

# Lay beliefs, practices of TB and HIV/AIDS among the community members living in Machakos County, Kenya: A cross sectional study

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## Abstract

Knowledge of lay beliefs on existence, cause, mode of TB transmission, and the association of TB/HIV relationship are key entry point to initiate effective prevention and control of TB in communities. Misconceptions of this result to fear and stigma that can sustain TB transmission. The main objective of this study was to determine the study community beliefs of TB, its relationship with HIV/AIDS and to quantify prevention practices. A cross-sectional survey of community members was done in Athi-river and Central Divisions of Machakos County. A pre-tested self administered questionnaire and researcher assisted interviews was used to collect data. The data was analyzed by use of statistical package for social sciences (SPSS) version 16. Pearson Chi-Square analysis was used to determine the relationships between variables. Level of significance was fixed at 0.05 ( $p=0.05$ ). The results of this study reveal a majority (90.6%) of the community is aware of the existence of TB and that 90.1% believe it can be transmitted  $p<0.05$  respectively. Misconceptions and lay beliefs on the cause and mode of TB disease transmission was prevalent with (90.8%) blaming these on unrelated factors such as smoking, poor hygiene, HIV/AIDS, hereditary and sharing eating utensils respectively. The community practices were discriminatory as they separated eating utensils of TB patients or isolated them as a way of preventing the disease spread which causes fear. A slight majority of the community (46.5%) believes TB is related to HIV/AIDS, a disease of stigma citing similarity of symptoms. The rest observe there is no relationship and said the symptoms and modes of transmission are different. The Ministry of health needs to urgently bridge this gap by disseminating health education on TB and TB/ HIV/AIDS relationships in the communities to demystify fear that result from misconceptions.

**Key words:** Lay Beliefs and practices of TB & HIV/AIDS, Community of Machakos County Kenya.

## 1.0 Background Information

Tuberculosis is a major public health problem in the developing countries (WHO, 2011).The disease is transmitted through air in prolonged close contact. If not treated, each person with active TB infects on average 10-15 people every year (WHO, 2009). Tuberculosis (TB) is the leading killer of people co-infected with HIV/AIDS, the highly stigmatized disease the world over (WHO, 2009; 2010).The fear of association of the two diseases has been reported in studies in Kenya to cause delay to seek treatment for those infected with TB (Wesonga,2002.,Ayisi,2011., Mutinda,2013)

Kenya started the implementation of the DOTS programme since the year (1993) and achieved 100% coverage by the year 1996. Despite this, the country is ranked 13<sup>th</sup> among the 22 World countries with high TB burden that collectively contribute about 80% of TB cases. The global estimates show the country has approximately 132,000 new TB cases and incidence rate of 142 new sputum smear positive cases per 100,000 populations (WHO, 2009). According to the latest surveillance and estimates of TB incidence, Kenya is the first country in Sub-Saharan Africa to have achieved the global targets for both case detection and treatment success. In 2007, the DOTS case new sputum smear and positive detection rate reached WHO target of 70% and 72%, respectively, and treatment success rate of 85%. Tuberculosis is mainly affecting the young and economically productive age groups 15 – 45 years and has caused significant reversal of the benefits of good health and socio-economic development in Kenyan communities (MOH, 2006). Further the emergence of HIV/AIDS has further complicated TB control measures due to stigma that is associated with the epidemic. An estimated 48% of new TB patients are co-infected with HIV and 50%-60%) of the TB infected patients in Kenya are HIV infected (CDC, 2007; MOH, 2006, WHO, 2010).

Tuberculosis (TB) is the leading cause of death associated with infectious diseases and HIV/AIDS worldwide ((WHO, 2009; Cook and Zumla, 2009; Curry, 2006). The disease is mainly caused by Mycobacterium tuberculosis and occasionally by Mycobacterium bovis and africanus bacteria. Tuberculosis is potentially deadly and usually affects the lungs but can attack other parts of the body as well (CDC, 2007). The TB symptoms are manifested by coughing, night sweats and fever, loss of appetite and weight loss. Transmission of TB is through air (aerosol) mainly by coughing. Risk to the disease transmission is exposure to the microorganism among those living in the same house with the infected person or in prolonged contact with a person infected with TB, in environmental conditions of poverty, inadequate ventilation and malnutrition (MOH, 2006; KEMRI, 2000; WHO, 2006).TB kills an estimated 8,000 people daily and approximately 2-3 million yearly the world over, with

an estimated 1 billion new infections expected by the year 2020 if preventive measures are not applied (AAHIVM, 2007, WHO, 2009). The spread of TB can be prevented but remains a challenge due to poor treatment, preventive measures and lack of disease surveillance.

Despite the Kenya government declaration “total war” in efforts to control TB through DOTS program (NLTP, 2007), the country continues to register new cases. Control efforts have been compromised by onset of HIV infection and the emergence of MDR – TB and XDR – TB which is difficult to treat.

Currently, Kenya is ranked 13<sup>th</sup> among the twenty-two world countries with high TB burden that collectively contribute about 80% of TB cases (WHO, 2008). The Global TB report (2009) indicates Kenya has approximately 132,000 new TB cases and incidence rate of 142 new sputum smear positive cases per 100,000 population.

The disease mainly affects the young and economically productive age groups 15 – 44 years and has caused significant reversal of the benefits of good health and socio economic development in Kenyan communities (MOH, 2006). Factors associated with TB transmission are delay to seek early treatment, poor TB drug compliance, fear of stigma and discrimination due to association of TB with HIV/AIDS, poverty, poor housing and malnutrition. The existence of these factors that predispose the communities to vulnerability to TB is largely unknown in different communities in Kenya and could be key in TB control.

This study seeks to examine these factors, assess prevention/ control measures currently in place and access to health care in the selected study community. The necessity arises due to the fact that TB has shown a variation in distribution pattern in Districts which are inhabited by different communities and is spreading fast. The uptake and the effectiveness of the DOTS which was nationally implemented to prevent and control TB spread will be evaluated at community level.

### **1.1 Statement of the problem**

Although a lot of information on TB prevention and control has been documented in many studies elsewhere and in Kenya, little information is available on the different community’s uptake of the DOTS programmes’ health education in Kenya. Health education is necessary to inform the community on the cause, mode of TB transmission control and prevention practices of TB. Tuberculosis is infectious and its transmission is sustained where there is misconception and poor practices in regard to effective prevention and control. It is on this background this study sort to investigate and recommend viable strategies on prevention and control of HIV and TB.

## **2.0 LITERATURE REVIEW**

### **2.1: Historical background of Tuberculosis (TB)**

Tuberculosis remains a global killer claiming millions of lives, it is an infectious disease mainly caused by *Mycobacterium tuberculosis* and occasionally by *Mycobacterium bovis* and *africanum* bacteria (Brunner et al; 2010). Studies indicate in the year 2008, there were 9.4 million new TB cases in the world and an estimated 8,000 people die of TB daily and approximately 2 – 3 million yearly in the world. TB spreads through the air, if not treated each person with active TB infects on average 10-15 people every year (WHO, 2009). To date studies show there is a close relationship of tuberculosis and poverty which is prevalent in developing countries, lack of attention to tuberculosis services and impact of HIV/AIDS pandemic (AAHIVM, 2007, WHO, 2009).

Further the studies have consistently shown that TB is transmitted in environments of poverty, inadequate ventilation, overcrowding and malnutrition. The disease is associated with poverty, and is affecting mostly young adults in their productive years 15-45 years with most deaths occurring in the developing countries (WHO, 2009). The WHO, (2010b) warns that TB epidemic cannot be addressed without involving those most affected by the disease, and the resulting consequences of their sickness.

In Africa an estimated 1.6 million new cases and 600,000 deaths occur annually in the region. The continent is also ranked 9<sup>th</sup> out of the 22 global TB high burden countries in the world responsible for 80% of total global TB burden (WHO, 2010 a). The WHO recommends control measures of early and accurate diagnosis, immediate accurate treatment, which is supported and supervised so that drugs are taken for the appropriate duration of time. Further, in order to remove the threat of TB, communities need to be empowered through awareness of primary issues and healthy behaviors.

Kenya is among the affected countries that are ranked 13<sup>th</sup> on the list of 22 high-burden TB countries in the World and the 5<sup>th</sup> in Africa (WHO, 2009). Reports indicate TB has re-emerged as a leading cause of morbidity and mortality in the country since the 1990’s (MOH, 2006). The Global TB Report (2009) indicates Kenya has approximately 132,357 new TB cases and incidence rate of 142 new sputum smear positive cases per 100,000 population. In 1993 Kenya began to implement the DOTS programme, the internationally recommended strategy for TB control, treatment and prevention and achieved 100% coverage by the year 1996. Despite this success,

the country continues to register new cases of TB with mortalities and economic consequences. Factors that may contribute to TB transmission such as poverty, malnutrition, socio-cultural beliefs/ practices and overcrowding that exacerbate or are associated with TB spread are not well studied in Kenyan communities.

In Machakos County alone, between the years 2005-2009, an average of 3,000 new TB cases was continually diagnosed. This pose a health risk to the study community and other communities living in other Districts as TB is air borne, spreads very fast and is infectious ( WHO,2010a; MOH 2006). The TB patients continue to transmit the infections especially to the close contacts, notably house hold associates. Tuberculosis is curable with proper treatment, can be prevented and controlled if the WHO recommended universal measures are implemented through the Directly Observed Treatment Short Course (DOTS).

### **3.0 Research Methods**

#### **3.1 Study site and respondent selection**

The study was carried out in Central and Athi River Divisions of Machakos County in Kenya, formally in Eastern Province. Machakos County is approximately 64 km to the East of the city of Nairobi and 16 km off Nairobi-Mombasa road. The County borders the Counties of Nairobi and Thika to the west, Kajiado to the South-West, Makueni to the South, Maragua and Mbeere to the North. On the eastern side are Mwingi and Kitui Counties.

The County covers 6281sq.km and has 12 administrative Divisions namely, Central, Kathiani,mwala,athiriver,yathui,Katangi,Yatta,Masinga,Ndithini,Kalama and Kangundo . Cluster and simple random sampling by lottery was used to select the two Divisions of Central and Athiriver out of the 12 Divisions of Machakos County. The sampling methods were further used to select 2 locations where 4 villages were picked for the study. According to the 2009 census in Kenya, Machakos County is inhabited by 293,434 persons with a growth rate of 2.0. Poverty level stands at 60%, the area has unreliable rainfall with subsistence farming as the main source of income (KNBS, 2009).

Machakos County has 160 health facilities distributed in the 12 Divisions that deal with preventive, promotive and curative services. Among these, there are three major TB treatment health facilities, namely Mutituni, Athi-River and Machakos level 5 hospitals where the TB patients go for treatment. The community members were selected from the four villages within the catchment areas of TB treatment centers; namely Mjini, Kasinga, Kiima kimwe and Kateve. Use of cluster and simple random selection ensured an equal inclusion of the study subjects. The community members live with the TB patients at their homes; they share amenities such as transport, sleeping facilities and assist them during treatment. Tuberculosis is infectious and transmission occurs among those at close contact. The community needs to understand all aspects of TB in order to effectively prevent and control the disease spread.

The interviews were held with 415 Community members selected at their homes whose ages were 18 years and above and those who consented. Only those study subjects who met the inclusion criterion of the study were interviewed. The exercise involved going from house to house to interview the study subjects individually. A pre-tested self administered questionnaire and researcher assisted interviews was used to collect data and was filled by the head of the household or the appointed representative. The data collectors who numbered 6 were trained on the procedure and use of data collection tools. On average 6-7 respondents were interviewed daily. The survey was completed in 10 days in the month of March, 2011.

#### **3.2 Interviews**

The questionnaires had closed-ended questions that were analysed quantitatively and open ended questions that permitted free responses that gave qualitative information and reported verbatim. Preparation of the study tool was done in English and translated verbally to Kiswahili and the local Kamba language where necessary.

#### **3.3 Ethical clearance**

The study protocol was done after approval by Mt.Kenya University; clearance was given by the Ministry of Higher education, Science and Technology, Ministry of Medical Services and the Medical Officer of Health, Machakos County.

#### **3.4 Data analysis**

Data analysis was performed using the Statistical package for Social Sciences (SPSS) version 16.0 for descriptive statistics and Pearson's Chi- square tests to test relationships.

### **4.0 Discussion**

#### **4.1: Socio-demographic characteristics**

Out of a total of 415 community members who consented to the interview, 60.9% (n=253) were females and 39.1% (n=162) males .Their age- range was 19-100 years, mean age of 36 years, median age of 32 years and standard deviation (SD) 14.9 respectively. The peak ages were within (19-40) accounting for (65.8%) and those above 60 years were few (5.8%).Level of education attainment was mainly primary (46.5%) followed by

(37.6%) secondary with few having attained mid level and university education (12%).The community is predominantly of Christian faith (81.8%),the rest are Muslims and other faiths.

#### 4.2: Community awareness of TB

In order to establish health education knowledge of TB, the community members were asked to indicate awareness of existence of TB, the cause, whether TB can be transmitted and mode of its transmission. In Table 1, out of 415 respondents, 90.6% (n= 376) were aware TB exists while 9.4% (n=39) were not. This was observed across gender age groups, marital status, educational level and religion (p<0.005). Among them, 90.1% (n=374) were aware TB can be transmitted while 8.9% (n=41) were not (p<0.005). On the knowledge cause of TB, 9.2% (n=38) named bacteria while 90.8% (n=377) named other causes. In addition, 16.1% n=67 named mode of TB transmission as poor ventilation while 83.9% (n=348) named others such as sharing eating utensils, bad air, witchcraft, HIV/AIDS as presented in table 1

**Table 1: Represents community members awareness of TB n=415**

TB awareness	Aware	others
1.TB existence	376 (90.6%)	39 (9.4%)
2. TB is caused by bacteria	38 (9.2%)	377 (90.8%)
3.TB can be transmitted	374 (90.1%)	41 (8.9%)
4.Mode of TB transmission as mainly poor ventilation	67(16.1%)	348 (83.9%)

#### 4.3: Community practices in prevention of self and others from TB transmission

Ways of TB prevention was named as not sharing eating utensils 45.3% (n=188), avoid poor ventilation 15.3% (n=63), immunization 10.1% n=42, isolation 6.5% (n=27), those who did not specify were 22.9% (n=95).Table 2

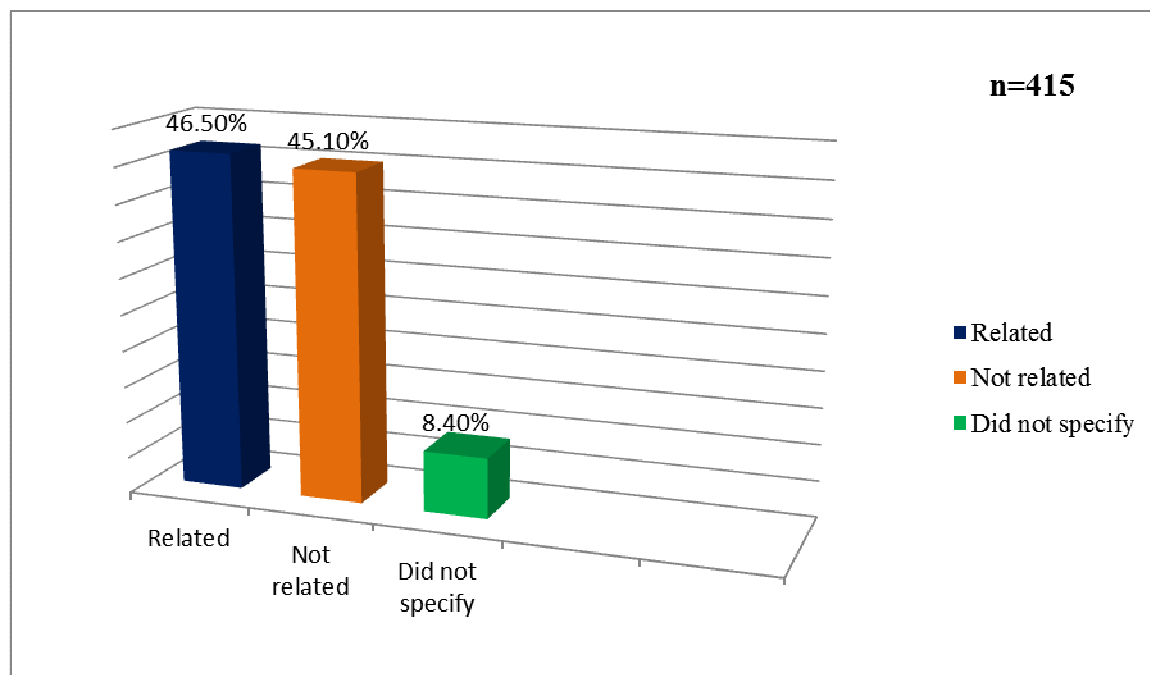
**Table 2: Community practices in prevention of TB transmission**

PRACTICES	%
1)Not sharing eating utensils	45.3%
2)Avoid poor ventilation	15.3%
3)Immunization	10.1%
4)Isolation	6.5%
5)Did not specify	22.9%

#### 4.4: Community beliefs in TB/HIV relationship

In figure 1, there was a mixed feeling in regard to TB/HIV relationship as 46.5% (n=193) said TB is related to HIV/AIDS while 45.1% (n=187) said there is no relationship and 8.4% (n=35) did not specify. Out of the one hundred and ninety three respondents who said there is a relationship, 67.3% (n=130) said symptoms of HIV are like those of TB, the rest said people infected with HIV are prone to TB.

Among the 187 respondents who believed TB has no relationship with HIV/AIDS, 65.2% (n=122) said the diseases have different modes of transmission, the rest did not specify.



**Figure 1: Community beliefs on TB/HIV relationship**

#### 4.5: Health education of TB in the community

On the issue of health education on TB in the community, 40.2% (n=167) had received while 49.9% (n=207) had none, and 9.9% (n=41) did not specify. The source of health education among the 167 who received, was from health workers 33.5% (n=56), media 31.7% (n=53), friends 9.5% (n=16), teachers 11.9% (n=20), community workers 11.9% (n=20) as presented in Table 3

**Table 3: Health education in the community**

Health education		
<b>Received</b>	Yes	40.2% (n=167)
	No	49.9% (n=207)
	None	9.9% (n=41)
<b>Source</b>		
1) Health workers		56% (n=56)
2) The media		31.7% (n=53)
3) community workers		11.9% (n=20)
4) Teachers		11.9% (n=20)
5) Friends		9.5% (n=16)
6) Did not indicate source		1.2% (n=2)

#### 5.0 Results

Misconceptions on the cause, mode of transmission and prevention practices of TB were prevalent in the study community. The study found majority of the community members (90.6%) is aware of the existence of TB. The finding is supported by the Kenya national surveys data (KDHS, 2008-9) that awareness about the existence of TB has reached about (98%) in Kenya, with lower figures observed in the rural populations. Further in a study on knowledge and perceptions of tuberculosis in Ethiopia among community members (Legesse et al., 2009) found (95.6%) of the community had knowledge about the existence of TB and point that lack of knowledge about the disease can affect health seeking behavior of patients and sustain transmission of the disease in the community.

Further the study found (90.1%) of the study community members knew TB could be spread from an infected person suffering from TB to other people and indeed (30.6%) of the respondents knew someone infected with TB. This is an indication of TB disease presence in the study community.

The study observed inadequate knowledge on etiology or the cause of TB among the study community members as the majority (91.8%) blamed it on smoking, poor hygiene, bad air, AIDS, hereditary or did not know. Only (9.2%) of the respondents mentioned bacteria or germs as the real cause. The findings agree with (Mesfin, 2009) in a study investigating TB patients delay to seek treatment in Ethiopia and others (Silva et al, 2012., Deribew et al; 2010) in Brazil that most patients had heard about TB and believed the cause to be unrelated factors such as exposure to cold, evil spirits, hereditary, HIV/AIDS or the will of God. The findings further agree with

(Gebremariam et al, 2010) in Ethiopia that very few people in the community know TB is caused by bacteria as the majority (90%) attributed the cause of TB, to factors such as exposure to “Bird” or cold, excessive exposure to sun, mud, smoking, alcohol, khat and inadequate food and suggested such beliefs led the respondents to self treatment.

In this study the majority (83.9%) of the community members had lay beliefs and mainly blamed the mode of TB transmission to factors such as sharing of eating utensils, shaking hands, dirt or witchcraft. Only 16.1% said TB transmission was mainly due to poor ventilation. The findings concur with other related TB studies in Western Kenya and in Ethiopia respectively (Ayisi et al, 2011.,Gebremariam et al., 2010) who report most of the TB patients thought they got TB from alcohol, water, sharing eating utensils or inherited, bad breath therefore sharing the study community beliefs.

As a way of prevention of TB transmission, the study community practiced not sharing eating utensils, or isolation of TB patients which discriminates those infected and causes fear. In previous reported studies on TB, Mesfin et al, 2010, Ayitsi et al, 2011 in Ethiopia, Indonesia and Kenya respectively reported fear and stigma of TB and was associated with the patients delay to seek treatment, a factor that sustains TB transmission.

Health education which is recommended by the DOTS programme as a tool for dissemination of knowledge on TB was investigated among the community members. The findings show only 40.2% of community members had received health education, and among them only (33.5%) received the recommended teaching from the MOH (formal) from health workers; the rest is from informal sources whose content cannot be verified such as the media, family, teachers or friends. In Kenya the findings are supported by the national survey (KDHS, 2008-2009) that rural women and men aged between 15-49 years were less likely to know TB is spread through air by coughing or believe that TB can be cured. Lack of proper information resulted to misconceptions and poor practices that cause fear and discrimination.

The study established that there was a significant belief in the community that TB is related to HIV/AIDS among gender, educational level and across age-groups and religion ( $p < 0.005$ ). Further (46.5%) community members believe TB is related to HIV/AIDS, a disease of stigma that cause fear to people. The community members cited similarity of symptoms and tendency to develop HIV infection once you are infected with TB as the reason to believe there is a relationship. The findings concur with (Wesonga, 2002) in a study involving slum dwellers in Nairobi that the community associate TB with HIV infection and this cause's societal stigma hence default from TB treatment. Further (Ayitsi et al, 2011) in Kenya and in Ethiopia (Mesfin et al, 2009, Mesfin et al, 2010.,Gebremariam et al.,2010) observed similar findings that the community believe there is association of TB and HIV, and the TB patients feared this would predispose them to stigma. In a TB stigma related study in Thailand (Kipp et al., 2011) observed low level of education, beliefs that TB increases the chances of getting HIV infection were associated with higher TB stigma. In Tanzania,(Ngadaya et al.,2009) agree with the findings that lack of knowledge on TB/HIV relationship result to misconceptions that cause fear and delay to seek treatment for those infected with TB.

Studies (CDC, 2007) showed high prevalence of HIV which predicts high vulnerability to TB and must be controlled. In conclusion (Gebremariam et al., 2010) in Ethiopia observed that there is need to give information and education to address misconceptions of TB and HIV by trained health personnel.

## 5.1 Conclusions

Misconceptions on the cause of TB, mode of transmission and poor prevention practices was evident in the study community. Lay beliefs on TB, its association with HIV/AIDS was observed and can affect health seeking behavior for those infected due to fear and stigma, a factor known to sustain transmission of TB. The study recommends urgent innovative strategies to disseminate health education on TB and to dymisfy beliefs on TB and HIV/AIDS relationship in the study community that cause fear.

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