Factors Associated with Tuberculosis Screening and Detection within the ANC Services in Thika Level Five Hospital

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STUDENT DECLARATION

I, Charity Njambi Ndwiga, declare that this proposal is my original work and has not been presented to any other institution for the purpose of obtaining a degree.

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DEDICATION

This thesis is dedicated to almighty God, who makes all things possible, indeed he has been very faithful throughout this journey. Secondly, to my family for their outstanding inspiration and encouragement during the entire study particularly my children, Sarah Njeri and Frank Njeru and niece Muthoni Mugo, who have being very generous with their time and patience with me.

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LIST OF ABBREVIATIONS

AFB	Acid Fast Bacillus
AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal Care
BCG	Bacillus Calmette - Guerin
CNR	Case Notification Rate
DLTLD	Division of Leprosy, Tuberculosis and Lung Diseases
DOTs	Direct Observation Therapy
EPTB	Extra Pulmonary Tuberculosis
ERC	Ethical review Committee
HIV	Human Immunodeficiency Virus
KAIS	Kenya AIDS Indicator Survey
KEMSA	Kenya Medical Management Supply Agency
KNH	Kenyatta National Hospital
MCH	Maternal and Child Health
MDG	Millennium Development Goals
MOH	Ministry of Health
MTB	Mycobacterium tuberculosis
NTP	National Toxicology Program
OBGYN	Obstetrics and Gynae
PNC	Post Natal care
PTB	Pulmonary Tuberculosis
SOPs	Standard Operating Procedures
SS+	Sputum Smear – positive
TB	Tuberculosis
UON	University of Nairobi
USAID	United States Agency for International Development
WHO	World Health Organization

DEFINITION OF OPERATIONAL TERMS

1. Screening for Tuberculosis in this study consists of history-taking of persistent cough lasting longer than two weeks with or without blood stained sputum; chest pain and/or shortness of breath; excessive night sweats; intermittent fever; loss of appetite; loss of body weight and excessive tiredness; generally feeling unwell and swollen glands for TB of the glands
2. Tuberculosis (TB) detection: confirmation of Mycobacterium Bacilli through a smear positive test in case of pulmonary tuberculosis (PTB) and confirmed clinical diagnosis of TB for extra pulmonary TB (EPTB)
3. Gestational TB: any form of TB during pregnancy
4. Patient factors: the time between onset of symptoms to when the patient sees the first health care practitioners.
5. Health care system factors: the time between first health care-seeking for diagnosis until the diagnosis made.

ABSTRACT

Tuberculosis (TB) remains a major cause of morbidity and mortality globally and the number of TB cases continues to rise. Passive TB screening reduces delays detection of the disease. A delay in TB detection continues to be a major impediment to TB management among the general population. Factors associated with tuberculosis diagnosis may worsen the disease and increase risk of death as well as enhance tuberculosis transmission in the community

TB during pregnancy has adverse consequences for the mother and the unborn baby as well as the immediate family members. Late TB detection during pregnancy worsens the outcome of pregnancy for the mother and the baby as well as her immediate family members. However, evidence suggests that there is inadequate screening of TB among pregnant women. This study was carried out to generate evidence on factors contributing to TB screening during pregnancy.

The study was carried out in Thika Level Five Hospital. A descriptive cross-sectional study design was employed. The study population included 7 members of the hospital management team, 477 clients attending ANC services and 12 ANC service providers. Interviews were conducted with the above study participants to elicit data related to the factors associated with TB screening among pregnant women. Records were reviewed to obtain data on TB screening during ANC services. Finally, the facility was assessed using a checklist to determine the availability of appropriate organizational structure, policies and guidelines, infrastructure, human resources, supplies and commodities that support TB screening and detection.

Data obtained were analyzed according to various sub-themes of factors associated with TB screening during pregnancy. Both providers' and patients' knowledge and practice are factors associated with TB screening among pregnant women. Five (5) of the 12 service providers knew that the screening for TB during pregnancy should be conducted for all mothers during all the ANC visits. This finding seems to correlate with the service providers' practice in TB screening for ANC clients which showed that only 27% of ANC clients interviewed are screened for TB. Further findings from the service statistics record review indicate that only 33% (n= 5080) of the clients were screened of TB. All the clients were screened during the first ANC visit despite the Ministry of Health's policy of screening all pregnant women during all the ANC visits (Division of Lung Tuberculosis and leprosy Disease (DLTLD), 2009). The referral practices for TB detection among pregnant women are adequate. Facility

preparedness in terms of supplies and commodities for TB detection were adequate and therefore could not be associated with delays in screening for TB among pregnant women.

Policy makers, health managers, service providers and community members should make efforts towards improving TB screening and detection among pregnant women in order to achieve MDG 4, 5 and 6 among other health goals.

CHAPTER 1: INTRODUCTION AND BACKGROUND

1.1: Introduction

Addressing maternal morbidity and mortality remains a key global and national agenda. The attainment of Millennium Development Goal (MDG) 5 (Reduce Maternal Mortality), is accelerated by the implementation of strategies and activities of the MDG 4 (Reduce infant Mortality) and MDG 6 (Reduce HIV, TB and Malaria) (World Health Organization (WHO), 2007). TB affects women mainly during their economically and reproductively active years, causing a substantial burden on children and families. In women aged 15–44 years in developing countries, tuberculosis is the third most common cause of morbidity and mortality combined; it kills more women of reproductive health age than any other infectious disease including malaria and AIDS (Floyd, 2003) (USAID, 2000).

Considering the high prevalence of this disease in many developing countries including Kenya, a large number of pregnant women are likely to suffer from TB. If routine screening is not performed prenatally, the infection will not be treated in time to prevent risk to the fetus, the newborn, and the obstetric ward (EJ. & S., 1994). Detection of TB during pregnancy is beneficial to women and their offspring (Gounder, et al., 2011). Recognizing that appropriate and effective management of TB requires timely detection, routine screening for TB among clients attending antenatal care (ANC) is now a policy in Kenya. This policy aims at maximizing on opportunities for prompt TB case detection and treatment among pregnant women (DLTLD, 2009).

Delays in healthcare-seeking and TB diagnosis, as well as in initiating appropriate treatment have been addressed by a number of studies in different countries. There is need to address factors associated with TB screening and TB detection during pregnancy given the adverse effects of TB on the woman and the unborn baby. This study proposes to describe the factors contributing to TB screening among pregnant women in Thika Level Five Hospital looking at any deviations from the factors known to contribute to in adequate TB screening in the general population. A better understanding of factors associated with inadequate TB screening and detection among pregnant women would help policy makers and program managers to better tailor TB services to the needs of pregnant women and thus improve TB control. The study reviews literature on the magnitude of TB, how it affects the pregnant woman and the unborn baby, factors that contribute to screening and TB detection. The problem statement, justification and methodology and study limitations are discussed in the study. The study collects and analysis data on the factors contributing to TB screening and

detection during pregnancy in order to build knowledge on this important area of maternal health.

1.2: The Burden of Tuberculosis Disease

Tuberculosis is a major public health problem globally, with an estimated 1.86 billion of the world's population infected. Of the estimated 9.4 million TB cases in 2008 (including 1.4 million TB/HIV cases), 3.6 million cases occurred among women and 500,000 women died of TB (WHO, 2009). Kenya ranks 13th on the list of 22 high-burden tuberculosis (TB) countries in the world and has the fifth highest burden in Africa (WHO, 2007). According to the WHO's Global TB Report 2009, Kenya had approximately more than 132,000 new TB cases and an incidence rate of 142 new sputum smear-positive (SS+) cases per 100,000 population. Kenya began to implement the WHO-recommended "Directly Observed Treatment Strategy (DOTS) for TB control in 1993 and reported 100 percent DOTS coverage by 1996 (WHO, 2009) (DTLD, 2009) It is estimated that 80% of new cases occurs in high burden countries (WHO, 2009).

In Kenya TB prevalence is high among the general population and the disease seems to be on the rise as more and more TB patients are treated each year (DTLD, 2009). According to government official records of the year 2008, 110,016 cases of extra-Pulmonary TB had been diagnosed in Kenya, amounting to 20 % of all TB cases confirmed in the country. Among all the cases of extra-pulmonary TB, the treatment has an 82% success rates, 6% death rate, and 8% out of control rate (DTLD, 2009). There is widespread co-infection of TB with HIV estimated at close to 48 % of new TB patients (MOH, 2008). At least one out of eight of HIV+ pregnant women are likely to be infected with TB (USAID, 2000). The HIV prevalence rate among the pregnant women in Kenya is 7.6%; and even higher in Nairobi 8.8%, placing the risk of TB infection among the HIV infected pregnant women at approximately fifty percent (MOH, 2008). However, whereas testing for HIV among pregnant women attending ANC services is well known and better practiced with 58.1% of pregnant women being tested for HIV during the antenatal care services (KAIS, 2008); screening for TB is still limited. These findings suggest that many pregnant mothers are not adequately screened for TB in Kenya leading to delay in detection and the requisite prompt treatment of TB despite the risk associated with TB during pregnancy.

1.3: Tuberculosis and women

Tuberculosis (TB) kills more than 1 million women per year, and it is estimated that 646 million women and girls are already infected with tuberculosis (Blower, et al., 1996). It is estimated that 19% of maternal deaths are caused by malaria, anemia and HIV/AIDS where AIDS related deaths includes TB (WHO, 2002). In 2008, 3.6 million women developed TB and approximately another 500,000 died as a result (WHO, 2009).TB affects women mainly during their economically and reproductively active years, causing a substantial burden on children and families. According to the global fund, over 250,000 children die every year of TB because children are vulnerable to TB infection as result contact from their mothers. In a study in Vietnam, 1.5% of women and 1.3% of men reported symptoms consistent with TB (Thorson, 2000). Among these, only 14% of women compared with 36% of men indicated having given a sputum sample, a finding which suggests women have more difficulties accessing health care or points to women's health seeking behavior which may hamper early TB detection care.

1.4: Burden of TB among pregnant women

According to Gounder et, al., 2011, active pulmonary TB among seropositive pregnant women is 10/1,454 HIV- (688 per 100,000) and 5/2,483 among HIV-seronegative women (201 per 100,000, $p = 0.03$). The diagnosis of tuberculosis (TB) in pregnancy is of utmost importance to both the mother and the fetus since untreated disease carries much greater risk to both. A study conducted in western Kenya showed that 42.8% of pregnant women attending ANC were screened for TB (Warren & Mwangi, 2008). Of the 18911 pregnant women screened for TB in this study, only 6 tested positive for TB translating to 32 per 100,000 of the population of pregnant women attending ANC services. This study found that there is inadequate screening for TB during pregnancy. TB in pregnant women heightens the chance of death during childbirth and causes danger to the child. Studies from Mexico and India indicate that TB positive pregnant women are twice as likely to give birth to a premature or low-birth-weight baby and four times more likely to die during childbirth (TB Action, 2010). The risk of infant death also greatly increases. Delayed TB diagnosis and treatment increases chances of death and leads to further spread of the disease (Lin & Chen, 2010). It is important to find out the factors associated with TB screening among the pregnant women in Kenya.

1.5: Etiology of TB and contributing factors

TB is caused by the Mycobacterium Tuberculosis Bacilli (MTB). About one third of the world population, i.e. about 2 billion people, is infected with MTB (Dye, et al., 1999). However, only about 10% of people infected with MTB will develop the disease during their whole lifetime, 90% of infections will remain latent or be cleared (Hopewell & Jasmer 2005) Latency can last for years or even decades. The exact site and physiologic state of MTB during latency is debated (Gomez & Mckinney, 2004).. The risk of active disease is higher among HIV-positive people, where annual rates of progression from latent infection to disease of 2%-8% have been reported. In the absence of HIV around 85% of reported TB cases are pulmonary TB (PTB) (Hopewell & Jasmer 2005)

In areas with high rates of HIV, the proportion of extra-pulmonary TB (EPTB) is much higher (Lienhardt, et al., 2003). Anyone can get TB but certain factors increase the risk of TB infection but the risk is much in certain people (Niijima, et al., 1990). According to Chin, et al 1998, in a multivariable model based on 601 matched pairs, the risk factor of TB include male sex, family history of TB, absence of a BCG scar, smoking, alcohol, anemia, HIV infection, and history and treatment of worm infection. TB is also associated with poverty and overcrowding. In a study conducted in India, overcrowding accounted for TB in infection at 71% higher infection rates in comparison to non-crowded environments (Baker, et al., 2008). In another study conducted in India, indoor pollution was found to increase the risk of pulmonary TB. According to the study interaction between cooking gas and fuel cooking or smoker in family revealed an OR of 3.14 (95% CI 1.15t0 8.8.56, p=0.02) for biomass fuel in comparison with LPG (Lakshmi, et al., 2010). Other factors to TB infection include malnutrition, chronic diseases such as kidney, diabetes and arthritis (Lienhardt, et al., 2003).

1.6: Screening and detection of Tuberculosis

Screening for TB, usually referred to as case findings, aims at diagnosing and treating TB as early as possible strategy to reduce the period that an infected individual can transmit the infection (WHO, 2012). Pulmonary tuberculosis (PTB) diseases should be diagnosed within 24 hours of patients' contact with health care but there is evidence that this does not usually happen resulting to delays in diagnosis (Yimer et al., 2009). Several studies have tried to quantify the influence of delay on the TB epidemic. In Ghana for example, a median delay of four months was reported by patients (Lawn, et al., 1998). In a study in Brazil, the median

delay was found to be three months and about 60% of patients had a delay longer than two months (dos Santos, et al., 2005). In Ethiopia, patient delay (the time from onset of signs and symptoms to first health institution visit) is alarmingly prolonged, with studies reporting median patient delay ranging from 2 to 4 months (Lienhardt, et al., 2001). Long delays may lead to adverse effects on the patients, their families, society and TB control (Mathur, et al., 1994). In many African countries, modern health services are consulted only after symptoms persist for some time and/or health deteriorates (Lienhardt, et al., 2001). This study will investigate factors associated with TB screening and detection among pregnant women that are important interventions in reducing TB transmission and the adverse consequences of the disease. The next section reviews literature on the factors associated with TB screening and detection.

CHAPTER 2: LITERATURE REVIEW

Screening for TB during pregnancy for prompt detection is associated with many factors that include decision making, ability to recognize signs and symptom of TB, healthcare-seeking behavior, access to health services socio-cultural, economic and health system factors (Storla1, et al., 2008). The following literature based on studies done in Kenya and other parts of the world critically looks at various aspects of factors associated with TB screening and detection.

2.1: TB control and diagnosis

One of the main objectives of any TB control Programme is to reduce tuberculosis transmission in the community through early detection of tuberculosis cases and prompt implementation of DOTS (DTLD, 2009). This is particularly important in the case of untreated smear positive patients who are the main sources of infections in a community (Enarson, 1991). Many studies have shown that people sick with TB may delay obtaining health care for long periods of time, which constitutes a serious problem for the control of the epidemic (WHO, 2007). Most of the countries in the world now apply case-finding approach for TB detection. The term passive case finding describes such methods for the identification of TB cases where the initiative for an individual patient-health provided contact is used to look for signs and symptoms in the client/patient that is suggestive if TB (Rieder, et al., 1997) (DTLD, 2009). In 2011, approximately 1.4 million people (range, 1.3 million–1.6 million) died of TB, 0.5 million were women (WHO, 2012). It is not well known that whether this is due to a higher risk of developing TB among men. Further, under notification history of TB among women suggests the possibility that cases of TB among women are under-reported in developing regions (Holmes, et al., 1998). Strategies aiming to reduce the time between the onset of symptoms and the initiation of effective chemotherapy may impact the infectious period in the community and thereby reduce the number of new infection (Karma, et al., 2006)

2.2: Impact of Undiagnosed TB on the community

Evidence suggests that TB has adverse effects on the patients; their family members, and society, as well as TB control in general (Mathur, et al., 1994). Where TB is endemic, each infectious case will result in between 20-28 secondary infections (Jochem, et al., 2009). Late diagnosis of pulmonary TB is likely to be associated with a worse prognosis owing to the presence of extensive disease and poor clinical condition (Styblo & Enarson, 1991). Factors

affecting diagnosis may worsen the disease, increase risk death and enhance tuberculosis transmission in the community (Odusanya & Babafemi, 2004). Delay in diagnosis and start of effective treatment of tuberculosis for patients result in a prolonged period of infectivity in the community and health care workers (Zafran, et al., 1994). Undiagnosed TB among women has even more adverse effects as the health and welfare of children and other family members (Hudelson, 1996 and Gounder, et al., 2011). Therefore, screening for TB and diagnosis is especially important among pregnant women and thus the need for the current study.

2.3: Factors contributing to TB screening and detection

In a passive case screening and detection approach the most important factors for early case detection include early recognition of TB-suggestive symptoms, early and adequate help seeking of the TB-suggestive symptoms, early and adequate help seeking of the TB-infected persons, and appropriate diagnostic performance by the health workers. This process is influenced by three main groups of inter-related factors: i) biological factors (occurrence of symptoms, severity of disease); ii) health care systems factors (availability of health care services, accessibility of services, quality of services; iii) socio-economic and cultural factors (poverty, social stigma, isolation, cultural behavior and belief). These aspects are detailed below.

2.3.1: Biological factors

According to the guidelines of the WHO, the most important suggestive symptoms for pulmonary tuberculosis is a cough for more than 2 weeks (prolonged cough) (WHO, 2012). A community based survey in Vietnam reported that prevalence of prolonged cough is not significantly different between men and women (1.3% and 1.5% respectively) (Thorson, et al., 2000). Another hospital based study from Vietnam reported that prevalence of cough and sputum expectoration among female TB patients was significantly less common than among male patients (Long, et al., 1999). Further, the absence of these symptoms was significantly associated with increased doctors' delays among both men and women. Another study in New York City also reported that absence of cough is significantly associated with longer health care systems delays (Sherman, et al., 1999). In addition, in many societies of Nepal and other developing countries, coughing and spitting up sputum are not socially accepted, especially among women. The cultural belief prevents women from deeply coughing and spitting up a good sputum sample therefore; the probability of finding AFB in the sputum

produced by women is likely to be lower than by men and women may not report cough during history taking in screening for TB (Matsushita et al., 1998).

2.3.2: Recognition of TB symptoms

Patients who recognize TB signs and symptoms are likely to provide this information to service providers thus prompting TB screening. Research conducted in Kenya revealed that TB patients only sought treatment after they had additional symptoms beyond persistent cough (Liefooghe, et al., 1997). Elsewhere, many patients failed to identify TB or even consider the possibility of TB from their symptoms, especially the less well educated, who were often women (HealthScope Tanzania, 2003). An Indian study found that patients with TB often found it difficult to differentiate symptoms of a serious condition from those of milder problems, such as a common cold (Ogden, et al., 1999). Consequently, many patients did not present to a health center or clinic for treatment until they experienced haemoptysis. Vietnamese study found that men with prolonged cough had better knowledge of TB symptoms than did women, and that recognition of symptoms they associated with TB correlated with seeking hospital care (Hoa, et al., 2003). These studies seem to suggest that there is a tendency among individuals to minimize the importance of their health problems and to discount or ignore the need for treatment. Many studies have found that men and women do in fact experience and interpret symptoms of TB differently. According to a study in Vietnam, women with TB report cough, sputum expectoration, and haemoptysis less frequently than do men (Long, et al., 2002). If a woman present to health centers without these characteristics symptoms, clinicians may not consider TB as a diagnosis. A study from Egypt revealed that significantly more women than men presented with purpura (as a symptoms of TB) (14.6% vs 2.6%) (Kamel, et al., 2003). A study in the urban and rural areas of Pakistan found out that cough was the symptom most commonly cited by both males (67.2%) and female (76.5%), while blood in sputum was least commonly cited by the males (17.9%) and females (18.6%) in the urban areas. In the rural areas, 57.7% of males gave blood in sputum as an important symptoms compared with only 5.6% of females. Prolonged fever was cited by 19.2% of males but only 4.9% of females. Neither males nor females reported night sweats, anorexia or weight loss as symptoms (Agboatwalla, et al., 2003). The current study sought to find out if failure to recognize TB symptoms contributed to TB screening and detection among pregnant women.

2.3.3: Factors associated with decision-making

In many low income countries, women cannot decide by themselves to seek health care, but the decision is often made by the husband or senior members of the family. As a result of their subordinate role in the family, they depend on men or older women for expenses and mobility in the event of illness and diseases (Okojie, 1994). Furthermore, due to lack of TB-related information, women themselves may not recognize the early symptoms of disease and therefore do not take the early decision for health care. Failure to make decision to seek health care may lead to poorer health status and poorer access to health care services among women, and therefore, they may receive less adequate health care than men (Needham et. al., 2011).

2.3.4: Factors associated with health care-seeking behavior

Health seeking behavior is a decision undertaken by an individual or family and friends to cope with illness. The process involves complex socio-cultural, psychological and economic factors (Tipping & Segall, 1995). An anthropologist named James C. Young (1981), proposed four criteria that determine patients choices of treatment which include: perceived severity of the illness, knowledge about the illness and remedy, perceived efficacy of each treatment choice and the cost of the treatment. In another study patients believed that they had malaria or pneumonia, depending on their symptoms (Eastwood & Hill, 2004). The same study observed that patients have complex patterns of care seeking behavior that causes diagnostic delay. These included, involving traditional healers, pharmacies, private doctors and health centres. Some patients use traditional methods and medical services simultaneously, and use more than one traditional healer before presentation to medical services (Eastwood & Hill, 2004).

Many of the socio-cultural and socio-economic factors that influence detection rates of TB also affect health seeking behavior in both men and women (Harper, et al., 1996). Some studies support the premises that the relatively lower number of female cases of active TB may be a consequence of barriers to help seeking affecting women more than they do man. In Nepal, for example, it has been reported that among those who presented to health centers voluntarily, only 28% TB cases were female. However, this percentage rose to 46% among those detected through active case finding (Cassels, et al., 1982). Therefore the current study sought to find out how health seeking behavior among pregnant women affects TB screening and detection.

2.3.5: Factors associated with access to health services

Anthropological studies choose accessibility (defined as geographical, economic and psychosocial accessibility) to the service as a main criterion for people when making their choice of treatment. In Tamil Nadu, India, Balasubramanian et al. (2004) reported that communication prevalence rate of smear positive TB in facilities were higher for men than women (male female ratio, 6.5:1); the male excess was reduced among TB clinic patient (male female ratio, 2.7:1) (Balasubramanian R, 2004). The findings of this study imply that women with TB are more likely to access clinical services of primary healthcare institution than are men.

Within the public health system, formal or informal eligibility criteria may prevent patients from accessing TB service (Ayuo,et., 2008). A study in Vietnam found that TB patient must have a fixed address to be eligible for treatment; those who are not eligible for treatment are referred to practitioners (Lonnroth, et al., 2001).This practice can constitute a major delay in TB detection for homeless and temporary migrant TB patients (Lonnroth, et al., 2001). In another study the level of care offered by the private sector is similar, or even inferior, to that available in public sector. However, patients' prefer the perceived confidentiality offered by private practitioners and therefore accepted the poorer quality of care (Khan, et al., 2000). Convenient timing, physical access to health service and poverty , desire to keep TB diagnosis a secret and fear of social stigma and rejection may impede patients from seeking health services (Lonnroth, et al., 2001) The current study sought to find out if these factors contributed to TB screening and Detection.

2.3.6:Education and knowledge-related factors

Studies point to the gender differences in educational opportunities and access to information in general including that of TB (Needham, et al., 1998) (Lienhardt, et al., 2003). Low education has also been linked to poor knowledge and erroneous beliefs about TB (Portero, et al., 2002). A study in South India revealed that 43% of illiterate participants and 52% above 45 years of age did not take action or delayed in taking action (Sudha, et al., 2003). A study from Tanzania reported that patient's delay is significantly longer in rural areas for patients with lower level of education and due to socio-economic barriers. Women are more likely to experience these factors than men (Wandwalo & Mørkve, 2000). However, these studies do not show how knowledge and education factors affect TB screening and detection among pregnant women. This study sought to demonstrate if these factors affect pregnant women in a different way.

2.3.7: Socio-economic factors

In many low income countries, women often have lower social position and poorer access to economic resources, education and information than men (Paoliso & Leslie, 1995). Evidence shows that men often have the last word in making decisions about production, business and allocation of household resources in the family (Khan, 2000). In Vietnam, large expenditure and health care expenditures were commonly decided by husbands than wives (Thorson, et al., 2000) (Tran, 1999). The resulting economic burden on patients and care givers contributed to delayed TB diagnosis (Needham, et al., 1998). In other words, women are pressured by both the economic and social costs of TB. An Indian study pointed that about 46% of the respondents cited lack of money as the main reason of failing to seek care (Sudha, et al., 2003). In Kenya, although antenatal care and TB services are free, there is still payment by those seeking the services (Ochako, et al., 2011). Therefore, the current study sought to find out if any actual or socio costs deter pregnant women from accessing health services thus leading to delays in TB detection during pregnancy.

2.3.8: Socio-cultural factors

TB detection is likely to be a result of a combination of factors including social barriers (e.g. TB related stigma), woman's immobility, economic dependence on husbands or family and lack of education and awareness of the significant of TB symptoms (Cambanis et. al., 2005). TB is disease strongly associated with traditional beliefs and stigma. Women may suffer silently for longer periods of time because of cultural expectations forcing them to accord lower priority to their own health (Uplekar, et al., 2001). Pressure to do household chores and the strain of keeping their condition secret was found to cause women to delay in help seeking and default from the treatment (Uplekar, et al., 1999). In the Philippines, TB is referred to as shameful and a bad mark on the family (Long, et al., 2001). Studies reveal that stigma is an important contributing factor to delay, as it seemed to weigh strongly on patient's decision regarding diagnosis and treatment (Bond and Nyblade, 2006 and Khan, 2012). Women especially, were found to shop around for a more appropriate diagnosis and treatment (Uplekar, et al., 1999) (Johansson, et al., 2000). Being largely dependent on their husbands or families, women's concerns about the social impact of TB may include realistic fears of isolation, rejection from their family and even divorce (Auer, et al., 2000). In this study the author sought to find out if pregnant women delay in help seeking care due to socio- cultural factors despite the need to seek prompt help for any problem during pregnancy.

2.3.9: Health system factors

Studies have sought to establish whether TB screening and diagnosis is associated to providers' inability to diagnose the disease promptly. In Kenya, 90% of TB suspects had attended a health care facility (private and/or public) for an average of 5 times, yet 65% had neither a chest radiograph taken nor their sputum examined (Liefooghe, et al., 1999). In India, the first source of help for a majority (86%) of patients is private practitioner and the median delay in diagnosis is found to be about 3 weeks and 2 weeks respectively among urban and rural patients after they sought help at private clinics (Sudha, et al., 2003). In Vietnam, patients who had first turned to a private pharmacy or a private physician were significantly more likely to have a long provider delay compared to people who had first turned to the National Tuberculosis Program (NTP) (Longhorth, et., 1999). In above Vietnam study and another in South Africa, limited ability of the health care system to timely diagnose TB was attributed to staff knowledge and attitudes, availability of diagnostic supplies and equipment for TB diagnosis, staff training (Longhorth, et., 1999) (Waisbord, 2007). Referral and linkage among services delivery points and TB centers, staff shortage coupled with pre-service training that do not match the national TB guidelines may be associated to health system delay in detection of TB (DTLD, 2009).

The literature review above highlights some factors identified to contribute to TB screening and detection among men and women. It is evident that pregnant women come into contact with health care providers at least once during pregnancy in an ANC visit. However, there is a gap of knowledge on TB screening and detection among pregnant women when they attend ANC services. To inform policy and practice; and therefore intervene for TB control, it is important to understand clients', ANC providers' and facility's practices in relation to known factors associated with TB screening and detection during pregnancy. This study sought to investigate these associations among pregnant attending ANC services in Thika Level V Hospital.

CHAPTER 3: STATEMENT OF RESEARCH QUESTION

3.1: Problem statement

Tuberculosis poses considerable risk to pregnant women and their unborn babies. In a study conducted in South Africa mother-to-child transmission of TB was estimated at 15 percent within three weeks of birth. This mother to child transfer of tuberculosis was correlated with untreated tuberculosis or late diagnosis (Pillay, et al., 2004). Delayed TB diagnosis in pregnant women heightens the chance of death during childbirth and poses danger to the unborn child. Case-control studies from Mexico and India report that pulmonary tuberculosis in the mother increases risk of prematurity and low birth weight in neonates two-fold, and the risk of perinatal deaths between three and six-fold . In pregnant women with a late diagnosis of pulmonary tuberculosis, obstetric morbidity is increased fourfold, according to a review on tuberculosis and pregnancy (Pillay, et al., 2004). The WHO review also reported higher risk of miscarriage, eclampsia and intra-partum complications. Under-diagnosis of TB among women and the broader neglect of the impact of this dual epidemic of HIV and TB also affect children, especially since women are hit hardest in their peak reproductive and economically productive years. Major obstacles to the success of tuberculosis control include factors related to seeking and obtaining timely diagnosis and treatment (Helman, 2000).

Delay in the diagnosis and/or treatment of tuberculosis worsens the disease, increases the risk of death and tuberculosis transmission in the community. Increasing incidence of HIV, low access to health care and other factors contributing to patient delay in seeking medical treatment are thought to be contributing to the persistent burden of tuberculosis. This counteract the expected improvement due to Directly Observed Treatment strategy (DOTS) of TB management (World Health Organization, 2006). Although active TB case finding during antenatal care is an important element to successful control of tuberculosis (TB), a study conducted in Kenya shows that, among the 12,604 immediate (0 to 6 weeks after delivery) post natal care clients (PNC) screened for TB, 14 TB cases were diagnosed (Ndwiga et.al, 2011). This is a prevalence rate of 95 per 100,000 PNC clients, a rate similar to DLTLD's 2009 estimate of 95 per 100,000 sputum smear positive population (DTLD, 2009). In this study, 6 women were diagnosed of TB, within the first 48 hours of delivery. This suggests that there is delay in TB detection during pregnancy despite many pregnant women being in contact with health care services during the ANC period. Although the body of knowledge exists on delays among the general population, factors influencing screening of

TB among the pregnant women's have not been studied. The high ANC attendance in Kenya forms a good base to study the factors contributing to TB screening during pregnancy. This study determined factors contributing to screening of TB among pregnant women attending ANC services.

3.2: Justification

It is important to make an early diagnosis of tuberculosis infection and disease in a pregnant woman because tuberculosis diagnosed and treated appropriately ensures good prognosis for both mother and child (Lin & Chen, 2010). WHO recommends TB case detection among HIV patients as TB is a major cause of death among people living with AIDS and many clients with HIV also have TB. Moreover, the national guidelines on PMTCT recognize TB as a common opportunistic infection in HIV-1 pregnant women and recommends a full physical examination focusing on HIV related symptoms and illness and signs of opportunistic infection. With 88% of pregnant women in Kenya attending ANC, this offers an opportunity to maximize on intensified case finding of TB whose MDG target is 60% by 2015 which would otherwise be a missed opportunity. Knowledge on the factors contributing to TB screening and diagnosis during pregnancy would ensure effective strategies for the early TB treatment for pregnant mothers thus contributing to the reduction of gestational TB related morbidity and mortality and achievement of the MDG target of reducing maternal mortality by 75% by year 2015.

3.3: Research Question

What are the factors associated with tuberculosis screening among pregnant women attending ANC services?

3.4: Main Objective

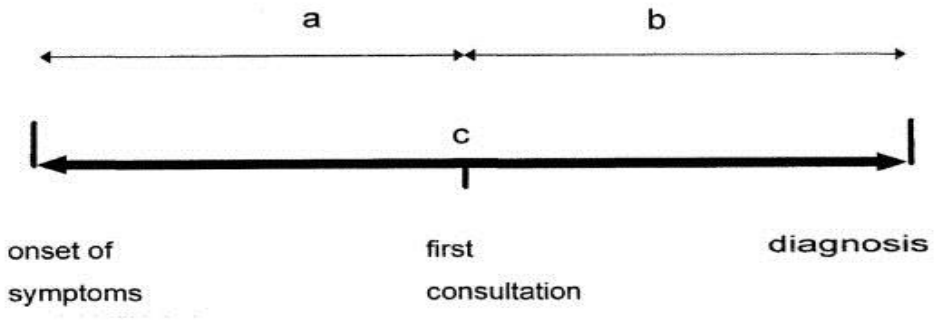
Determine factors contributing to screening of tuberculosis during pregnancy.

3.4.1: Specific Objectives

1. To determine the socio profile of mothers attending ANC clinic
2. To establish the mothers' knowledge on gestational TB
3. To determine the laboratory's preparedness for TB detection
4. To determine the mothers, health seeking behavior for TB screening during pregnancy
5. To determine the providers' knowledge and practice on TB screening in the ANC services

3.5: Conceptual Framework on definitions of delays in TB detection

Delay in TB detection has been described as a process involving several steps as shown in figure I below. The study examined factors contributing to TB screening and detection in relation to the delay conceptual framework describe below.



(Adapted and modified from Yimer et al., 2005)

Figure 1: Delays in TB Detection

a = patient factors – the time from onset of symptoms to until the patients see the first health care practices. b = health care system factors – the time from first health care seeking for diagnosis until the diagnosis made. c = total factors (a + b).

The current study examines factors associated with TB screening and detection based on the above conceptual frame work. From the conceptual frame work, there are numbers of factors influencing help seeking and diagnosis of TB and start of treatment. "Time to first health provider" is the interval from onset of symptoms to the first presentation to any health care provider including self medication. "Patients factors" is the time interval from onset of symptoms to the first visit to a hospital or a doctor or a local public health facility where TB diagnosis is available. "Doctor's factors" or "health care personnel's factors" is the time interval from the first visit to a hospital or a doctor or a local public health facility where TB diagnosis. "Health system factors" speaks to the interval from the first visit to any type of provider to the start of treatment. The patients' and providers' factors, respectively, among total factors is affected by countries geographical, socio-economic, demographic, socio culture and health systems factors (Storla1, et al., 2008).

3.5.1: Variables Interaction

The study examined patient and health system factors contributing to TB screening and diagnosis during pregnancy. Figure II below show the interaction of the study's independent and the dependent that were used to measure the factors contributing o TB screening and diagnosis.

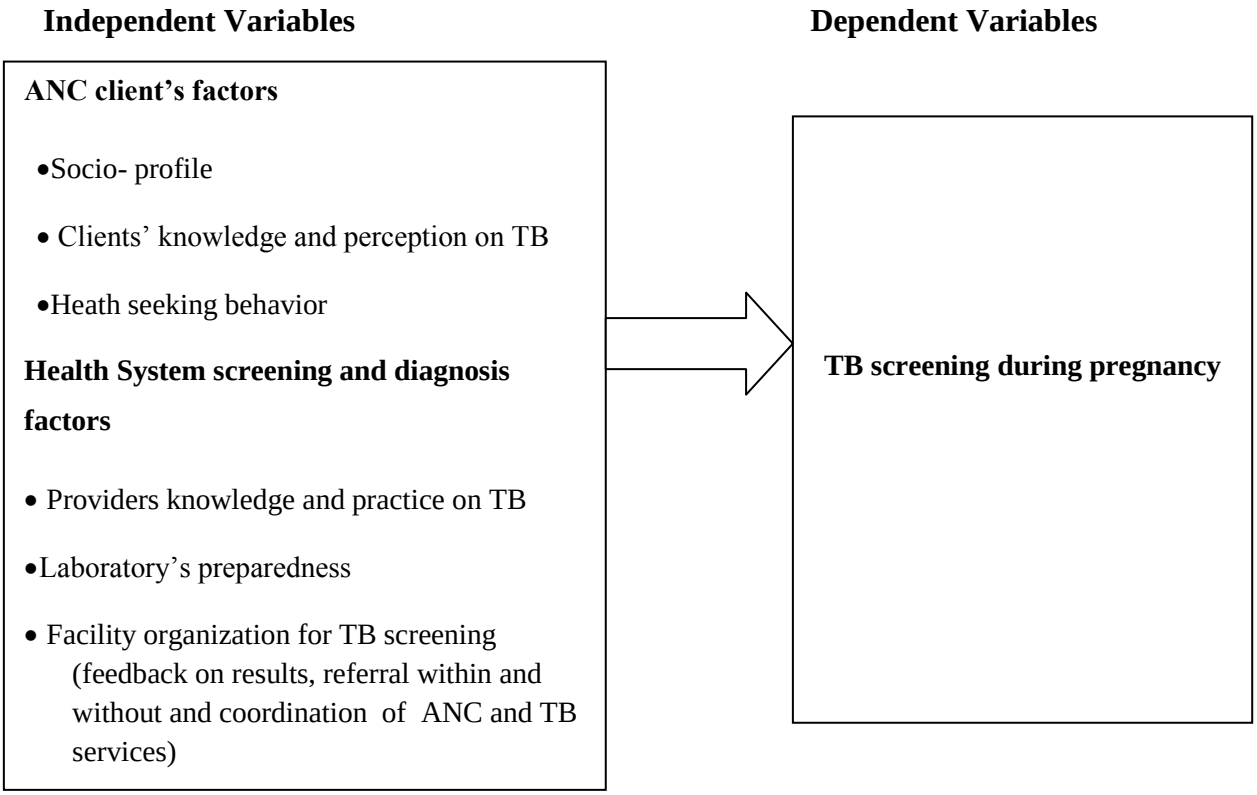


Figure 2: Variable Interaction

The study sought to find out how all the factors in figure above are related to TB screening during pregnancy. Knowledge & perception was examined from both the providers' and the clients' aspect. For example, providers were asked questions about knowledge on how to screen for TB during the ANC period led to health system factors that contributed to low TB screening and detection. The providers' view may not perceive TB screening as important aspect of ANC services and thus fail to conduct TB screening for ANC clients in the four recommend ANC visits. Likewise the clients may not perceive the TB symptoms as serious and thus delay in seeking help for TB screening and detection. Access was also examined from the providers' and the clients' view. From the clients view lack of funds for services is examined and how it associated with patient factors in seeking health care for TB screening

and diagnosis. Human resource factors such as staff supervision, deployment coupled with lack of supervision at the health facility could be associated with access to TB screening and detection among the pregnant women.

3.6: Hypotheses

1. There is no association between TB screening and the respondents' socio profile
2. There is no association between TB screening and the respondents' knowledge on gestational TB
3. There is no association between TB screening and study respondents' health seeking behavior for TB detection during pregnancy
4. There is no association between TB screening and health care providers' knowledge on TB
5. There is no association between TB screening and providers' practice on TB detection in the ANC services
6. There is no association between TB screening and the laboratory's preparedness for TB detection

CHAPTER 4: METHODOLOGY

The following section describes study design, variables of interest, the study site, sampling procedure and the sample size. The study's data collection tools; data collection and analysis methods are also discussed.

4.1: Study Design

The study used descriptive cross-sectional design. Study respondents included ANC mothers, ANC providers and the institutional managers. Data were collected over a two-week period between 28th July, 2013 and 10th August, 2013.

4.2: Variables

Quantitative variables were measured using structured questionnaires and observations checklist. To ensure that the variables are standard, the investigator borrowed heavily from the Kenya demographic health survey on socioeconomic status and the WHO tool on delay in TB detection (WHO, 2009). The following variables formed the basis for data collection:

4.2.1: Independent variables

4.2.1.1: Socio demographic factors and TBError! Bookmark not defined. screening and detection

1. Age
2. Marital status
3. Number of children
4. Level of education/literacy
5. Whether she is household head or not

4.2.1.2: Ability to access to Health care ANC and Laboratory services

1. Distance to facility
2. Ability to pay for services
    a. Source of income(employed or un employed)
    b. Amount of income per month
    c. Partner/husband or relatives support financial or socio support
3. Waiting time for services in the facility
4. Availability of providers in facility

4.2.1.3: Pregnant Mothers Knowledge and Perception on

1. Signs and symptoms of TB
2. How TB spreads
3. Effect of TB to the unborn baby
4. Effect of TB to the pregnant women
5. When/where to seek care or help for illness
6. Perception of TB during pregnancy

4.2.1.4: Health seeking behavior for TB screening and detection during pregnancy

1. Practice on seeking care in cases of suspected TB (traditional healers, private practitioners/chemist, public facility)
2. Type of provider seen if in health facility
3. Reasons for choice of provider seen if care is sought elsewhere
4. Reasons for not seeking care
5. Myths about TB disease
6. Stigma on TB
7. Influence on care seeking behavior by partner/husband relative
8. Ability to make decision on health issues during pregnancy

4.2.1.5: Reported practice in TB during ANC

1. Type of service providers who made the initial diagnosis
2. Duration between initial health facility visits and TB detection
3. Number of health visits encounter before the initial diagnosis
4. Action taken by the providers to who made the initial TB diagnosis

4.2.1.6: ANC client's sources information/ communication on TB illness

1. Information on TB received during interaction with service provider in ANC visit at that point in time
2. Information on TB received previously from ANC providers in the facility
3. Information on TB received from other sources
4. Type of sources of information

4.2.1.6: Providers knowledge practice and perception on TB screening and detection

1. ANC providers' training in TB detection during pregnancy
2. Knowledge on the TB guidelines during pregnancy

3.Service providers' knowledge on TB

4.Knowledge on when to screen for TB during pregnancy

5.Practice on TB detection

6.Knowledge on referral mechanism for TB detection

7.Practice on referral for TB detection within and without the facility

8.Practice on management of ANC clients detected to have TB

9.Providers' opinion on factors affecting TB detection for ANC clients

4.2.1.7: Referral between the ANC and laboratory

1.Service providers' knowledge of the laboratory referral tools for TB suspect within ANC

2.ANC service providers' practice on referral of TB suspect within ANC to the laboratory

3.Laboratory service providers' practice in feedback on TB specimens results from ANC

4.2.2: Dependent variables

No of pregnant women screened for TB during any contact with a service provider in any of the ANC visits

Screening for Tuberculosis in this study consists of history-taking of persistent cough lasting longer than two weeks with or without blood stained sputum; chest pain and/or shortness of breath; excessive night sweats; intermittent fever; loss of appetite; loss of body weight and excessive tiredness; generally feeling unwell and swollen glands for TB of the glands

4.2.3: Study Site

The study was conducted in Thika Level Five Hospital, located in Thika Municipality in central province of Kenya. The district is adjacent to the northeastern border of Nairobi. The district has a population of 645.713 with approximately pregnant women. The total TB clients per year are 1327 (Thika District annual report, 2010). About 200 TB patients per month are receiving TB treatment in the TB clinic, out of which 67 are women (Thika Level V Hospital TB register, accessed Dec 5th 2011). The hospital has a bed capacity of 247, but usually has bed occupancy of an average of 400 patients (Thika District annual report, 2010).

4.2.3.1: Rationale for choice of Thika Level Five Hospital

The hospital is one of the high volume public hospitals referred to as MOH Level V facility and serves both rural and pre-urban population. It also serves low income residential areas such as Kiandutu slum and the many workers from the industries in its proximity. Due to these factors, it provides a diversity of clients representing various socio-economical classes. The high number of ANC clients provides a good case for the study. The author had ongoing work in HIV and FP in the facility and had identified a practical need to study the area of TB screening and detection among ANC clients.

4.3: Study Population

The study population consisted of pregnant women attending the ANC clinic within the hospital. These clients were recruited for an exit interview during the study period. Providers working in the TB and MCH clinics were also interviewed. The hospital management team namely the hospital superintendent, hospital Matron, Nurse in charge MCH/FP, the laboratory technician in charge and the procurement officer in charge of Thika Hospital were also included in the study.

4.3.1: Inclusion criteria

Pregnant women attending ANC clinic and TB clinic in Thika Hospital were eligible for the study. All the above hospital management team members had been managers in their respective areas for at least the last one-month prior to study date.

4.3.2: Exclusion criteria

- Unwillingness to participate in the study
- Institution managers for a period less than one month in facility- as they might not have adequate exposure to facility management practices in relation to TB management.

4.4: Sampling

The sampling procedure and the sample size for ANC clients are described below.

4.4.1: Sampling procedure

The study used purposive sampling to recruit the ANC mothers given that TB among ANC mothers is rare in order to obtain a meaningful sample size. Purposeful sampling was used for the key informants (hospital superintendent, hospital Matron, Nurse in charge MCH/FP, the laboratory technician in charge and the procurement officer).

4.4.2: Sampling ANC Clients

The mothers attending the ANC clinic for any visit formed the sample for all possible pregnant mothers. Therefore, the first pregnant mother was drawn from the ANC register for exit interview. Once this was done, all pregnant women attending ANC during the three weeks data collection period and willing to participate in the study were purposefully selected as the sample size.

4.4.3: Sample Size

The total expected TB cases in Thika level V Hospital are 1327 per year. About 600 women attend ANC per month in Thika level V Hospital (Thika District annual report, 2010). The available data from Thika Hospital shows about 110 attend TB clinic monthly (Thika level V Hospital TB register, accessed Dec 5th 2011). Records on the number of pregnant mothers detected with TB were not available. The ANC mothers therefore formed the sample size for the study. A total sample size of 478 was obtained. This way the investigator hoped to ensure the adequate ANC cases screened of TB during the current pregnancy would be captured.

In order to understand service provides' practice in TB detection a record review of ANC clients screened for TB for twelve period months preceding the study (June 2011 to June 2012) was conducted.

4.5: Data collection

This section highlights the data collection methods, tools and analysis. Qualitative and quantitative approaches were employed in data collection.

4.5.1: Study instruments/tools

The following were data collection tools used for the study.

4.5.1.1: Quantitative Data collection

An exit interview using a semi-structured questionnaire was used for pregnant women to determine the practice of TB detection among pregnant women. TB and ANC registers and the respective client files were reviewed for complementary secondary data. A checklist was used to assess the facility for supplies and commodities for TB diagnosis by reviewing and recording the supply status for the last one year to the date of the study. Using the same checklist availability of laboratory reagents was also observed.

4.5.1.2: Qualitative Data collection

A key informant guide was used for the hospital management team to collect the qualitative data in relation to various aspects of delay in TB detection. Six managers namely the in

charges, MCH unit, TB clinic, Comprehensive care unit, procurement office. Medical officer, Obstetric and Gynae department and laboratory unit were interviewed to provide the relevant data from their managerial position on TB detection.

4.6: Data Processing and analysis

The section below describes the process and analysis used in the study.

4.6.1: Data Processing

The EPI data version 3.4.3 computer software was used for data entry. Stata SE 11 was used for data cleaning and analysis. Recurrent themes within the data were categorized accordingly and put in tabular form as basis for analysis in relation to different variables TB detection during pregnancy.

4.6.2: Analysis of Qualitative Data

Qualitative data obtained through key informant interviews and ANC mothers' exit interviews in the open-ended questions were captured on paper and audiotapes and later transcribed and typed into MS Word. Observations made from documents such as the records, ordering and receiving tools for supplies TB detection were typed into ms word and put into various categories. At the analysis stage, a thematic framework was used in analysis, allowing for iterative use of both deductive and inductive approaches. Emerging patterns were identified based on the theoretic knowledge on the factors associated with TB screening and detection during pregnancy. The availability or lack of commodities and supplies was compared to the practice of TB detection during pregnancy. Explanations for the patterns such as the laboratory reagents, referral mechanisms, supervision and how they affect TB detection were identified and observed to show if they are present or absent in the Thika hospital situation and then compared to other settings or situations in detection of TB services. This helped to show they contribute to screening and TB detection during pregnancy at the hospital.

4.6.3: Analysis of Quantitative Data

All the questionnaires were collected at the end of each day including the spoilt ones and checked for completeness and accuracy. Seven exit interview questionnaires did not have accurate data and were therefore discarded. Raw data obtained in numerical form or frequencies of variables obtained was manually entered in EPI data version 3.4.3 computer software and analyzed using Stata SE 11software to give descriptive statistics. Descriptive statistics included measures of central tendency such as mean, and median. These presented

the picture of the findings of different variables in relation to factors associated to TB screening and detection among pregnant women attending the TB clinic.

Narrative data was collected through open-ended questions. The responses were coded and analyzed together with the quantitative data.

4.6.4: Minimization of Errors and Bias

Training of data collectors was done to ensure uniform understanding of the data to be obtained. During data collection, the researcher avoided conducting interviews with familiar or known respondents in the hospital management team members. In such cases, research assistants conducted the in-depth interviews. A pilot test for the study design and tools was conducted in Kiambu District Hospital to ensure they were accurate. Data was cleaned and carefully coded to ensure correct entries for analysis.

4.6.5: Ethical Considerations

Following approval of the study by the School of Public Health, permission was sought in writing to conduct the research from the Kenyatta National Hospital and University of Nairobi Ethics and Research Committee. The Ministry of health (MOH), Division of Reproductive Health (DRH) and DLTLD were also informed since they are possible users of the study results. The Thika hospital's administration was informed to allow entry into the site, records and the respondents.

TB is a disease associated with stigma. Consequently, in conducting the study, the author ensured that ethical issues such as right to respondent's dignity, privacy and respect are strictly followed. Respondents' oral and written informed consent was obtained. Each respondent was given a consent form to sign as evidence of knowledge for participation. Respondents were assured that they could withdraw at their own volition without penalty. The respondents were informed they could also freely access research data pertaining to them because they have moral ownership. The questionnaires were without reference to any identity, filled in private and data collected was only used for academic purposes.

4.6.6: Study Limitations

Use of purposive sampling in obtaining the sample size limits generalization of the findings obtained in this study. Clients/patient received from ANC clinic and any other service delivery points were issued with new identification numbers in the TB register at the TB

clinic. In addition, the register does not indicate the client were received from whether within or from without the facility. It was therefore difficult to retrieve records for review service statistics on TB during pregnancy due to poor record keeping. Time and finances to support data collection exercise was constrain also experienced. The study relied on client's memory of signs and symptoms of TB that were experienced during her pregnancy and hence the likelihood of recall bias. The ANC service provision in the hospital during the data collection started late (at times even as late as eleven o'clock) in the morning. This led to clients becoming impatient and some refused to participate in exit interviews due to the long waiting time. The numbers of exit ANC patients/clients diagnosed of TB during pregnancy is small. However, it was complemented by data from records review and as such this did not affect the desired number of the sample size and the results.

CHAPTER 5: RESULTS

This chapter presents findings of the study and their interpretation. The findings of factors associated with TB screening and detection attributed to ANC clients are obtained from the ANC clients exit interviews. Findings on factors associated with the health care system in TB screening and detection among pregnant women are obtained from the data on facility preparedness for TB detection, service provider interviews and in-depth interviews with selected facility's department managers. Finding from the in-depth interviews with selected facility's departments' managers explains the factors associated with the patient and the health system factors. Descriptive statistics are presented in percentages, frequencies and means in the form of text, tables and graphs while chi-square has been calculated for inferential statistics.

Out of the 480 targeted exit interviews, we obtained 478 responses (99.6%). All respondents interviewed resided in Thika district at the time of the study. Twelve (100%) ANC and TB service providers' on duty in the two service delivery areas at the time of the data collection participated in the quantitative and qualitative data structured interviews.). Six in-depth interviews were conducted with selected hospital department in charges. A facility inventory for TB and ANC commodities, supplies and records was also conducted. In order to understand service providers' practice in TB screening and detection, a record review was conducted for ANC clients screened for TB in the twelve months period preceding the study (June 2011 to July 2012). Out of these, a total of seven ANC clients/patients had been diagnosed of TB during pregnancy during the period and their records were reviewed.

5.1: Patient Factors in TB Screening and Detection Among ANC Clients

This section explores findings on factors associated with TB screening attributed to ANC clients namely; clients' socio-demographic factors, client access to ANC and laboratory services, their income and pregnant women's knowledge and perception on TB. Findings on ANC clients' health seeking behavior if suspected/or self suspected to have TB, myths and stigma associated with TB and ANC clients source of information on TB disease are also presented.

5.1.1: Socio Demographic factors of the ANC Clients Respondents

This section explores the socio demographic characteristics of all the ANC clients' respondents. The findings will later be used to show how they relate to the factors contributing to TB screening and detection among pregnant women for those clients who experienced signs and symptoms of TB as well as those that were detected with TB in the study. From the findings, 27% of the clients (n= 478) were making the first ANC visit, 26% the second ANC visit, while 24% were making a third visit, 13% fourth visit and 10% the 5th visit and above. Figure 2 below shows the ANC clients' visits.

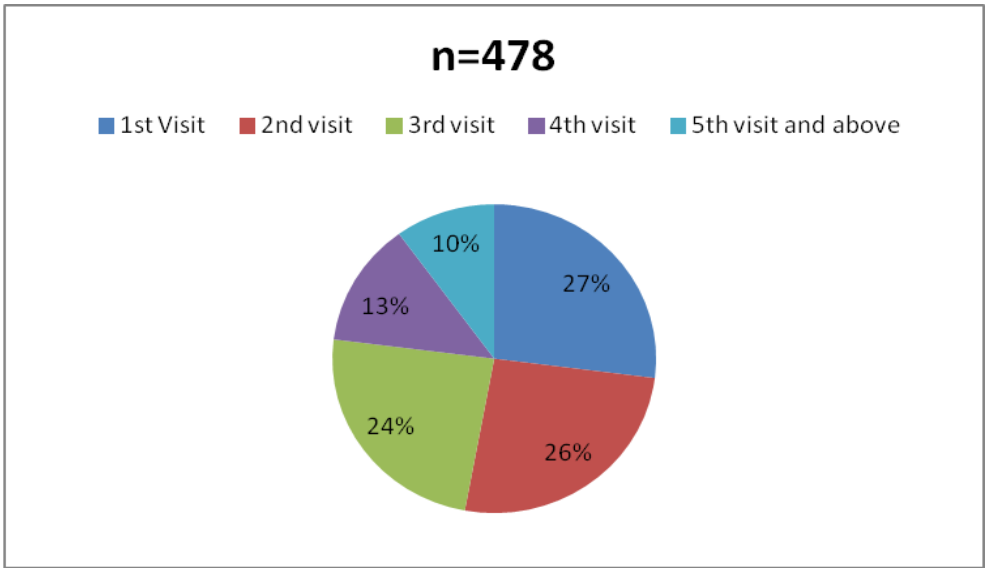


Figure 3: Clients ANC Visit

The following are findings on respondents' age, marital status, level of education, number of children, household head, sources and the income level. Majority 47% (n=226) of the clients interviewed were between 21-25 years of Age. Out of the 478 ANC clients interviewed, 88% of the respondents were married or living with a partner, while 11% were single. Approximately 42% (n=199) of them had attained secondary level of education, 39% (n=186) primary level with 19% (n 89) attaining tertiary education. About half (50.6%) of the respondents had children. Majority, 74% (n=175) had one or two children, 9% (n=21) had between three and five children and 18% (n=42) were pregnant for the first time. Among the respondents 10% (n=49) were living in female-headed households. Out of these, 61% of the households were headed by the respondents while 39% were headed by another female relative such the mother, grandmother and aunt. Table 1 below illustrates the findings of the ANC Client respondents' socio-demographic characteristics.

Table 1: ANC Clients characteristics												
Variable	**1st Visit**		**2nd visit**		**3rd visit**		**4th visit**		**5th visit and above**		**Total**	
Age	**n=129**	**%**	**n=124**	**%**	**n=115**	**%**	**n=62**	**%**	**n=48**	**%**	**n=478**	**%**
15-20 years	20	(15.5)	18	(14.5)	17	(14.8)	10	(16.1)	6	(12.5)	71	(14.9)
21-25 years	60	(46.5)	58	(46.8)	55	(47.8)	26	(41.9)	27	(56.3)	226	(47.3)
26-30 years	27	(20.9)	27	(21.8)	30	(26.1)	20	(32.3)	13	(27.1)	117	(24.5)
31-35 years	16	(12.4)	19	(15.3)	12	(10.4)	3	(4.8)	1	(2.1)	51	(10.7)
36-40 years	6	(4.7)	2	(1.6)	1	(0.9)	3	(4.8)	1	(2.1)	13	(2.7)
Marital status	**n=128**	**%**	**n=124**	**%**	**n=115**	**%**	**n=62**	**%**	**n=48**	**%**	**n=477**	**%**
Maried / Living with partner	114	(89.1)	113	(91.1)	95	(82.6)	57	(91.9)	45	(93.8)	424	(88.9)
Single	14	(10.9)	10	(8.1)	18	(15.7)	5	(8.1)	3	(6.3)	50	(10.5)
Divorce	_	_	1	(0.8)	1	(0.9)	_	_	_	_	2	(0.4)
Other	_	_	_	_	1	(0.9)	_	_	_	_	1	(0.2)
Number of children	**n=67**	**%**	**n=61**	**%**	**n=67**	**%**	**n=23**	**%**	**n=20**	**%**	**n=238**	**%**
None	15	(22.4)	7	(11.5)	13	(19.4)	2	(8.7)	5	(25.0)	42	(17.6)
1-2 children	43	(64.2)	47	(77.0)	51	(76.1)	20	(87.0)	14	(70.0)	175	(73.5)
3- 5 children	9	(13.4)	7	(11.5)	3	(4.5)	1	(4.3)	1	(5.0)	21	(8.8)
Level of education	**n=129**	**%**	**n=124**	**%**	**n=114**	**%**	**n=62**	**%**	**n=48**	**%**	**n=477**	**%**
Primary	53	(41.1)	45	(36.3)	50	(43.9)	27	(43.5)	11	(22.9)	186	(39.0)
Secondary	52	(40.3)	54	(43.5)	47	(41.2)	25	(40.3)	21	(43.8)	199	(41.7)
Tertiary	24	(18.6)	23	(18.5)	17	(14.9)	9	(14.5)	16	(33.3)	89	(18.7)
Never been to formal school	_	_	1	(0.8)	_	_	_	_	_	_	1	(0.2)
Household head	**n=15**	**%**	**n=12**	**%**	**n=13**	**%**	**n=4**	**%**	**n=5**	**%**	**n=49**	**%**
Is she household head	10	(66.7)	7	(58.3)	5	(38.5)	3	(75.0)	5	(100.0)	30	(61.2)

5.1.2: ANC Respondents' Source of Income

Approximately, 40 % (n=188), of the respondents were unemployed and not looking for work while 26% (n=124) of them were self-employed or working in the formal sector or in formal trading while 3.8% of them were students. Table 2 below shows respondents' sources of income.

Table 2: Respondents' Source of Income

Income Source	n=478	%
Unemployed, looking for work	39	8.2
Unemployed, not looking for work	188	39.7
Work in formal sector	3	0.6
Self employed formal sector/formal trading	124	26.2
Employed Professional, technical, managerial	22	4.7
Employed, clerical, sales, service	40	8.5
Employed skilled manual	5	1.1
Employed unskilled manual, domestic worker	12	2.5
Casual skilled	11	2.3
Casual labour	11	2.3
Student	18	3.8

5.1.3: Respondents' Income

Majority of the respondents (37% n=179) were earning between Ksh 10,000-19,999 per month, 24% (n=117) between Ksh 20,000 to 49,999 per month, 23% (n=108) earned between Kshs 5,000-9,999 per month, 8% (n=38) were earning between Ksh 3,000 to 4,999 per month and 3 % of them were earning between Ksh 1,000 to 2,999 per month. Figure 4 below shows the respondents' income levels.

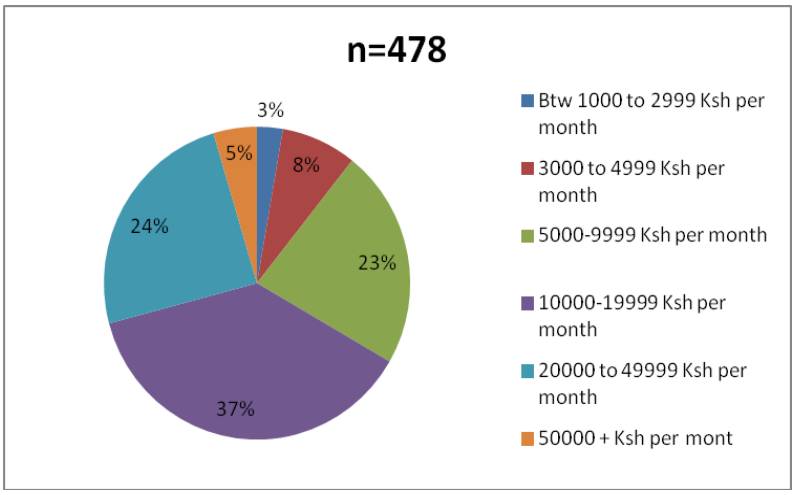


Figure 4: Respondents' Source of Income

5.1.4: Respondents Waiting Time

This section reports the ANC clients' waiting time for ANC consultation on the day they were interviewed. The study found out that the average waiting time to receive ANC services for the majority of the respondents 31% (n=148) was over 5 hours compared to the recommended 30 minutes as per the service charter for ANC services. The median waiting time recorded for this study was 4 hours. Table 3 below shows the average waiting time.

Table 3: Respondents Average Waiting Time for ANC

Time	n=478	%
30 minutes	47	10
One hour	38	8
Two hours	69	14
Three hours	83	17
Four hours	93	20
Over five hours	148	31
Median* Percentile 50% (4.hours)		

5.1.5: Pregnant Mothers' Knowledge and Perception on TB

Findings on the knowledge of the following signs and symptoms of TB- (i) persistent cough for three or more weeks with or without blood stained sputum, (ii) chest pain; (iii) close contact with a case of TB, (iv) loss of body weight, and (v) intermittent fever and night sweats are presented below. About 96% (n= 458) knew that coughing for more than two weeks is a sign of TB, 79% (n=375) said weight loss is a sign of TB 58% (n= 276) said that night sweats is a sign of TB, 12% (56) and another 12% (59) knew that blood stained sputum and chest pain or difficulty in breathing were symptoms of TB. Only 4% (17) of the respondents did not to know the signs and symptoms of TB disease giving incorrect responses such as thinning of hair and darkening of skin color, among others. Table 4 below shows findings of the respondents' knowledge on signs and symptoms of TB.

Table 4: Pregnant Mothers Knowledge and Perception of TB

Variable	Total	
% clients who	**n=478**	**%**
Have knowledge on signs and symptoms of TB		
Persistent coughing >=2 weeks	458	96
Weight loss	375	79
Fever	303	63
Night sweats	276	58
Enlarged glands	190	40
Blood stained sputum	56	12
Chest pain / Difficulty breathing	59	12
Others (thinning of hair, loss of appetite, darkening of skin color)	17	4

5.1.6: Respondents (ANC Clients) Knowledge on How TB Spreads

From the findings, majority of the mothers 86% (n=411) said that TB is spread through inhaling droplets from an infected person, 30% (n=141) said that sharing utensils with an infected person could spread TB while 13% stated that TB could be spread by sharing a room with infected person. Only 1% (n=4) of the respondents mentioned that TB could be genetically acquired. Table 5 below illustrates respondents' knowledge on how TB spreads.

Table 5: Pregnant mothers' knowledge on how TB spreads

% clients who	n=478	%
Have knowledge on how TB spread		
Inhaling droplets from an infected person	411	86
Sharing a room with infected person	63	13
Genetic inheritance	4	1
Sharing utensils	141	30

5.1.7: Respondents' Knowledge of the effects of TB on the Unborn Baby

Almost half of the respondents (n=478) did not know how TB affects the unborn baby. For those who knew how TB affects the unborn baby, 46.7% (n=223) of them mentioned that TB causes low birth weight, 37.9% (n= 181) still birth, and 38.1% (n=182) premature birth. Table 6 below shows the respondents' knowledge of the effects of TB on the unborn baby.

Table 6: Respondents' knowledge on the effects of TB on the unborn baby

Have knowledge on how TB affect unborn baby	N= 478	%
Premature baby	182	38.1
Low birth weight	223	46.7
Intra uterine death	181	37.9
Still birth	186	38.9

The study further found that 44 % (n=107) of the mothers who did not know the effects of TB on the unborn baby had attained secondary level of education. Among those who had attained some level of education, 40% (n=92) knew the effects of TB on the unborn baby. The 30% (n=93) that did not know the effects of TB on the unborn baby had attained primary level of education. A further 0.5 % (n=2) of the respondents who did not know the effects of TB on the unborn baby had never been to formal school. Table 7 below presents the findings on respondents' knowledge of the effects of TB to the unborn baby by women's education level.

Table 7: Level Education of Women who know how TB affect unborn Baby

	Know effects		Don't know effects		Total	
Level of Education	**n=233**	**%**	**n=244**	**%**	**n=478**	**%**
Primary	93	40	93	38	186	39
Secondary	92	40	107	44	199	41
Tertiary	48	21	41	17	89	19
Never been to formal school	0	0.0	1	0.4	1	0.2

5.1.8: Respondents Experiencing Signs and Symptoms of TB

This section presents findings of ANC clients who experienced any one sign or symptom of TB during the course of their current pregnancy. Out of the 478 respondents, 4.4 % (n=21) reported experiencing any one sign or symptom suspicious of TB during their current pregnancy. Out of the 21 respondents, 6 were making their second ANC visit, 6 their third ANC visit, 4 their first ANC visit, 3 their fourth ANC visit and another 2 were making their fifth or more ANC visits. There is no significant difference in respondents reporting signs and symptoms of TB and the clients' ANC visit Table 8 below illustrates the respondents experiencing any signs and symptoms of TB.

Table 8: Women Experiencing any one or more sign or symptoms of TB

Variable	**1st Visit**		**2nd visit**		**3rd visit**		**4th visit**		**5th visit and above**		**Total**	
% women experiencing TB symptoms	**n=129**	**%**	**n=124**	**%**	**n=115**	**%**	**n=62**	**%**	**n=48**	**%**	**n=478**	**%**
Experienced one or more of the TB symptoms	4	3	6	5	6	6	3	5	2	5	21	5

5.1.9: TB Signs and Symptoms Experienced by Respondents

Out of the 21 respondents who experienced TB Signs and Symptoms, 8 reported experiencing cough, 5 fever, 4 chest pain, 5 loss of weight while one experienced blood stained sputum. Figure 5 below shows signs and symptom suspicious of TB experienced by women during pregnancy.

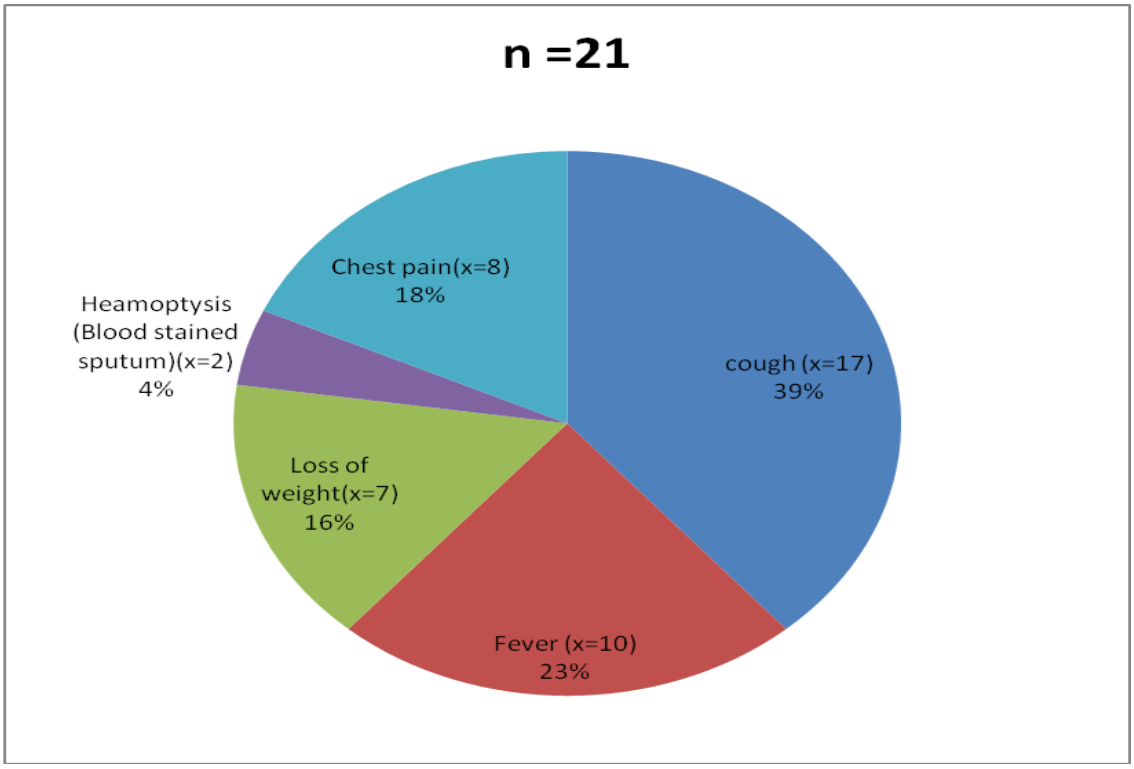


Figure 5: TB Signs and Symptoms Experienced by Respondents

5.1.10: Respondents' Health Seeking Behavior for TB Signs and Symptoms

This section reports initial health care behavior of respondents experiencing any sign or symptom of TB. Their level of education and income are also presented in order to gain more insight on how these affected health seeking behavior. Out of the 21 clients who reported experiencing any sign or symptom of TB, 7 sought help for the signs or symptoms experienced while 14 did not. These clients earned incomes of between Ksh 5,000 - 9,999 per month. Nine out of the 21 clients who experienced any one sign or symptom of TB earned incomes of between Ksh 10,000-19,999 per month. These clients did not seek health care. However, there was no difference between the level of education between those that sought help and those that did not. When the health seeking behavior was compared to the level of education, 12 out of the 21 who experienced at least one symptom of TB had attained primary level of education. Four out of these 12 respondents with primary level of education sought health care while nine did not. Nine respondents had attained secondary level of education with 3 seeking health care while 6 did not. Table 9 below compares respondents who experienced any one sign of TB health seeking behavior against their education and income levels.

Table 9: Respondents health seeking behavior compared to their education and income

Variable	Seek healthcare		Did not seek healthcare		Total	
women by INCOME who	**n=7**	**%**	**n=14**	**%**	**n=21**	**%**
Ksh 1000 to 2999 per month	1	14	_	_	1	5
Ksh 3000 to 4999 per month	1	14	2	14	3	14
Ksh 5000-9999 per month	4	57	3	21	7	33
Ksh 10000-19999 per month	_	_	9	64	10	48
Ksh 20000 to 49999 per month	1	14	_	_	1	5
Variable	**Seek healthcare**		**Did not seek healthcare**		**Total**	
Women's education level who	**n=7**	**%**	**n=14**	**%**	**n=21**	**%**
Primary	4	57	8	57	12	57
Secondary	3	43	6	43	9	43
Tertiary	_	_	_	_	_	_
Never been to formal school	_	_	_	_	_	_
Other	_	_	_	_	_	_

5.1.11: Facility and Providers Seen by Respondents Experiencing Symptoms of TB

This section reports findings on the type of facility visited and providers seen by respondents who experienced any one or more suspicious signs of TB during their current pregnancy. Five of them sought help from public/local government health facility first, while one each sought help from a mission and private health facility with one resorting to self-medication. The client who had initially practiced self-medication later sought help from the public facility, as well. All the seven clients sought help for management of the signs or symptoms from skilled providers in the health facilities as follows; two from a chest specialist, three from a doctor, another 3 from a nurse/midwife and one from a clinical officer. One of the above clients reported seeing two providers, namely a chest specialist and a nurse. Four out of the five clients sought help within three days of the onset of the symptoms. One client sought help after four days citing the reason for the delay as economic (lack of fare to hospital). Table 10 below shows the type of facility and providers seen by respondents experiencing signs and symptoms of TB during the current pregnancy.

Table 10: Facility and Providers Seen by Respondents Experiencing Signs and Symptoms of TB						
Variable	**1st Visit**	**2nd visit**	**3rd visit**	**4th visit**	**5th visit and above**	**Total**
Seek care from	**n=2**	**n=2**	**n=2**	**n=2**	**n=..**	**n=8**
Self medication	_	1	_	_	_	1
Public/local government health facility	2	1	_	2	_	5
Private health facility	_	_	1	_	_	1
Mission health facility	_	_	1	_	_	1
Pregnant women sought help from						
Health facility	2	1	2	2	_	7
% Providers who were seen	**n=3**	**n=3**	**n=1**	**n=2**	**_**	**n=9**
Chest specialist	2	0	0	1	_	3
Doctor	0	1	1	0	_	2
Nurse/Midwife	1	1	0	1	_	3
Clinical officer	0	1	0	0	_	1
Duration taken to seek help	**n=2**	**n=2**	**n=2**	**n=2**	**n=...**	**n=8**
More than 4 days of the onset of sign or symptom	1					1

5.1.12: Clients' Reported Experience on Providers' Practice in TB detection

Out of the 478 ANC clients, 2 (0.4%) had been diagnosed with TB in health facility. The chest specialist made each of the respondent's initial diagnosis. For the two clients, a sputum test for AFB was conducted to make the diagnosis. One was diagnosed during the first visit representing 0.8% of all first visit ANC clients while the other was diagnosed during the third ANC visit representing 0.9% of all third visit of ANC clients. One client had made three visits before the initial diagnosis was made while the other was diagnosed during the first visit. The diagnosis was made at Thika Level Five Hospital which is a public facility. Table 11 below shows findings on the two clients' reported experience on provider practice in TB detection during pregnancy.

Table 11: Clients Reported Experience on Providers' Practice in TB detection						
Variable	1st Visit	2nd Visit	3rd Visit	4th Visit	5th and above visit	Total
No. of visits made before initial TB diagnosis and providers seen						
Nurse/midwife	1					1
Clinical Officer	1					1
Chest specialist	1		1			2
Type of facility visited before initial diagnosis made						
Private	2					**2**
Public	1		1			**2**
Type of facility where TB diagnosis was made						
Public/ Government	1		1			2
Action taken to Diagnosis						
Sputum examination	1		1			2

5.1.13: Stigma and Myths about TB

This section reports findings on myths and self-report stigma by the two clients who were diagnosed with TB. The two clients felt that TB during pregnancy affected their work performance because of the amount of time required to finish the medicine. The two also felt that TB led to serious complications during pregnancy and preferred that TB patients be isolated. One of these two felt that TB affects breast feeding and family responsibilities and relations. The same one client also felt a woman may not decide solely by herself on seeking care for TB treatment.

5.1.14: ANC clients' Information/ Communication Sources on TB

This section reports the respondents' information and communication sources on TB. Findings show that among all respondents who received information/ communication sources on TB only 5 % (n=478) received information about TB infection during their consultation visit. Out of this sample, 2% received information on how TB spreads while 6 received information on TB symptoms.

The majority of the respondents 94 % (n=447) clients had heard about TB previously before this ANC consultation. About 42% (n=188) got TB information from MOH campaigns / Media, 39% (n=188) from education, 40% (n=190) from relatives and 16% (n=75) from health talks. Table 12 below shows the clients' information / communication sources on TB.

Table 12: ANC Clients' Information / Communication Sources on TB

Variable	Total	
% women who	**n=478**	**%**
Received TB infection information during consultation	24	5
% women who received Information on	**n=478**	**%**
How TB spreads	9	2
TB symptoms	6	1
% Clients who	**n=478**	**%**
Previously heard of TB	447	94
% Clients who received information on TB from other sources	**n=478**	**%**
MOH campaign (media)	188	39
Education	170	36
Friends/ relatives	190	40
Health talks	75	16

5.2: Health Systems Factors in TB Screening and Detection among ANC Clients

Health system factors associated with TB screening and detection are reported in this section. This includes health facility preparedness and service provider factors associated with delay in TB detection. The health facility factors associated with TB screening and detection among pregnant women include; facility preparedness for TB detection in term of the infrastructure that supports the TB detection for ANC clients, the services offered and the routine ANC investigations and the minimum supplies and equipment for TB detection services. Other factors include the range of ANC and TB services offered on a daily basis as a proxy indicator of clients' choice of facility. The possibility that clients requiring referral for TB detection would access that service on the same day as well as recording and referral tools for TB management for ANC clients are also reported. Service provider factors associated with TB screening and detection are reported in the next section as part of health system delay in TB detection among pregnant women.

5.2.1: Facility Preparedness for TB Screening and Detection

From the findings, a score of 4 was obtained from mean score of 0-4 computed on the availability of minimum supplies and equipment indicating availability of i) Reagents for TB tests; ii) Specimen pots for Sputum; iii) Smear microscopy; and iv) Algorithm for TB diagnosis that is necessary for TB detection. A score of 6 was obtained from a computed mean score of 0-6 from the range of ANC services offered on the same day showing that ANC clients can access both ANC and TB services on the same day. These services included

i) Counseling and testing of HIV; ii) PMTCT; iii) ANC profile; and iv) TB treatment services and a mean score of 0-4 was computed for this. A score of 8 out of the mean score of 0-7 was computed for tools for referral, documentation and record keeping for ANC and TB services that are important in supporting service delivery in ANC clinic, the laboratory and the TB clinic. These tools were i) ANC cards; ii) ANC register; iii) TB screening checklist (Job aid); iv) Tuberculosis record card; v) Tuberculosis appointment card; vi) TB register; and vii) Referral form. From the findings, availability of infrastructure for TB and ANC is not a factor associated with delay in TB detection among pregnant women. Table 13 below presents the findings on facility preparedness for both ANC and Laboratory for TB detection services.

Table 13: Availability of ANC and TB Services and Lab Supplies

Variable	
Minimum supplies and equipment for TB detection services	**Score**
Reagents for TB tests, Specimen pots for Sputum, Smear microscopy, Algorithm for TB diagnosis **Mean score (0-4)**	**6**
Services Available Daily	
ANC services, ANC profile, PMTCT, testing of HIV, TB detection services TB treatment services **Mean score (0-6)**	4
Tools for referral, documentation and record keeping	
ANC cards, ANC register, TB screening Checklist- (Job aid) ,Tuberculosis record card, Tuberculosis appointment card, TB register ,Referral tools **Mean score (0-7)**	7

5.3: Service Providers' Factors in Gestation TB Screening and Detection

The next section presents results on service providers' factors that contribute to TB detection among pregnant women in the ANC clinic. The findings include ANC and TB clinic providers' i) staffing by cadre and years of experience; ii) Training in TB detection during pregnancy; iii) Knowledge on the TB guidelines during pregnancy; iv) Knowledge on TB Disease v) Knowledge on when to screen for TB during pregnancy; vi) Practice on TB detection; vii) Knowledge on referral mechanism for TB detection; viii) Practice on referral for TB detection within and without the facility; ix) Practice on management of ANC clients detected to have TB and; x) Providers' opinion on factors affecting TB screening and

detection for ANC clients and the supervision practice on ANC and TB service for pregnant women attending ANC.

5.3.1: ANC and TB Service Providers Cadres

From the findings, there were 36 service providers who provide ANC and TB services on a day-to-day basis. Twenty-one of these were skilled providers who included; Obstetric and Gynae (OBGYN) specialists, medical officers, registered nurses, enrolled nurses and clinical officers offering ANC services. Two peer educators and two support staff also support the ANC services. However, it was observed that the ANC room is served by one provider and the peer counselors daily. An average of 70 ANC clients are served for daily routine ANC services which also includes screening mothers for TB. Table 14 below presents the staffing of ANC and TB clinic.

Table 14: Staffing in MCH and TB Clinics

Cadre of staff	No in MCH	No in TB clinic
OBGYN Specialist	1	0
Medical officer	1	1
Registered nurses	12	0
Enrolled nurses	3	1
Clinical officers	3	3
Peer educators	2	4
Nutritionist	0	1
Support staff	2	1
Total	25	11

5.3.2: Service Providers offering ANC and TB Services

Twelve service providers working in Maternal and Child Health (MCH) and the TB clinic at the time of the study were interviewed on their knowledge, practice and opinions on factors affecting TB detection among pregnant women. Seven (7) of the providers of MCH services are registered nurses, two OBGYN specialists and two medical doctors while one was an enrolled nurse working in the TB clinic. Figure 6 below shows the breakdown of the staff interviewed in the TB clinic and MCH unit.

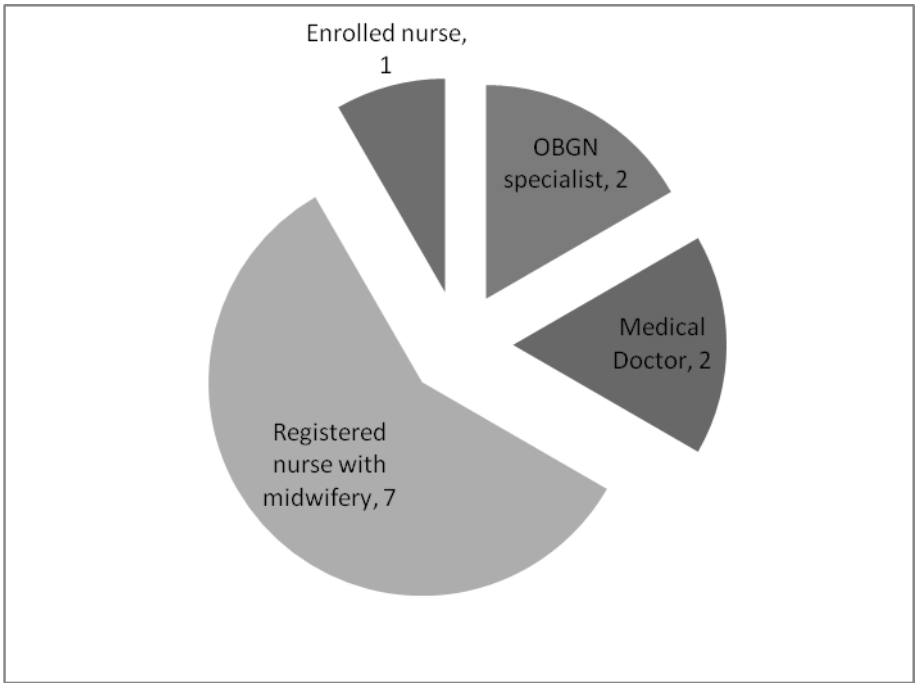


Figure 6: Representation of Staff Interviewed

5.3.3: Service Providers Respondents' Years of Experience

The study sought to find out the years of experience for the ANC and TB service providers' respondents. From the findings, four of the providers had worked in the ANC clinic for less than 2 years, 3 for between 5-10 years and a similar number for over 10 years. Figure 7 below presents providers' years of experience by cadre.

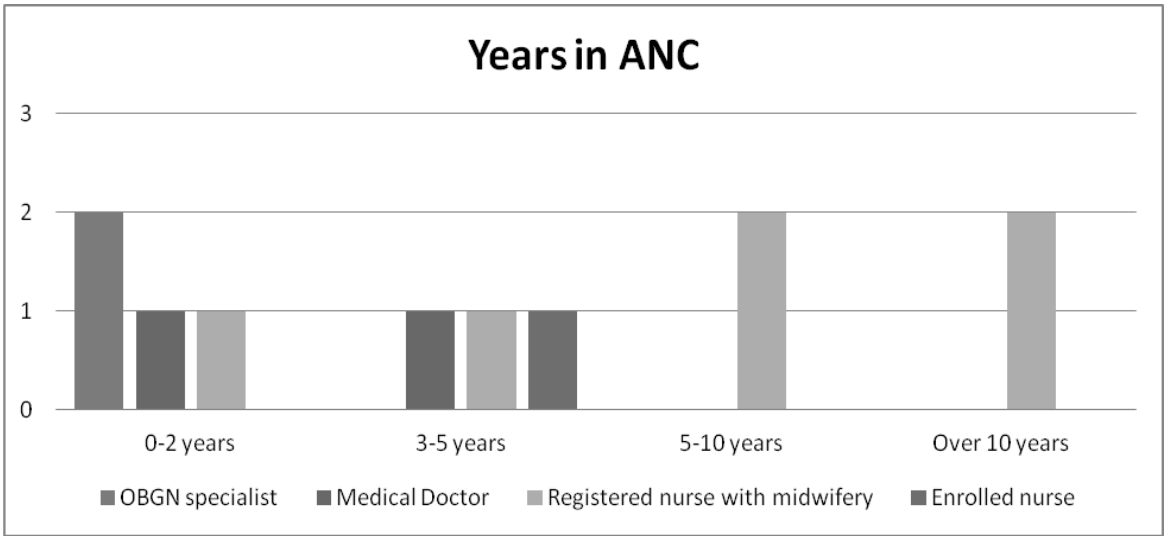


Figure 7: Providers' Years of Experience in ANC

5.3.4: Providers Knowledge Guidelines on TB in Pregnancy

This section reports findings on service providers' knowledge on TB in pregnancy service guidelines and the timing of ANC schedule. Out of the 12 providers interviewed, 4 of them were aware of the availability of the TB guidelines within the ANC clinic suggesting that they refer to them. About half of them (n=6) said they knew the guidelines fairly well while 4 said they knew the guideline very well and 2 reported not knowing the guidelines well. Table 16 below shows the providers knowledge on TB guidelines.

Table 15: Providers' knowledge on ANC visit schedule and timing for TB screening

Variable	n=12
Provider aware of the availability of TB guideline within ANC	4
Providers who unaware of the availability TB guidelines within ANC	8
Providers who know ANC guidelines and standards for TB Screening during pregnancy	
Very well	4
Fairly well	6
Not well	2

5.3.4.1: Providers' Knowledge on Timing for TB Screening

TB screening should be done during all four of the minimum recommended ANC visits for pregnant mothers. From the findings, all 12 of the providers knew the least number of ANC visits a mother should make. However, when they were asked when TB screening should be done, half (n=6) of the providers stated that this can be done during the first ANC visits usually recommend < 16 weeks of pregnancy, 5 knew the correct timing of screening for TB which is all the ANC visits while one (1) did not know exactly when the screening should be done. Table 16 below shows finding on providers' knowledge on the least ANC visits and when TB screening during pregnancy should be done.

Table 16: Providers' knowledge on ANC Visits and scheduling for TB screening

	n=12
Provider with knowledge on least number of visits	12
Providers who know that TB screening should be done in	
First-< 16 weeks	6
All visits	5
Don't know	1

5.3.5: Providers knowledge of Signs and Symptoms of TB

TB screening is based on providers finding out whether the client had any history of the five common signs and symptoms of TB - (i) persistent cough for three or more weeks with or without blood stained sputum; (ii) chest pain; (iii) close contact with a case of TB; (iv) loss of

body weight; and (v) intermittent fever and night sweats. From the findings providers' knowledge on this signs and symptoms was high. All the 12 providers reported that persistent cough for three or more weeks with or without blood stained sputum was sign of TB.Ten (10) of the providers knew that loss of body weight was a sign of TB while 8 of the providers said history of close contact with a case of TB is suggestive of TB. Table 17 below shows providers' knowledge on signs of TB.

Table 17: Providers knowledge symptoms of TB during pregnancy

Variable	**n=12**
% Providers knowledge on	
Persistent cough for three or more weeks with or without blood stained sputum	12
Chest pain	5
Close contact with a case of TB	8
Loss of body weight	10
Intermittent fever and night sweats	8

5.3.6: Providers' Reported Practice on TB Detection

From the findings, all of the 12 providers said that the first specimen should be obtained from the laboratory, 10 said that the next specimen should be received the next morning within 24 hours with only 2 reporting a third sputum spot test that is no longer recommended by national TB detection protocols. Suspected extra pulmonary TB cases are referred for clinical diagnosis by physician or TB specialist. Table 18 below presents findings of the providers' knowledge on sputum specimen for TB detection.

Table 18: Provider knowledge on obtaining sputum specimen for TB detection

Variable	**n=12**
Provider who know how many sputum specimens and how are they obtained for TB detection	
First- Spot at the lab	12
Second - Morning next day at home within 24 hours	10
3rd Spot at the lab	2
Mean scores 95% CI (0-3)	**3**

5.3.7: Providers' Reported Referral Practice for clients suspected to have TB

This section illustrates reported referral practice for ANC clients suspected to have TB in Thika Level Five Hospital. From the findings, 4 of the providers interviewed at the facility reported using a referral form to refer the ANC clients suspected to have TB to the clinician. Three (3) sent the clients to TB clinic for further consultations while 2 used a referral form to send the clients to the laboratory. Two (2) of the providers personally escorted the clients to

the clinician for further consultation. It was observed that ANC clients suspected of TB are usually referred to the clinician (clinical officer or doctor) within the MCH unit or directly to the TB clinic (TB specialists. Clients that required obstetric services are referred to the OBGYN specialist or a medical officer within OPD. Table 19 below shows the providers referral practice within the facility.

Table 19: Service providers' Referral Practice for clients suspected to have TB

Variable	n=12
% ANC providers who	
Use referral form to the Lab from the ANC	2
Send the ANC client to TB clinic for further consultations	3
Send ANC client to see the clinician without a referral form	1
Send ANC client to see the clinician with a referral form	4
Escort the ANC client personally to the clinician	2

In order to understand how the referral practice contributed to health systems factors in TB screening and detection among pregnant, ANC, PNC and TB service statistics record were reviewed. The records review was conducted for the 12 months proceeding the study period from July 2011-June 2012 at Thika Level V Hospital. From the findings, a total of 15,447 ANC clients were seen during the 12-month period. Out of this, 5,080 clients (33%) were screened for TB during ANC visit. All these clients were screened for TB during the 1st ANC visit. Only 7, (0.14%) clients out of all ANC clients were suspected to have TB. Six out of 7 suspected cases were sent for a sputum test for AFB across the period while one had extra pulmonary TB. Five (5) had sputum smear positive results but all six were started on TB treatment. Three (43%) out the seven clients also had HIV sero positive status. Table 20 below shows ANC Clients TB Screening and TB detection in Thika Hospital.

Table 20: Practice on TB Screening and TB detection for ANC Clients

	Total No
Total ANC clients	15447
ANC clients screened (1st Visit)	5080
ANC clients diagnosed of TB	7*
ANC clients sent for sputum test	6
ANC clients with TB positive sputum smear	5
Other ANC diagnosed with other forms of TB	1

*Note; * clients records for those suspected to have TB were not available at ANC unit and tracing was done from the TB clinic records mainly showing those that were diagnosed of TB. The Laboratory results registers only indicate clients as male or female without showing where the client was referred from.*

Out of the 6 clients, 2 received the sputum results later than the 24 hours recommend in the national TB guidelines and thus there was delay in TB detection. One client was diagnosed with TB five months after her contact with the health system when she had complained of backache until it became very severe and was too ill. She was admitted to the hospital and then referred to Kenyatta National Hospital (KNH) for further consultation. In addition to that, two more clients had complained of symptoms of TB during contacts with ANC service providers. This shows a total doctor delay of 3 clients among the ANC clients within a range of two to five months. One client went to the Laboratory for a sputum test 6 days after referral from MCH resulting in patient delay. It was also found that two of the clients with PTB were from the same household. Table 21 below shows the ANC Clients Diagnosed with TB in the last 12 months preceding the study.

Table 21: ANC Clients Detected with TB

Date suspected with TB	**Date client specimen Received at Lab**	**Date client received result**	**Date client started treatment**	**HIV Sero status**	***Visits made before diagnosis**	**Delay in detection**
11/4/2012	11/4/2012	12/4/2012	12/4/2012	-ve	1	none
14/5/2012	14/5/2012	15/5/2012	16/5/2012	+ ve	1	none
12/3/2012	12/3/2012	13/3/2012	13/3/2012	+ ve	1	none
15/5/2012	15/5/2012	16/5/2012	17/5/2012	+ ve	4 in two months	present
15/5/2012	16/5/2012	17/5/2012	Missing information		3 in two months	present
15/3/2012 client complained of severe back and loss of weight Clinicians not suspicious of TB. Sent to KNH but did not go**		Admitted to Thika hospital 28/6/2012 and referred to KNH from the hospital where TB spine detected		-ve	7 in five months	present
4/7/2012	10/7/2012	11/7/2012	11/7/2012	-ve	1	present

Note: **Visits made to the facility where the client made complaints suspicious of TB before detection of TB* ********Client did not go to KNH citing lack of money as a reason for not going.*

5.3.8: Duration of Feedback on TB Results

To find out the service providers' experience in receiving feedback on TB for ANC clients, data were obtained on their opinion on timeliness of the feedback from the laboratory. Ten (10) of them reported receiving feedback within 24 hours as per the National Guidelines for TB detection. Two (2) reported that the results were received within one week, suggesting a health system delay in TB detection associated with feedback of results.

5.3.9: Providers practice in managing a pregnant woman diagnosed with TB

Data on provider practice in managing ANC clients detected to have TB was obtained to explain if this could be associated with clients' perceived stigma and practice in seeking care. From the findings, 10 ANC providers referred the clients to the TB clinic while one of them documented the TB positive results in the ANC register. Figure 8 below shows management of ANC clients diagnosed with TB within the ANC unit.

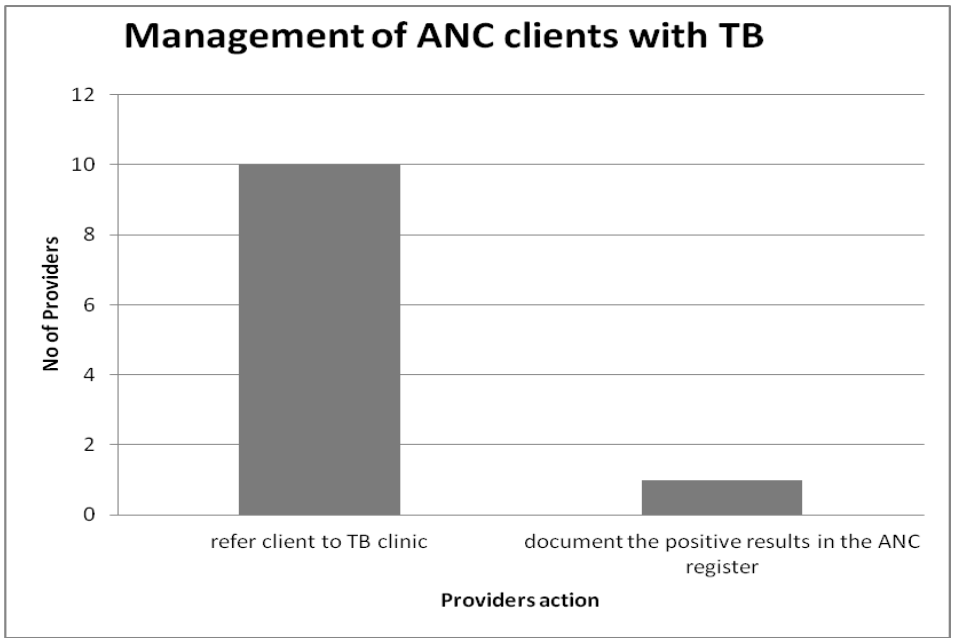


Figure 8: Management of ANC Clients with TB

5.3.10: Providers' Opinion on Factors Affecting TB Screening and Detection

Qualitative data were obtained from providers on factors contributing to the delay in TB detection and the explanations categorized. Two providers cited the laboratory procedures as contributing to delays in TB screening and detection, 2 reported the inadequate knowledge of providers as another factor associated with delays in TB detection while the cost of x-rays was reported as a cause of delay by one of the providers.

5.3.8.1 Supervision of ANC and TB Service Providers

Seven of the providers reported that they received supervision daily while 2 reported fortnightly supervision. All the providers reported that the supervision is from within the facility and the DLTLD who although working from the DHMT office is also part of the service providers in the TB clinic. It was observed that supervisors from the national,

provincial and district level on supervision visits to the facility for reproductive health services do not usually focus on TB screening during ANC services or the TB clinic.

5.4: Key Informants opinions on Factors Contributing to TB screening and detection

This section reports findings of the key informant interviews conducted with seven selected health managers at Thika level V Hospital. The informants included the hospital superintendent, hospital Matron, Nurse in charge of the MCH/FP unit, the laboratory technician in charge, the TB clinic in charge, the comprehensive care unit manager and the hospital procurement officer. The findings focus on their role in TB screening and detection that include; TB and ANC service providers' training; services provision; supplies and equipment necessary for TB detection. The emerging themes from the interviews on factors contributing to factors associated with TB screening and detection are then triangulated with the client exit and the providers' interviews. This provides an in-depth understanding of the factors contributing to patient and health system factors associated with TB screening and detection among pregnant women attending the ANC clinic in the facility.

5.4.1 Managers Role in TB screening and detection for Pregnant Women

In general, the managers' role in TB detection during pregnancy includes overseeing the day-to-day running of the MCH unit in terms of staffing, supplies and supervision of the facility departments and staff

> "*I am responsible for running this unit, I ensure that that the staff are duty and do the work, I order the supplies and receive report on what is happening in each of the rooms where the providers are working"* a middle aged female respondent said.

It was also observed that, other than their management role, some of these managers also provided services directly to the ANC mothers. They are also involved in TB screening and detection during pregnancy. These seem to suggest that TB detection is not solely left to the frontline service providers.

> "*I am in charge of the TB clinic.....when TB patients, they come to me; I give them TB drugs. Also the health talks on how to prevent TB"* another manager said. "*I run high risk clinic for pregnant mothers. If we detect the TB early in pregnancy we help the mother and the baby"* a youthful respondent said.

The managers also have a duty in keeping up-to-date with current knowledge on TB screening and detection among the pregnant mothers in order to ensure that they support the

services**.** Some managers seem to have adequate knowledge of the procedures for TB detection during pregnancy as part of ANC services,

> "*ANC mothers who are in PMTCT are always screened for TB. ..... So at every visit we screen this patient for TB, through questions that may lead you to know whether this patient has TB or is a suspect or they don't have any signs"* another middle respondent said.

But from another middle aged respondent in MCH, lack of knowledge of the ANC providers' practice on TB detection for all the ANC was demonstrated:

> *"I am not sure that TB detection is being done in MCH unit but in the outpatient department the TB detection is being done, someone referred to as* "cough Identifier[1]" *identifies coughers, if they are identified.... Then that person is supposed to be screened for TB, You don't have to wait till they reach the clinician"*

However, this seems to be contrary to the MOH guideline for TB screening during pregnancy that recommends TB screening for all pregnant mothers whether they show any sign or symptom of TB and regardless of women's HIV status. This finding seems to agree with the service providers findings, where half of the respondents reported knowing the TB guidelines very well. Another middle-aged respondent seemed to be unaware of the ANC services providers' practices in screening and detection of TB for pregnant mothers. Asked whether the ANC providers were currently offering TB detection to ANC clients' one clinical male manager responded

> *"I can't answer that question ...I don't go to ANC*".

This response seem to suggest that perhaps clinical managers are not updated on the policy guidelines for TB screening and detection during pregnancy in order to provide the necessary support for these services at the ANC clinic.. In addition, although some managers know and encourage TB screening for prompt TB detection during ANC services, the numbers of ANC clients per day are too many for only one provider working in the ANC room in any day.

> "*...there are about 70 ANC clients per day, we cannot expect the providers to do all the necessary procedures, including screening for TB, I know they omit a number of procedures like TB screening unless the client is coughing. They have to prioritize on what must be done, a* male respondent, ANC clinic.

[1] *"cough identifier" is a community health work/peer educator trained on signs and symptoms of TB and recognized by the national DLTLD to support prompt TB detection in the health facility and community under supervision of the district DLTLD manager*

This seems to agree with providers' practice observed in the record reviews which showed that only 33% of all ANC clients are screened for TB during ANC consultations.

5.4.2 Managers Role in training/ Updates of ANC and TB Providers on TB

The study sought to understand the managers' role in ensuring that ANC providers were trained or updated on policy guidelines in TB detection during ANC services. Most managers reported that they supported providers' training on TB detection. This training is conducted through workshops and continuous medical education within the facility.

"*Trainings on infection prevention for TB control and how to detect TB involve people in the outpatient department and MCH*" a youthful respondent, MCH unit said. "*We have fortnight meetings or organize a continuous medical education for nurses, where they also give feedback.....Some of this feedback has been on TB"* a female respondent, Nursing Department.

These seem to suggest that providers have the necessary management support on training in TB detection during pregnancy. This concurs with the findings on high level of providers' knowledge where more than eight of the twelve providers interviewed reported knowing four out of the five cardinal signs and symptoms of TB.

5.4.3: Managers' support in for ANC and TB service providers

In response to how managers facilitate the ANC staff and the Lab staff ensure effective referral of clients suspected to have TB to the Laboratory for TB detection, most managers said that they ensured that the providers have referral forms that are used by the ANC providers to refer clients suspected to have TB to the TB clinic or the laboratory for sputum test.

> "*We take them to the laboratory for the test of sputum. We write this forms (pointing to a laboratory investigation request form for the sputum test on the desk) for sputum, then the patient takes the "kikohozi" (sputum) to the laboratory"* a middle aged respondent, ANC clinic said.

However, although the "cough identifier" works as an important link between the TB clinic and the outpatient, some managers seem to suggest that they are not available in the MCH unit. This seems to suggest that there is need for the "cough identifier" services to support the MCH unit in TB detection for pregnant women. Managers were asked on the existing facility's practice in providing feedback on TB specimen's results from the laboratory for ANC clients. From the responses, clients get the results from the laboratory and are then referred to the TB clinic for TB treatment and follow up unless the clients are too sick and

require admission. If admitted in the maternity unit, the results are sent there. When asked whether the clients fail to come back for the results and what is done if they do not come back, the respondents said that they ensure they obtain adequate information for follow up. The follow-up is done through the Community Health Workers or the phone.

> "*We call them or get the CHW to go to the villages to get them. "Most of the times they come but they are those who change the dwellings particularly in the slums, so we keep trying their numbers until we get them*" a middle aged respondent, TB Clinic said.

This may seem to suggest that there is some possibility of delay in prompt treatment even if the diagnosis has been made. From the provider interviews and the record review conducted in this study it is evident that the patients fail to comply with instructions on giving the required specimen in the laboratory or come late for the results which contributes to delay in TB detection.

5.4.4: Managers' Role in Provision of Supplies for ANC and TB services

Adequate supply of equipment and commodities for TB detection is another important factor in support of TB detection during pregnancy. Managers were therefore asked how they support the facility in ensuring the facility has TB sputum specimen bottles, TB laboratory regents/testing kits, microscope and the safety hood, TB drugs and referral forms. From the responses, the district/facility procurement officer is responsible for the whole supply chain management, including TB management supplies from procuring, ordering from government stores to the storage and issuing to the service delivery points. TB supplies were observed to be mainly coming from KEMSA (Kenya Medical Management Supply Agency) and are provided free to the clients.

> "*So anything that is gotten in the hospital has to be channeled through my office"* a middle aged respondent said. "*We are not buying these things. They are supplied by KEMSA, once we give the report to KEMSA we just sit down and wait for a re-supply"* a female respondent, Stores Department said.

From the findings, the Chest X-ray is the only service that is paid for among the TB diagnostic tests but the same respondent said that sputum test is usually the standard test recommend by MOH for TB diagnosis.

> *"Chest X-ray cost three hundred shillings in this facility... am not sure if they have increased the price; we rely on Sputum test for TB diagnosis as the recommended standard by DLTLD".*

It was observed that TB supplies had periodic stock-outs. Asked how they cope with the stock-outs in ensuring continuity of TB detection for pregnant mothers attending ANC, the managers said they report to higher authorities or refer clients to other facilities that have the supplies.

> "*We just communicate to the higher authorities or we refer the clients to where the services are being provided but our services are rarely interrupted by lack of supplies"* a middle aged respondent, TB Clinic said on stock outs for TB laboratory reagents.

The facility assessment conducted found adequate supplies and commodities for TB detection and thus agrees with the above facts.

5.4.5: Managers Role in Ensuring Accountability for ANC and TB Supplies

The managers' role in ensuring accountability and safety of the supplies (equipments and commodities) necessary for TB detection and routine services for pregnant mothers was sought. The laboratory and MCH unit in charges were observed to have the biggest role in supplies and equipment relevant for TB detection during pregnancy. They ensured that the supplies meet the quality specifications, order them from the procurement officer's stores and oversee their use. It was observed that various tools are maintained for accountability and safety of these supplies and equipments. These included use of the bin book to record all the supplies received from the procurement officer's stores and standard operating procedures (SOPs) to ensure the safety of TB equipment and supplies.

> *"We have the bin cards to enter the supplies received from the stores and record how we are using them"* a female respondent Stores Department. " Any *new staff and student rotating in the units are orientated in the SOPs"* a middle aged respondent, TB Clinic.

Overall, supplies and equipment are not a major impediment to TB detection during pregnancy. Since TB services are free there are no cost implications to the user that may hinder TB detection during pregnancy. However, lack of information by the clinical managers on TB detection procedures for pregnant women may seem to suggest inadequate implementation of the policy guidelines that may result to delay in TB detection.

CHAPTER 6: DISCUSSION

This chapter presents discussion of the key findings on the factors associated TB screening and detection among pregnant women in Thika level V Hospital. It also explores the factors associated with clients and health system in TB screening and detection and how these compare to findings in other studies.

6.1: Clients Factors in TB screening and detection

These include patient socio-economic status, client knowledge and health seeking behavior as well as clients' source of information.

6.1.1: ANC Clients' Socio-economic Status

This study found out that, socio-economic status was associated with TB screening and detection among pregnant women. The findings showed that majority of the respondents (40%) were unemployed and were not looking for employment. The findings concur with a study in Nepal where 28% TB cases were female and many of them were found to have economic dependence on their husbands (Cassels, et al., 1982). In this study, one of the clients could not afford the cost of referral for TB detection. This finding concurs with two studies; one in Kenya and another in Tanzania that found out socio-economic barriers such as cost for transport to health facilities were significantly associated to delay in TB detection for poor women (Ngadaya, et al., 2009) (HealthScope Tanzania, 2003).

6.1.2: Clients Knowledge and Perception on TB Disease during Pregnancy

Knowledge of coughing as a sign of TB was the most cited sign of TB among the pregnant women interviewed in this study (96%). This agrees with another study in Eygpt where cough was the most cited sign of TB by females (76.5%) demonstrating that cough is the most known sign of TB (Kamel, et al., 2003). However, mother's knowledge on how TB affects the unborn baby was found to be low. This would be a driving factor in her health seeking behavior since her ultimate pregnancy goal is to have a healthy baby. Almost half of the respondents did not know how TB affects the unborn baby. Although TB has serious consequences for the unborn baby that includes prematurity and low birth weight (WHO, 2002), this study shows only 5 out of 21 clients that reported experiencing signs and symptoms of TB sought help. This seems to suggest that although ANC clients had high knowledge on how TB presents, inadequate knowledge on affects of TB on the unborn explains the reason why 61% of those women reporting experiencing signs of TB did not seek any help. These findings concur with a study in South India which revealed that 43% of

illiterate participants and 52% above 45 years of age did not take action or delayed taking action (Sudha, et al., 2003).

6.1.3: Clients' Health Seeking Behavior before Initial Diagnosis

Health seeking behavior is determined by a number of factors such as cost, perceived seriousness of the illness and trust of the services providers (Godfrey-Faussett, et al., 2002). In this study, 21 respondents interviewed on exit interview reported experiencing at least one signs and symptoms suggestive of TB. Thirteen out of the 21 respondents who reported to have experienced any one sign of TB during the course of their current pregnancy did not seek any help. When asked the reason for not seeking help, 9 said they had no reasons while 4 said they did not think the symptoms were serious.

Findings from records review show that one client out of the six clients sent for sputum smear test went to the Laboratory for the sputum test 6 days after referral from MCH resulting in patient delay. Out of the 6 clients, 2 brought the second specimens later than recommended duration (the next morning) and therefore received the sputum results more than 24 hours as stipulated by the national TB guidelines and thus there was delay in TB detection. This is patient delay resulting from their practice in health seeking behavior. These findings agree with Ngadaya, et al., 2009 that demonstrated that there was delay in seeking care for TB services among female patients of up to 8 weeks.

6.1.4: ANC clients' Information/ Communication Sources on TB

Information on TB is likely to contribute to a mother's health seeking behavior and knowledge on the symptoms of TB. The majority 94% (n=465) of ANC clients interviewed had heard about TB previously before ANC consultation. From the findings, only 5% (n=24) of all the ANC clients interviewed received information from the ANC service providers during the consultation. However, media and MOH campaigns (42%) and relatives (43%) seem to be a good source of information on TB. From the findings ANC clients' information and communication source is not associated with delay in TB detection. Pregnant mothers' knowledge on the signs and symptoms of TB is important in ensuring that they seek prompt health care and inform the service providers of their suspicion for prompt TB detection.

6.2: Health system delay in TB detection during pregnancy

This section presents findings on health system factors associated to TB detection in the study.

6.2.1: Service Providers Knowledge Signs and symptoms of TB

Service providers' knowledge on the key five signs and symptoms of TB, namely a persistent cough for more than two weeks, excessive sweating or fever at night, loss of body weight, chest pain and history of being in contact with anyone who has TB is important in detection of TB. The providers' knowledge on signs and symptoms of TB is high with a score of 4 out of a computed mean score of 0-5 with 100% of them knowing that persistent cough was sign of the PTB which is the most common form of PTB. This seems to suggest that service providers' knowledge on signs and symptoms of TB is not associated with delay in TB detection. The results seem to reject the null hypothesis that providers' knowledge on the signs and symptoms of TB is associated with delay in TB detection during pregnancy.

6.2.2: Service Providers' Knowledge and Practice on TB Screening

According to the National Reproductive Health Policy Guidelines of 2007, pregnant mothers should make at least four ANC visits spread throughout the entire pregnancy as follows: 1st visit: <16 weeks; 2nd visit: 16-28 weeks; 3rd visit: 28-32 weeks and the 4th visit: 32-40 weeks. From the findings, 100% of the providers knew the correct timing of the ANC schedule. This is important in ensuring that they screened for TB during all the four ANC visits for prompt TB detection. However, only 5 of the 12 providers interviewed knew that the screening for TB during pregnancy should be conducted for all mothers during all the ANC visits. This finding seems to correlate with the service providers' practice in TB screening for ANC clients which showed that only 27% of ANC clients interviewed are screened for TB. Further findings from the service statistics record review shows only 33% (n=5080) were screened for TB. All the client were screened during the 1st ANC visit despite the MOH 2007 policy of screening for all pregnant women during all the ANC visits for prompt TB detection (DLTLD, 2009). This seems to suggest that inadequate TB screening during ANC is associated with health system factors in TB detection among pregnant women. This study concurs with studies in South Africa and Vietnam that have found that the inability of health services providers to screen patients upon first contact contributes to delayed diagnosis (Waisbord, 2007).

6.2.3: Providers Knowledge on the timing of Specimens for TB Detection

The current TB and Leprosy Control guidelines recommend that, clients who report to have had persistent cough for two to three weeks with or without blood should be suspected to have Pulmonary Tuberculosis (PTB) and require further investigation to confirm the diagnosis. Within ANC, the process requires providers to complete a referral form for the

client to take to the laboratory for a sputum specimen for Acid Fast Bacilli test to identify the bacteria that causes TB- Mycobacterium bacilli. At the laboratory, the client is given another sputum pot to take home and asked to produce an early morning sputum specimen the following day for re-confirmatory test. The two specimens should be taken within 24 hours apart. ANC clients with a positive sputum smear are then referred to the TB clinic within the facility where they are started on TB treatment. The findings showed that 86% had knowledge on this recommended practice. However, 2 of the providers had no knowledge of the recommended PTB sputum specimens test regimen. This seems to suggest that the 2 who had no knowledge on the recommended PTB specimens test regimen are likely not to inform clients correctly to return for the second sputum specimen within 24 hours thus resulting to delay in TB detection.

6.2.4: Providers' Practice of Feedback on TB Results

Delay in receiving feedback from the laboratory contributes to health system delay in TB detection (Agboatwalla, et al., 2003). This study found out that 10 of the services providers felt that feedback from the laboratory on TB results was within 24 hours as per the national guidelines for TB detection. However, one of providers reported that the results were received within one week suggesting that there is health system delay in TB detection associated to feed back on the result. Despite the high level of timeliness in feedback on TB results found in this study, clients were not suspected of TB despite being in contact with the health facility staff.

From the findings out of the 5,080 clients (33%) screened for TB during in twelve months preceding the study 7 (0.14%) ANC clients were suspected to have TB. Six out of the 7 suspected cases were sent for a sputum test for AFB across the period while one had extra pulmonary TB. From the findings, the most common type of TB found in this study was PTB. The findings agree with a study by Hopewell & Jasmer who found that in the absence of HIV, around 85% of reported TB cases are PTB (Chin DP, et al., 1998). According to WHO, 2009 and DLTD, 2009, Kenya had approximately more than 132,000 new TB cases and an incidence rate of 142 new sputum smear-positive (SS+) cases per 100,000 population. This study shows that the five PTB (SS+) cases among the pregnant women represents 98/100,000 population of pregnant women. This finding seems to suggest that the prevalence of TB among pregnant women in Kenya is slightly lower than that of general population. Three out the seven clients had HIV sero positive status.

From the record review, one client out of the seven clients detected with TB was diagnosed of TB five (5) months since her contact with the health system where she complained of backache until it became very severe and was too ill. She was admitted to the hospital, and then referred to KNH for further consultation. In addition, two of the seven clients had complained of the symptoms of TB during contacts with ANC service providers. This shows a doctor delay of 43% (n=3) among the ANC clients within the range of two to five months. This is in agreement with the findings of a Brazilian study where the median delay found was three months and about 60% of patients had a delay longer than two months (dos Santos, et al., 2005). In Ghana, for example, a median delay of four months was reported by patients (Lawn, et al., 1998). The current study demonstrates both patient and health system factors contribute TB screening and detection among pregnant women. This seems to suggest ANC clients' health seeking behavior practices and provider practice are associated with TB screening and detection during pregnancy.

6.2.5: Facility Preparedness for TB Detection

Facility unpreparedness in TB detection is one cause of health system delay. The study found out that the facility was well prepared in the infrastructure that supports the TB detection for ANC clients, the services offered and the routine ANC investigations. From the findings, it was evident that health facility preparedness in terms of minimum supplies for TB detection, ANC and TB services; and referral tools and records were adequate for TB detection and as such could not be associated with delay in TB detection during pregnancy.

6.2.6: Providers' Opinion on Factors Affecting TB Screening and detection

Two of the providers in this study were of the opinion that laboratory procedures led to delay in TB detection, another two said that high case load due to provider shortage led to delay in TB detection while one of the providers were of the opinion that the cost of x-ray was a cause of delay in TB detection among pregnant women.

This study found out that 31% (n=148) of clients waited for over five hours to receive the ANC services. From the in-depth interviews with selected departmental managers, shortage of staff was found to be associated with longer waiting hours for the clients. Due to this, some clients found to be suspicious of TB and referred for TB diagnosis to the laboratory and/or TB clinic fail to go to the laboratory for TB specimen. From the findings, shortage of staff and long waiting time for clients are factors associated with health system factors in TB screening and detection among pregnant women.

6.2.7: Facility Management factors contributing to TB Screening and detection

Health managers have a role in ensuring service delivery both for quality of care and to improve access to the users (Management Sciences for Health, 2010). The study found that some managers had inadequate knowledge of the procedures for TB detection during pregnancy as part of ANC services with a respondent saying that TB screening is only done for pregnant mothers who are HIV positive. This finding seems to suggest that the managers may not adequately support frontline service providers in TB detection thus resulting to health system delay. This is particularly important because of the important role the managers' play in supervising the TB services for ANC mothers as well as promoting the service to community.

The study established that most managers support providers' training on TB detection. This training is conducted through workshops and continuous medical education for service providers in the MCH unit. This seems to suggest that providers have the necessary management support on training in TB detection during pregnancy. This support DLTLD 2009 report notes that there is need for training and updates to ensure provider promptly diagnose TB thus avoiding delay in TB detection.

The study found that managers ensured adequate supply of equipment and commodities to support TB detection during pregnancy. This included TB sputum specimen bottles, TB laboratory regents/testing kits, microscope and the safety hood, TB drugs and referral forms. Although periodic stocks-outs were reported, this did not affect TB detection. This finding is supported by the health facility assessment findings that found that there was adequate supply for TB detection at the time of the study.

Overall, supplies and equipment are not a major impediment to TB screening and detection during pregnancy and therefore cannot be associated with health system delay. However, lack of information by some clinical managers on TB detection procedures for pregnant women may seem to suggest inadequate implementation of the policy guidelines. This may result to inadequate screening of TB during pregnancy.

CHAPTER 7: CONCLUSIONS AND RECOMMENDATIONS

7.1: Conclusions

Client's health seeking behavior and inadequate knowledge of the effects of TB on the mother and the unborn baby feature prominently as major patient level factors affecting TB case detection during pregnancy. These two factors contribute to further delays in clients' collection and submission of sputum specimen for confirmatory tests. Health system factors associated with delays in prompt TB detection among pregnant women include service providers' practice, clinicians' failure to promptly investigate TB both for PTB and extra pulmonary TB even when clients presented signs and symptoms suggestive of TB, and long waiting time at ANC clinics attributed to staff shortages.

Some managers were not aware of the recommended guidelines for TB screening among the pregnant women while others did not discuss TB screening for ANC services during their supervision, perhaps contributing to low numbers of ANC clients screened during the ANC consultations. Providers' knowledge on the signs and symptoms of PTB is high but this there is inadequate screening of TB. Further, ANC services are not being fully utilized for TB screening among the pregnant women for prompt TB detection despite the high numbers of mothers attending ANC services. Detection for extra pulmonary TB was extremely delayed suggesting inadequate provider capacity to diagnose this type of TB.

The facility is adequately prepared to conduct TB detection among pregnant women in terms of supplies and commodities. Supervision visits for ANC and TB are also adequate and hence could not be attributed to delays in TB detection among pregnant women. On the other hand, some clinical managers seem not to have the current update on TB during pregnancy and as such may not competently supervise these services during visits.

The number of ANC clients detected with TB on exit interview is low perhaps due to the duration of the data collection. The TB referral practice in the facility is adequate and works efficiently for ANC clients diagnosed with TB. But there is poor record keeping in the facility perhaps limiting continuity of care for TB detection.

Service providers are not adequately informing clients about TB during the ANC consultations. MOH media campaigns are a better source of information on TB to pregnant women when compared to the ANC service providers and the health talks. Overall, from the findings, facility preparedness – supplies and commodities are not associated with delays in TB screening and detection. Staffing, provider practice and clients health seeking behavior are factors associated TB screening and detection among pregnant women in Thika Level V Hospital.

7.2: Recommendations

Based on the study findings, the following is recommended:

1. There is need for policy makers and service providers to enhance effort for TB passive screening during all the ANC visits for prompt TB detection since many ANC clients are not being screened for TB.
2. More effort should be made to improve providers' and managers' knowledge on presentations of extra pulmonary TB as this form of TB is not promptly detected among pregnant women attending ANC in Thika Level Five Hospital.
3. Service providers' follow-up practices for ANC clients suspected to have TB for continuity of care should be strengthened since ANC clients are not taking the sputum specimen for TB detection on time.
4. There is need to enhance information and education on the benefits of screening for TB among pregnant women as a number of ANC clients did not know the effect of TB on the unborn baby.

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APPENDICES

Appendix I: Approval letter Organization of the Study

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Ref: KNH-ERC/A/215

25th July 2012

Charity Njambi Ndwiga
School of Public Health
College of Health Sciences
University of Nairobi

Dear Charity

RESEARCH PROPOSAL: "DELAYS IN DETECTION OF GESTATIONAL TUBERCULOSIS WITHIN THE ANC SERVICES IN THIKA DISTRICT HOSPITAL" (P261/05/2012)

This is to inform you that the KNH/UoN-Ethics & Research Committee(KNH/UoN-ERC) has reviewed and **approved** your above revised research proposal. The approval periods are 25th July 2012 to 24th July 2013.

This approval is subject to compliance with the following requirements:

a) Only approved documents (informed consents, study instruments, advertising materials etc) will be used.
b) All changes (amendments, deviations, violations etc) are submitted for review and approval by KNH/UoN ERC before implementation.
c) Death and life threatening problems and severe adverse events (SAEs) or unexpected adverse events whether related or unrelated to the study must be reported to the KNH/UoN ERC within 72 hours of notification.
d) Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to KNH/UoN ERC within 72 hours.
e) Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. (*Attach a comprehensive progress report to support the renewal*).
f) Clearance for export of biological specimens must be obtained from KNH/UoN-Ethics & Research Committee for each batch of shipment.
g) Submission of an *executive summary* report within 90 days upon completion of the study
This information will form part of the data base that will be consulted in future when processing related research studies so as to minimize chances of study duplication and/or plagiarism.

For more details consult the KNH/UoN ERC website **www.uonbi.ac.ke/activities/KNHUoN**

"Protect to Discover"

Yours sincerely

PROF. A.N. GUANTAI
SECRETARY, KNH/UON-ERC

c.c.

The Deputy Director CS, KNH
The Principal, College of Health Sciences, UoN
The Director, School of Public Health, UoN
The HOD, Records, KNH
Supervisors: Prof. Violet Kimani, Prof. Joseph Wang'ombe

Appendix II: Facility Assessment tool

Facility Assessment

Detection of Gestational Tuberculosis within the ANC Services in Thika Level Five Hospital

Questionnaire Number*:* ☐

Date of assessment: Day/ month/year: ☐☐☐

INDICATE the number of the following laboratory Staff					
1	**Staff**	**Number**	**No update/trained in TB detection**		
a)	Technicians				
b)	Technologist				
c)	Other specify				
2	**INDICATE HOW FREQUENT THE FOLLOWING SERVICES ARE PROVIDED FOR PREGNANT WOMEN**				
	AVAILABILITY OF DIFFERENT SERVICES	**Daily**	**Twice**	**Once**	**Not offered**
a)	How many times a week do you offer ANC services				
b)	How many times a week do you offer services ANC profile				
c)	How many times a week do you offer counseling for PMTCT services				
d)	How many times a week do you offer testing of HIV for PMTCT /ANC				
e)	How many times a week do you offer TB services				
f)	How many times a week do you offer TB treatment services (DOTS)				

3	**Which services are provided routinely, on indication in your laboratory?**			
		YES	**NO**	
a)	HIV			
b)	TB			
c)	ANC profile			

4	**OBS. Physically check & circle if reagents & supplies are available at the laboratory/facility today**	**Yes**	**No**	**Stock out in last three months**	**Used Yes/No**
a)	Reagents for ANC profile				
b)	Reagents for Blood test for HIV (Elisa for HIV –1)				
c)	Reagents for HIV – (Elisa HIV-2)				
d)	Reagents for HIV – Rapid test				
e)	Reagents for TB tests				
f)	Specimen pots for Sputum				

5	**Registers, cards, guidelines; Does the facility have the following;**	**Yes**	**No**	**Stock out in last three moths**	**Never stocked**
a)	ANC cards				
b)	ANC register				
c)	TB screening Checklist- (Job aid)				
d)	Tuberculosis record card				
e)	Tuberculosis appointment card				
f)	TB register				
g)	Referral tools				

Appendix III: Client Exit interview Tool

(Adapted and modified from the WHO, 2009. Case-finding in tuberculosis patients: Diagnostic and treatment delays and their determinants, patient questionnaire)

Client Exit Interview

Detection of Gestational Tuberculosis within the ANC Services in Thika Level Five Hospital

Questionnaire Number*:* ☐

Date----------Day/ month/year: ☐☐☐

Client visit No (indicate by ticking against the visit)

ANC client	First visit	Second visit	Third visit	Fourth visit
Other ANC visits Specify the visit				

Ask the client the following questions and fill the responses given

1. How old are you? (Age in completed years) ----------
2. Have you ever been pregnant again?(Tick against the answer given)
   YES NO
3. If, yes how many times? Write.....
4. How many Children do you have alive? Write.....
5. What is your highest level of completed education (tick against the answer given)

Primary	Secondary	Tertiary	Never been to formal school	Other

6. What is your marital status?

Married	Single	Divorce	Windowed	Other

7. Where do primarily live? Write Village _____

   Sub location_____

8. Is the head of household a man or a woman?
   a. Man (GO TO 10)
   b. Woman
   c. 98 DK
9. [*ask only if answer to Q 8is woman*] Are you the head of household?

   a) Yes
   b) No

10. What is your religion?

    a. [ ] Protestant
    b. [ ] Roman Catholic
    c. [ ] Pentecostal
    d. [ ] Muslim
    e. [ ] Traditional
    f. [ ] African Instituted churches
    g. [ ] None
    h. [ ] Other (specify)_____

11. How would you describe your present employment situation?

    a. [ ] Unemployed, looking for work
    b. [ ] Unemployed, not looking for work
    c. [ ] Work in informal sector (e.g. hawker)
    d. [ ] Self-employed – (formal sector / formal trading)
    e. [ ] Employed (professional / technical / managerial)
    f. [ ] Employed (clerical / sales / services)
    g. [ ] Employed (skilled manual)
    h. [ ] Employed (unskilled manual / domestic services / agriculture)
    i. [ ] Sick / disabled and unable to work
    j. [ ] Casual skilled

k. [ ] Casual labour

l. [ ] Student

m. [ ] Other specify)_____

12. What is your average monthly household income (including any remittances)?

a. [ ] < 1000 Ksh / month

b. [ ] 1000 – 2999 Ksh / month

c. [ ] 3000 – 4999 Ksh / month

d. [ ] 5000 – 9999 Ksh / month

e. [ ] 10,000 – 19,999 Ksh / month

f. [ ] 20,000 – 49,999 Ksh / month

g. [ ] 50,000 + Ksh / month

13. In own opinion, what is the average waiting time for ANC in this facility? (please include time take for ;laboratory investigation services)

a. 30 minutes
b. One hour
c. Two hours
d. Three hours
e. Four hours
f. Over five hours
g. 98 DK

ANC Attendance

14. Did you attend ANC clinic regular in this facility? (Tick against the answer given)

YES NO

15. How does TB spread from person to person?

Means of spread	Knows without prompting	Does not know
Inhaling droplets from an infected person		
Sharing of a room with an infected person with poor ventilation		
Sharing utensils		
Others Specify		

16. How would you tell that a person has TB? **Allow for spontaneous response if no Answer prompt for answers (tick)**

Sign/symptom	Knows without prompting	Knows with prompting	Does not know
Persistent coughing lasting two or more weeks			
Weight loss			
Fever			
Night sweats)			
Enlarged Glands			
Others specify			

17. . Does TB in pregnancy affect the unborn baby? (Tick against the answer given)

YES NO (skip to Q 19)

18. If yes how does TB affect the unborn baby? **Allow for spontaneous response if no answers prompt for answers(tick)**

Effect of TB	Knows without prompting	Knows with prompting	Does not know
Premature baby			
Low birth weight			
Intra uterine death			
Still birth			
Other specify			

19. How does TB affect the pregnant woman? **Allow for spontaneous response if no answers prompt for answers**

Effect of TB	Knows without prompting	Knows with prompting	Does not know
Abortion			
Premature labor			
Difficult labor			
Other			

20. Did you experience any of the following symptoms Yes No if No skip to 27
21. If yes when did you experience the symptoms? Read out.

No	Symptoms	Day	Month	Year
a)	Cough			
b)	Fever			
c)	Loss of Weight:			
d)	Haemoptysis (blood stained sputum)			
e)	Chest pain:			
f)	Others (specify)			

22. Which symptom(s) made you seek healthcare:

	Symptoms	Tick all that apply
a)	Cough	
b)	Fever	
c)	Loss of Weight:	
d)	Haemoptysis (blood stained sputum)	
e)	Chest pain:	

Health seeking behavior with onset of symptoms (before initial diagnosis)

23. When you experienced the symptoms where did you seek care and how much did cost you?

First action	Cost Khs	
Self medication		Prompt for any other, if no skip to Q 25
Traditional medicine		Prompt for any other, if no skip to Q 25
Service provider at home		Prompt for any other, if no skip to Q 25
Drug stores (pharmacies)		Prompt for any other, if no skip to Q 25
Health facility and type		
I. Public- GOK/local Government		
II. Private		
III. Mission		
Other specify		

24. If sought help from a health facility who was the provider who saw at the first consultation?

Type of provider	**Code**
Chest Specialist	1
Doctor	2
Nurse/Midwife	3
Clinical officer	4
Nurse aide /support staff	5
Other (specify)	96
DK	98

25. What was the reason that you did not seek help in health facility?

Reason	**Tick all that apply**
Not Accessible	
Lack of confidence in getting cured	
Advised by somebody	
Services not available anytime	
Referred by previous health service provider	
No Free services/cost	
Others (specify)	

26. What are the reasons that you did not seek help or opted for self medication?

Reason	**Tick all that apply**
Facility too far	
Too busy/long waiting time	
Bad experience	
Others (specify	

27. a). How long did it take you before seeking help for the symptom you experienced?

Write in days_____

27. b). If the client took more than 4 days before seeking care (delay) what was the reason for the delay

Reason	Tick all that apply
Thought ok to wait(perceived no delay)	
Fear of what would be found on diagnosis	
Hoped their symptoms would go away on their own (denial and concealment	
Fear of social isolation	
Economic constraints	
Inadequate staff attitude	
Poor quality of health services	
Others (mention)	

TB Stigma

28. Now I am going to ask you a few questions on TB. *Please indicate the extent to which you agree or disagree with these general statements given below.*

a)Do you feel ashamed for having TB?

a.Strongly agree=0 Agree=1 Average=2 Do not agree=3 Do not agree at all=4

b)Do you have to hide TB diagnosis from the other people?

a.Strongly agree=0 Agree=1 Average=2 Do not agree=3 Do not agree at all=4

c)Does TB affect relation with the others?

a.Strongly agree=0 Agree=1 Average=2 Do not agree=3 Do not agree at all=4

d)Is TB very costly due to long duration of the disease?

a.Strongly agree=0 Agree=1 Average=2 Do not agree=3 Do not agree at all=4

e)Do you prefer to live isolated since you got TB diagnosis?

a.Strongly agree=0 Agree=1 Average=2 Do not agree=3 Do not agree at all=4

f)Does the TB affect your work performance?

a.Strongly agree=0 Agree=1 Average=2 Do not agree=3 Do not agree at all=4

g)Does TB affect marital relation?

h)Strongly agree=0 Agree=1 Average=2 Do not agree=3 Do not agree at all=4

i)Does TB affect family responsibilities?

a.Strongly agree=0 Agree=1 Average=2 Do not agree=3 Do not agree at all=4

j) Do you think there is less chances of marriage due to TB diagnosis?

a.Strongly agree=0 Agree=1 Average=2 Do not agree=3 Do not agree at all=4

k)Does TB affect your family relations?

a.Strongly agree=0 Agree=1 Average=2 Do not agree=3 Do not agree at all=4

l)Does TB cause female infertility?

a.Strongly agree=0 Agree=1 Average=2 Do not agree=3 Do not agree at all=4

m)Does TB lead to serious complications during pregnancy?

a.Strongly agree=0 Agree=1 Average=2 Do not agree=3 Do not agree at all=4

n)Does TB affect breast feeding?

a.Strongly agree=0 Agree=1 Average=2 Do not agree=3 Do not agree at all=4

o)Does TB affect pregnancy outcome?

a.Strongly agree=0 Agree=1 Average=2 Do not agree=3 Do not agree at all=4

p)Is a girl/woman able to make decision about g getting TB treatment on her own?

q)Strongly agree=0 Agree=1 Average=2 Do not agree=3 Do not agree at all=4

29. If you were diagnosed with TB what was the first date of first TB diagnosis (dd/mm/yy):
    Write

30. How many health's seeking visits or encounter did you make before the initial TB diagnosis:
    Write

31. Who made the initial diagnosis?

Type of provider	**Code**
Chest Specialist	1
Doctor	2
Nurse/Midwife	3
Clinical officer	4
Nurse aide/support staff	5
Other (specify)	96
DK	98

32. What action was taken by the provider to who made the initial TB diagnosis: [dd/mm/yy]

Action	Tick only one	dd/mm/yy]
Sputum examination		
X-ray		
Both of the above		
Other specify		

Information on TB

33. During your interaction with service provider in this visit (the one you have just attended), did the provider tell you about TB infection? (Tick against the answer given)
YES NO (if no skip to Q 35)

34. If yes, What did she/he tell you----------

---

35. Have you previously heard of TB?
Yes No

36. If yes what was the source of information on TB (select)

Source	**Tick**
MOH campaign (media)	
Education	
Friends/relatives	
Others (specify)	

36. Do you have any comment about the services given to you during the ANC period?

Thank the woman for her time

Appendix IV: Antenatal Care Service Provider Tool

(Adapted and modified from the WHO, 2009. Case-finding in tuberculosis patients: Diagnostic and treatment delays and their determinants, patient questionnaire)

Antenatal Care Service Provider Interview

Detection of Gestational Tuberculosis within the ANC Services in Thika Level Five Hospital

Questionnaire Number*:* ☐

Date of Interview:Day/ month/year: ☐☐☐

	QUESTIONS	**CODING CLASSIFICATION**	
1.	**1. Provider Training and Experience**		
2.	In what year did you start working in this facility?	Year: ☐	
3.	What is your current technical qualification?	OBGN specialist	
		Medical Doctor	
		Registered nurse with midwifery	
		Registered nurse without midwifery	

		Registered midwife		
		Enrolled nurse		
		Enrolled Midwife		
		Nursing aide/ assistant		
		Community health worker		
		Other (Specify)		
4.	**ANC**			
5.	Do you currently personally provide antenatal care?		Yes	No
6.	For how many years in total have you provided this service? (Including from another facility) IF LESS THAN 1 YEAR RECORD "00"		Year	-------
7.	Does this facility have a copy of any Service Delivery Guidelines on TB during ANC period		Yes	No Skip to Q 9
8.	Can you please show them? ***Interviewer write "Yes" for seen and "No" for not seen***		Yes	No
9.	Were you oriented on these any Service Delivery Guidelines on TB during ANC period		Yes	No
10.	Have you received training on TB control and management during the ANC period?		Yes	No
11.	How well do you know the ANC guidelines and standards for TB Screening during pregnancy?		Very well	
			Fairly well	
			Not well	
			DK/NA	
12.	Please tell the <u>least number</u> of antenatal care visits a woman should receive during the entire pregnancy?	No. visits		
		Don't know		

13.	Between what gestation age should a pregnant woman make her first ANC visit? IF DON'T KNOW WRITE 98 AGAINST LOW AND HIGH	Low (weeks)
		High (High)
		Don't know
14.	Between what gestation age should a pregnant woman make her second ANC visit? IF DON'T KNOW WRITE 98 AGAINST LOW AND HIGH	Low (weeks)
		High (weeks)
		Don't know
15.	Between what gestation age should a pregnant woman make her third ANC visit?	Low (weeks)
		High (weeks)
		Don't Know
16.	Around what gestation age should a pregnant woman make her fourth ANC visit?	Weeks
		Don't Know
17.	At which of the visits should you screen the pregnant woman for TB	First visit
		Second visit
		Third Visits
		All visit
		Don't Know
18.	**When screening a pregnant woman for TB in pregnancy, what kind history must you inquire from the client**	
a)Persistent cough for three or more weeks with or without blood stained sputum		
b)Chest pain		
c)Close contact with a case of TB		
d)Loss of body weight		
e)Intermittent fever and night sweats		
f)Enlarged lymph nodes		

19.	**If a pregnant woman is suspected to be infected with TB, what would you do?**
a) Request TB lab investigations	
b) Refer client to TB clinic	
20.	How many sputum specimens and how are they obtained
a) First- Spot at the lab	
b) Second - container provided for collection of Sputum that should be collected in the **Morning** next day at home the same morning	
d) Other specify	
21.	**How do you refer ANC clients suspect to have any of the TB symptom for TB detection**
a) Use referral form to the Lab from the ANC	
b) Send her to the TB clinic for further consultations	
c) Send her to see the clinician without a referral form	
d) Send her to see the clinician with a referral form	
e) Escort her personally to the clinician	
f) Other specify	
22.	**If a pregnant woman has been diagnosed with TB, how is she managed**
a) Document the positive results in the ANC register	
b) Send the woman to the TB clinic directly	
c) Counsel on TB drugs safety during pregnancy and breastfeeding	
d) Explain that TB drugs are free	
e) Explain that she will continue with ANC visits	
f) Other specify	
23.	**In your own opinion how long does the ANC client take to receive her results on TB diagnosis in this facility**
a) 24 hours	
b) One week	
c) Two weeks	
d) Three weeks	
e) One month	
f) Other specify	

24. In your own opinion, what reason would you give for ANC clients receiving their TB diagnosis results in the duration that you have just said(Q 23)

.....

.....

.....

.....

.....

25. How often are you supervised ----------

---

26. During the supervision, do your supervisors discuss of TB as part ANC care?
    YES NO

27. In our own opinion are they factors that affected TB detection during ANC?

    YES NO (if NO thank the client and end interview)

28. If yes please briefly describe how?
    a) Positively

    ---

    b) Negatively

Thank you

Appendix V: Key in Format Interview Guide

Introduction*:* Good morning/afternoon. My name is _____. We are conducting a study aimed at identifying factors associated with TB screening and detection among pregnant women in Thika Hospital. We are inviting you to take part in the study given you role as manager in this facility. We would like to gather information on support for TB detection during pregnancy including availability of equipment, supplies and infrastructure and personnel training and work. Will you allow us to carry out the interview?

Yes ☐ No ☐ *If "No", - Thank the Officer in-charge or designated official and terminate the interview.* If "yes", proceed with the interview

Background Demographic Information for PHMT/DHMT/Facility in charges in-depth interviews

INTERVIEWER: _____ Code ☐☐

Note taker: _____ Code ☐☐

District _____

Facility Name_____

QUALIFICATION TICK APPROPRIATELY

Enrolled Nurse/Midwife ☐
Chest specialist ☐
Registered Nurse/Midwife ☐
BSCN Nurse ☐
Clinical Officer ☐
PHO/PHT ☐
Doctor ☐
Laboratory Technician ☐

CURRENT WORK

Facility In charge ☐

MCH in charge Facility In charge T☐nic in charge ☐

Hospital administrator ☐ Laboratory in charge ☐

DATE OF INTERVIEW (dd-mm-yy): ☐☐-☐☐-**2012**

TIME STARTED (24 hours) (hh-mm): ☐☐:☐☐

TIME ENDED: ☐☐:☐☐

1.0 Description of key informant's role in the TB during the ANC

1.1 Please tell me about your work.

1.2 Can you please explain to me in some detail your position and function in this facility. [***PROBE*** *to elicit any indication for position in the management/implementation of the TB during ANC services*]

1.3 In your role, how do you support the TB detection in the ANC clinic? ***Probe for their management role in,*** *policy implementation, standards and guidelines , supervision, coordination of their activities, reporting, training and updates, procurement of laboratory TB reagents*

2.0 Understanding of services offered in ANC clinic in relation to TB and ANC

2.1 What TB services are the provider in ANC currently offering ***Probe*** *for details for the services offered for history taking, screening for TB, referral for TB suspected clients and how result are received by the providers and client , laboratory services for ANC clients, payment made for the services*

2.2 Do you think the activities respond the prompt detection of TB among ANC clients? *please explain*

3.0 Service providers training and practice in ANC and TB

3.1 How were the service providers in MCH trained on ANC and TB management? ***Probe*** *for the length of time, training material used, practical, trainee follow up, updates*

3.2 How do you facilitate the ANC staff and the Lab staff ensure effective referral of client suspected to have TB to the Laboratory for TB detection? *Probe for channel of communication in referral and feedback clients specimen, supervision, availability of referral tool, meetings and how often,*

4.0 Equipments, commodities and supply for TB detection

4.1 What equipments, commodities/supplies are required for the TB detection?

4.2 How do you ensure accountability and safety of the equipments, commodities and supplies?

4.3 How do you ensure adequate supplies for the services they are providing TB detection? Probe for source, procurement, cost, distribution?

Finally, we have come to the end of the interview. Is there anything that you would like to add?
Thank you

Appendix VI: Consent for Client Exit Interview

Interviewer: Introduce yourself to the client: Good morning/afternoon. My name is _____. We are conducting a study aimed at identifying factors that cause delay for TB detection among pregnant women in Thika level five Hospital. We are inviting you to take part in a study. Before you decide whether to take part, you need to understand why the research is being done and how it would involve for you. Please take time to read or to listen as I read the following information carefully. Please ask us if there is anything that is not clear or if you would like more information.

Mhoji: Jitambulishe kwa mhojiwa: *Habari ya asubuhi/jioni. Jina langu ni _____. Tuna fanya utafiti unalenga ku tafuata sababu ambazo zina chelewesha kugunduliwa kwa ugonjwa wa TB kati ya akina mama waja wazito kwa hopitali ya Thika. Tu na kualika husike na utafit huuu. Kabla ya ya kuamaua kuhusika. Unahiataji kuwelewa kwaninin utafit unfafanaywa na vile wewe utahusika. Tafadhali chukua wakati huu kusoma au kusikilisha maeelezo kwa utaratibu. Tafadhali uliza jambo lolote kama huelewi ama ukitaka maelezo saidi.*

Purpose of the Study: We are conducting a study to gather information on factors contributing to delay in TB detection during pregnancy. This study is part of a requirement in completion of Masters of Public Health by UON, School of Public Health.

Lengo la utafiti: Tunafanya utafiti kukasanya habari *zina chelewesha kugunduliwa kwa ugonjwa wa TB baina ya akina mama wajawazito. Utafiti huu ni kata ya matekwa inayohitajika kwa kumaliza masomo ya masters ya afya ya uma na UON, Shule* ya Afya ya Uma.

Procedure: Participation in this study will involve you being interviewed by a researcher before you leave the facility. You will not receive money or reward of any kind if to participate in the study.

Taratibu: Kuhusika kwako kwa utafiti huu itajumulisha kuhojiwa na mtafiti kabla haja toka kwa kitu cha afya. Hutapat pesa au zawadi ya namamna yeyote kwa kuhusika na utafiti huu.

Duration of the Interview: This interview will take approximately 30 minutes.

Wakati wa mahojiano: mahiajiano haya itachukwa kadili dakika thalathini (30).

Participation: Your participation in this study is voluntary. You may refuse to answer any question. You may choose to stop the interview at any time without giving any reason. Refusing to participate will not affect the services you receive in any way either now or in the future. We are very interested in your opinions; everything you say is very important to us. I want you to talk freely and openly as much as you want.

Kushiriki kwako katika utafiti huu ni kwa hiari na unatakikana kujiskia huru kukataa kushiriki kabisa au kutamatisha kushiriki kwako wakati wowote. Ukikataa kuhojiwa, hakutakuwa na madhara yoyote

kwa huduma unazopata kwa wakati huu kutoka katika kituo hiki ama kutoka katika kituo chochote kile. Chochte usemalo ni la mhuhimu sana kwetu. Nakuuliza uongee kwa uhuru and kiwasi kwa vile unaotaka.

Benefits: The results from this study are expected to contribute towards improvement of provision of quality ANC service that include prompt TB detection for mother suspected to have TB in Kenya as a whole.

Faida ya kushiriki katika utafiti: *Matokeo ya utafiti huu ni kuwa yale tutakeye pata inatarajiwa kuchangia kuimarisha huduma bora ya wa mama wajawazito inayo jumurisha kugunduliwa kwa ugojwa wa TB kati ya walee mama wanao shikiwa kuwa na TB nchini Kenya.*

Discomfort and Risks: We believe that this study is safe and do not expect you to suffer any harm or injury because of your participation in it. During the interview I may ask you some personal and sensitive information, it could be uncomfortable for you. If at any time you feel you cannot continue with the interview please feel free to ask me to stop. All the information collected will be confidential and will not bear your name and will be kept under lock and key.

Madhara ya kushiriki katika utafiti: *Tanaamini utafiti huu hauna madhara inayo umiza mhusika. Wakati wa mahojiano nitakuuliza habari Fulani, yenye hali ya kibinafsi, lakini yaweza kukutia wasiwasi. Ikiwa kwa wakati wowote ule unahisi kuwa huwezi kuendelea na mahojiano haya tafadhali jisikie huru kunielezea ili ni katize mahojiano haya. Habari zote ambazo zitakusanywa zitakuwa za siri, hazitaambatanishwa na jina lako ama la mhudumu na zitahifadhiwa kwa kufungwa na kufuli.*

Withdrawal or refusal to participate

Participation in this study is voluntary and you should feel free to refuse to participate at all or to stop at any stage. If you refuse or terminate the interview, there will be no effect on the current services you receive at this facility or any other facility. Do you have any questions?

Kujiondoa ama kukataa kushiriki

Kushiriki kwako katika utafiti huu ni kwa hiari na unatakikana kujiskia huru kukataa kushiriki kabisa au kutamatisha kushiriki kwako wakati wowote. Ukikataa kuhojiwa, hakutakuwa na madhara yoyote kwa huduma unazopata kwa wakati huu kutoka katika kituo hiki ama kutoka katika kituo chochote kile. Je! unaswali lolote?

No Yes (if yes, note the questions)

_____

Yes ( ) No ( ) If NO, thank the respondent and end interview)

If any problem arises, ***or*** if you have a problem that you think may be related to any questions about the research, please contact Charity Ndwiga on Tel: 020-2723480

Ikiwa unaswali lolote kuhusu utafiti huu, wasiliana na Charity Ndwiga Simu: +254 020 2713480

If you have any other questions about participating in the research please contact: KNH/UON-ERC on Tel: 0722-829500-2 /2726300-9

Ikiwa unamaswali yoyote kuhusu kushiriki katika utafiti huu, wasilianana KNH/UON-ERC simu: 0722-829500-2 /2726300-9

Clients Statement

I have understood the above considerations regarding my participation. I have been given a chance to ask any questions I may have and my questions have been answered to my satisfaction. I understand that the information I give will be kept private. I understand that I may withdraw from this study at any time. My withdrawal from this study or my refusal to participate will in no way affect me or my family's medical care from this centre or any other centre. I agree to participate in this study as a volunteer

Maelezo ya mhojiwa

Nimeelewa kuhusu kushiriki kwangu katika utafiti huu. Nimepewa nafasi ya kuuliza maswali yoyote. Na yale maswali nilikuwa nayo yamejibiwa na kunitosheleza. Nimeelewa kuwa habari hii itawekwa kwa siri. Ninaelewa pia kuwa naweza kujitoa katika utafiti huu wakati wowote. Na kujitoa kwangu hakuta niadhiri mimi au familia yangu kupata huduma za afya katika kituo hiki cha afya au kingine chochote. Nina kubali kushiriki kwa kujitolea.

_____ _____ Thank the client.

Appendix VII: Consent for Service Provider Interview

Introduction

Good morning/afternoon. My name is _____. We are conducting a study aimed at identifying factors that cause delay for TB detection among pregnant women in Thika Hospital. We are inviting you to take part in a study. Before you decide whether to take part, you need to understand why the research is being done and how it would involve for you. Please take time to read or to listen as I read the following information carefully. Please ask us if there is anything that is not clear or if you would like more information.

Mhoji: Jitambulishe kwa mhojiwa: *Habari ya asubuhi/jioni. Jina langu ni _____. Tuna fanya utafiti unalenga ku tafuata sababu ambazo zina chelewesha kugunduliwa kwa ugonjwa wa TB kati ya akina mama waja wazito kwa hopitali ya Thika. Tu na kualika husike na utafit huuu. Kabla ya ya kuamaua kuhusika. Unahiataji kuwelewa kwaninin utafit unfafanaywa na vile wewe utahusika. Tafadhali chukua wakati huu kusoma au kusikilisha maeelezo kwa utaratibu. Tafadhali uliza jambo lolote kama huelewi ama ukitaka maelezo saidi.*

Purpose of the Study: We are conducting a study to gather information on factors contributing to delay in TB detection during pregnancy. This study is part of a requirement in completion of Masters of Public Health by UON, School of Public Health.

Lengo la utafiti: Tunafanya utafiti kukasanya habari *zina chelewesha kugunduliwa kwa ugonjwa wa TB baina ya akina mama wajawazito. Utafiti huu ni kata ya matekwa inayohitajika kwa kumaliza masomo ya masters ya afya ya uma na UON,* Shule ya Afya ya Uma.

Procedure: You have been selected to participate in the study because you provide ANC and TB services in this facility. If you agree to be interviewed, we will ask you a few questions on the services you offer to the ANC clients including laboratory services for TB diagnosis for pregnant mothers attending ANC. You will not receive money or reward of any kind if to participate in the study.

Taratibu: Kuhusika kwako kwa utafiti huu ni kwasababu unpeana huduma ya mamawajawazito na pia za TB. Ukibari kuhusika, takuliza mwaswali cahche kwa zili huduma ambazo unatoa, vile wamama wana pata huduma za laboratory kwa ajili ya kugundliwa ugwjwa wa TB.

Duration of the Interview: This interview will take approximately 20 minutes.

Wakati wa mahojiano: mahiajiano haya itachukwa kadili dakika ishirini (20).

Participation: Your participation in this study is voluntary. You may refuse to answer any question. You may choose to stop the interview at any time without giving any reason. Refusing to participate

will not affect your job or position in any way, including your relationship with your supervisors either now or in the future. We are very interested in your opinions; everything you say is very important to us. I want you to talk freely and openly as much as you want.

Kushiriki: *Kushiriki kwako katika utafiti huu ni kwa hiari na unatakikana kujiskia huru kukataa kushiriki kabisa au kutamatisha kushiriki kwako wakati wowote. Ukikataa kuhojiwa, hakutakuwa na madhara yoyote kwa huduma unazopata kwa wakati huu kutoka katika kituo hiki ama kutoka katika kituo chochote kile. Chochte usemalo ni la mhuhimu sana kwetu. Nakuuliza uongee kwa uhuru and kiwasi kwa vile unavyotaka.*

Benefits: The results from this study are expected to contribute towards improvement of provision of quality ANC service that include prompt TB detection for mother suspected to have TB in Kenya as a whole.

Faida ya kushiriki katika utafiti: *Matokeo ya utafiti huu ni kuwa yale tutakeye pata inatarajiwa kuchangia kuimarisha huduma bora ya wa mama wajawazito inayo jumurisha kugunduliwa kwa ugojwa wa TB kati ya walee mama wanao shikiwa kuwa na TB nchini Kenya.*

Discomfort and Risks: We believe that this study is safe and do not expect you to suffer any harm or injury because of your participation in it. However some of the questions we will be asking might be considered too personal. There are no 'good' or 'bad' answers, no 'correct' or 'wrong' answers. You do not have to answer a question if you feel particularly uncomfortable and you have the right to stop the interview at any moment if you feel uncomfortable to continue. You are free to ask me to stop discussions if you are uncomfortable, or decline to answer any single question if it upsets or makes you uncomfortable. If so, you may choose not to answer it.

Madhara ya kushiriki katika utafiti: *Tanaamini utafiti huu hauna madhara inayo umiza mhusika. Wakati wa mahojiano nitakuuliza habari Fulani, yenye hali ya kibinafsi, lakini yaweza kukutia wasiwasi. Hakuna jibu liziloo sawa. Ikiwa kwa wakati wowote ule unahisi kuwa huwezi kuendelea na mahojiano haya tafadhali jisikie huru kunielezea ili ni katize mahojiano haya. Pia unaweza kuchaga kutojibu swali hilo.*

Confidentiality: Your participation in this study is completely voluntary. All the information you provide will be recorded anonymously without your identity attached to it. I want to emphasize that this interview is not an evaluation of the job that you do and neither will the information you provide ever be passed on to your supervisors. It is strictly confidential. Please note that the data will be collected and you respective supervisors, facilities and community will receive feedback. Thus the overall information will be revealed but it will not be known who said what. Any written or verbal report using data collected from this study will not use your name or any other information that may identify you.

Usiri kwa kushiriki: *Kushiriki kwako katika utafiti huu ni kwa hiari yako binafisi. Habari zote ambazo zitakusanywa zitakuwa za siri, hazitaambatanishwa na jina lako. Ningetaka kudhibitishia kuwa hii sio hali ya chunguza kazi yako. Na majibu yale uatakaye tolewa haijurikana na mkumbwa wako. Tafadhali nataka uwelewe kuwa uafiti huu utatoa repoti kwa jumla kwa wakumbwa, vituo za afya na uma lakini haiajulikana nani has alisema nini. Maandishi yeyote kuhusu utafiti huu haitabatwisha na jina lako.*

Compensation: You will not be paid or receive any reward to participate in this interview.

Hutapata pesa au zawadi ya namamna yeyote kwa kuhusika na utafiti huu.

You now have an opportunity to ask me questions concerning the study and your consent to participate.

Sasa uko na wakati wa kuuliza swali kuhusu utafiti huu na pia kushiriki kwako kwa hiyari.

1.0 ***Do you have any questions?*** ***1. YES*** (If yes, note the questions) ***2. NO***

2.0 ***Do you agree to participate in this study?*** ***1. YES*** ***2. NO***

If any problem arises, ***or*** if you have a problem that you think may be related to any questions about the research, please contact Charity Ndwiga on Tel: 020-2723480

Ikiwa unaswali lolote kuhusu utafiti huu, wasiliana na Charity Ndwiga Simu: +254 020 2713480

If you have any other questions about participating in the research please contact: KNH/UON-ERC on Tel: 0722-829500-2 /2726300-9

Ikiwa unamaswali yoyote kuhusu kushiriki katika utafiti huu, wasilianana KNH/UON-ERC simu: 0722-829500-2 /2726300-9

I certify that I have read this statement and that I have fully understood its meaning. I have agreed to participate in the study.

Nathibisha kuwa nimesoma na kuelewa maana ya wakala huu. Nakubali kuhusika kwa utafiti huu.

Respondent's signature _____ **Date_____**

Interviewer's signature _____ **Date_____**

Appendix VIII: Consent for In-depth Interviews with in charges

Introduction

Interviewer, introduce yourself; Good morning/afternoon. My name is _____. We are conducting a study aimed at identifying factors associated with TB screening and detection among pregnant women in Thika Hospital. We are inviting you to take part in a study. Before you decide whether to take part, you need to understand why the research is being done and how it would involve for you. Please take time to read or to listen as I read the following information carefully. Please ask us if there is anything that is not clear or if you would like more information.

Mhoji: Jitambulishe kwa mhojiwa: *Habari ya asubuhi/jioni. Jina langu ni _____. Tuna fanya utafiti unalenga ku tafuata sababu ambazo zina chelewesha kugunduliwa kwa ugonjwa wa TB kati ya akina mama waja wazito kwa hopitali ya Thika. Tu na kualika husike na utafit huuu. Kabla ya ya kuamaua kuhusika. Unahiataji kuwelewa kwaninin utafit unfafanaywa na vile wewe utahusika. Tafadhali chukua wakati huu kusoma au kusikilisha maeelezo kwa utaratibu. Tafadhali uliza jambo lolote kama huelewi ama ukitaka maelezo saidi.*

Purpose of the Study: We are conducting a study to gather information on factors contributing to delay in TB detection during pregnancy. This study is part of a requirement in completion of Masters of Public Health by UON, School of Public Health.

Lengo la utafiti: Tunafanya utafiti kukasanya habari *zina chelewesha kugunduliwa kwa ugonjwa wa TB baina ya akina mama wajawazito. Utafiti huu ni kata ya matekwa inayohitajika kwa kumaliza masomo ya masters ya afya ya uma na UON,* Shule ya Afya ya Uma.

Procedure: You have been selected to participate in the study because you supervise or contribute to provision of ANC and TB services in this facility. If you agree to be interviewed, we will ask you a few questions on the services offered by the ANC and Laboratory service providers on the services they provide, get and manage their supplies and commodities, and how you support the services at your level. To capture all this information accurately, we would like to use a tape recorder during the interview, however I assure you that all the information gathered will be put together at the end and what you say cannot be linked to you. The tape will be deleted after we have taken all the information from it.

Taratibu: Kuhusika kwako kwa utafiti huu ni kwasababu unasiamia au kucahngia huduma ya mamawajawazito na pia za TB kwa kituo hiki cha afya. Ukibari kuhusika, takuliza mwaswali chache kwa zili huduma ambazo zinatolewa hapa, vile wamama wana pata huduma za laboratory kwa ajili ya kugundliwa ugwjwa wa TB. Pia tutauliza mwasali kuhusu vifaa vya kazi na vile wewe unachangia hizo huduma. Ndio tuweze kushika habari hizi kwa usahihi tutumia recorder kunakili mazongumozo. Badaye tata fuata mangomozo hayo tukmliza kunitmia kwa huu utafiti.

Duration of the Interview: This interview will take approximately one hour.

Wakati wa mahojiano: mahiajiano haya itachukwa kadili lisaa limoja.

Participation: Your participation in this study is voluntary. You may refuse to answer any question. You may choose to stop the interview at any time without giving any reason. Refusing to participate will not affect your job or position in any way, including your relationship with your supervisors either now or in the future. We are very interested in your opinions; everything you say is very important to us. I want you to talk freely and openly as much as you want.

Kushiriki: *Kushiriki kwako katika utafiti huu ni kwa hiari na unatakikana kujiskia huru kukataa kushiriki kabisa au kutamatisha kushiriki kwako wakati wowote. Ukikataa kuhojiwa, hakutakuwa na madhara yoyote kwa huduma unazopata kwa wakati huu kutoka katika kituo hiki ama kutoka katika kituo chochote kile. Chochte usemalo ni la mhuhimu sana kwetu. Nakuuliza uongee kwa uhuru and kiwasi kwa vile unaotaka.*

Benefits: The results from this study are expected to contribute towards improvement of provision of quality ANC service that include prompt TB detection for mother suspected to have TB in Kenya as a whole.

Faida ya kushiriki katika utafiti: *Matokeo ya utafiti huu ni kuwa yale tutakeye pata inatarajiwa kuchangia kuimarisha huduma bora ya wamama wajawazito inayo jumurisha kugunduliwa kwa ugojwa wa TB kati ya wale wamama wanao shikiwa kuwa na TB nchini Kenya*

Discomfort and Risks: We believe that this study is safe and do not expect you to suffer any harm or injury because of your participation in it. However some of the questions we will be asking might be considered too personal. There are no 'good' or 'bad' answers, no 'correct' or 'wrong' answers. You do not have to answer a question if you feel particularly uncomfortable and you have the right to stop the interview at any moment if you feel uncomfortable to continue. You are free to ask me to stop discussions if you are uncomfortable, or decline to answer any single question if it upsets or makes you uncomfortable. If so, you may choose not to answer it.

Madhara ya kushiriki katika utafiti: *Tanaamini utafiti huu hauna madhara inayo umiza mhusika. Wakati wa mahojiano nitakuuliza habari Fulani, yenye hali ya kibinafsi, lakini yaweza kukutia wasiwasi. Hakuna jibu liziloo sawa. Ikiwa kwa wakati wowote ule unahisi kuwa huwezi kuendelea na mahojiano haya tafadhali jisikie huru kunielezea ili ni katize mahojiano haya. Unawe kuchagau kuto jibu swali hilo.*

Confidentiality: Your participation in this study is completely voluntary. All the information you provide will be recorded anonymously without your identity attached to it. This is to ensure that we capture everything that you tell us. I want to emphasize that this interview is not an evaluation of the job that you do and neither will the information you provide ever be passed on to your supervisors. It

is strictly confidential. Please note that the data will be collected and you respective supervisors, facilities and community will receive feedback. Thus the overall information will be revealed but it will not be known who said what. Any written or verbal report using data collected from this study will not use your name or any other information that may identify you.

Usiri kwa kushiriki: *Kushiriki kwako katika utafiti huu ni kwa hiari yako binafisi. Habari zote ambazo zitakusanywa zitakuwa za siri, hazitaambatanishwa na jina lako. Ningetaka kudhibitishia kuwa hii sio hali ya chunguza kazi yako. Na majibu yale uatakaye tolewa haijurikana na mkumbwa wako. Tafadhali nataka uwelewe kuwa uafiti huu utatoa repoti kwa jumla kwa wakumbwa, vituo za afya na uma lakini haiajulikana nani has alisema nini. Maandishi yeyote kuhusu utafiti huu haitabatwisha na jina lako.*

Compensation: You will not be paid for participating in this interview.

Hutapata pesa au zawadi ya namamna yeyote kwa kuhusika na utafiti huu.

You now have an opportunity to ask me questions concerning the study and your consent to participate.

Sasa uko na wakati wa kuuliza swali kuhusu utafiti huu na pia kushiriki kwako kwa hiyari.

1.0	***Do you have any questions?*** ***1. YES*** (If yes, note the questions) ***2. NO***
2.0	***Do you agree to participate in this study?*** ***1. YES*** ***2. NO***

If any problem arises, ***or*** if you have a problem that you think may be related to any questions about the research, please contact Charity Ndwiga on Tel: 020-2723480

Ikiwa unaswali lolote kuhusu utafiti huu, wasiliana na Charity Ndwiga Simu: +254 020 2713480

If you have any other questions about participating in the research please contact: KNH/UON-ERC on Tel: 0722-829500-2 /2726300-9

Ikiwa unamaswali yoyote kuhusu kushiriki katika utafiti huu, wasilianana KNH/UON-ERC simu: 0722-829500-2 /2726300-9

I certify that I have read this statement and that I have fully understood its meaning. I have agreed to participate in the study.

Nathibisha kuwa nimesoma na kuelewa maana ya wakala huu. Nakubali kuhusika kwa utafiti huu.

Respondent's signature _____ Date_____

Date_____ Interviewer's signature _____

Appendix IX: Records Review Form

Number of ANC clients suspected and detected with TB												
	2011						**2012**					
	Jul	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**
Total ANC clients												
ANC clients screened												
ANC clients suspected to have TB												
ANC client sent for sputum test												
ANC clients with TB positive sputum smear												
Other ANC diagnosed with of Forms of TB												
Clients lost to follow up between the ANC, lab and the TB clinic for TB detection												

Note: For clients diagnosed with any form of TB, fill the details in separate sheet provided separately next page

Appendix X: List for Clients Suspected to Have TB

ANC Clients No or TB clinic or IP	Date suspected with TB	Date Sent lab	Date client received results	Numbers of visits made to the health facility before the diagnosis	Date client started treatment

Appendix XI: Declaration form for Students

UNIVERSITY OF NAIROBI

Declaration of Originality Form

This form must be completed and signed for all works submitted to the University for examination.

Name of Student CHARITY NDWIGA

Registration Number H57/P/8059/06

College HEALTH SCIENCES

Faculty/School/Institute SCHOOL OF PUBLIC HEALTH

Department

Course Name MASTERS OF PUBLIC HEALTH

Title of the work Factors Associated with Tuberculosis Screening and Detection with ART Services in Thika Level Five Hospital

DECLARATION

1. I understand what Plagiarism is and I am aware of the University's policy in this regard
2. I declare that this Thesis (Thesis, project, essay, assignment, paper, report, etc) is my original work and has not been submitted elsewhere for examination, award of a degree or publication. Where other people's work, or my own work has been used, this has properly been acknowledged and referenced in accordance with the University of Nairobi's requirements.
3. I have not sought or used the services of any professional agencies to produce this work
4. I have not allowed, and shall not allow anyone to copy my work with the intention of passing it off as his/her own work
5. I understand that any false claim in respect of this work shall result in disciplinary action, in accordance with University Plagiarism Policy.

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Date 19/10/2013