB?

a. Most people reject him/her

b.Most people are friendly but generally avoid him/her

c. The community mostly supports and helps him/her

Other

18. Do you think HIV positive people should be concerned about TB?

1. yes-go to the next question (a)

2. No-go to the next question (b)

19. (A) why

1. Person with HIV is more likely to develop TB

2. Do not know

3. Other

19. (B)

1. Person with HIV is not more likely than person without HIV to develop TB

2. Do not know

3. Other

Practice

20. Where do you usually go if you are sick or to treat a general health problem?

1. Private clinic

2. Government clinic or hospital

3. Traditional healer

4. Ngo clinic

5. Other

21. How often do you generally seek healthcare at a clinic or hospital?
1. Twice a year or more
2. Once per year
3. Less than once a year but at least 5 years
4. Once in past 5 years
5. Other

22. What would you do if you had symptoms of TB/
1. Go to a health facility
2. Go to a pharmacy
3. Go to a traditional healer
4. Pursue other self-treatment options
5. Other

23. If you had symptoms of TB, at what point would you go to the health facility?
1. When treatment on my own does not work
2. When symptoms that look like TB signs last for 3-4 weeks
3. As soon as I realize that my symptoms might be related to TB
4. I would not go to the doctor

Appendix 2: Informed consent

Study title:
A comparative study on Knowledge, Attitude and Practice on Tuberculosis in Machakos District, Kenya

Introduction

My name is Nancy Kimwele from JKUAT, I am here to gather information that you have on tuberculosis, this will help relate health seeking behavior towards TB with the ongoing TB messages provided by the government, with this information appropriate TB health messages will be planned for the community.

The study will determine whether the ongoing TB campaign has been effective.

Purpose of study

The Division of Leprosy, Tuberculosis and Lung Disease [DLTLD] recognize the importance of community members/leaders in the involvement of TB control. In its efforts to control TB, DLTLD provides TB messages to various groups in the community so that TB disease Knowledge, attitude and health seeking behavior among the community is appropriate. This study will determine whether the on-going TB messages have achieved this.

Procedure to be followed:

Upon accepting to participate in this study you will be asked to sign an informed consent after which you will be asked some questions about the TB disease.

Risks:

Efforts will be taken to maintain confidentiality so that risks of disclosing the information you have given us will be fully minimized. All data collected will be handled confidentially and no names will be included in the report. The data will be stored in computers with passwords and hard copies will be kept in lockable cabinets that have authorised access to the investigators only.

Benefits:

Contribution will help us to better understand and interpret issues that will go a long way in improving the management of TB. Health messages on TB will be

appropriately made and provided to the community to enhance the suitable health behavior towards TB disease.

Assurance of confidentiality:

All the answers you have provided us will be handled confidentially. Your identity will not be disclosed in any public reports or publications or to any other parties.

Storage of data:

Records relating to your participation in the study will be stored at KEMRI for analysis. Access to these records will only be to the investigators.

Right to refuse or withdraw:

Your participation is voluntary. You may wish to withdraw from this study at any time without any penalty.

Subject:

If during the course of this study you have any questions concerning the nature of this research you should contact Nancy Kimwele, P.O.Box 50945-00200, Nairobi.

Telephone Number: 0202728881.

If in case you have a question concerning your rights of participation, you should contact; The Secretary, KEMRI/National Ethical Review Committee, P.O.Box 54840-00200, Nairobi.

Telephone Number: 0202722541

I _____ have read/been read to the information shown above and had the opportunity to ask questions and all were answered satisfactorily. I hereby give consent for my participation as explained to me.

Study participant's name: _____

Date: _____
Sign _____

Name of Investigator/supervisor/fieldworker:

Date: _____
Sign_____