DETERMINANTS OF DELAYED TUBERCULOSIS CASE FINDING IN MAKANA LOCAL MUNICIPALITY, EASTERN CAPE

by

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DECLARATION

I declare that **DETERMINANTS OF DELAYED TUBERCULOSIS CASE FINDING IN PRIMARY HEALTH CARE CLINICS, MAKANA MUNICIPALITY, EASTERN CAPE** is my own work and that all the sources I have used or quoted have been indicated and acknowledged by means of complete references and that this work has not been submitted before for any other degree at any other institution.

…… …….… ..……..

SIGNATURE **DATE** **ONAGA JULIET ONYINYE (MRS.)**

DETERMINANTS OF DELAYED TUBERCULOSIS CASE FINDING IN PRIMARY HEALTH CARE CLINICS, MAKANA MUNICIPALITY, EASTERN CAPE

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ABSTRACT

DETERMINANTS OF DELAYED TUBERCULOSIS CASE FINDING IN PRIMARY HEALTH CARE CLINICS, MAKANA MUNICIPALITY, EASTERN CAPE

BACKGROUND: The prevalence of tuberculosis (TB) has been rapidly on the ascendency in the recent years globally due to its co-infection with HIV/AIDS. TB case finding is one of the technical pillars of the Directly Observed Treatment Short course (DOTS) TB strategy and there has been advocacy for early TB case detection to be the new focus of TB control efforts.

PURPOSE: The purpose of this non-experimental study was to assess the determinants of TB case finding among pulmonary TB patients registered for treatment in Makana Municipality

METHOD: A quantitative, non-experimental, cross sectional descriptive study among PTB patients registered for treatment at the primary health care clinics in Makana Municipality was done. Data collection was by self-administered questionnaires while sampling was by systematic sampling of PTB patients at five systematically selected clinics.

RESULTS: Patient–related delay contributed more to total delay, in this study sample, than health system-related delay. Health system delay was found to be significantly associated with poorer finances, passive smoking history, seeking care from multiple health providers, initially visiting a non- NTCP health provider, TB stigma , overcrowding in the household and having difficulty with breathing as an initial symptom ($p<0.05$).

CONCLUSION: There was a significant delay in TB case finding among PTB patients in this local municipality and patient related determinants contributed more than health system related determinants to this delay. There is need for the municipal TB programme to embark on an aggressive health education programme to furnish the populace with accurate information about TB, improve their health seeking behaviour and help address the issue of stigma associated with TB.

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May God bless you all.

DEDICATION

I dedicate this study to

My dear husband, Chukky and my loving and adorable children, Kunny , Jassy, Kamsy and Kaira, for their love, support and motivation, without which I would not have accomplished this.

My parents whose esteem for the value for education and whose willingness to sacrifice for their children always remain fresh in my memory and to my siblings for their loving forbearance while I was engaged in this study.

All those affected with TB disease

And above all, to God Almighty Who saw me through this journey to obtaining my degree

Table of Contents

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS USED IN THE STUDY

AIDS : Acquired Immune Deficiency Syndrome

CDC : Centre for Disease Control and Prevention

ECDOH : Eastern Cape Department of Health

DOH : Department of Health

DOTS : Directly Observed Treatment Short-course

FLD : Flexible Lines of Defence

HIV : Human Immunodeficiency Virus

HPM : Health Promotion Model

LED : Local Economic Development

LOR : Lines of Resistance

NDOH: National Department of Health

NLD : Normal Lines of Defence

NSM : Neuman's System Model

PHC : Primary Health care

PTB : Pulmonary Tuberculosis

SA : South Africa

SPSS : Statistical Package for Social Sciences

TB : Tuberculosis

UNISA : University of South Africa

USAID : United States Agency for International development

WORLD HEALTH ORGANIZATION : World Health Organisation

LIST OF ANEXTURES

CHAPTER 1

ORIENTATION OF THE STUDY

1.1 INTRODUCTION

Tuberculosis (TB) is a potentially fatal disease caused by bacteria, Mycobacterium tuberculosis, which affects many parts of the body (Centres for Disease Control and Prevention, 2009: 8). The commonest form of TB is pulmonary tuberculosis (PTB), a droplet infectious disease involving the lung parenchyma and is easily transmitted when an infected person expels TB bacteria. If TB is left untreated in any part of the body it can be fatal. The prevalence of TB has been rapidly on the increase because it is the commonest opportunistic infection associated with HIV/AIDS (Stop TB Partners, 2011:1; USAID, 2009:8). South Africa ranks 3rd amongst the countries worst hit by TB burden in the world, contributing 500,000 new TB cases in 2011 (WORLD HEALTH ORGANIZATION, 2012: 10-11) while the Eastern Cape Province, with 62,000 new TB cases, is second hardest hit among the provinces in South Africa (Day, Gray, & Budgell, 2011:168; Health Systems Trust, 2013).

Management of TB is one of the top strategic priorities for the health system in South Africa (National Department of Health (NDOH) 2007:6). Despite the improvement in the Directly Observed Treatment Short- course (DOTS) coverage in the country to 100% coverage (NDOH, 2007:12), the growing burden of TB infection and death in the South Africa are yet to be controlled (WORLD HEALTH ORGANIZATION, 2012:10-11). The STOP TB Partners (Stop TB Partners, 2011:25) emphasize the need to strengthen TB control determinants and not just concentrating on only medical treatment of TB. Preventive measures including early case finding was stressed as crucial for curbing TB infection, especially PTB infection. TB case-finding in South Africa is based on the use of internationally approved DOTS strategy of systematic screening of symptomatic patients presenting at the health facilities (passive-case finding) (NDOH, 2009:18). Unfortunately, TB cases do not present directly to public TB clinics, rather they present to other health care settings or stay at their homes to seek alternative care (WORLD HEALTH ORGANIZATION, 2006a:5-10, NDOH-Arizona, 2007:5.8). Consequently, there are delays in detecting these TB cases for prompt and effective treatment. Delayed TB case-finding hampers effort at controlling

TB particularly in South Africa (Liu, Wilson, Dawood, Cameron, & Alvarez, 2012:3). These delays has been reported, among other things, to contribute to increase in infectiveness in the community (Wood, Lawn, Johnstone-Robertson & Bekker, 2010:113; WORLD HEALTH ORGANIZATION, 2006a:11) thereby perpetuating the high TB burden. Determinants, including patients' and health system determinants have been identified as major contributing determinants (Storal, Yimer & Bjune, 2008:1, 3; Finnie, Khoza, Van den Borne, Mabunda, Abotchie & Mullen., 2011:397-406). Sustained progress in TB control programme in resource-limited settings requires establishing the level of delays and the setting-specific patient and health system determinants that influence delays in finding TB cases (WORLD HEALTH ORGANIZATION, 2006a:11-12). These are important first steps in identifying points of intervention in TB care and control (Finnie *et al.,* 2011:395).

This study set out to investigate the delays in TB case finding among PTB patient registered for treatment at the primary health care (PHC) clinics in Makana Municipality and to describe the determinants contributing to these delays.

1.2 BACKGROUND TO THE STUDY

TB is a global health crisis and a growing health threat in the world today. The WORLD HEALTH ORGANIZATION reports that 1 in every 3 persons in the world already has (latent) TB infection (STOP TB Partners, 2011:v). Approximately 10% of this latent TB cases develops into active TB, which without treatment, result in an estimated case-fatality rate of 60% (World Bank, 2006:290, 291). Studies on natural history of TB show that, left untreated, 70% of smear-positive TB cases and 20% of smear-negative TB cases die within 10 years of the infection (WORLD HEALTH ORGANIZATION, 2011a:3). The WORLD HEALTH ORGANIZATION declared TB a global health emergency in 1993 due to the steady rise in TB disease in the whole world (WORLD HEALTH ORGANIZATION, 2011a:3). At the time, over 7 million new TB cases were identified and 1.35 million people had died of TB in the world. Efforts have been made at reducing the scourge of TB infection through the development of the DOTS strategy in 1995, and the introduction of International Standard for TB Care (Migliori, Hopewell, Blasi, Spanevello & Raviglione, 2006 :687-689), yet, the burden of TB in many countries remains a catastrophe, requiring urgent measures (WORLD HEALTH ORGANIZATION, 2006b:9-12; WORLD HEALTH ORGANIZATION, 2011a:10,13;

WORLD HEALTH ORGANIZATION, 2012:10-11). According to the WORLD HEALTH ORGANIZATION Global Tuberculosis Report (WORLD HEALTH ORGANIZATION, 2012: 3, 9), there were an estimated 8.7 million incident cases of TB and 1.4 million deaths globally in 2011. TB infection is currently the second leading cause of death in the world among the infectious disease category (WORLD HEALTH ORGANIZATION, 2012:3), with Africa and Asia disproportionately bearing the brunt of the epidemic. The global TB epidemic stabilized and is said to be currently on the decline but this decline is more of a developed world's phenomenon (WORLD HEALTH ORGANIZATION, 2012: 12).

South Africa had the highest TB incidence rates (993 per 100,000 populations) in the world in 2011 (WORLD HEALTH ORGANIZATION, 2012: 10-11), a rate the WORLD HEALTH ORGANIZATION described as being of a serious epidemic proportion. Among the 22 countries with highest TB burden, South Africa ranks 3rd behind India and China (WORLD HEALTH ORGANIZATION, 2012: 10-11) but these other two countries have populations which are much bigger than that of South Africa. The first TB case was spotted in South Africa in the 17th century and became widespread in the 19th century (Abdool Karim, Churchyard, Abdool Karim & Lawn 2009:3-4). Following the advent of HIV/AIDS, the new TB cases in South Africa has more than quadrupled from 110,000 (301 per 100 000 populations) in 1990 to 500,000 (993 per 100,000 populations) in 2011, and TB-related deaths more than doubled from 14,000 deaths (38 per 100,000 populations) to 25,000 death (50 per 100,000 populations), over the same period (WORLD HEALTH ORGANIZATION, 2012:10-11; WORLD HEALTH ORGANIZATION, 2010:72; WORLD HEALTH ORGANIZATION, 2011a:12-13, 125). The majority of TB infection in South Africa affect young people aged between 30-39 years and who are living in the townships and informal settlements (NDOH, 2011:24) Currently, TB is the leading cause of death in South Africa (Wilson, Howel,Toppozini, Dong, Clark & Hurtado, 2011:1102).

The Eastern Cape Province has one of the worst TB statistics in South Africa. The Province has a high incidence rate of TB with about 62000 new cases recorded in 2010 alone (Day, Gray, & Budgell, 2011:168; HST, 2011) while TB related deaths were put at 167 deaths per 100,000 population in 2009 (Day & Gray, 2013: 228). 90% of these TB cases are PTB, indicating high proportion of infectious TB cases (Day, Gray,

& Budgell, 2011:168). Cure rate in Eastern Cape was 66% in 2009, well below the South African average (71%) and the WORLD HEALTH ORGANIZATION target of 85% (Day, Gray, & Budgell, 2011:169; Day, Barron, Massyn, & Padarath, 2011:93). Cacadu District presents a peculiar situation. Despite having a TB cure rate of about 72% in 2009 (Day, Barron, Massyn and Padarath. 2011, 2011:90) which was above the Provincial average, it was, paradoxically, the district with the second highest TB incidence rate (1383 per100,000 populations) in South Africa in 2010 (Day *et al.*, 2011:89). This suggests that TB cases are not detected early enough to reduce transmission rate, hence, it was suggested that there is the need to investigate the issues around TB case finding in Cacadu district (HST, 2009:98).

Table 1.1 Tuberculosis related statistics of South Africa, Eastern Cape and Cacadu District

	1990	2009	2010	2012
South Africa				
New TB infection [a]	110,000 [a]		500,000 [a]	530,000 [a]
Incident rate per 100,000 population	301 [a]		981 [a]	1000 [a]
TB-related deaths [a]	14,000		25,000	31,000 [a]
Cure rate [b]	40% (in 1995) [a]	71% [a]	74% [a]	74% [a] (in 2011)
Eastern Cape				
New TB infection	56,495 (in 2000) [e]	63,807 [b]	62,029 [b]	60,046 [b] (in 2011)
Incident rate per 100,000 population [b]		948.2	919.8	902.3 (in 2011)

TB-related deaths per 100,000 population [b]	154 (in 2003)	173 (in 2008)	167 (in 2009)	
Cure rate	50.7 (in 2003) [f]	66% [b]	67.1% [b]	
Cacadu district				
TB incident rate per 100,000populations			1383 [d]	1029 [c]
Cure rate	39.1 [f] (in 2003)	72% [d]	70.4%[d]	75.1% [c] (in 2011)

Source **a**- WORLD HEALTH ORGANIZATION, 2013: 148,168; **b**- Day and Gray, 2013:228-229; **c:** Massyn, Day, Dombe, Barron, English, and Padarath, 2013:184, 200; **d**- Day, Barron, Massyn, Padarath, and English. 2011:89-90; **e:** Antoinette, 2000:343; **f:** Day, Monticelli, vermaak, okorafor, Moodley and DoHerty. 2006: 107,111.

TB case finding is one of the technical pillars of the DOTS strategy fundamental to the prevention and control of TB (WORLD HEALTH ORGANIZATION, 2006b:9-10). It is an important step that leads to prompt initiation of anti-TB treatment which will reduce TB infectiousness and overall burden of the infection (WORLD HEALTH ORGANIZATION, 2006b:9-10; Department of Health (DOH), 2012:2.7). Progress in TB case finding has been made worldwide. Globally, 65% of estimated incidence was detected in 2010, and in South Africa, TB case finding rose from 59% in 2000 to 72% of estimated incidence in 2010 (WORLD HEALTH ORGANIZATION, 2011a:116&128). For long, though, emphasis has been focused more on increasing the number of cases detected. This is because assessment of performance of case finding efforts has always focused on measurement of the number of cases diagnosed as a function of estimated incidence (WORLD HEALTH ORGANIZATION, 2011a:28-36) rather than on how early these cases are detected. However, due to continued high rates of new TB infection and high mortality rates, emphasis should now shift to early case finding (NDOH, 2011:36; Day *et al.*, 2011:89).

Delayed TB case-finding is a factor that hinders efforts at reducing TB burden (WORLD HEALTH ORGANIZATION, 2006a:5-10). Delayed TB case finding is a global problem (Sreeramareddy, Panduru, Menten & Van den Ende, 2009:1), a health challenge in Africa (Sendagire, Schim van der Loof, Mubiry, Kende-Lule, &Cobelens, 2010:1) and in South Africa (Liu, Wilson, Dawood, Cameron, & Alvarez, 2012:3). Recent studies (Wilson *et al.*, 2011:1102; Shapiro, Variava, Rakgokong, Moodley, Luke, Salini, Chaisson, Golub& Martinson, 2012:1) show that TB in South Africa is diagnosed too late for effective treatment, both to save life and to prevent infectivity in the community. Wood *et al.,* (2010:113) further stated that in high TB transmission settings (such as South Africa), "lower case finding and delays in diagnosis…result in on-going transmission". The WORLD HEALTH ORGANIZATION (2006a:5-11) notes that 35% of TB contacts would have become infected by the time a smear-positive index case is diagnosed. Other consequences of delayed TB case finding, of importance to public health, include more extensive disease/complications, increased mortality as well as worsened economic conditions for the patients and their families (Sendagire *et al.*, 2010:1). Studies found delays of 90 to over 180 days to exist in African countries (Sreeramareddy *et al.*, 2009:4-7; Fatiregun, & Ejeckam, 2010:1). In a study conducted in Nigeria, 62% of patients were found to delay for over 30 days before seeking for care (Fatiregun, & Ejeckam, 2010:1).

Wilson *et al.* (2011:1102) affirms that the key to reducing the transmission of and death from TB is not the provision of new diagnostic technologies rather the effective and responsive management of human determinants that delay TB case finding. These human determinants are of critical importance for maximising TB control outcomes. Patient's alertness to all symptoms of TB and having the right attitude to health seeking behaviours as well as health systems preparedness to diagnose TB infection is of importance (STOP TB Partners, 2009:4). The best TB control programme will fail if these important undermining determinants are not identified and addressed.

The WORLD HEALTH ORGANIZATION (2011b:5) identified sources of delays to detection of TB cases to include, disease natural history delay, patient delay, access delay, suspect identification delay, and diagnostic delay. Prior related studies classified these delays into patient and health care system delays (Finnie *et al.*, 2011:397-406; WORLD HEALTH ORGANIZATION, 2006:11). Critical determinants

including patient's knowledge of TB disease, patient's attitudes and perception about TB, and patient's own way of experiencing TB symptoms and illness, socio-cultural determinants were identified in systematic review studies as aspects of patient's delay (Finnie *et al.*, 2011:397). Other contributing determinants include residential/geographical determinants, travel time/distance to health care facilities, the choice of health facility/health provider to consult, and health system determinants including staff knowledge, staff attitude, staff workload, and coordination of TB services and referral systems (WORLD HEALTH ORGANIZATION, 2006:11; Finnie *et al.*, 2011:397-406; Woolf, Salaniponl, & Kemp, 2006:67-68; Meintjes, Schoeman, Morroni, Wilson & Maartens, 2008:4-7). Despite the fact that similar studies have been undertaken on delays in case detection in South Africa (Skordis-Worrall, Hansen & Mills, 2010:171) and other countries (Fatiregun & Ejeckam, 2010:1), studies show the phenomenon of delayed TB case finding is a complex one in which different contributing determinants are in operation for different groups of TB patients in different settings (Fatiregun & Ejeckam, 2010:2; Mpungu, Karamagi, &Mayanja, 2005:2).

Finnie *et al.* (2011:395) noted that investigating barriers to early case finding is an important starting point for identification of points of intervention in planning for TB care and control. The WORLD HEALTH ORGANIZATION (2006a:12) suggests that to understand the determinants of delays in TB case finding for the entire population, determinants in specific segments of the population need to be investigated. There is paucity of data on the existence of and determinants contributing to presumed delays in TB case finding among PTB patients in Makana Municipality, despite a very high TB incidence rate in the Cacadu District. Thus, this study was designed to assess the level of and determinants contributing to, delayed TB case finding among PTB patients registered for treatment at the PHC clinics in Makana Municipality.

1.3 STATEMENT OF THE RESEARCH PROBLEM

Early TB case finding is crucial for reducing TB transmission, severity of the infection and mortality. However, TB cases are often detected late in the disease. Delays in TB case finding has been attributable to patient not seeking care early enough, and health services not detecting the TB cases even when the cases have presented during the

earlier stage of the infection (Skordis-Worrall *et al.*, 2010:177-178; Sendagire *et al.*, 2010:8; WORLD HEALTH ORGANIZATION,2004:8). Screening of patients for TB in primary health care facilities are not adequately implemented to identify cases of TB early enough to curb the spread of TB. TB patients, on the other hand, are not alert to all the TB symptoms and do not have the right health seeking behaviour. This study, however, intends to investigate the level of delayed TB case finding among PTB patients registered for treatment in Makana Municipality, and the health system- and patient-related determinants contributing to these delays.

1.4 RATIONALE FOR THE STUDY

The rising burden of TB infection in South Africa is a growing concern requiring urgent attention (WORLD HEALTH ORGANIZATION, 2012:10-11; WORLD HEALTH ORGANIZATION, 2011a:72). Despite the improvement in the DOTS coverage in the country to 100% coverage (NDOH, 2007:12), the growing burden of TB infection and death in the South Africa suggests that effective TB treatment programme alone cannot win the battle over TB (WORLD HEALTH ORGANIZATION, 2011a:12). Progress in controlling and mitigating the ravaging effect of TB infection in South Africa can be expedited if TB control programmes focuses on early case detection and prompt treatment (Skordis-Worral *et al.*, 2010:171). This study is relevant because while emphasis continues to be on improving TB case detection, TB cases are detected too late both to save life and to reduce on-going infection, distress in the community and economic hardship (WORLD HEALTH ORGANIZATION, 2011b:1). There is urgent need to improve the health outcomes of TB control programmes… as establishing the determinants deterring early TB case finding is an important starting point for identification of points of intervention in planning for TB care and control (Finnie *et al.*, 2011:395). There has been a call by the WORLD HEALTH ORGANIZATION (2006b:12) and other researchers (Fatiregun & Ejeckam, 2010:2; Mpungu *et al.*, 2005:2) for the investigation of context specific determinants that cause delays in TB case finding in particular settings. Hence the need to assess the level and determinants contributing to delayed TB case finding among PTB patients registered for treatment at the PHC clinics in Makana Municipality.

1.5 PURPOSE OF THE STUDY

The purpose of this non-experimental study was to assess the determinants of TB case finding among pulmonary TB patients registered for treatment in Makana Municipality. The study also sought to investigate the determinants contributing to these delays in TB case-finding. Both patient- and health care system-related determinants contributing to this delay in TB case finding among PTB patients registered for treatment at the primary health care clinics in Makana municipality were assessed.

1.6 RESEARCH OBJECTIVES

The research objectives that guided this study were

- To assess the time duration of delay in TB case finding among PTB patients in Makana Municipality
- To identify patient-related determinants contributing to delays in TB case finding among PTB patients registered for treatment in Makana Municipality.
- To identify the health system-related determinants contributing to delays in TB case finding among PTB patients registered for treatment in Makana local Municipality.
- To suggest recommendations on practical interventions to mitigate delay TB case finding.

1.7 RESEARCH QUESTION

To achieve the purpose of the study, the researcher addressed the following questions:

- What is the level of delay in TB case finding among PTB patients registered for treatment in the PHC clinics in Makana Municipality?
- What are the patient- related determinants contributing to delays in TB case finding among PTB patients registered for treatment in Makana Municipality?

- What are the health system- related determinants contributing to delays in TB case finding among PTB patients registered for treatment in Makana municipality?

1.8 RESEARCH SETTING

The study was conducted at the PHC clinics in Makana Municipality situated at the eastern part of Cacadu district in the Eastern Cape Province. According to the latest census figures (Statistics South Africa, 2012), as at 2011, Makana municipality had a population of 80, 390 with an average household size of 3.4 persons. It had a population growth rate of 0.65%, with the majority (about 70%) of the population aged between 15-64 years. There is an overall unemployment rate of 32.5% in the Municipality which is higher than the national average (29.8%), with the youth being worse affected (42.3% unemployment rate). Overall, about 44% of those aged between 15-64 years depend on others or the government's welfare program for their livelihood. 6.3% of the populace had no form of formal education while only 11.9% had higher education. 15% of the households live in informal dwellings with almost half (44.5%) of them female-headed. Half of the households have piped water within their dwelling, just over 70% have sanitary sewage disposal system in place and about 90% of the households had electricity and weekly refuse removal.
Makana Municipality is a relatively large administrative entity comprising of urbanised and rural population (Makana Municipality Local Economic Development Strategy, 2009:1-2). Poverty level is quite high, with over a fifth of the households living below the poverty line (less than R800 per month) (Makana Municipality Local Economic Development Strategy, 2009:28- 34).

The municipality has three hospitals (a district hospital, TB hospital, and psychiatric hospital) which support the nine PHC clinics (Joza, Alicedale, Settlers Day, Extension 7, Anglo African, Tyantyi, Middle Terrace, Riebeck East, Raglan Road) distributed across the municipality. TB treatment is a clinic-based programme in the municipality, like the rest of South Africa. All patients, irrespective of the place of diagnosis in the municipality, are referred to and receive their TB treatment at the clinics under the DOTS programme. During the time of study, the nine clinics in the municipality had a total TB case load of 590 cases.

1.9 SIGNIFICANCE OF THE STUDY

This study will make unique contributions to the body of knowledge and to the TB programme in Makana Municipality as well as to the TB patients. The findings of the research will provide current, local level data on the determinants of and duration of delay in TB case finding in an Eastern Cape Municipality. This may form the foundation of further TB research in the Municipality and may likewise, provide guidance to similar research in other comparable Districts in Eastern Cape Province. Also, the identification of health system determinants contributing to delays in TB case finding may engender evidence-based change in the TB control policies in the Municipality which may bring about speedier and more successful screening for TB cases. The identified profile of the typical patient with delayed TB case finding as well as the patient related determinants contributing to TB case finding delays may also effectively direct the content and target audience of TB health education programme in the Municipality.

1.10 OPERATIONAL DEFINITIONS OF KEY CONCEPTS

Operational definition is described as explaining the basic concepts in terms in which they are to be measured (Polit and Beck, 2008:760). For the purpose of this study, the key concepts are conceptually defined as thus:

Determinants: According to Collins English dictionary (Collins English dictionary, 2005:452), determinant refers to determinants or circumstances that influence something. In this study, determinant refers to anything that contributes to delay in case-finding of PTB patients.

Health system delay: is defined as the time interval between the first presentation to health care facility and time of diagnosis (Storal *et al.*, 2008: 3). In this study, health system delay refers to the time, in days, from first presentation to an official health care facility to the time of initiation of treatment. Time interval exceeding five days will be termed health system delay (Ngadaya, Mfinanga, Wandwalo & Morkve 2009:3).

Makana Municipality: In this study, Makana Municipality refers to a relatively large administrative entity located in the eastern part of Cacadu district in Eastern Cape,

which comprises of urbanised and rural population (Makana Municipality Local Economic Development Strategy (LED), 2009:1-2).

Municipality: According to Collins English dictionary (Collins English dictionary, 2005:1071), a municipality refers to a city, town district or administrative unit with some level of local self-governance.

Patient: According to Collins English Dictionary (Collins, 2005:1193), a patient is a person who is receiving medical care. In this study, a patient refers to person whom a medical practitioner or a health care worker has diagnosed with PTB disease (NDOH, 2009:29) and is receiving treatment at a PHC clinic in Makana Municipality.

Patient delay: In this study, patient delay refers to the time, in days, from the onset of symptoms attributable to PTB to the time of presentation to health care practices. A time period of more than of 30 days will be termed patient delay in this study.

Pulmonary TB: PTB is described as a life-threatening droplet infectious disease caused by mycobacterium tubercle which affects the lung parenchyma (WORLD HEALTH ORGANIZATION, 2011:29, STOP TB Partners, 2011:24). In this study, PTB refers to an infection caused by Mycobacterium tubercle which causes the inflammation of the lungs, commonly presenting as cough and other systemic symptoms, and which is spread from person to person through droplet nuclei (NDOH, 2009:15-18

TB Case finding : WORLD HEALTH ORGANIZATION (1968:14) describes case finding as an essential early step in disease control, aimed at early detection, and cure of conditions which have not reached the clinical stage that will spontaneously make one to seek medical attention.. TB case finding is however, a strategy of prompt detection and reporting of TB cases (Centers for Disease and Control, 2009:9-10). In this study, TB case finding refers to screening for PTB based on presence of symptoms attributable to PTB.

Total delay: is defined as the time from onset of TB symptom to time of diagnosis (Storal *et al.,* 2008:3). In this study, total delay refers to the sum of both the patient and health system delays.

1.11 RESEARCH DESIGN AND METHOD

The research methodology is the overall plan for data collection and analysis. The research design and methodology for this study will be discussed in greater depth in chapter three

Research design

A research design is a structural approach that guides the planning and implementation of the study to achieve intended goal (Joubert & Ehrlich, 2007:77; Polit & Beck, 2008:211). This study followed a non-experimental, cross-sectional quantitative study design to obtain information from the respondents.

Study population

The research population included all pulmonary tuberculosis patients registered for treatment at the primary health care clinics in Makana Municiplity.

1.12 SCOPE OF THE STUDY

The study focused on delays in passive TB case-finding and contributing determinants, on the basis that TB control in South Africa depends mainly on passive case-finding. The study was conducted in the health care clinics in Makana Municipality among TB patients registered for treatment.

1.13 ETHICAL CONSIDERATION

Ethics measures the extent a given study abides by the legal, social and professional rules (Polit & Beck, 2008:753). Ethical rigors need to be adhered to for every research process, to demonstrate the integrity of the research process and protect the welfare of both the respondents and those the findings of the study may affect (Terre Blanche, Durrheim & Painter; 2006: 61; Houser, 2006: 66). Every research needs to adhere to some ethical standards starting from the identification of the research problem, through the conduct of the research to the publication of the research findings. The ethical considerations include protecting the right of the respondents, protecting the right of the institution and ensuring the scientific integrity of the research.

The details of ethical consideration for this study are presented in chapter three.

1.14 STRUCTURE OF THE DISSERTATION

Chapter one is the orientation of the study. It gave a brief introduction of the study and the background to the study. It also outlined the research problem, purpose and objective of the study. Chapter 2 discusses the literature reviewed for the study. Chapter 3 gave a detailed discussion of the study design used in the study and the methodology. Chapter 4 covers data analysis and the data presentation. The concluding chapter, chapter 5, discusses the main findings of the research, the limitations of the study and provides feasible recommendation for future research and practice.

1.15 CONCLUSION

This chapter provides the orientation of the study. It describes the background of the study, the statement of the research problem, the purpose and specific objectives of the study as well as the significance of the study. The chapter also gave brief definitions of the key terms used in the study.

CHAPTER 2

LITERATURE REVIEW

2.0 INTRODUCTION

A critical step that a researcher must undertake at the onset of a research process is to familiarize him or herself with the body of knowledge that already exists in the area or field of research of interest. This is the process of literature review. Burns and Grove (2009:92) explained that “a literature review is an organised written presentation of what has been published on the topic by scholars”. It refers to different forms of accounts or stories on existing knowledge published about the topic of interest (Barbie, 2011:94). The emphasis is on *published work* which signifies that the material is credible within scholarly community. The core sources of information for the review of literature are from published, credible scholarly works which are found in journal articles and books but other sources include dissertations, databases, conference papers, policy guides, government reports, and other credible sources (Joubert & Ehrlich, 2007: 70). In this study, the researcher consulted a wide range of scholarly materials, published journal articles, books, guidelines and other “*grey*” literature (thesis, unpublished materials).

A literature review process serves the crucial purpose of identifying other people working in the area /field of interest; increasing the researcher’s breadth and depth of knowledge on the respondents of interest; identifying theories addressing the respondents of interest and providing guidance in the analysis and interpretation of research findings (Barbie, 2011:94; Joubert & Ehrlich, 2007:66-74. In this study, the researcher conducted a review of literature to gain in-depth insight and obtain various account on issues relevant to the respondents matter of delays in TB case finding and determinants driving it. The literature review also helped the researcher to identify the theoretical framework that anchors the study in this field as well as to determine the suitable research process for the study.

2.1 OVERVIEW OF TUBERCULOSIS.

Tuberculosis (TB) is a disease caused by five closely related bacteria of the class mycobacteria namely *Mycobacterium tuberculosis*, *Mycobacterium bovis, Mycobacterium africanum, Mycobacterium microti and Mycobacterium caneti* but by far the commonest cause of TB worldwide is *Mycobacterium tuberculosis* (NDOH, 2009: 15; World Bank, 2006:290). *Mycobacterium tuberculosis* is infectious and typically affects the lung parenchyma (PTB) but can also affect other body parts (extra-pulmonary TB) (WORLD HEALTH ORGANIZATION, 2011a:3; CDC, 2009: 8). PTB is the commonest form of TB, occurring in 70- 90% of the cases (World Bank, 2006:290). PTB is the type of TB that can be easily spread from an infected person to another person by coughing, sneezing or singing (NDOH, 2009:15) which releases the droplets (small particles containing a number of air-borne *Mycobacterium tuberculosis*) into the air which may be inhaled by another individual in close and prolonged proximity to an infected person. Transmission occurs more indoors, in dark, damp spaces where the droplet nuclei may remain airborne for longer periods of time (NDOH, 2009:15).

On the average, most *Mycobacterium tuberculosis* infections will not develop into TB disease (this is latent TB). It is estimated that there is only a 10% lifetime risk of developing TB in HIV negative patients (World Bank, 2006: 290). The situation is different, however, in HIV positive patients who have an average annual risk of developing TB of 10% (NDOH, 2009:15). Individuals with latent TB are not infectious because they do not have bacteria which are growing and hence cannot transmit TB (NDOH, 2009:15)

TB manifests itself in a variety of symptoms such as persistent cough (of more than 2 weeks duration), sputum production, haemoptysis (blood in sputum), fever of more than 2 weeks, drenching night sweats, loss of appetite, unexplained weight loss (of more than 5kg in a month), a general feeling of illness (malaise) and tiredness, shortness of breath, chest pain (NDOH, 2009: 18).

The most common method for diagnosing TB worldwide is by testing for *Mycobacterium tuberculosis* in the sputum samples examined under the microscope (WORLD HEALTH ORGANIZATION, 2011a:3). Those patients who have TB disease and whose sputa show up the TB bacteria are described as smear positive TB cases

and this category of TB patients have the greatest chance of transmitting the droplets, especially if they have cavities in their lungs (NDOH, 2009:15). In countries (including South Arica) with more sophisticated laboratory services, other means of diagnosis include the culture of *Mycobacterium tuberculosis* in sputum (the gold standard of TB diagnosis) or using rapid molecular test methods (WORLD HEALTH ORGANIZATION, 2011a:3). In South Africa, confirmation of TB diagnosis is done using at least two sputum specimens for bacteriological confirmation (NDOH 2009:18). It is best that these are early morning specimen. In a patient with clinical symptoms of TB that are unresponsive to antibiotics treatment, and in whom the first two sputum tests are negative, a 3rd sputum specimen is sent for bacterial culture.

Studies on natural history of TB show that, left untreated, 70% of smear-positive TB cases and 20% of smear-negative TB cases die within 10 years of the infection (WORLD HEALTH ORGANIZATION, 2011a:3). Fortunately, TB, if detected early, in most cases, is a curable disease. (Stop TB, 2011:1). Using a combination of first line drugs introduced from the 1950's to the 1980's, up to 90% of people with drug susceptible TB can be cured in six months (Stop TB, 2011: 1).Treatment of drug resistant TB requires more drugs (second-line drugs) and is more challenging.

From the fore-going, it is evident that TB is a disease which has been well studied and understood (World Bank, 2006:290-295). Pulmonary TB is, without doubt, the most important form of TB as it is both the most infectious and most commonly occurring. TB symptoms are well known and the methods of detecting/diagnosing it are known and available in the South African health care system. Despite this, the TB epidemic continues to worsen (WORLD HEALTH ORGANIZATION, 2012:3, 10, 11). This study will focus on the determinants affecting delay in Pulmonary TB case finding in a South African municipality.

2.2 EPIDEMIOLOGY OF TB

2.2.1 Epidemiology of TB globally

According to the WORLD HEALTH ORGANIZATION Global Tuberculosis Report, there were an estimated 8.7 million incident cases of TB and 1.4 million deaths globally in 2011 (WORLD HEALTH ORGANIZATION, 2012: 3, 9). Twenty two countries (of which South Africa is one) were designated as TB HBC (High Burden Countries) by

the WORLD HEALTH ORGANIZATION in the year 2000 and jointly, accounted for 82% of all estimated new cases in the world in 2011.The burden of TB is greatest in Asia and Africa with the world's most populous nations (India and China) accounting for about 40% of the world's TB cases. Africa has roughly 25% of the global TB burden and on per capita basis, has the world's highest TB mortality rate (WORLD HEALTH ORGANIZATION, 2012:9). Globally, the incidence of TB stabilized between 1990 and 2001 (WORLD HEALTH ORGANIZATION, 2012: 12) and then declined. In the 2010-2011 period, the average global decline rate was approximately 2.2%, being fastest (8.5%) in the WORLD HEALTH ORGANIZATION European region and slowest (2.0%) in the South-East Asian Region. As cheering as this reported global decline in incidence may sound, it is important to note that the WORLD HEALTH ORGANIZATION based its estimates heavily on vital registration system. But this source of primary data is unreliable especially in poor, rural communities like the setting of the present study. For example, in 2009, it was found that 32.1% of death certificates submitted at the Home Affairs Department in Cacadu District in South Africa could not be used for public health analysis (Massyn, Day, Barron, Haynes, English & Padarath, 2013:194). It is therefore possible that the incidence of TB is hugely understated globally. In fact, the South African Health Review 2012/2013 (Day & Gray, 2013:227) went as far as saying that the said WORLD HEALTH ORGANIZATION report on global TB decline represented "a perfect example of how averages can obscure real problems"

2.2.3 Epidemiology of TB in South Africa.

South Africa has been reported by many researchers to have one of the highest prevalence and incidence TB rates in the world (WORLD HEALTH ORGANIZATION, 2012: 10-11). There have been suggestions (Abdool Karim *et al.*, 2009:3-4) that TB arrived with the European settlers and colonialists in South Africa in the 17th Century. At that time, the colonialists were said to have been escaping from TB which was a scourge ravaging Europe and Northern America. The hope then was that the sun and relatively purer air of South Africa would be a cure for the TB. The local, indigenous South African population which was previously unexposed then quickly developed TB. This was further worsened by later socio-political and economic events that subsequently unfolded. The overcrowded living conditions in the hostels, poor wages,

poor nutritional status and the migrant labour system which characterized the mining sector at the time contributed to the spread of TB. This claim was supported by a study (Stuckler, Basu, Mckee & Lurie, 2011: 524) which seemed to suggest that silica dust (especially from gold dust) predisposes to increased risk of pulmonary TB and that the circular migration of workers to and from the mining fields and their far flung families in the homelands hastened the geographical spread of TB and also disrupted the detection and treatment of TB. Furthermore, the apartheid policies did little to curb the spread of TB, and in cases may have contributed to the increase in TB rates. There was rural poverty, unjust restriction of access to health care, banishment of those with disease to their original rural homes, as well as the proliferation of overcrowded squatter camps in peri-urban areas (HST Update issue No 56, 2000:3). Later, in the 1980's, the upsurge in TB/HIV led to a dramatic increase in TB rates as well as the development of drug resistant TB bacillus which further worsened the spread of TB.

The South African TB situation "has reached a crisis point" (CDC, 2011) and is of "serious epidemic proportions" (WORLD HEALTH ORGANIZATION, 2012: 10-11). Following the advent of HIV/AIDS, the new TB cases in South Africa has more than quadrupled from 110,000 (301 per 100 000 populations) in 1990 to 490,000 (981 per 100,000 populations) in 2010, and TB-related deaths more than doubled from 14,000 deaths (38 per 100,000 populations) to 25,000 death (50 per 100,000 populations), over the same period (WORLD HEALTH ORGANIZATION, 2010:72; WORLD HEALTH ORGANIZATION, 2011a:12-13, 125). The latest WORLD HEALTH ORGANIZATION Global TB Report (WORLD HEALTH ORGANIZATION, 2012:123) estimated that, in 2011, TB mortality in South Africa has remained 49 per 100,000 populations. The majority of TB infections in South Africa affect young people aged between 30-39 years and who are living in the townships and informal settlements (NDOH, 2011:24) Currently, TB is the leading cause of deaths in South Africa (Wilson, Howel, Toppozini, Dong, Clark & Hurtado, 2011:1102).

The accuracy of this relatively low TB mortality rate (49 per 100,000 populations) reported by the WORLD HEALTH ORGANIZATION for 2011 is challenged by the Statistics South Africa TB mortality data (Day & Gray, 2013: 228) in the preceding years (153 persons per 100,000 population in 2008 and 140 persons per 100,000 population in 2009). There appears no logical justification for a precipitous reduction in TB mortality rate in South Africa as suggested by the said WORLD HEALTH

ORGANIZATION report. For instance, TB incidence has been reported to be on the increase (from 971 per 100,000 in 2009 to 993 per 100,000 in 2011) (Day & Gray, 2013: 227) and prevalence of drug resistant TB is comparatively high in South Africa (CDC, 2011; Day & Gray, 2013: 227). South Africa still remains, one of the twenty two countries designated by the WORLD HEALTH ORGANIZATION as high burden countries (HBC), the other twenty one being Afghanistan, Bangladesh, Brazil, Cambodia, China, the Democratic Republic of the Congo, Ethiopia, India, Indonesia, Kenya, Mozambique, Myanmar, Nigeria, Pakistan, the Philippines, the Russian Federation, Thailand, Uganda, the United Republic of Tanzania, Vietnam and Zimbabwe (Day & Gray, 2013: 227). Even among these HBC's, South Africa ranks 3rd amongst the countries worst hit by TB burden in the world, contributing 490,000 new TB cases in 2010 (WORLD HEALTH ORGANIZATION, 2011a: 12) and is one, among seven HDC's, that has not achieved the target treatment success of 85% for smear positive pulmonary TB (Day & Gray, 2013: 227). There is thus a possibility that the latest WORLD HEALTH ORGANIZATION report may have masked the severity of the South African TB epidemic.

2.2.4 Epidemiology of TB in the Eastern Cape Province

Eastern Cape was the province with the highest proportions of Years of Life Lost (YLL) due to TB and HIV in South Africa in 2009 (Massyn *et al.*, 2013: 162). An estimated 62,000 new TB cases occurred in the Province in 2010 (Day *et al.,* 2011:168; HST, 2011). The TB death rate in the province increased steadily from 154 per 100,000 population in 2003, peaked in 2006 at 187 per 100,000 population and has been on a slow decline ever since (HST, 2011) . However, the TB statistics in the Eastern Cape have always been worse than the national average. TB death rates were estimated at 173 deaths per 100,000 population and 167 deaths per 100,000 populations in 2008 and 2009 respectively compared to national averages of 153 and 140 per 100,000 in 2008 and 2009 respectively (Day & Gray, 2013: 228). Cure rate in Eastern Cape was 66% in 2009, well below the South African average (71%) and the WORLD HEALTH ORGANIZATION target of 85% (Day *et al.,* 2011:169; Day, Barron, Massyn, & Padarath, 2011:93). Similarly, percentage of TB patients completing treatment has improved from 60.3% in 2001 to 76.9% in 2009 but it has consistently been under-

performing compared to the national averages (65.4% in 2001 and 77.1% in 2009) (HST, 2011).

Though there is reason to believe that TB related deaths have been on gradual decline in recent years in the province, it is also likely that the TB mortality rates reported above are under-estimations of the true burden of TB as they are calculated based on Statistics South Africa data which were neither corrected for under-reporting nor for coding of ill-defined causes of death (HST, 2011). Hence despite the Eastern Cape Provincial TB control programme recording some modest successes in the last few years, it is not performing nearly as well as other provincial programmes and TB very much remains a huge public health concern. There is thus need to investigate every aspect of the TB control programme to further understand why the programme is under-performing.

2.2.5 Epidemiology of TB in Cacadu District

Makana Municipality (the study setting) is in Cacadu District. Based on the 2009 data from death certificates, TB is, by far, the commonest cause of YLL in Cacadu (20.9% of total YLL's) with HIV/AIDS coming a distant second at 12.1% (Massyn *et al*., 2013: 194). Also, Cacadu district was the district with the second highest TB incidence rate (of 1 383 per 100 000) in South Africa in 2010 (Day, Barron, Massyn, & Padarath, 2011:89). This figure, as worrisome as it may be, is still likely to be an under-estimation of the true TB incidence rate because the data upon which the estimates were based (the Electronic TB Register data) accounted for only those cases which were diagnosed and recorded in the health system. It is thus reasonable to assume that the situation is much worse

Also concerning the TB situation in Cacadu District (Massyn *et al.*, 2013: 194-1980), TB treatment defaulter rate worsened from 8.4% in 2009 to 9.0% in 2010 while the TB cure rate increased from 39.1% in 2003 to 78.4% in 2010 and the number of new smear positive TB cases showed a modest decrease from 2,023 per 100,000 of the population in 2009 to 1,930 per 100,000 of population in 2011. This suggests that there is a high number of cases of infectious (smear positive) TB cases in the district. Hence, the advice by the Health System Trust (2009: 98) that issues hampering TB case finding in Cacadu have to be investigated.

2.3 TB CASE FINDING

TB case finding is described as an organised effort to identify (and bring to treatment) as many TB cases as possible, in the entire community, year after year, until the disease ceases to be a public health problem (Centres for Disease Control, 2009:9-10). CDC (2005:32) described case-finding as a complex process that leads to the presentation, evaluation, receipt of diagnosis, reporting of person with active TB and bringing TB patients to treatment.

Increasingly, it is becoming evident that there needs to be a paradigm shift in the focus of TB control efforts and strategies. In South Africa, for example, TB control efforts have historically focused mainly on the proportion of TB patient effectively treated (Wood *et al.*, 2005:112).Despite the increase in treatment success from 57% to 77% between 1999 to 2009, the TB notification rate in the country also paradoxically doubled over the same period (WORLD HEALTH ORGANIZATION, 2011a: 40,131). A plausible reason for this increase in new TB cases may be the detection of TB cases at advanced stages in the disease, after susceptible contacts had already been infected. This assumption seems to be supported by a study conducted in Cape Town which found a high force of transmission of TB bacilli among the study respondents (Wood *et al.*, 2005:112-113; Uys, Warren, Van Heldon, 2007:1). This was due to high numbers of people with infectious TB and multiple exposures of contacts to many infectious TB cases. Early TB case detection was reported to result in shorter duration of infectiousness, less transmission to contacts, decreased individual morbidity and mortality and greater success in treatment (CDC, 2005:32). It is therefore necessary for the appropriate TB case detection approach to be embraced and secondly, for the determinants that militate against the early detection of TB cases to be explored and understood.

2.3.1 Approaches to TB case finding.

There are two recognized approaches to TB case finding, active and passive. Each has its merits and demerits but the move, in the recent years, has been towards the passive TB case finding approach.

2.3.1.1 Active case finding

Active case finding is described as a screening strategy targeted at the general or a specific population to identify presumptive TB (and initiation of treatment) among individuals who have not sought diagnostic services on their own accord (WORLD HEALTH ORGANIZATION, 2011b: 4; Golub, Mohan, Comstock, & Chaisson, 2005: 1183). This strategy had historically been the standard approach for TB case detection. There have been reports of active TB case finding programs that had successfully detected additional and previously undiagnosed TB cases (Golub *et al.*, 2005: 1184-1197). Mass radiography was conducted in developing countries, in 1945, where high prevalence of TB was found among army recruits (Golub *et al.*, 2005:1185). Significant numbers of previously undiagnosed TB were also detected through mass screening of a rural Indian population of civil servants. Also a house-to house screening study conducted in South Korea in1969 reportedly detected three times more cases than the health facility screening (Golub *et al.*, 2005:1185, 1192). But Active TB case finding is not without some strong criticisms. It has been described as a more difficult and rigorous strategy to implement on a large scale (STOP TB Partners, 2009:12), requires the investment of extensive financial/ human resources and ties up health personnel who otherwise should be useful in other health activities (STOP TB Partners, 2009:12; Golub *et al.*, 2005: 1185, 1197). This re-channelling of scarce human and material health resources to active TB case finding efforts can have dire consequences in poor, developing world countries/municipalities where other severe public health concerns also exist. This was the point made by a study conducted in South Africa (Golub *et al.*, 2005: 1195) that stated that active case finding may not be ideal in high TB incident settings such as South Africa. The World Health Organisation took a stand,on the debate of active versus passive TB case finding approaches. According to the WORLD HEALTH ORGANIZATION Expert Committee on TB (World bank, 2006:294-295), majority of smear-positive TB cases (which usually progress rapidly) may develop in-between the intervals of reasonable mass screening, and if not picked up by any other means, will increase the transmission of TB infection. During the 1960s and 1970s, population-wide screening was discouraged in developing countries by the WORLD HEALTH ORGANIZATION and restricted to screening of high-risk groups (Stop TB Partnership, 2009:12). A recommendation was then made that mass-screening may be pursued as a complementary strategy after

appropriate effort have been made to address barriers to passive case finding (WORLD HEALTH ORGANIZATION, 2011b:4).

2.3.1.2 Passive case finding

Passive TB case finding is a public health strategy described as the detection of active TB mainly through sputum microscopy in symptomatic individuals presenting themselves to health services (Golub *et al.*, 2005:1183; Stop TB Partnership, 2009:4). The WORLD HEALTH ORGANIZATION recommended passive case finding as the main approach to case finding in developing countries due to some shortcomings of the active case finding, some of which have been highlighted above. A facility-based case finding (passive case finding) programme/approach that runs indefinitely ensures continuous case detection.

However, it has been found that passive case finding has not realised its full potentials. Passive case finding is influenced by determinants including individual (patient's motivation to seek care), degree of suspiciousness by health care worker to identify individuals who should undergo diagnostic investigations for TB, and the quality of laboratory facilities (WORLD HEALTH ORGANIZATION, 2011b:4). As described by the WORLD HEALTH ORGANIZATION (2011b:4), the different stages involved in the pathway of passive case finding can potentially, serve as leakage from the chain leading to early case finding. These stages include (1) patient recognition of TB symptoms; and (2) patient accessing appropriate health service; (3) health-care-worker identifying potential TB suspects; (4) health care worker applying the required step in an appropriate diagnostic algorithm; and (5) patient referral to appropriate place of treatment. The fault lines in the pathway to passive TB case finding can occur at any of the stages mentioned above. According to Golub *et al.* (2005:1185), studies conducted in developing countries found that a significant number of TB patients were aware of their TB symptoms and majority of those detected through mass screening have previously presented to health facilities for these symptom, suggesting that effective case finding in health services can identify symptomatic individuals. Higher compliance in health seeking behaviour is also believed to occur in those who have identified themselves as symptomatic (Dara, Grzemsk, Kimerling, Reyes & Zagorskiy, 2009:35). Hence, it is being argued that passive case finding represent a unique opportunity in the TB control programme and every effort must be made to understand

the root causes of delay in the passive case detection to enable prioritisation of action (WORLD HEALTH ORGANIZATION, 2011b:5).

2.3.2 Delayed case finding

Delay in TB case detection has huge implications for TB transmission dynamics, TB prevention and the control of TB epidemics and represents a major concern for public health (WORLD HEALTH ORGANIZATION, 2006a:5; Sreeramarareddy *et al.*, 2009:8; Uys *et al.*, 2007:1,2,5). This delay has been variously defined /characterized by different authors. The WORLD HEALTH ORGANIZATION (2011b:5) described Total TB case finding delay as comprising of 6 types of delays namely ; delay that exists between the development of active TB and patient recognition of symptoms (disease natural history delay); delay between patient recognition of symptoms and accessing health care (access delay); delay between patient accessing health care and identification of patient requiring TB test (suspect identification delays); delay between identification of patient requiring TB test and confirmation of diagnosis (diagnostic delay); and delay between the confirmation of TB diagnosis and initiation of treatment (treatment delay). Other authors categorised delay case finding broadly into patient delay and health system delay, reflecting the duration from onset of symptom to the time of first consultation at a health care facility (patient delay), and the delay between the first consultation and initiation of treatment (Sendagire *et al.*, 2010:1; WORLD HEALTH ORGANIZATION, 2006a:33). However, irrespective of the definition given to “delayed TB case finding”, there is unanimity among researchers that it should be expressed in terms of number of days/weeks. It has been reported that for effective TB control, patient delay should not exceed 2-3 weeks while health system delay should not exceed a 5-7 days (Lambert & Van der Stuyft, 2005:954).

Unfortunately, research conducted in both developed and developing countries, as well as in high and low TB endemic countries have recorded prolonged delays in TB case finding. The range of time delays in TB case finding have also varied greatly, from delays of 2-4 months in South Africa (Storal *et al.*, 2008:3; Wondimu, Micheal, Kassahum, & Getechew, 2007:148; WORLD HEALTH ORGANIZATION, 2006a:33), over 6 months in Tanzania (Sreeramareddy *et al.*, 2009:6) and Nigeria (Fatiregun, & Ejeckam, 2010:3); and over one year in California (CDC, 2005:16)

The delay in TB case finding has serious consequences, some of which will be highlighted below.

2.3.3 Consequences of delayed TB case-finding

Delay in TB case detection has such significant consequences as increased risk of development of severe disease in patients; reducing the success of treatment; extending the period of infectiousness; increasing the probability of transmission of TB disease to contacts/outbreaks of TB disease (CDC, 2005:32; WORLD HEALTH ORGANIZATION, 2006:10). A study in South Africa (Meintjes *et al.*., 2008:6) demonstrated that the need for hospitalization for in-patient TB treatment was found mostly among TB cases who had longer delays before diagnosis. Similar significant association between longer delays before diagnosis and high mortality were found by other studies as well (Lienhardt, Rowley, Manneh, Lahai, needham, Milligan & McAdam, 2001:236).

Additionally, case finding delay has implications for members of the community to which the TB patient belongs. A study that evaluated the duration of TB symptoms before patients presented to health facility for treatment (Madebo & Lindtjorn, 1999:1) found that patients who were symptomatic for longer periods before presenting for treatment had larger number of bacilli in their sputa. Golub *et al.* (2006:24) noted that such cases that remained infectious for longer durations increased the chances of transmission of the infection to the community thereby perpetuating and expanding the epidemic to successive generations. Their study on association between total delays in initiation of treatment and TB transmission showed that 40% of contacts of those who delayed for three months and above tested positive to tuberculin skin test. Similar studies reported that a ship yard artisan in Maine who had active TB for 8 months before detection resulted in 21 TB cases among his contacts (CDC, 2005:16) and a high school student in California who was undiagnosed for over one year resulted in 12 TB cases among her contacts with 23% of her other school members testing positive to tuberculin skin test (Centres for Disease Control, 2005:16). Wood *et al.* (2011:112-113) stated that the consequences of these delays in case finding is amplified in high transmission setting. They demonstrated that in setting where the effective contact number (defined as the number of contacts sufficient enough between an infectious pulmonary case and a susceptible individual to ensure TB

transmission) is >10, delayed case finding results in transmission of TB infection to additional 10 contacts, while delayed case finding in settings where the force of infection (proportion of TB-uninfected individual newly infected per annum) is <1.0 will only affect the specific individual.

In the light of dire consequences of delay TB case finding, both for the patient and his/her community, it is crucial that determinants that can contribute to its occurrence be explored and investigated.

2.4 THEORETICAL FRAMEWORK

To provide a theoretical framework for this study, a combination was created of Pender's Health Promotion Model (HPM) and Neuman's System Model (NSM). The Neuman's System Model provides the basis for understanding the essence of early TB case finding as a prevention strategy, while the Pender's Health Promotion Model provides the framework for assessing the determinants associated with delays in TB case finding. Pender maintains that the determinants influencing an individual's response to health action need to be assessed to assist health professionals in tailoring interventions to suit the specific clients/community needs (Peterson & Poredow, 2009:297-301). Neuman System Model emphasises that the client's/communities is a holistic system that interacts with stressors and nursing action should identify these stressors and deliver appropriate prevention (Neuman, 1995: 20-21; Neuman & Fawcett, 2002:16-21).

2.4.1 Neuman's system model

The Neuman's System Model is a wellness system-based model that focuses on the holistic nature of a client/community system and prevention as an intervention (Neuman & Fawcett, 2002:16-21; Neuman, 1995:20-21). The model addresses how the client's variables (including, physiological, psychological, socio-cultural, spiritual and developmental) interact with internal and external stressors and how nursing prevention as intervention is applied to restore the clients to optimal wellness and stability (Neuman & Fawcett, 2002:16-17; Masters, 2005:42). This client-centred model describes the individual system as an open system comprising of a core (referred to as the person's basic survival structure) and protective rings (which

protects and restores the person to stability). The core consists of the person's normal lines of defence (NLD) which helps the person to adapt to normal level of health. The surrounding protective rings consists of flexible lines of defence (FLD) and lines of resistance (LOR) which help to increase person's resistance from stressor, decrease stressor reaction and return the individual/ community to stability and balance (Neuman, 1995: 20-21). Neuman and Fawcett (2002:21) describe a stressor as "tension-producing stimuli or forces occurring within the internal and external environmental boundaries of the client system". It disrupts the individual or community causing physical illness, social or emotional crisis (Ume-Nwagbo, DeWan, Lowry, 2006:32).

The Nursing process was described in the Model as a "three-step format of nursing diagnosis, nursing goals, and nursing outcomes" (Neuman, 1996: 69). Neuman emphasises that the role of the nursing action is to assess the stressors (tuberculosis in this case) to the client/community, and reinforce the individual with adequate prevention which it classified in terms of primary, secondary and tertiary prevention.

2.4.1.1 Application of the Neuman's System Model to TB case finding

With reference to the model, tuberculosis disease is the potential stressor, when tuberculosis penetrates an individual or a community; it breaks the lines of resistance (LOR) and flexible lines of defence (FLD) and disrupts the person's core, the basic survival determinants. The model emphasises that, of utmost importance, the flexible line of defence of a client/community need to be strengthened (against the stress) through promotion strategies carried out by nursing action so as to promote client wellness (Fawcett & Neuman, 2002).

The primary and secondary prevention of the model apply to early TB case finding, the essence of this study.

Primary prevention was described in the model as an intervention before a reaction occurs. Based on this, early TB case finding is a primary prevention strategy developed to maintain the wellness of the community by preventing them from getting TB infection (the stressor) from undiagnosed and untreated PTB patient with active/infectious TB disease (Neuman, 1995: 20-21; Ume-Nwagbo *et al.*, CDC, 2005:32). When TB cases are detected early, the rate of transmission of the infection

to the community reduces. The reverse, delayed TB case finding, increases the number of people that get infected before an active TB case is diagnosed and treated, thereby perpetuating the burden of the TB epidemic (WORLD HEALTH ORGANIZATION, 2006a:6-12; Wood *et al.,* 2010:113).

The secondary prevention perspective of early TB case finding is directed to individuals already infected with the stressor, TB disease. The model implies that these individual should be assessed as early, to ensure prompt diagnosis and treatment to prevent the development of more extensive disease/ disease complication and possible death.

2.4.2 Penders' health promotion model

The Pender's Health Promotion Model (Pender, 1996) was an elaboration of the expectancy-value theory and the social cognitive theory. The HPM was developed for predicting health promotional behaviours, emphasizing the role of expectations in shaping of behaviours. It describes the multidimensional nature of individuals as they interact with the environment in pursuit of health.

The model focuses on three major areas namely individual characteristics and experience; behaviour-specific cognitions and affect; and behavioural outcomes. The HPM seek to understand the determinants of behaviours and postulates that three major groups of interrelated determinants affects individual's commitment to plan of action which influences (directly or indirectly) the health promoting behaviours. These groups of influencing determinants includes (1) Individual characteristics and experiences (biological, psychological, personal, social and prior-related determinants); (2) behaviour-specific cognition and affect (perceived self-efficacy, perceived barrier to action, perceived benefits to action, activity-related affect, situational influences and interpersonal influences- such as from peer, family members, health providers, norms, supports, models); (3) immediate behaviour contingences (response to immediate competing demands and preferences) (Pender, Murdaugh & Parsons, 2006: 46-50). The model posits that these interrelated concepts can be modified through nursing actions. An understanding of the dynamics of these multidimensional and interrelated determinants provides insight to both health compromising and enhancing behaviours. The model structures a multistep process

for health planning including reinforcing client strength; developing a plan based on client preferences; addressing barriers, facilitators and committing to goal. Health professionals are allowed to explore “the complex individual’s bio-psychosocial processes that motivate individuals to engage in actions directed towards enhancement of health” (Pender, *et al.*, 2006: 47). “Measuring changes in these concepts is essential to determine if such changes influence the occurrence of health promotional behaviour” (Pender *et al.*, 2006:52).

The HPM assumptions are, that individuals seek to actively regulate their own behaviour; the individual in her bio-psychosocial complexity interact with the environment, progressively transforming the environment and being transformed over time; health professionals constitute a part of the interpersonal environment, which exerts influence on persons throughout their life span; self-initiated reconfiguration of person-environment interactive patterns is essential to behaviour change (Pender *et al.*, 2006:63; Nursing Theories, 2012). The schematic framework (Figure 1) below depicts the major concepts comprising the Pender’s Health Promotion Model.

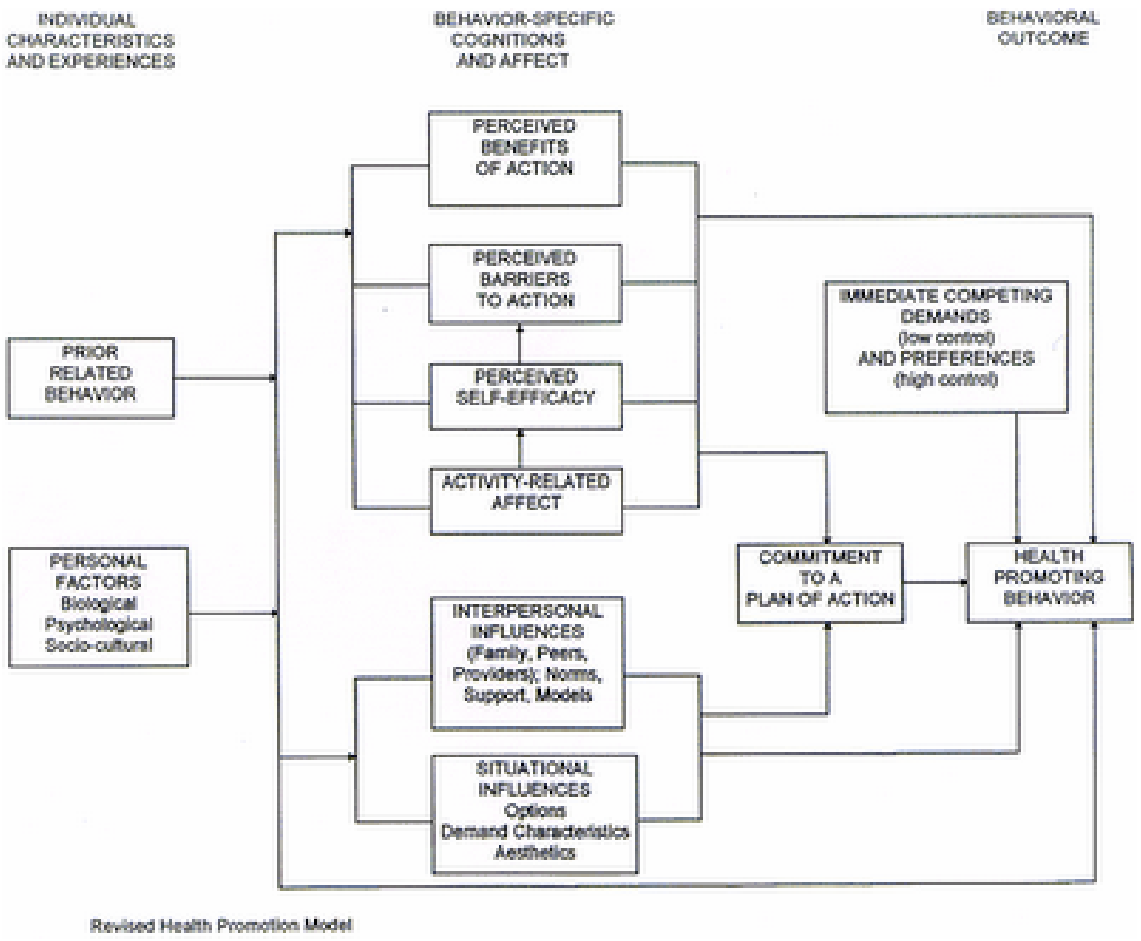

Figure 2.1: Schematic framework of the Health promotion model (Pender et al., 2006:50)

2.4.2.1 Application of the Pender's Health Promotion model to this study

TB case finding is a strategy developed for improving the health status of people. Based on the concepts described in the model, TB case finding is taken as a health related action. The theory suggests that the multidimensional and interrelated constructs of the model could affect delayed TB case finding which in turn influences health promoting behaviour- the right behavioural outcome (Pender *et al.*, 2006:45-52). This Pender's model-based assessment study will consist of a survey of patient's personal determinants, perceived barriers to health seeking behaviours, perceived benefit of health seeking, perceived self-efficacy, activity related actions, interpersonal influences, situational influences, competing determinants and preferences that impact on delay TB case finding.

Individual characteristics, a construct of the model, predicts that TB patients' personal determinants such as socio-demographic determinants, clinical determinants, and their prior experiences with health providers or within their environments can possibly influence delayed detection of TB cases. Perceived Barriers refer to assessing patient's identified barriers to seeking care. Distance/geographical barriers, poverty, cultural determinants, and stigma were proposed to influence early detection of TB cases. The construct of interpersonal influences predicts that influences from health system/health providers, family, peers, norms, can limit the chances of early detection of TB cases. Qualitative study on health worker's perception of TB case detection found that staff attitude, staff workload, staff knowledge influence their delivery of TB services and thus delays in case finding (Woolf *et al.,* 2006:68). Activity related effect refers to patient identified processes or activities that contribute to the delays in TB case finding, such as seeking care from non-specialized health providers, receiving a missed diagnosis at first health care consult, time interval between sputum submission and receipt of result (Woolf *et al.,* 2006:67; Finnie *et al.*, 2011:407). WORLD HEALTH ORGANIZATION (2006a:12) shows that delays in TB case finding in low TB prevalent countries were attributed mainly to the fact that TB is not suspected in patients seeking care (WORLD HEALTH ORGANIZATION, 2006a:12). Furthermore, the model posits that competing demands (referred to as alternative determinants) can interrupt early TB case finding. Mavhu, Dauya, Bandason, Munyati, Cowan, Hart, Corbett and Chikovore (2010:577) shows that TB patients are not detected early because they defer seeking care so as to prioritise their limited resources for more pressing family needs. Lastly, the construct of preferences proposes that patient's preferences to the type of health care to seek and choice of health provider to consult can influence delays in case finding. A systematic review on TB case finding studies shows that patient preferences for traditional/spiritual healers, pharmacists, over the counter outlets, etc, affect their chances of early case detection (Finnie *et al.*, 2011:407). This study intends to assess these complex determinants in a resource-poor setting to offer professionals the opportunity to provide more appropriate interventions for the individuals and the community so as to achieve improved public health outcomes.

2.5 CONCLUSION

It is evident from the literature reviewed that TB disease is a grave public health concern globally and even more so in South Africa where, due to the HIV pandemic, it has assumed epidemic proportions. Cacadu district (within which is the study setting of this research, Makana Municipality) has been reported to be particularly badly hit by the TB scourge, being the district with the second highest incidence rate of TB in South Africa in 2010. Efforts to control TB epidemic in South Africa has yielded limited results so far, partly because emphasis has not shifted to the case detection aspects of the TB control program. The WORLD HEALTH ORGANIZATION has advocated passive TB case finding as preferred over active TB case finding approach in high TB burden areas such as South Africa but unfortunately, delay in TB case finding continues to be extensively reported in both developing and developed countries. This delay in TB case finding has severe consequences for the TB sufferer as well as for the community to which he or she belongs.

An understanding of the determinants that contribute to delay in TB case finding in particular settings can inform setting-specific interventions that enhance early detection of TB, and by extension, break the chain of transmission very early.

To date, no study has attempted to explore a wide range of patients and health system related determinants that may contribute to delay in TB case finding in this municipality. This is what this study seeks to achieve.

CHAPTER 3

RESESARCH DESIGN AND METHODS

3.1 INTRODUCTION

This chapter describes the overall plan for conducting the study, including the chosen study design, the sampling process, the population and selection criteria, the sample size, data collection and analysis. Also discussed in this chapter are the measures undertaken to enhance validity and reliability of the study as well as the ethical rigors followed in the study

3.2 RESEARCH APPROACH

The investigator followed a quantitative research approach. Burns & Grove (2009:717) defines a quantitative research as a "formal, objective, systematic study to describe and test relationships and to examine cause and effect interactions among variables". Quantitative study follows a systematic approach and progresses from the definition of the problem, and relevant concepts to the solution of the problem (Polit & Beck, 2008:16). It describes and measures phenomena that are quantifiable; and gathers empirical evidence that is rooted in objective reality. Brink, Van Der Walt, & Van Ransburg (2006:11) characterises quantitative research as the type of research that is concise and focuses on small number of concepts; it begins with pre-conceived ideas about how the research concepts are interrelated; uses formal instruments and structured procedures to collect information; emphasises objectivity in the data collection and analysis of information; analyses numeric information through statistical procedures; and the researcher takes an objective stance in the events under investigation.

A quantitative research approach, therefore, was suitable for this study because of the following:

The study used the non-experimental/observational aspect of quantitative study to examine its phenomenon- delays in TB case finding and to describe its associated determinants in a given setting. The study operationally defined the relevant concepts

in measurable terms. A form of control was exercised in the study by the use of a clear definition of the study population and specified eligibility criteria for the respondents. Study samples, of a predetermined sample size, were also selected using probability sampling technique and the information from the respondents were captured using structured data collection technique with predesigned response set. The numerical data collected was analysed using descriptive and analytical statistics to enhance objectivity and provide statistical evidence to support the findings.

3.3 RESEARCH DESIGN

A research design is a structured approach that guides the planning and implementation of the study to achieve intended goal (Joubert & Ehrlich, 2007:77; Polit & Beck, 2008: 211). Burns & Grove (2009:696) described it as a plan for conducting the study that maximises control over determinants that could interfere with the validity of the findings. It is conceived and implemented with the purpose of bringing empirical evidence to a research problem. A non-experimental, descriptive, cross-sectional study design was used in the study.

3.3.1 Descriptive research design

According to Polit & Beck (2008:752), a descriptive research is research that its primary objective is to give accurate portrayal of the characteristics of phenomena of interest. In this study, the researcher sought to describe the determinants, situations and actions that were barriers to early identification of TB cases in a health district. This will arm health planners with accurate information that will guide TB control interventions in the community.

3.3.2 Cross-sectional research design

Cross-sectional study design refers to a study design involving data collection at a given point in time (Barbie, 2011:82). The author refers to cross-sectional studies as studies that are designed to permit observation of a population or phenomenon at one point in time. In this study, the researcher conducted a survey of a population of PTB patients registered for treatment and collected data from them at one point in time.

3.4 RESEARCH SETTING

Research setting refers to the physical location and conditions in which the data collection process takes place (Polit & Beck, 2008: 766).

As explained in section 1.8 of the study report, the study was conducted at the PHC clinics in Makana Municipality situated at the eastern part of Cacadu district in the Eastern Cape Province. According to the latest census figures (Statistics South Africa, 2012), as at 2011, Makana municipality had a population of 80, 390 with an average household size of 3.4 persons.

3.5 RESEARCH METHOD

3.5.1 Population

Barbie (2011:91) describes the population for the study as the group about whom one wants to draw conclusions. A target population is defined as the entire set of elements-person, events or records that meet specified criteria and to which the investigator would like to generalise the research findings (Boswell & Cannon, 2011:146; Polit and Beck, 2008:767). The accessible population is that portion of the target population that conform to the designated criteria and whom the researcher can reasonably reach (Polit & Beck, 2008:339). Therefore, the target population in this study consists of all PTB patients in Makana Municiplaity and the accessible population was all PTB patients registered for treatment at those PHC clinics and actually available for the study.

3.5.2 Eligibility criteria

Brink *et al.* (2006:124) defines eligibility criteria as the criteria used to select the respondents for the study. Boswell and Cannon (2011:149) describes eligibility criteria as characteristics necessary to be part of the research sample which are established to minimise systematic error or to control for irrelevant attributes in the sample. Inclusion criteria are those characteristics the respondents must have to enable them take part in the study while exclusion criteria are those attributes that if present in a respondents would make the person ineligible to be in the study sample (Boswell and cannon, 2011:149).

In this study, the study sample includes only adult PTB patients, 18 years and older, who were started on treatment within nine months prior to the conduct of the study. The researcher excluded non-consenting patients; those who had been on treatment for over nine months because of greater chances of recall bias; medically unstable patients; and those with mental impairments because they may not be in the position to complete the questionnaire.

3.5.3 Sample

A sample is a small part of a larger population that are selected for study (Williams, 2011:184-185). The author emphasized that samples must be selected so that it is representative of the population to enable generalisation from the sample to the population. The sample for this study consists of the PTB patients who met the eligibility criteria.

3.5.4 Sampling frame

Sampling frame refers to the list of elements from which the sample for study are selected (Barbie, 2011:196).The sampling frame in this study was the list of PTB patients registered for treatment at the PHC clinics in Makana Municipality. Sampling frame was estimated as 531 PTB cases. This figure is 90% of the total TB cases on treatment as at the time of the study. This was informed by the report that 90% of all TB cases in Eastern Cape Province were Pulmonary TB cases (Day, Gray, & Budgell, 2011:168) which also correlated with the information given by the Makana TB Coordinator (Data from TB Coordinator, Makana Municipality, 20/05/ 2012).

3.5.5 Sampling and sampling procedure

Sampling is the process or procedure of selecting units or individuals for observation Sampling is the selection of research respondents from the population so that inference can be made about the population (Barbie, 2011:176; Polit & Beck, 2008:339). This study employed systematic random sampling in selection of study respondents.

3.5.5.1 Probability/random sampling

Probability/random sampling, according to Terre Blanche, Durrheim, and Painter (2006:139), is defined as a sampling approach that is determined by statistical principle of randomness. Joubert and Ehrlich (2007:95) describes probability sampling as a sampling technique that gives individuals in the population equal chance of being selected for the study so as to ensure representativeness of the study The researcher used this sampling approach to give the eligible patients equal chance of participating in the study to allow generalization from the sample to a larger population as emphasised by Barbie (2011:176). This sampling approach also helped the researcher to reduce the likelihood of systematic bias, thus, increasing the validity of the study.

3.5.5.2 Systematic sampling

Systematic sampling is defined as the selection of every n-th participant from the population list or sample frame (Barbie, 2011:201; Terre Blanche, Durrheim, & Painter, 2006:135). This sampling technique was appropriate for the study because according to Polit and Beck (2008:348), systematic sampling can be applied where the population list is in strata. In this study, the sample was selected from individual lists for each PHC clinic. Joubert and Ehrlich (2007:100) explained that a complete population list need not be known for a systematic random sampling to be applied. However, a particular order needs to be followed. In this study, respondents were selected in a particular order, from the list of those arriving for treatment. Furthermore, systematic sampling technique is convenient, less-laborious and can produce equally or more efficient result than simple random sampling (Terre Blanche, Durrheim, and Painter, 2006:135; Polit & Beck, 2008:347-348).

3.5.5.3 Sampling procedure

The researcher sought the assistance of the TB coordinator to obtain the list of PHC clinics in the Municipality from where five PHC clinics were systematically selected for study. The starting point (first PHC clinic) was randomly selected, and then every second PHC clinic was subsequently selected. Similarly, systematic sampling was used to select every third eligible PTB patient who attended the PHC clinic for treatment on the day of the research. The first patient was randomly selected from the list of those present and then every third patient starting from the first patient was subsequently selected until the desired sample size – from all the selected PHC clinics was reached.

The table below shows research sample selected per PHC clinic.

Table 3.1 Number of patients per chosen clinic

PHC Clinic	**Population registered for TB treatment**	**Study Sample**
Clinic A	**52**	**13**
Clinic B	**132**	**34**
Clinic C	**151**	**39**
Clinic D	**112**	**29**
Clinic E	**84**	**22**

3.5.6 Sample size

Brink *et al.*, (2006:135) defined sample size as the total number of respondents who will take part in the study. Many determinants affect the choice of sample size; however, practical factor such as cost and convenience prove most influential in sample size determination (Boswell & Cannon, 2011:155-157). Larger sample sizes are required for quantitative studies, studies with heterogeneous population and complex studies. Polit and Beck (2008:348) notes that there is no specified formula for determination of sample size, the largest sample size being more desirable. The sample size is a function of level of precision and possible variations in the attributes present in the population (Joubert & Ehrlich, 2007:346-347).

The sample size for this study was calculated using Cochran formula (1963:75): $n_o = (Z^2pq/e^2)$. Where Z is the abscissa of the normal curve that cuts off an area at the tails,- set at 1.96 at 95% desired confidence level; e is the desired level of precision, set at 0.05; p is the estimated proportion of an attribute that is present in the population, this was taken as 9% based on similar study conducted in a high TB incident setting in Peruvian Amazon (Ford, Bayer, Gilman, Onifade, Acosta, Cabrera, Vidal & Evans, 2009:1099-1100); and q is (1-p) = (1-0.09) = 0.91.

$n_o = \{[1.96^2 (.09 \times .91)]/ (0.05^2)\} = 125.851$

An adjustment of this sample size for a small population was performed using an adaptation from Cochran formula, $n= n_o/ [1+ \{ (n_o-1)/N\}]$ (Glenn, 2009:3)

Where, N is a population of 531 PTB patients registered for treatment at the PHC clinics in Makana Municipality (Data from TB Coordinator, Makana Municipality, 20/05/ 2012).

$n= 126/ [1+ \{(126-1)/531\}] = 102$

Therefore, the sample size, n, appropriate for this study was 102 respondents. The appropriateness of this sample size was confirmed with the statistician. However, a total of 137 respondents were approached for inclusion in the study so as to accommodate non-response and incomplete data.

3.6 DATA COLLECTION

Data collection is described as the objective, systematic and organised gathering of information necessary to achieve the objectives of the study and to enable generalization of the outcome of the study from the study sample to broader population (Burns & Grove, 2009:695; Boswell & Canon, 2011:218). The information gathered in the study is referred to as data (Burns & Grove, 2009:695).

3.6.1 Data collection process

The data was collected using structured questionnaire. The researcher obtained permission to conduct the study from the Eastern Cape Provincial Department of Health, the Manager in charge of all the clinics at Makana Municipality Local Service Area and the responsible managers of the different PHC clinics (see annexure). The managers of the respective clinics identified suitable private area within the premise for the interview session; however the respondents had the option to choose the place for the interview. The list of the clinics along with the registered TB cases in each clinic was obtained from the TB coordinator, from where the respondents were recruited in the study.

The data was collected over a period of one month. The researcher and trained research assistants were visiting the clinics during the morning hours to synchronise with the morning hours scheduled for TB patients arriving at the clinics for treatment. The interviewer and research assistants distributed the self-administered questionnaire (SAQ) in-person to the research respondents after the purpose of the research and the respondents' ethical rights had been explained to the respondents. Written informed consent was also obtained before data collection instrument was given to individual respondents. Structured face-to-face interview was used for respondents who could not complete the questionnaire by themselves. Joubert and Ehrlich (2007:107) stressed that in using SAQ, the questions may be read out to the respondents and answers filled in by the respondents in a structured manner. Questionnaire distributed in-person to the respondents increase their response rate (Polit & Beck, 2008:430). The questionnaire was completed by the respondents in a private room within the study setting and at respondents' time of convenience. On each data collection day, the researcher was available to answer and clarify any questions the respondents may have and to ensure that there was no interference that might influence data collection

3.6.2 Data collection instrument and development

This section discussed the process followed to develop the data collection instruments.

3.6.2.1 Questionnaire as data collection instrument

The researcher used self administered questionnaire for data collection instrument. A data collection instrument is the physical device employed to collect information in a study (Boswell & Canon, 2011:218). A questionnaire is a formal written document used to solicit information for analysis (Barbie, 2011:515; Polit & Beck, 2008:372). A questionnaire was an appropriate data collection instrument for this study because it had been described as an efficient instrument well suited for descriptive studies. This is because its main features (being those of impersonality and fixed questions) ensure that the researcher does not influence the responses from the respondents and does not change the questions according to how the responses develop (Williams, 2011:190). A questionnaire is cost-effective, less time consuming, allows anonymous collection of data, and the data collected is easier to analyse as respondents respond to the same questions (Wood & Ross-Kerr, 2011:125; Joubert & Ehrlich, 2007:182; Polit & Beck, 2008:423-424). In this study the questionnaire was well-structured to obtain detailed information from the respondents; the questions were simple, clear and concise and made it easier for the respondents to complete. Response rate was also increased as the questionnaire demanded less of the respondent's time and literacy skills (Stommel and Wills, 2004:246).

3.6.3.2. Structured data collection

Polit and Beck (2008:767) describes structured data collection as a data collection approach in which the response categories are specified in advance. According to Stommel and Wills (2004: 245), structured data collection entails predetermined questioning of the respondents and the responses are made from fixed response option. In this study, the researcher developed the questionnaire before-hand. The wordings were predetermined and the possible response options were recorded from which the respondents selected the responses applicable to them. Polit and Beck (2008:414-413, 371-372) stated that a mixture of closed- and open-ended question helps to offset the weaknesses of each in a questionnaire. In this study, the choice of closed-ended question helped to reduce the writing burden on the TB patients, accommodated those respondents that may not express themselves properly. It increased the response rate as most respondents completed the questionnaire. The

researcher also experienced ease of quantification of the data collected in the study. Open-ended questions, on the other hand, helped to accommodate potentially important response the investigator may have overlooked and reduce the bias of respondents' choice of options that misrepresent their position.

3.6.2.3. Development of the data collection instrument

The questionnaire was compiled based on knowledge obtained from the review of current, peer reviewed. While a vast body of TB literature was reviewed in the course of developing the study questionnaire, greater insight and guidance was provided by the studies conducted by Finnie *et al* (2011: 396-406) and Meintjes *et al.* (2008:3-6) as well as some sections of the questionnaire of the WORLD HEALTH ORGANIZATION (2006:42-45) study on TB diagnostic and treatment delay. The draft questionnaire was reviewed by a family physician who had extensive theoretical knowledge of and experience in the diagnosis and management of TB patients in primary health care settings. His critical input was used to improve on the draft questionnaire while the findings of the pilot study were used to develop the final version of the questionnaire. The questionnaire was used to collect data on such variables as; socio-demographic information of the patient- age, sex, employment status, level of education, income; access to health facility; knowledge about TB; health seeking behaviour; time of onset of symptom; time taken to seek care; type of care sought; time of first presentation to a health care facility on TB related symptoms; number of visits made prior to diagnosis. This information was used to establish the determinants contributing to delays in TB case finding. Information obtained was also used to estimate proxies for patient delay (time duration from onset of symptom to the time of first visit to a health care facility) and health system delay (the time from first visit to a health care facility to the time of eventual diagnosis) in line with the previous studies (Storla *et al.*., 2008: 4-8).

The questionnaire was developed in both English and Isi-Xhosa language. The translations from English to isi-Xhosa and back-transcription were done by professional transcribes (Annexure F& G).

3.7. DATA ANALYSIS

According to Polit & Beck (2008:751), data analysis is the systematic organisation and synthesis of data gathered in the study and the testing of hypothesis using the data in case of quantitative study. It is performed to reduce, organise and give meaning to the data collected in the study (Burns & Grove, 2009:695).

The data captured from the eligible PTB patients was cleaned and double entered using EPI info computer software and the two data checked for discrepancies. Randomly, the data entered was checked against the actual data on the data collection forms.

Statistical analysis was performed using Statistical Package for Social Sciences (SPSS version 19.0). Each variable collected was described in relation to delays in TB case finding. Quantitative data obtained were summarised and associations explored using descriptive and inferential statistics (Joubert & Ehrlich, 2007:135-136). The sample population was described using descriptive statistics, in the form of frequencies, contingency tables, mean, range and percentages of age, gender, level of education, employment status, and marital status. The duration of the dependent variable (delay TB case finding) was calculated in terms of mean and median days. Statistical significance of variables was estimated using bivariate tests (fisher's exact, student t test and Chi-square tests) as appropriate. The suitability of the suggested analysis was discussed with a statistician.

3.8. VALIDITY AND RELIABILITY

Validity and reliability are important criteria for assessing the quality of a study (Polit & Beck, 2008:196). Barbie (2011:131-133) defines validity as the extent to which a measure or an instrument accurately measures the concepts it is supposed to measure. Joubert and Ehrlich (2007: 160) asserted that a valid study is one that represents the truth, and has minimised systematic errors in the way samples are selected and the way data is collected (selection bias and information bias). Representativeness of sample and external validity of the findings are of utmost importance in descriptive studies (Terre Blanche *et al.,* 2006:91).

3.8.1 Validity of the data collection instrument

The questionnaire was pilot-tested on 10 respondents other than the study participant to determine the appropriateness of the question.

3.8.1.1 Pretesting of the instrument

A pilot study is described as the pre-testing of the data collection instrument on a small number of people who are similar to the intended study sample so as to test the procedure and quality of responses and rectify any source of confusion or any problem of comprehension (Williams, 2011:190-191. 365) After the approval of the questionnaire, the questionnaire was given to a qualified family physician who is an expert in infectious diseases especially TB. His inputs gave guidance on the appropriateness, clarity, sequence and length of the questions, and the questionnaire was adjusted as recommended. The questionnaire was then pre-tested on 10 respondents selected from one PHC clinic in a near-by municipality (Ndlambe Municipality) within the same Cacadu district. From the list of the patients arriving to the PHC clinic for treatment, the first patient was randomly selected and then every third patient was subsequently selected to make the sample for the pilot study. The respondents were of similar population as the study population and they met the eligibility criteria specified for the main study. However, respondents who took part in the pilot study were not included in the main study.

The respondents' reactions/difficulties, common responses and other logistical information were recorded and used to modify the final questionnaire. Few flaws and irregularity in the sequence of the question; ambiguity in the concept and language of the questions were identified and corrected in the final version of the questionnaire. The pretesting of the instrument enabled the estimation of the time duration required for the completion of the questionnaire Identified problems were used to adjust the questionnaire before it was administered to the research respondents. The questionnaire was transcribed, using professional transcribers, to isi-Xhosa (the dominant local language in the study setting) and a different language expert transcribed the Xhosa version to English to ensure validity of the questionnaire. In addition, the probability sampling used for sample selection helped to minimise random sampling error.

3.8.2 Internal validity

Internal validity of a study can be enhanced through judicious design decisions and minimising possible measurement and sampling biases (Polit & Beck, 2008:295-307).

For this study, the study was conducted in the respondents' natural environment- the PHC clinics; the sampling technique was predetermined and adhered to. Probability sampling was used to ensure equal chance of selection and representativeness of the population of interest.

According to Joubert and Ehrlich (2007:163), the data collected from the respondents is expected to be unbiased and representative of the population's views. Therefore, data was collected at a private place and at the participant's convenience to ensure an unbiased response. Information bias was noted as a common occurrence in self-report (Joubert & Ehrlich, 2007:163), as the study respondents may decide to compromise their responses on issues they are not comfortable with. Owing to this, the respondents were recruited and explained the importance of the study and assured of anonymity of their response. Unlinked anonymous written questionnaire was used for data collection in cases where respondents did not need assistance with reading and/or understanding the relevant version of the questionnaire. A question in the data collection instrument was aimed at determining if the respondents have been resident in the municipality from, at least, at the onset of TB symptom to diagnosis. This is intended to ensure that the information obtained pertains to the municipality. Double entry of data and cross-checking of discrepancies was used to reduce measurement bias. Appropriate statistical analysis was also used for data analysis with the help of a statistician.

3.8.3 External validity

External validity is defined as the degree to which the outcome of the study can be applicable to other populations, programs and settings other than the study sample (Burns & Grove, 2009: 700; Fink, 2008:336-337). It is anticipated that the outcome of this study will only be generalizable to the Makana Municipality.

3.8.4 Reliability

Terre Blanche, Durrheim, and Painter (2006:92-93) define reliability as the degree to which a research result can be reproduced on replication of the study. Mitchell and Jolley (2013: 161-164) explains reliability as the relative absence of random error (unsystematic selection and measurement errors). It is the consistency of the measure obtained from using a given instrument (Burns & Grove, 2009:719)

To ensure reliability of the data collection instrument, the supervisor's assistance was sought throughout the development of the questionnaire to ensure a reliable instrument. The questionnaire was developed based on sound knowledge obtained from extensive review of current TB research literature. Reports of previous published studies as well of adaptation of sections of the WORLD HEALTH ORGANIZATION study questionnaire all guided the development of the questions contained in the questionnaire. Critical insight provided by the medical expert also further enhanced the reliability of the data collection instrument.

3.9 ETHICAL CONSIDERATIONS

Ethics is defined as a system of moral value which measures the extent a given study abides by the legal, social and professional rules (Polit & Beck, 2008:753). It deals with issues of human conduct that are relevant to a particular profession (Pera and Van Tonder, 2005:4). Houser (2008:66) describes ethics as the rights and wrongs in the conduct of a research. An ethical study entails a good demonstration of the integrity of the research process; protecting the welfare and ensuring dignity of the respondents including the welfare of those whom the outcome of the study may affect (Terre Blanche *et al.*, 2006:61; Houser, 2008:66).

The ethical rigors for this study are discussed as thus:

3.9.1 Protecting the right of the respondents

Beneficence: No physical harm was anticipated in this study, however, the researcher endeavoured to minimise risk and maximise benefit that the research generated. The researcher did not interfere in the respondents' treatment hours. The interview session was conducted at the shortest possible time, to minimise any wastage of respondents' time. As was stressed by Polit and Beck (2008:170), the interview with any participant was terminated as soon as the researcher suspected that continuing would have caused undue distress to the respondents. The questions were structured in such a way as to avoid any allusion to anything that might intrude on the respondents' psyches. The study may not benefit the respondents directly, but they would have had better knowledge of the topic in question by participation in the study. The study findings, which were shared with the Makana Municipality, might enable the Makana Municipal TB control authorities to plan adequately for strategies for optimising early detection of TB cases which will ultimately benefit the TB patients.

Respect of respondents: (Informed consent, self-determinism, transparency and autonomy). According to the National Health Act 61 of 2003, research respondents will be human respondents who are legally and mentally competent to participate in study (Joubert & Ehrlich, 2007:3). The study included stable PTB patients, aged 18 year and older, who were also mentally competent to autonomously participate in the study. The respondents were given clear, simple and detailed information about the study, so that they could understand and have the power to decide on participation in the study. The risk and benefit of the study were shared with the respondents so that they could decide if the study was worth their participation. They were requested to, on voluntary basis, give a written consent to participate in the study and a copy of the signed consent form was retained by the respondents. The investigator also informed them that they had the freedom to ask question, refuse or withdraw from the study at any time of their choice, without proffering any reasons for the withdrawal and without suffering any compromise to their health benefits.

Anonymity: Anonymity was ensured by distributing unlinked anonymous questionnaire to respondents, who were requested not to indicate any identifying information on them.

Confidentiality: Confidentiality of participant and their information was maintained throughout the study. Because the questionnaire was distributed in-person, anonymity was fully ensured by giving the respondents a promise of confidentiality that the information they provided will not be shared with people known to them or reported in a manner that identifies them. Neither the researcher nor any of the three research assistants had been involved with health management of the patients. Data was collected at a private place and patients were not coerced into sharing private information. Responses from respondents were kept private, in a locked file, and those entered into the computer system were password-protected.

Justice: The respondents were treated with equity, fairness and respect during all stages of the study. The selection of the respondents was based on the requirement of the study and not on the compromised position of any person, or selective selection of those with special qualities. The researcher/research assistants were polite and gracious and ensured that the respondents were not exploited merely because they were accessible to the researcher. Justice required that the researcher had some responsibility to provide care and support for respondents who may become distressed or harmed by the study (Terre Blanche, Durrheim, and Painter, 2006:68).The study caused no harm except the time it took the participant to complete the questionnaire.

Researcher- participant relationship: As proposed by Polit and Beck (2008:171-172), the respondents were neither coerced into the study nor exploited. They were given detailed information sheet (in isi-Xhosa or English language) and only gave written informed consent after all their queries regarding the research had been addressed. During the process they were trained against 'Halo effect' (Murphy, Jako, & Antialt, 1993:220)- they were trained to feel that they were not 'constrained' by their previous experiences of the health facilities and should feel able to give right judgements. Respondents were informed that their participation or the information they provided will not be used against them. Being a quantitative study, the investigator took an objective stance, to simply avoid doing harm.

3.9.2. Protecting the right of the institution

In accordance with the South African Health Act (Act 61 of 2003) (Terre Blanche, Durrheim &Painter, 2006:61), prior to the commencement of the data collection, written approvals of the protocol of this study were secured from the Higher Degrees Committee of Health Studies Department, University of South Africa (UNISA), the Eastern Cape Department of Health Research and Ethics Committee and the Makana Municipality Health Authority.

3.9.3. Scientific integrity of the research

The study purpose, to investigate determinants influencing delay in TB case finding, is scientifically significant and did not place respondents at unnecessary risk. The methodology and data analysis procedure was rigorous, justifiable and feasible and led to valid results (Terre Blanche, Durrheim, and Painter, 2006: 70). The research protocol developed for this study by the researcher and the design processes was adhered-to. All the analyses decisions were made prior to data collection to minimise any manipulation of data. The researcher's integrity and moral probity was also brought to bear on the research process as data collected were honestly handled, analysed and truthfully reported while the research protocol was scrupulously adhered to. Exhaustive literature review was conducted with due acknowledgement of sources consulted.

3.10 CONCLUSION

This chapter discussed the research design used in the study and methodology employed. The researcher conducted a quantitative, non-experimental, descriptive study to investigate the determinants associated with delays in TB case finding. Information was collected from the respondents using structured questionnaire.

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CHAPTER 4

PRESENTATION OF RESULTS

4.1 INTRODUCTION

The previous chapter (chapter three) dwelt on research design and methodology. A quantitative, non-experimental descriptive study design was used to investigate the research objectives. This chapter (chapter four) deals with data analysis and presentation of the main findings of the result.

The objectives of this study were

- To assess the time duration of delay in TB case finding among PTB patients in Makana Municipality
- To identify patient-related determinants contributing to delays in TB case finding among PTB patients registered for treatment in Makana Municipality.
- To identify the health system-related determinants contributing to delays in TB case finding among PTB patients registered for treatment in Makana local Municipality.

4.2 DATA ANALYSIS

Data analysis (in consultation with a statistician) was performed using Statistical Package for Social Sciences (SPSS version 19.0). Each variable collected was described in relation to duration of delay in TB case finding. The data collected was analysed using descriptive statistics, in the form of frequencies, contingency tables, mean, range and percentages to summarise the variables including age, gender, employment status, marital status. The duration of the dependent variable (delay TB case finding) was calculated in terms of mean and median days. Comparisons between groups were made using Chi-square test or Fischer's exact test as appropriate for categorical variables. Level of significant was determined at 95% (p value = 0.05). All tests were 2-sided.

4.3 PROFILE OF THE PULMONARY TUBERCULOSIS PATIENTS

This section dealt with the participant's socio-demographic characteristics including gender, age, marital status, highest education attained, marital status, financial status, crowding index (this is a term used in this study to refer to a measure of the number of individuals living in the same house as the research participant)

4.3.1 Demographic information

A total of 137 eligible PTB patients were included in the study. Only three respondents were unwilling to participate in the study, providing a response rate of 98%.

4.3.1.1 Gender

Figure 4.1 shows that among the PTB patients interviewed, there were more males (55.2%, n=74) than females (44.8%, n=60).

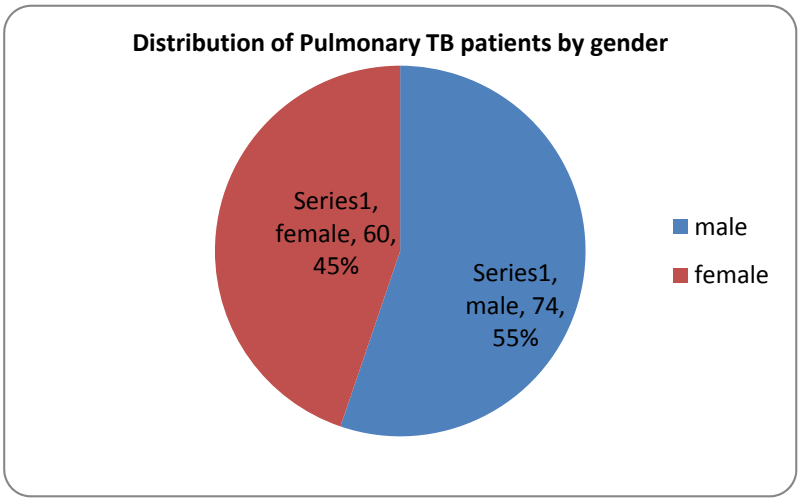

Figure 4.1: Distribution of Pulmonary TB patients in Makana Municipality by gender

4.3.1.2 Age

The ages of the respondents range from 20 to 68 years with a mean age of 38 years (standard deviation = ±10.4). The majority of the respondents (71.4%, n=95) were within the ages of 25- 45years. Respondents less than 25 years old were 9% (n=12) of the study population while 6.8% (n=9) of the patients were older than 55 years old. Figure 4.2 below show the distribution of the PTB patients by age

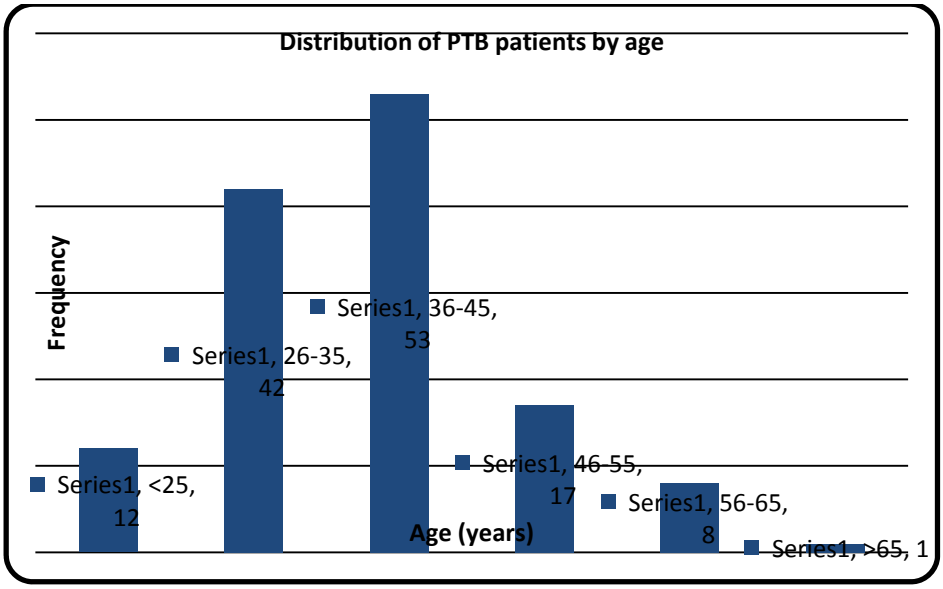

Figure 4.2 Age distribution of Pulmonary TB patients in Makana Municipality

4.3.1.3 Number of people living in the same households

37% (n=49) reported they had three people or less living in the same house and 63.4% (n=85) had four people or more living in the same house.

4.3.1.4 Marital status

Of the respondents, 14% indicated they were married, 9% were divorced/ separated, 5.2% were widowed, 14.9% were cohabiting with their partners and 63.4% were single.

4.3.1.5 Educational status

Table 4.1: Respondents' educational status

Highest education level	Frequency	Percentage
No formal education	3	2.2
Grade 1-6	26	19.4
Grade 7-12	102	76.1
Any higher education	3	2.2

Table 4.1 above shows that the majority (76.1%, n=102) of PTB patients are scholars in secondary/high school. And very few (2.2%, n=3) of the PTB patients had either no formal education or a form of tertiary education in each case.

4.3.1.6 Employment status

The employment status was grouped into unemployed, employed, grant/pensioned and others. The distribution of the respondents by employment status is depicted in figure 4.3 below

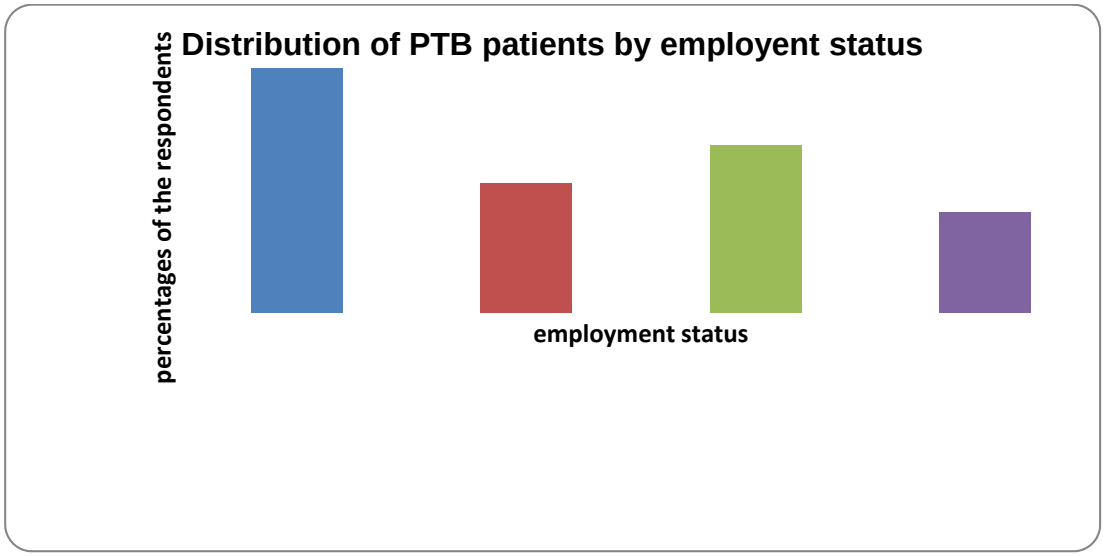

Figure 4.3: Employment status of the respondents

NB: The category "Others" above include casual workers and student.

Figure 4.3 above shows that more than two-thirds (64.2%) of the PTB patients were either unemployed or depended on the government for their livelihood either through social grants or pension

4.3.1.7 Financial status

Only a small proportion of the respondents (4.4%, n=6), have savings usually while 47.0% (n=63) admitted that their income just about covers all their expenses most of the times. Almost a quarter (21.7%, n=21) were dependent on others for all their financial needs while 32.8% (n=44) were normally in debt.

The socio-demographic characteristics are significantly associated with delay of any type were gender, financial status and crowding index. Gender was significantly associated with patient delay. Males tended to experience more delay than females. Financial status, on its own, was significantly associated with health system delay, with the more affluent respondents (whose incomes normally match or exceed their expenses) tending to have less delay. It is important to note that marital status, educational level, age and employment status were not included in table 5.0 because they were not found to be significantly associated with any type of delay.

4.3.2 Personal habits

Personal habits asked the respondents about their smoking habits and exposure to cigarette smoke by staying with a person who is smoking.

4.3.2.1 Smoking history

About half (50.7%, n=68) of the respondents had never smoked cigarette in their life while a similar proportion (49.3%, n=66) were either currently smoking or had smoked in the past. 61.9% (n=83) reported they were passive smokers (had someone close to them who smoke).See table 4.2 below for the details.

Table 4.2 distribution of patients by smoking history

Smoke cigarette	
Never	68(50.7)
Currently	34
Quitted	32
Passive smoking	81

Passive smoking (living with someone who smokes) was associated with longer delay for both patient and health system delay. However, among the 34 respondents that

were still smoking, there was no statistically significant association between current smoking status and patient or health system delay (p value 0.894). Similarly, analyses of the duration of smoking (for both current and former smokers) showed no statistically significant association with delay (both patient and health system related) in TB case finding (p value 0.478)

4.3.3 Patient's characteristics

Just over a quarter of the respondents (27%, n=36) had previously had TB while 3.7% (n=5) of all the respondents had drug resistant TB cases. A prior medical history of other lung diseases before the current TB disease was reported by 3.7% (n=5) of the respondents while 17% (n= 23) patients were admitted in a hospital as at the time of TB diagnosis.

4.3.4 Symptoms experienced

Table 4.3 below shows the distribution of various symptoms experienced by the respondents. Cough and febrile illness were the main **first** symptoms experienced by the respondents. Likewise, the two most frequently cited symptoms experienced , at any time during the course of the illness up to the study time were constitutional symptoms (this are symptoms like weight loss, fatigue, loss of appetite, etc that show affectation of many different systems in the body) and febrile illness.

Table 4.3: Distribution of symptom experienced and presented to health care provider

Symptoms experienced and presented	**Frequency n(%)**
First symptom experienced * (missing data *)	
Cough	70(52.6)
Febrile illness	40(30.1)
Chest pain	9(6.8)
Difficulty in breathing	6(4.5)
Coughing-blood	2(1.5)
Constitutional illness	6(4.5)

Other symptoms experience during the course of the illness	
Cough >2weeks	34(25.0)
Febrile illness	77(57.5)
Chest pain	26 (19.4)
Difficulty in breathing	19(14.2)
Constitutional illness	79(59.1)
Symptoms presented to health provider	
Cough> 2weeks	101(75.4)
Chest pain	35(26.1)
Difficulty in breathing	37(27.1)
Coughing-blood	
Febrile illness	113(84.3)
Constitutional illness	118(88.1)

Cough, as the first symptom experienced, was associated with more patient delay but was not significantly associated with health system delay. Conversely, however, coughing up blood was associated with less patient delay, probably as a consequence of fright at the sight of blood in the sputum which may have prompted the patients to seek care earlier. On the other hand, as a first symptom, associated with more health system delay was difficulty with breathing. Possible reasons for this may have been an initial misdiagnosis of TB as asthma or bronchitis or other lung diseases that present with difficulty with breathing. Having febrile illness as the first symptom was associated with shorter health system delay.

4.3.5 Types of care sought

Table 4.4 below show that all (100% of) the patients were diagnosed with TB at a government health facility (clinic or hospital) despite 54.5% of the respondents initially visiting the pharmacy store or traditional healer/spiritual healer at the onset of TB related symptoms. Additionally, there is a tendency for the patients to visit multiple categories of care before TB diagnosis as shown by the significant proportion (43.8%)

of the respondents that visited two or more categories of care provider before diagnosis. When asked about first action taken when they first experienced TB-related symptoms, 44.8% (n=60) consulted government health facility first while some others (53.2%, n=74) initially took other actions including taking oral herb, visiting traditional healer, spiritual healer, pharmacy shop and private health facility. The table also shows that private doctors are rarely presented to with TB symptoms as only 2.2% (n=3) visited private health facility before eventually going to government health facility.

Table 4.4 Health facility where TB was diagnosed

Variable	Frequency
Health facility of TB diagnosis	
Government clinic/hospital	134(100)

This section further dealt with the reason why the respondents did not seek care during the onset of TB-related symptom. When asked if they sought care immediately they had TB related symptom, only 32.8% (n=44) reported they sought care at the onset of TB-related symptom. Table 4.5 below depicts the reason given by the respondents that waited before seeking care. The table shows that the commonest reason (57% of the time) given by patients for not seeking help early was the expectation that they would get better. This is probably due to the assumption (noted in table 4.3 above) by majority of the respondents that TB symptoms were those related to ‘flu. Significantly, lack of money and the fear of being diagnosed with TB or of HIV featured as important reasons for not seeking care immediately.

Table 4.5: Reason for delay before seeking help after onset of TB related symptom

Reason for not seeking care during onset of TB-related symptom	Frequency (%)
Thought I will get better	57
Fear of TB diagnosis	26
Fear of TB stigma	13
No money	29
Fear of compulsory HIV test	23
No reason	23
Busy	14

Table 4.6 Health seeking behaviour prior to TB diagnosis

Variable	Frequency (%)
What did you think was wrong with you	
Thought TB	67 (50.0)
Thought HIV	43 (32.1)
Other medical condition	14 (10.4)
Cold or flu	97(72.4)
Bewitched	6(4.5)
Psychological problem	14(10.4)
Don't know	29(21.6)
First health visit	
Government health facility	60(44.8)
Traditional/spiritual/pharmacy/private	73(54.5)
Private	3(2.2)
Pharmacy shop	36(26.9)
Traditional/spiritual healer	35(26.1)
Common pattern of consultation	
Government sector only	60(44.8)
Pharmacy shop, Private GP and government sector only	3(2.2)
Pharmacy shop and government sector only	36
Traditional/spiritual healer, pharmacy shop, government sector only	21
Traditional/spiritual healer and government sector only	14
No of different types of care sought before TB diagnosis	
Only one type	60(44.8)
Two types	43(30.1)
More than two types	31(23.1)

Actions that took place during initial visits to health facilities

The table 4.7 below shows that the commonest action that took place at the first visit was taking sputum samples (n=114) while taking a chest x-ray was the second commonest initial action taken.

Table 4.7: Action that took place during the initial visits to the hospital

	Frequency (%)
I did not tell all the symptoms I experienced	13
I was given antibiotics	5
I gave sputum	114
Had two positive sputum	7
Sent for chest X-Ray	53

Sputum turn around- Among the respondents who were asked to give sputum during their visits, only 20.1% (n=12) received their TB result within two days while 79.9% (n=107) received their result after two days. When asked about the reason for receiving their results after two days, majority of the patients (79.1%, n=106) said the date they were given to come for their result was more than 2 days. 11.2% (n=15) said they did not go back to the health facility early after sputum was collected.

The study found that shorter patient delay was associated with visiting a government health facility first while longer patient delays were associated with visiting the traditional /spiritual healer and pharmacy shops. Longer health system delay, on its own, was associated with seeking multiple types of care and the "pattern" of care sought ("pattern of care" in this study relates to the order in which the different types of care providers were visited).

4.3.6 Role of health system in raising awareness in TB

The table 4.8 shows that awareness of TB was high among the respondents with a high proportion of them (87%, n=116) having heard of the disease, TB, prior to the onset of their symptoms. Likewise, the study found that a very high percentage of the PTB patients had fairly good knowledge concerning TB with more than 95% correctly stating that TB was curable and infectious. However a smaller percentage (58%, n= 79) correctly identified the infectious organism as "bacteria". Despite the high TB awareness prior to onset of TB symptoms and the fairly good knowledge, the table above however showed that only half (n=67) of the patients rightly suspected that symptoms were indeed those of TB. And almost three quarters (72%, n=97) initially

mistook their symptoms to be due to ‘flu (upper respiratory infection). Significantly, almost 70% of the respondents believed that TB is hereditary.

Table 4.8 TB awareness

Variable	Frequency (%)
TB Awareness	
Heard about TB before onset of illness	
Yes	116(86.6)
No	18(13.40)
Knowledge/perception about TB	
Caused by evil spirit	38(28.4)
TB is hereditary	93(69.4)
Curable	132(98.5)
Infectious	129(96.3)
Caused by bacteria	79(58.0)
Male should take responsible of their illness	48(35.8)

Regarding the source of health information about TB, 69% (n=93) got their information from friends, 71% (n=95) got theirs from the media while a much smaller proportions heard about TB from either a health worker (38.1%, n=51) or at a health talk (24.6%, n=33).

4.3.7 TB and stigma

Table 4.9 highlights the information elicited from the respondents about stigma. On the stigma level, only a very small minority of the respondents (1.5%, n= 2) reported they had no form of stigma, 68.7% (n=92) had some degree of stigma and 29.9% (n=40) were highly stigmatised. In this study, “highly stigmatised” means answering “yes” to more than four of the nine questions posed regarding stigma while “some degree of stigma” means answering “yes” to between one and four stigma-related questions on the questionnaire. This study thus suggests that TB is still very much a

disease that its patients perceive to be stigmatizing. Indeed about a third (34%, n=45) reported that visiting the TB clinic in the health facilities is associated with stigma

Table 4.9: Stigma about TB

Variables	**Frequency (%)**
Feel ashamed they had TB and will not want people to know they have TB	70(52.2)
TB affect relationship / will not want to associate with people who had TB	58(43.3)
There is stigma with visiting TB clinic	45(33.6)
Everyone who has TB also has HIV	29(21.6)
Chance of girls who has TB getting married is limited	48(35.8)
TB affect work performance	92(68.7)
Stigma level	
No stigma	2(1.5)
Some degree of stigma (≤ median)	92(68.7)
Highly stigmatised(>median)	40(29.9)

The study found that stigma was associated with longer duration of both patient and health system delay. Patients who felt that being seen at the TB clinic was stigmatising tended to have more delay. Those that believed TB had “some stigma” associated with it had less patient delay compared to those who felt TB was “highly stigmatising”. Also, patients who felt ashamed of having TB and did not want people to know that they had TB were associated with more health system delay.

4.3.8 Access to health facility

When asked about access to the nearest health facility from the respondent’s place of residence, the majority 97.8% (n=134) admitted they access the health facility on foot. Out of these, 32.8% (n=43) reported that it took them less than 15 minutes to arrive at the health facility on foot, 59.8% (n=77) arrived between 15 to 30 minutes on foot, and

only 8.4% (n=11) took more than 30 minutes on foot to arrive at the nearest health facility.

4.3.9 Living in Makana municipality during both onset of symptom and diagnosis

Almost all (90.3%, n=121) of the patients interviewed were resident in Makana municipality as at the time of development of PTB symptoms and diagnosis.

4.4 DELAY IN TB CASE FINDING

Table 4.10 depicts the duration of the different types of delays in TB case finding. The mean patient delay from onset of symptom to first health care visit was 45 (±29.6) days. A majority (83.6%, n=112) of the respondents delayed for one month and above before seeking care. The mean health system delay from the time patient first visited a health care facility to the time of TB diagnosis was 16 (±13.1) days. Health system delay of 2 weeks and above was found among 62% (n=89) of the respondents while the mean total delay from the onset of symptoms to TB diagnosis was 60 (± 34) days. Therefore, in this study, patient delay contributed more than health system delay to the total delay in TB case finding.

Table 4.10: Patient, health system and total delay in TB case finding in Makana Municipality

Duration of delay in TB case finding	Mean(standard deviation) (days)	Median (days)	Range (days)	Inter-quartile range
Patient delay Patient delay of 1 month and above	45(29.6) 112patients	28	6-113	28-56
Health system delay Health System Delay of 2 weeks and above	16(13.1) 89 patients	14	2-112	6-14
Total delay	60(34.0)	56	12-168	34-70

4.5 DETERMINANTS ASSOCIATED WITH DELAYED TB CASE FINDING

Table 4.11 below gives the summary of the characteristics/determinants that had statistically significant associations with patient and health system delay among the study respondents. For the characteristics contained in the questionnaire but not presented in the table, their associations were found not to be statistically significant.

Table 4.11 Statistically significant characteristics associated with patient and health system delay

Characteristics		**0dds ratio (confidence interval)**	**p-value**
Patient delay			
Gender		N/A	0.012
Passive smoking		N/A	0.017
Admitted during diagnosis		N/A	0.038
<u>Symptoms</u>			
Cough as first symptom experienced		3.6 (1.52-8.55)	0.003
presented coughing up blood		0.36(0.136-0.933)	0.032
<u>Health seeking behaviour</u>			
Place of first visit			0.001
Number of different types of care sought		0.28(0.14-0.59)	0.0001
Visited traditional/spiritual healer			0.0001
Visited pharmacy shop		N/A	0.015
Prior awareness of TB before onset of illness		5.57(1.97-10.60)	0.048
<u>Knowledge</u>			
Knowledge level		2.41(1.2-4.86)	0.005
Believe that TB is caused by evil spirit		N/A	0.007
Perception that male should take responsibility of their illness		2.77(1.3-5.7)	0.007
<u>Stigma</u>		0.32 (0.14-0.74)	0.0001
There is stigma in visiting TB clinics			0.029
TB affect work performance		0.35(0.16-0.74)	0.023
Stigma level			

Why did you not seek care early			0.003
believe they will get better on their own		3.9(1.8-8.4)	0.032
No reason		N/A	
		0.41(0.19-0.88)	
		3.6 (1.52-8.55)	
		0.36(0.136-0.933)	
HEALTH SYSTEM DELAY			
Characteristics			
Crowding index		N/A	0.027
Financial status		0.32 (0.13-0.77)	0.007
Passive smoking		3.1(1.17-8.23)	0.020
Symptoms			
First symptom experienced			0.027
having difficulty in breathing as symptom		N/A	0.005
presenting difficulty in breathing as a symptom		4.5 (1.6-12.6)	0.040
presenting febrile illness as symptom		2.48(1.06-5.84)	0.045
health seeking behaviour		0.37(0.13-1.00)	0.011
No of types of care sought			0.006
Pattern of consultation			
		N/A	0.0001
Stigma		N/A	0.0001
There is stigma with visiting TB clinic			0.001
Level of stigma		N/A	0.003
TB affect my relationship with people		N/A	
Feel ashamed I have TB/will not want people to know I had TB		N/A	
		4.07 (1.60-10.33)	

Interestingly, the study found that having better knowledge about TB (symptoms, causation and prognosis) was associated with longer patient delay while it was not significantly associated with health system delay. The belief that HIV was caused by evil spirit was found to be associated with shorter patient delay.

4.6 CONCLUSION

This study has presented the research results as well as how the data was analysed. Estimates of the time delay in TB case finding related to the patient and the health system have been presented. In addition, a summary of the statistically significant determinants associated with patient and health system delay in TB case finding has been presented.

Chapter 5 will discuss the main findings and will also highlight the limitations of the study and proffer some recommendations based on the research findings.

CHAPTER 5

DISCUSSION, RECOMMENDATION AND CONCLUSION

5.1 INTRODUCTION

The previous chapter focussed on data analysis and presentation of main findings. This chapter discusses the results, offers some recommendations based on the study results and gives a conclusion of the study

5.2 THE PURPOSE OF THE STUDY

The purpose of the study was to determine the determinants that may be contributing to the delay in TB case finding among patients in Makana municipality. The specific objectives of the study include

- To assess the duration of delay in TB case finding among PTB patients in Makana Municipality
- To determine patient-related determinants contributing to delays in TB case finding among PTB patients registered for treatment in Makana Municipality.
- To determine the health system-related determinants contributing to delays in TB case finding among PTB patients registered for treatment in Makana local Municipality.

5.3 DISCUSSION OF RESULTS

The highlights of the study results will be discussed in comparison with existing academic literature on TB case finding.

5.3.1 Demographic profile of TB patient in the Municipality

This study found that among the study participant, slightly more males (55.2%) had PTB compared to females (44.8%). Other studies among PTB patients have found different gender distributions. While some studies (Wondimu *et al.*., 2007: 150; Van Wyk, Enarson, Beyers, Lombard & Hesseling 2011: 1071) found that more females had PTB, other similar studies also conducted in Sub-Saharan Africa (Lienhardt *et al.*, 2001: 234; Sendagire *et al.*., 2010: 4) found that more males were affected. This study also found that PTB is a disease that affects people during their youthful years since

the majority (71%) of the patients in the study were between the ages of 25 – 45 years while the mean age of the patients was 38 (±10.4) years. This concurs with the finding of other similar studies in South Africa (Van Wyk *et al.*., 2011: 1071; Meintjes, *et.al.,* 2008: 75) and Gambia (Lienhardt *et al.*, 2001: 235) that found median ages of 30-36 years. The implication of this is that PTB is a disease which, similar to HIV/AIDS, may potentially have a significant impact on the economy of South Africa as it affects the most productive members of the workforce. Furthermore, as shown in the result section above, TB tends to afflict the poor and unemployed who tend to have only limited education. This concurs with the reports in many scholarly articles that TB is a "disease of poverty" with the sufferers having illiteracy, poverty and unemployment rates higher than those of the general population (WORLD HEALTH ORGANIZATION, 2006: 33).

5.3.2 Patients characteristics

Distance to health facility: This study found that more than 91% of the patients arrived at their nearest health facility on foot within 30 minutes of walking. This suggests that accessibility to a health facility was not a problem for the patients in this Municipality. This is a testament of the government's commitment to making healthcare accessible to the generality of the populace. Interestingly, 29% of the respondents still responded that "lack of money" contributed to their delay in visiting a health care facility after they had developed TB related symptom. It is reasonable to assume that this lack of money did not refer to the unavailability of transport fare to the clinic but rather to lack of money to buy groceries/food to eat. The lack of money (and their efforts to get some money) may have seized the respondents' attention to the point that they neglected their health needs.

5.3.3 Symptoms experienced

The majority of the symptoms reported in table 4.3 above are related to cough and other symptoms associated with chest infections. As only pulmonary TB patients were included in the study, it is not surprising that cough and lung infection-related symptoms predominate among the reported first symptom experienced and other symptoms experienced / reported to the health care provider. Table 4.3 also shows that the commonest symptoms reported during the course of the illness were

constitutional illness (88.1%), febrile illness (84.3%) and cough (75.4%). This closely resembles the results of a similar study (Meintjes, *et.al.,* 2008: 75) among PTB patients in a Cape Town hospital that found that constitutional illness was reported most (91%) by the patients followed by cough (78%) and febrile illness (53%).

5.3.4 Knowledge, attitude and perception about TB

Table 4.4 shows a paradox of some sorts. While majority of the patients were aware of TB as a disease prior to the onset of symptoms and also had fairly good knowledge about the causation and prognosis of the disease, only half of them could relate the symptoms to TB when they contracted the disease. This high awareness of TB among TB patients has been reported in Tanzania (Ngadaya, 2009: 199) and South Africa (Meintjes, *et.al.,* 2008: 77). The inability of the patients to attribute the symptoms to TB despite their good knowledge may seem to validate the suggestion by Meintjes, *et.al.* (2008: 78) that knowledge of TB was not being "personalised". However, there are still countries like Pakistan where knowledge about TB was reportedly generally poor. For example, less than 40% of the TB patients that participated in a study in that country knew that TB was infectious (WORLD HEALTH ORGANIZATION, 2006: 34). This poor knowledge was attributed to inadequate and ineffective health education.

Furthermore, the assumption by more than a third of the patients that their symptoms were those of HIV may be fuelling the stigma associated with TB.

Regarding the source of health information, more (71%) of the patients relied on the media for their health education compared to the 38% that heard from the health care worker. The danger is that the message disseminated by the media, being uncensored, may contain inaccurate information. It is therefore critical that the health system take steps to establish itself as the main provider of health education to the population of Makana Municipality.

5.3.5 TB and stigma

Stigma is one factor that has consistently been reported in the literature as a factor associated with TB case finding delay (WORLD HEALTH ORGANIZATION, 2006: 34; Moller and Erstad, 2007: 113). The study found that only a negligible proportion (1.5%) of the respondents denied experiencing and feeling any form of stigma as a result of TB infection.

The stigma associated with TB may be linked to its close association with HIV (an even more stigmatised disease) as well as the notion, according to Crowford in Moller and Erstad (2007: 116), that ill-health is symptomatic of moral indiscipline.

5.3.6 Delay in TB case finding

This study found that patient delay contributed more to total delay than health system delay. There has been no consistent pattern, in academic literature, in the relative contribution of patient and health system determinants to total delay in TB case finding (Storla *et al.*., 2008: 3). Some studies have found patient determinants to contribute more to total delay (Tegegn & Yazachew, 2009: 32; WORLD HEALTH ORGANIZATION, 2006a: 24; Ngadaya *et al.*, 2009:4; Storal *et al.*, 2008:3-4), others found that health system determinants contributed more to delay (Van Wyk, *et al.*, 2011: 1073; Wondimu *et al*., 2007: 148; Lonnrot, Aung, Maung, Kluge & Uplekar, 2007:160; Mpungu, Karamagi, & Mayanja, 2005:5; STOP TB Partners 2008:11) while yet others found that patient and health system delay were comparable (Sreeramareddy *et al.*, 2009: 4; Sendagire *et al*., 2010: 4)

The finding of this study was different from two South African studies conducted in the Western Cape Province (Van Wyk *et al.*, 2011:1073; Meintjes *et al.*, 2008:76) that found that health system delay had greater contribution to total delay than patient delay. A number of reasons may justify that. One of the studies (Meintjes *et al.*, 2008:76) was conducted among admitted patients in a secondary level hospital. As such, they may have experienced a longer health system delay as a result of the time elapsed during referral from primary health facilities. The 2nd South African study which was also a clinic based study (Van Wyk *et al.*, 2011:1073) interestingly, found a

median health system delay of 17 days which is comparable to that found in this study (14 days). The much shorter patient delay recorded in the Cape Town clinic study may be as a result of increased TB knowledge, lesser stigma or a more effective health education system in the Cape Town area compared to the predominantly rural setting of this study. This study, thus, supports the assertion that determinants affecting TB case finding may differ within countries (Van Wyk *et al.*, 2011:1073). Two Ethiopian studies have shown this 'within-country' difference in the contribution to total delay between patient and health system. While one reported greater contribution by patient delay in one setting (Ayalew & Maseret, 2009; 32) another study (Wondimu *et al.*., 2007: 150) conducted in another region of Ethiopia reported health system delay that is much longer than patient delay.

The implication of the longer patient delay found in this study is that the patients remain infectious in the community for a longer period and spread the infection before they come in contact with the health system (Golub *et al.*,2006:24, CDC, 2005:32; WORLD HEALTH ORGANIZATION, 2006:10). This may be part of the ill-understood reasons why the study setting was the district with the second highest TB incidence rate in South Africa in 2010 and also why Cacadu District continues to have very high numbers of new smear positive cases despite having a significant improvement in the TB cure rate (Massyn *et al.*., 2013: 194-198).

5.3.7 Determinants contributing to delays in TB case finding

Some delay determinants are attributable to the patients' not seeking medical attention timeously from health care facilities/providers while others relate more to the health care system's delay in suspecting, investigating and diagnosing TB (Sreeramareddy *et al.*, 2009: 2). What constitutes a risk factor for delay in TB case detection in one setting may well be an enabling factor for early detection in another setting (Storal, et al., 2008:3). Additionally, determinants have also been demonstrated to have some interrelationship and may differ between and within settings (Storla, *et al.*, 2008; 3; Finnie *et al.*, 2011:397-406).

5.3.7.1 Demographic determinants

This study found that males were more likely to have more patient delay in TB case finding that females. This may be because females tend to visit the hospital more frequently than males for other reasons such as ante-natal visits (many of the study respondents are of child-bearing age) and may, thus, have more health knowledge than their male counterparts. This finding was similar to the finding in the Amazon region which found the male gender to be associated with more patient delay (Ford *et al.*, 2009:1100). On the contrary, other studies have found the female gender to be associated with more patient delay (Fatiregun & Ejeckam, 2010:5; Wondimu *et al.*, 2007: 151; WORLD HEALTH ORGANIZATION, 2006a:24, Sendagire *et al.*., 2010; 4). This was thought to be due to the fact that females have limited decision making powers, are pre-occupied with domestic duties, may be unemployed and may have constrains in resolving their health needs (Fatiregun & Ejeckam, 2010: 7; Wondimu *et al.*, 2007: 155). Perhaps this may not have been the case in this study setting.

This study also found that the more affluent respondents had less health system delay than their poorer counterparts. However, educational level, employment status and marital status were not associated with any type (patient or health system) of delay in TB case finding. The socioeconomic status of the patient has been implicated both as an enabler as well as a barrier to early TB case detection in different researches. The finding of this study was similar to those of studies in Ethiopia (Wondimu, *et al.*, 2007:151) and Kampala Uganda (Mpungu, Karamagi, & Mayanja, 2005:5) which reported that educational status and monthly income were not associated with patient delay. On the other hand, other studies found that prior formal education was associated with less delay (Ayalew & Maseret, 2009: 32; WORLD HEALTH ORGANIZATION, 2006a: 28; Ford *et al.*, 2009:1100). Similarly, while being a housewife or a married woman were both reported to be associated with patient delay in Malawi and India respectively (Gosoniu, Ganapathy , Kemp, Auer, Somma, Karim,& Weiss, 2008 : 848), in Ethiopia, being divorced, was instead found to be a risk factor for patient delay (Ayalew & Maseret, 2009: 32).

5.3.7.2 Presenting symptoms

This study found that cough, as an initial symptom, was associated with more patient delay. This may be because cough with sputum is a symptom that is wide spread in many societies (Storla *et al.*, 2008: 2). Hence the delay may be due to TB patients initially attributing their symptoms to other illnesses and not seeking formal medical assistance. Likewise, breathing with difficulty may be attributed to other diseases like asthma. However, some symptoms like coughing up blood, unexplained weight loss, fever and general body aches have been associated with seeking medical diagnosis and help earlier (Gosoniu *et al.,* 2008: 848, Ford *et al.*, 2009:1099). Indeed, this is in line with the finding of this study which recorded shorter delay with coughing up blood and febrile illness. Passive smoking was found to be associated with longer patient and health system delay. This may be because passive smokers may be used to chronic cough and may thus mistake their cough to be due to the smoke they had inhaled (Mpungu, Karamagi, & Mayanja, 2005: 5). Interestingly, however, Wondimu *et al.* (2007: 150) found no statistically significant difference in patient or health system delay for the different TB symptoms, either individually or in group.

5.3.7.3 TB stigma

This study found that stigma was associated with both patient and health system delay. The stigma of being seen at the TB clinic was associated with longer patient and health system delay. In the context of this study, while there is no designated 'TB clinic', the practice throughout all the primary health clinics in the Municipality, of attending to TB patients at a designated time (very early in the morning) and room was viewed by the patients as attending a "TB clinic". Table 5.0 shows other aspects of the TB stigma associated with both patient and health system delay.

TB has been stigmatized over the years, partly due to its symptoms. Stigma has been described as an ideology that identifies and links the presence of biological disease causing agents in the body or signs of the disease to negatively defined behaviours or groups in the society (Moller & Erstad, 2007: 107). The close association of TB with HIV in recent years has made TB stigma to become even stronger (Moller & Erstad, 2007: 114). Many studies have linked stigma with delay in TB case finding. The fear of being diagnosed with TB and subsequent isolation were significantly associated

with delay in the Eastern Meditarranean region (WORLD HEALTH ORGANIZATION, 2006a: 34) and Nigeria (Fatiregun & Ejeckam, 2010: 7). Also a study among Cape Town TB patients found that there was delay, especially among the Xhosa patients, in seeking help at the local clinics for fear of being respondentsed to an HIV test or being labelled as HIV positive if community members saw them walking to the clinic regularly (Skordis-Worrall, Hanson & Mills 2010: 176). Ironically, no association was found between stigma and delayed TB case finding in the Amazon (Ford *et al.*, 2009: 1100) and Kampala, Uganda (Mpungu, Karamagi, & Mayanja, 2005:1) and the WORLD HEALTH ORGANIZATION (2006:24) even reported that in Somalia, stigma associated with the development of full blown TB may have motivated TB sufferers to seek help early

5.3.7.4 Knowledge about TB

This study found that more knowledge about TB was associated with longer patient delay but was not associated with health system delay. This may be due to the greater likelihood of the patient equally having knowledge of other diseases that have symptoms similar to those of TB and thus failed to *personalise* his/her symptoms (Meintjes, *et al.*, 2008: 78). However this was contrary to other studies in Ethiopia (Ayalew & Maseret, 2009: 32) and Syria (WORLD HEALTH ORGANIZATION, 2006a: 24) that found that prior knowledge about TB was associated with less delay. Another study (Fatiregun & Ejeckam, 2010: 5) found though, that good knowledge about TB was not associated with time duration of TB case finding.

5.3.7.5 Health seeking behaviour

This study found that visiting a government health facility (state-owned clinic or hospital) first was associated with less patient delay while visiting traditional /spiritual healers and pharmacy shops was associated with longer patient delay. This may be due to the fact that traditional/spiritual healers, pharmacy shops in South Africa are outside the National TB Control Programme (NTCP) (Van Wyk, *et al.*, 2011: 1069; Ndjeka *et al.*, 2008:48). And there is minimal TB surveillance in this sector of the health system and little engagement with the NTCP (Van Wyk, *et al.*, 2011: 1069). Only

government health facilities are within the NTCP in South Africa. Other studies have similarly reported that seeking help from non-specialized individuals like traditional healers is associated with longer delays in TB case finding (WORLD HEALTH ORGANIZATION, 2006a: 24; Storal *et al.*, 2008: 6; Finnie *et al.*, 2011: 397, 407; Wondimu *et al.*, 2007:154)

In this study, private practitioners were consulted by a very insignificant proportion of the patients (2.2%) so the report by other studies (Ayalew & Maseret, 2009: 32; Van Wyk, *et al.*, 2011: 1073; WORLD HEALTH ORGANIZATION, 2006a: 28) that consulting them was associated with longer delay in TB case finding could not be investigated in this study.

This study also found that visiting multiple care providers was associated with longer patients and health system delays. This is similar to the reports in literature (Skordis-Worrall *et al.*, 2010: 177; Mpungu, Karamagi, & Mayanja, 2005: 5; Van Wyk, *et al.*, 2011: 1075) that visiting multiple care providers at the onset of symptoms is associated with delay

5.3.7.6 Distance to health facility

This study found that there was no statistically significant association between distance from health facility and delay in TB case finding. This may be due to the fact that a majority (92.6%) of the TB patients access the nearest health facility on foot within 30 minutes. This is also similar to the situation reported in Kampala, Uganda (Sendagire *et al.*, 2010: 4) where there was no significant association between a TB patient's area of residence (distance to nearest health facility) and delay in TB case finding. However, studies where there was wide variations in the distances of TB patients' residences to nearest facility, have reported an association between those living further away from the health facilities with longer delays in TB case finding (Finnie *et al.*, 2011: 397; Fatiregun & Ejeckam, 2010:6).

5.4 LIMITATIONS OF THE STUDY

A limitation of this study was the reliance on accurate recollections of past events by the patients rather than on documented records. Hence, there is a risk of recall bias. However this was mitigated in the study by using time ranges for time related questions

and the use of multiple questions to explore a single theme. Also, such issues such as visit to a traditional healer may have been under-reported by the patients for fear of criticism. Additionally, sampling a much larger sample size may have yielded results that would have been more representative of the situation in Makana Municipality but that was logistically impossible as there were financial and time constraints. Since the study was conducted only at clinics in Makana Municipality, these findings can neither be generalizable to in-hospital TB patients in Makana Municipality nor to PTB patients at clinics in other municipalities.

5.5 RECOMMENDATIONS

Based on the results of the study, the following recommendations are being made:

5.5.1 Health education

TB educational campaigns should be intensified in the Municipality. As the media was found to be commonest source of health information for the patients, all efforts should be made to ensure that only accurate (and not just sensational 'news worthy') TB health information is passed on to the populace using by the media. The Municipal TB programme should also revive and/or intensify the health facility based health education programme as health care workers were found to be less frequently cited sources of health information even though they have the best chance of communicating the most accurate TB health information to the patients.

Whatever channel of communication is used, the health education message should dispel the myths surrounding TB and particularly address the issue of stigma associated with TB as this has been found to contribute to delay in both patient and health system delays. This is also in line with the recommendation of the WORLD HEALTH ORGANIZATION (2006: 34) that the issue of TB stigma should be tackled head on by any TB health education programme. Additionally, the health education campaigns should be specifically taken to schools as the typical profile of a TB patient in the municipality (as found by the study) is a young, single, unemployed youth/adult with secondary or high school level education.

5.5.2 Health promotion

Health education should encourage the populace to seek medical attention only at government facilities when they develop TB related symptoms as these are the only health facilities currently operating within the National TB Control Programme (NTCP). However, this study would seem to support a collaboration with/training of non-NTCP providers (like traditional/spiritual healers, private practitioners, pharmacy shops, etc) to encourage them to urgently refer all TB suspects, who consult them, to government health facilities for prompt diagnosis.

5.5.3 Integration of the TB clinic within the mainstream outpatient clinic

This study found that the current practice of attending to TB patients at one corner of the clinic at specific times (usually very early in the morning) or in a designated room in the clinic was viewed as stigmatizing by the patients and contributed to both patient and health system delays. It is therefore recommended that TB patients should not be easily identifiable or isolated at the clinic in any manner. If the waiting areas of the clinics are well ventilated and waiting times are short, the risk of infection of other patients will be low. Information gathered showed that ARV clinics in the municipality were recently integrated into the mainstream out-patient departments successfully. The TB clinics should also be similarly integrated.

5.5.4 Training of clinic nurses on the clinical features and management of TB

The study found that some TB symptoms were associated with longer and shorter health system delays. It is therefore important that all clinic nurses who manage TB patients are sent on TB workshops and trainings at regular intervals to re-freshen their knowledge on the wide range of TB symptoms. Pamphlets should be distributed at health facilities reminding visitors to the clinic that cough is a common symptom of TB. Additionally, patients to the health facilities should be actively triaged and asked if they have cough and be screened for TB if the answer is in the affirmative.

5.5.5. Improvement of sputum turn-around time

There is need to strengthen the entire chain of sputum collection, sputum testing at National Health Laboratory Service (NHLS), reception of sputum results at the clinics and giving of results to the patients. All issues negatively affecting sputum turn-around time along this chain should be investigated and resolved timeously.

5.5.6 Recommendation for future research

The following should be considered as possible topics for future research:

- A qualitative study to explore, in depth, the myths and stigma associated with TB as a disease.
- A study to investigate the determinants affecting sputum results turnaround time in the municipality. A mixed method would be best; an initial quantitative study determining the existence or otherwise of an unacceptably long sputum test result turnaround time, followed by a qualitative study that will explore the determinants identified in the quantitative study.
- A qualitative study to further explore, in depth, the specific role of traditional healers and culture in the TB case detection delays.

5.6 CONCLUSION

This study investigated the time delay of TB case finding among TB patients receiving treatment at the clinics in Makana Municipality as at the time of data collection of this study. It also identified determinants, unique to Makana Municipality, that affect TB case finding. The results of this study informed a number of practical and implementable recommendations that were suggested. It is the hope that this original research work, which is to be shared with the Municipal and Provincial TB Directorates, will serve as a piece of scientific evidence that will inform modifications or improvements in the current TB control programme in the Makana Municipality. The suggested further research will also explore, in greater depth, some of the issues that this study have raised which, if still poorly comprehended, will continue to hamper efforts to eliminate delay in TB case finding in the Municipality.

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Annexure A: Approval from the university

UNISA university of south africa

UNIVERSITY OF SOUTH AFRICA
Health Studies Higher Degrees Committee
College of Human Sciences
ETHICAL CLEARANCE CERTIFICATE

HSHDC/97/2012

Date: 26 November 2012 Student No: 4547-354-4

Project Title: Determinants of delayed tuberculosis case finding in Makana Local Municipality, Eastern Cape

Researcher: Juliet Onyinye Okolo

Degree: Masters in Public Health Code: DIS4986

Supervisor: Mrs MR Makua
Qualification: M Tech
Joint Supervisor: -

DECISION OF COMMITTEE

Approved [√] **Conditionally Approved** [ ]

for **Prof L Roets**
CHAIRPERSON: HEALTH STUDIES HIGHER DEGREES COMMITTEE

pp **Dr MM Moleki**
ACTING ACADEMIC CHAIRPERSON: DEPARTMENT OF HEALTH STUDIES

PLEASE QUOTE THE PROJECT NUMBER IN ALL ENQUIRES

Annexure B: Letter of approval: Department of Health: Eastern Cape Province

Eastern Cape Department of Health

Enquiries:	Zonwabele Merile	Tel No:	083 378 1202
Date:	28th November 2012	Fax No:	043 642 1409
e-mail address:	zonwabele.merile@impilo.ecprov.gov.za		

Dear Ms J. Onyinye Okolo

Re: Determinants of delayed tuberculosis case finding in Makana Local Municipality, Eastern Cape

The Department of Health would like to inform you that your application for conducting a research on the abovementioned topic has been approved based on the following conditions:

1. During your study, you will follow the submitted protocol with ethical approval and can only deviate from it after having a written approval from the Department of Health in writing.
2. You will observe and respect the rights and culture of your research participants and maintain confidentiality of their identities and shall remove or not collect any information which can be used to link the participants. You will not impose or force individuals or possible research participants to participate in your study. Research participants have a right to withdraw anytime they want to.
3. The Department of Health expects you to provide a progress on your study every 3 months (from date you received this letter) in writing.
4. At the end of your study, you will be expected to send a full written report with your findings and implementable recommendations to the Epidemiological Research & Surveillance Management. You may be invited to the department to come and present your research findings with your implementable recommendations.
5. Your results on the Eastern Cape will not be presented anywhere unless you have shared them with the Department of Health as indicated above.

Your compliance in this regard will be highly appreciated.

DEPUTY DIRECTOR: EPIDEMIOLOGICAL RESEARCH & SURVEILLANCE MANAGEMENT

PGDP EASTERN CAPE

Ikamva eliqaqambileyo!

Annexure C: Letter of approval: Makana Municipality Local Service Area Manager.

Province of the
EASTERN CAPE
HEALTH

Makana Sub District Office•49 Beaufort Street • Grahamstown • Eastern Cape
Private Bag X1023 • Grahamstown • 6140 • REPUBLIC OF SOUTH AFRICA
Tel.: +27 (0)46 622 4901 • Fax: +27 (0)46 622 6225 • Website: www.ecdoh.gov.za

Enquiries :	Miss M-PAN Mtoba	Telephone	: 046 622 4901
Ref No. :	Sub-district Management	Fax	: 046 622 6225
E-mail :	Nikiwe.mtoba@impilo.ecprov.gov.za	Cellphone No.	: 083 378 2044

To	Clinic Supervisors - Joza Clinic - Tyantyi Clinic - Middle Terrace Clinic - Raglan Road Clinic - Anglo African Clinic Middle Manager: Nursing - Settlers Day CHC
Subject	GRANTING OF PERMISSION TO CONDUCT RESEARCH : Joza, Tantyi, Middle Terrace, Raglan Road, Anglo African clinics and Settlers Day CHC: Ms JULIET ONYINYE OKOLO: MASTERS IN PUBLIC HEALTH.
From	SU-DISTRICT MANAGER
Date	7 December 2012

Juliet Onyinye Okolo has been granted permission by the department of Health Provincial Epidemiology, Research and Surveillance to conduct research in the above-mentioned clinics. Find for easy reference the letter granting permission from the office of Mr Dlamini and Ethical Clearance Certificate from the UNISA. This then serves as a notification to provide the above-mentioned access to the clinics and CHC and as well as research participants from 10 December 2012.

MPAN MTOBA
SUB-DISTRICT MANAGER

Annexure D: Informed consent form (English version)

CONSENT: RQUEST TO THE STUDY RESPONDENTS REQUESTING TO PARTICIPATE IN MY STUDY

University of South Africa (UNISA),

Department of Health Studies,

Researcher: Ms. Okolo Juliet. O,

Supervisor: Mrs Makua M.R.

Dear Sir/Madam/Miss.

A letter requesting for your consent to participate in my study

My name is Ms Okolo Juliet O, a postgraduate student of Masters of Public Health, University of South Africa (UNISA). To complete my degree I am conducting a study in collaboration with the University of South Africa. The title of the study is **"Determinants of delayed TB case-finding among pulmonary TB patients at the primary health care clinics in Makana Local Municipality, Eastern Cape**" I would like you to participate in the study.

Your participation will enable us to understand the determinants contributing to delays in the detection of TB cases and also to estimate the time duration of this delay. The information you provided will be published and is hoped to enable health authorities in Makana Municipality to plan adequately on strategies for optimising early detection of TB cases which will ultimately benefit the TB patients. The study will cause no harm to you but if the interview is causing any psychological uneasiness, I have the service of a counsellor available to you free of charge. The study procedure, including responding to a questionnaire will take about 20minutes of your time.

Your participation is totally voluntary and you have the right to withdraw from the interview at any time. You are not required to indicate your name or any form of identification on the questionnaire. The information you will give us will be kept confidential. The interview will be collected in a private area/room in the study

setting, and the information will not be shared with any person known to you and will not be reported in a manner that will identify you.

If you sign this consent form, it means that

- You understand the reason for the research
- You understand the topic of the research
- You understand the process of the research
- You voluntarily decided to participate in the study and you experienced no pressure from anybody to participate.
- You understand that you have the right to withdraw at any stage without giving any reason and this will not negatively affect you in any way
- You understand that the information you supplied will remain confidential and no information will be linked to your name

Thanks for your anticipated co operation.

Signature of participant …….

Date……

You are free to ask any question about the study or about being a participant and you may call Ms Okolo at XXXXXXXXX if you have further questions. Should you have any questions regarding this study or wish to report any problems you have experienced relating to the study, please contact the study coordinator:

Study Coordinator's Name: Mrs Makua, M.R

University of the South Africa

Telephone: 0124296754

Email: makuamr@unisa.ac.za

Annexure E: Informed consent form (Xhosa version)

IFOMU YESIVUMELWANO KUBANTU ABAZAKUTHATHA INXAXHEBA MALUNGA NOPHANDO-NZULU

University of South Africa (UNISA),

Department of Health Studies,

Umphandi: Ms. Okolo Juliet. O,

Umanejala: Mrs Makua M.R.

Ndiyabulisa Manene nani Manenekazi

Esi sisicelo mvume sokuba uthathe inxaxheba koluphando-nzulu

Igama lam ndingu Ms Okolo Juliet, ndingumfundi onesidanga owenza imfundo enomsila malunga nesebe lezempilo, kwi Univesiti I UNISA. Ukuze ndikwazi ukufumana isidanga sam, kufuneka ndenze uphando-nzulu ndikunye ne univesiti (UNISA), oluphando lubizwa ngokuba **"Uphando nzulu ngezizathu ezenza kuthathe ixesha ukufumaniseka kwesifo sephepha (TB) kwizigulana kwiklinki eziku Masipala waseMakana , kwiphondo lase Mpuma-Koloni."**

Ukuthatha kwakho inxaxheba kuyakwenza ukuba sikwazi ukufumana izizathu ezibangela oku, sikwazi nokuqikelela ixesha elithathwayo phambi kokuba umntu afunyansiwe enesifo sephepha. Izimvo zakho zizakubhalwa phantsi kwiphepha elakuthi lipapashwe, ngethemba lokuba ziyakuthi zincedisane namagosa ezempilo ase Makana ukuhlangabezana nezidingo zezigulana zesifo sephepha. Akukho bungozi buza noluphando, kodwa ukuba ufumanisa ukuba awuphathekanga kakuhle ngokwasemphefumlweni emva kwale mibuzo, ukhona umntu onokuthetha naye endingakudibansia naye, mahala, akukho mali ozakuyihlawula.

Imibuzo le endizakuyibuza yona ayizukudlula kwimizuzu eyi 20. Akunyanzelekanga ukuba uxele igama lakho, kwaye kuzakugcinwa kuyimfihlo okuthethileyo, Imibizo le izakwenziwa bucala, kwaye okuthethileyo kuzakugcinwa kuyimfihlo ebantwini obaziyo, Kwaye siyaqinisekisa ukuba kuzakubhalwa ngendlela ezakwenza ukuba kungabikho kukrokreleka ukuba intetho le ivela kuwe.

Xa usayina apha eli phepha, uvuma oku kulandelayo:

- Uyavuma ukuba uyayazi injongo yoluphando
- Uyavuma ukuba uyasazi isihloko soluphando
- Uyavuma ukuba uyayazi indlela ekuzakwenziwa ngalo luphando
- Uyavuma ukuba awunyanzeliswanga ukuba uthathe inxaxheba
- Uyavuma ukuba uyayazi ukuba unelungelo lokuba ungalimisa uphando olu, ungaqhubekeki, kwaye lonto ayizukwenza ukuba ungaphatheki kakuhle
- Uyavuma ukuba uyayazi ukuba okuthethileo kuzakugcinwa kuyimfihlo, kwaye akuyi kwayanyaniswa nawe

Enkosi ngentsebenzisiswano yakho.

Sayina apha……..……..

Umhla……

Wamkelekile ukuba ungabuza imibuzo nenkcazelo'banzi malunga noluphando, okanye xa uthe wanesikhalazo, ungaqhakamishelana no Ms Okolo kule nombolo XXXXXXXX

Umphathi wophando: Mrs Makua, M.R

University of the South Africa

Telephone: 0124296754

Email: makuamr@unisa.ac.za

Annexure F: Informed consent form (Xhosa version)

Please answer the question as honestly. You are not required to indicate your name and the information you provide will be kept confidential. Your participation is voluntary and you can terminate the session without any penalty.

Individual's Questionnaire Number**:** ☐☐☐☐☐ ☐

Date: ----------

SECTION A: Demographic information

No	**Question**	**Please give your response here (Tick appropriate answer)**
1	Gender	Male **( )** Female **( )**
2	Age (in years as at your last birthday)	**…… ……..**
3	Number of people living in the same house	**.....**
4	Marital status	Married **( )** Single **( )** living together **( )** Divorced/Separated **( )** Widowed **( )**
5	Highest educational level completed	No formal education **( )** Grade 1-6 **( )** Grade 7-9 **( )** Grade 10-12 **( )** Any university or higher education **( ) if yes please specify(……..)**
6	Employment status	Unemployed **( )**

		Employed ( ) Casual work ( ) Grant/pensioned ( ) Student ( ) Others (Please specify)……	
7	Please indicate what best describes your financial status?	You have savings	( )
		Your income just covers your expenses	( )
		You are in debt	( )
SECTION B: PERSONAL HABITS			
8	Do you smoke cigarettes?	Never ( ) Currently smoking ( ) Quitted smoking ( )	
9	Do you or did you ever live with somebody World health Organization smokes in the house	**Yes** ( ) **No** ( )	
10	If **currently smoking**, for how long have you been smoking?	**Years……..; Months……..**	

SECTION C: **Patient's characteristics:**

No	Question	Indicate your response here
11	Before you were diagnosed with TB did you have any other lung disease?	Yes ( ) No ( )
12	Have you had TB before?	Yes ( ) No ( )
13	If yes, how many times before this current TB?	Please specify ……

14	Are you currently on treatment for Drug-resistant TB	Yes ( ) No ( )
15	Were you admitted in a hospital at the time you were diagnosed of TB?	Yes ( ) No ( )

SECTION D: Symptoms experienced

No	Questions	Response
16	**Please indicate the "first" symptom you experienced before you were diagnosed of TB** (**tick as appropriate)**	
	Cough less than 2weeks	( )
	Cough more than 2weeks	( )
	Coughing up blood	( )
	Chest pain	( )
	Difficulty in breathing	( )
	Increased sweating at night, even during cold days	( )
	Fever	( )
	Fatigue	( )
	Unintentional weight loss	( )
	Loss of appetite	( )
	Others (specify)……. ……	
17	Please list **all the other** symptoms you had before you were diagnosed of TB……. …… …… ……..	

SECTION E: Types of care sought, reason for choice of first consultation, and care received

No	Question	Indicate your response here
18	**What did you think was wrong with you when you had TB related symptoms?** I thought it was HIV ( ) I thought I had cold or flu ( ) I thought it was TB ( ) I thought it was another medical condition ( ) I thought I was bewitched ( ) I thought I had psychological distress ( ) I did not know what was wrong with me ( ) Others (specify)……	
19	Did you seek medical care immediately you had your first TB related symptoms	Yes ( ) No ( )
20	**If <u>"No"</u> what made you to wait before seeking medical attention? (you can tick more than one if applicable)** Thought I will get better without treatment ( ) Fear of being diagnosed with TB ( ) Fear of social isolation(stigma) if diagnosed with TB ( ) Lack of money ( ) Fear of a compulsory HIV test ( ) No specific reason ( ) I was busy ( ) Others (Specify)……	
21	Which one of these health facilities did you visit **<u>FIRST</u> when you had TB related symptoms?**	Clinic ( ) Government hospital ( )

		Private health facility **( )**
22	**Please indicate <u>ALL</u> the reasons for visiting this health facility you ticked above first? (you may tick more than one)** The health facility was located close to my residence **( )** I was confident of getting cured there **( )** Was advised by friends and relatives **( )** I was referred by other health services **( )** The services were free **( )** I had no reason **( )** Others (specify)**……** **……..**	
23	**Please indicate <u>ALL</u> the reasons for <u>NOT</u> visiting the other health facilities first? (you may tick more than one if applicable)** I did not think I would get any help there ( ) It was far from my place of residence **( )** There is always a long queue there **( )** I had a previous bad experience there **( )** I do not like the staff attitude there **( )** I had no reason **( )** Others (Specify**……** **……**	
24	How long after you had **<u>FIRST</u> TB related symptom** did you make this first visit to this health facility you chose in **question 21**?	I-6 days **( )** 1- 2weeks **( )** 2-4 weeks **( )** 1 -2 months **( )** 2-4months **( )** >4months **( )** If **<u>>4months</u>** specify **……**

25	Please Tick all the symptoms that you told the health care provider during this your first visit	
	Cough less than 2weeks	**( )**
	Cough more than 2weeks	**( )**
	Coughing up blood	**( )**
	Chest pain	**( )**
	Difficulty in breathing	**( )**
	Increased sweating at night, even during cold days	**( )**
	Fever	**( )**
	Fatigue	**( )**
	Unintentional weight loss	**( )**
	Loss of appetite	**( )**
	Others (specify)**…….. ……..**	
26	**What actions took place during your initial visits to the health facility you chose in question 22 (Tick where appropriate) (you may tick more than one)**	
	I did not tell the health worker all the symptoms I experienced	**( )**
	I was initially given repeated courses of antibiotics	**( )**
	I was asked to give a sputum specimen for TB test	**( )**
	I had two Negative sputum smear results	**( )**
	I was sent for chest X-ray	**( )**
	I cannot remember	**( )**
	Others(Specify…… …….	
27	How long after you submitted your sputum for test were you given your TB test results? Within 2 days **( )** More than two days **( )**	

28	**If your answer is <u>" more than two days"</u>, please indicate the reason for your answer**	**Yes**	**No**
	I did not go back to the clinic after the sputum was collected		
	I did not go back to the clinic on time to fetch my result		
	The date I was given to come and collect my result was more than two days		
	Others(specify)……		
29	At which of these **three** health facilities were you **finally diagnosed** of TB	Clinic **( )** Government hospital **( )** Private health facility **( )**	
30	How long after your **first** visit to the health facility you chose in **question 21** were you **started on TB treatment**	Within 2 days **( )** 3-6days **( )** 1-2weeks **( )** 2-4weeks **( )** 1-2months **( )** 2-4months **( )** >4months **( )** If **<u>>4months</u>** specify **……**	
31	**How many times (in-total) did you visit health facilities for your TB symptoms before you were diagnosed of TB? ……**		
32	**When you had TB related symptoms, did you take any of the actions below before you visited a health facility? (please mark them in the order you took the actions (example 1st , 2nd, etc)**		

	Visited traditional healer ( ) Visited spiritual healer ( ) Used oral Herb ( ) Used medication at pharmacy shops ( ) I did not take any of the actions above ( ) Others (Specify)……..... .....

SECTION F: Role of health system in raising community awareness about TB disease/ patient's perception about TB

No	Questions	Indicate your response here
33	Did you know there is a disease called TB before you were diagnosed of TB?	Yes ( ) No ( )
34	**If YES, how did you get information about TB disease before you were diagnosed of TB? (Tick more than one if applicable)**	
	Friends/relatives ( ) Media ( ) Health care worker in the community ( ) Health talks in the health care facility ( ) Others (Specify) …….	

35	**Which of the following is true about TB? (Please tick Yes/No/Don't know)**	**Yes**	**No**	**Don't know**
	TB is caused by bacteria			
	TB is caused by evil spirit			
	TB is curable			
	TB is infectious			
	TB is hereditary			
	Males are expected to take care of their own health (especially when symptoms are mild)			

SECTION G: TB STIGMA (please tick either Yes, No, or I don't know to these questions)

No	Question	YES	NO	I DON'T KNOW
36	I feel ashamed of having TB			
	I do not want other people to know that I have TB			
	TB affects my relation with other people			
	Tb affects my work performance			
	Every person World health Organization has TB has HIV			
	The chance of a girl getting married is limited if she had TB			
	I will not want to be near someone who has TB			
	There is stigma associated with visiting a TB clinic			
	I would feel embarrassed if a family member has TB			

SECTION H: Access to health care

No	Question	Indicate your response here
37	What mode of transport do you usually use to go to the nearest health facility close to your place of residence?	Walk ( ) Public transport ( ) Own transport ( )
38	How long does it take you to get to this health facility using your usual mode of transport?	<15minutes ( ) 15-30minutes ( ) 30-60minutes ( ) > 60minutes ( )

SECTION I: Exploration that findings above pertain to Makana Municipality health system

39 Were you living within Makana Municipality when you first had TB symptoms?

YES ( ) NO ( )

40 Where you living within Makana Municipality when you were diagnosed of TB?

YES ( ) NO ( )

Annexure G: Questionnaire (Xhosa version)

Sicela uphendule lemibuzo ilandelayo ngokunyanisekileyo. Akukho sinyanzeliso sokuba unikezele ngegama lakho, kwaye impendulo zakho zizakugcinwa ziyimfihlo. Akukho sinyanzeliso sokuba uthathe inxaxheba kule mibuzo, kwaye unelungelo lokungaqhubekeki nemibuzo xa uziva ungakhululekanga.

Inombolo yephepha: | | | | | |

Umhla:: ----------

Background questions

No	**Umbuzo**	**Nceda unikezele impedulo zakho apha (bhala unxa)**
1	Isini/Ubuni	Indoda **( )** Umfazi **( )**
2	Mingaphi iminyaka yakho? (beka leminyaka sowuyigqibile)	**…….. ……..**
3	Bangaphi abantu ohlala nabo endlini ohlala kuyo	**……**
4	Inkcukacha zomtshato	Awutshatanga/awunamntu uncuma naye **( )** Utshatile **( )** Niyahlalisana **( )** Wahlukene neqabane lakho lomtshato **( )** Uswelekelwe liqabane lakho lomtshato **( )**
5	Amabanga emfundo	Awuzange uye eskolweni **( )** Ibanga 1-6 **( )**

		Ibanga 7-9 **( )** Ibanga 10-12 **( )** Imfundo yaseUnivesiti **( )** **ukuba kunjalo yeyiphi imfundo enomsila onayo(……..)**		
6	Inkcukacha ngomsebenzi/ingqesho	Awuphangeli **( )** Uyaphangela **( )** Uphangela isingxungxo **( )** Ufumana indodla okanye umhlala phantsi **( )** umgumfundi **( )** Enye indlela ophila ngayo engekho kwezi zingentla (cacisa)**……**		
7	Nceda cacisa uphila phantsi kwesiphi isimo semali?	Unayo imali oyigcinilelyo	**( )**	
		Umvuzo wakho wanele ingxaki zakho, ingabikho imali eshiyekayo	**( )**	
		usematyale ni	**( )**	

8	Uyalitshaya icuba?	Zange nditshaye **( )** Ndiyatshaya **( )** Benditshaya, ngoku ndiyekile ( )
9	Uhlala nomntu otshaya icuba ekhayeni lakho/ okanye wakhe wahlala nomntu otshaya icuba?	…….
10	Lixesha elingakanani utshaya?	**Iminyaka**……., **iinyanga**……..

Inkcukacha zesigulana:

No	Imibuzo	Bhala impendulo zakho apha
11	Phambi kokuba ufunyaniswe unesifo semiphunga (TB), wakhe wanaso isigulo esayanyaniswa nemiphunga	Ewe **( )** Hayi **( )**
12	Wakhe wanaso isifo semiphunga ngaphambili (TB)?	Ewe **( )** Hayi **( )**
13	Ukuba kunjalo, amatyeli amangaphi phambi kokuba ufunyaniswe nale unayo i TB?	Cacisa……..
14	Ingaba ufumana unyango lwe TB enganyangekiyo?	Ewe **( )** Hayi **( )**
15	Wawulaliswe esibhedlele ukuze ufunyansiwe une TB?	Ewe **( )** Hayi **( )**

Iimpawu ozivayo

No	**Questions (Imibuzo)**	**Response (Impendulo)**

16	**Nceda xela iimpawu zakho zokuqala, ngaphambi kokuba ufunyansiwe une sifo se TB (beka unxa ecaleni kwempendulo)**	
	Ukhohlo-khohlo olungaphantsi kwentsuku ezimbini	**( )**
	Ukhohlo-khohlo olungaphezu kwentsuku ezimbini	**( )**
	Ukukhohlela igazi	**( )**
	Iintlungu zesifuba	**( )**
	Iphika	**( )**
	Ukubila ebusuku, nokuba sekubanda	**( )**
	Ifiva	**( )**
	Ukudinwa	**( )**
	Ukwehla komzimba (ukubhitya)	**( )**
	Ukungafuni ukutya	**( )**
	Ezinye(cacisa)**……** **……**	
17	Nceda bhala **zonke** ezinye iimpawu owawunazo phambi kokuba ufunyansiwe usesifo se TB**……** **……..** **……** **……** **……**	

Indlela zokuzinyanga, isizathu sokukhetha indawo yokuqala owafuna kuyo uncedo, noncedo owalufumanayo

No	**Imibuzo**	**Bhala impendulo yakho apha**
18	**Ngeyiphi into owawucinga ukuba ugula yiyo ngexesha owawusiva impawu ze TB?** Ndandicinga ukuba ndino gawulayo/HIV Ndandicinga ukuba ndinengqele/ ifiva	 **( )** **( )**

	Ndandicinga ukuba ndineTB ( ) Ndandicinga ukuba sesinye isigulo ( ) Ndandicinga ukuba ndithakathiwe ( ) Ndandicinga ukuba ndiyaphazimiseka engqondweni ( ) Ndandingayazi ukuba ndigula yintoni ( ) ezinye(cacisa)……	
19	Wayokufuna uncedo lwezempilo ngokukhawuleza emva kokuba ubenempawu ze TB?	Ewe ( ) Hayi ( )
20	**Ukuba <u>zange uye</u> ngokukhawuleza, yintoni eyenza ukuba ulinde ungayi? ungakhetha impendulo enye nangaphezulu** Ndandicinga ukuba ndizakuphila ngaphandle konyango ( ) Ndandisoyika kuthwe ndinesifo se TB ( ) Ndandisoyika ukuhlekwa ndibelikheswa ekuhlaleni ngenxa xa kuthwe ndine TB ( ) Ndandingenamali ( ) Ndandisoyika ukuvavanyelwa ugawulayo/ HIV ( ) Akukho sizathu ( ) Ndandixakekile ( ) Ezinye izizathu (cacisa)……	
21	Ngeyiphi kwezi ndawo zilandelayo, owaya kuzo **ukuqala kwakho ukuva iimpawo zesigulo se TB?**	Ekliniki ( ) Esibhedlele sika rhulumente ( )

		Kwagqirha osecaleni - ohlawulelwayo **( )**
22	**Khetha izizathu ezabangela ukuba uye kule kliniki/ sibhedlele waya kuso? (ungakhetha ngaphezu kwesinye)** Yayikufuphi apho ndihlala khona ( ) Ndandiyazi ukuba ndizakufumana uncedo ( ) Ndacetyiswa sisihlobo/ isizalwane ( ) Ndathunyelwa yenye ikliniki/ esibhedlele ( ) Ndandingazukubhathala ( ) Kwakungekho sizathu ( ) Ezinye (cacisa)……	
23	**Xela <u>zonke ezinye</u>e izizathu ezabangela ukuba <u>ungayi</u> kwezinye ikliniki/ isibhedlele (ungakhetha sibe sinye nangaphezulu)** Zandicinge ukuba ndizakufumana uncedo ( ) Kukude apho ndihlala khona ( ) Kuhlala kukho abantu baninzi abalindileyo (que) ( ) Ndakhe ndaya andafumana ncedo luxolisayo ( ) Andiyithandi indela abasebenzi bapha abaziphethe ngayo ( ) Akukho sizathu ( ) Ezinye (cacisa)……	
24	Wathatha ixesha elingakanani <u>Ukuqala</u> nje kwakho ukuva **iimpawo ze TB** phambi kokuba uye ekliniki/sibhedlele okanye kwqhirha, lo umkhethileyo k**u no. 21**	Phakathi kosuku olunye ukuya kwezintandathu **( )** Emva kweveki enye ukuya kwezimbini **( )** Emva kweveki ezimbini ukuya kwezine **( )** Emva kwenyanga eziyi 2 -3 **( )**

		Emva kwenyanga eziyi 2 - 4 **( )** Emva kwenyanga eziyi 4, nangaphezulu **( )** **Ukuba kungaphezu kwenyanga ezie cacisa ixesha…..**
25	Nceda xela zonke iimpawu owaye wazixelela unesi/ugqirha ukuqala kwakho ukuyokufuna uncedo	
	Ukhohlo-khohlo olungaphantsi kwentsuku ezimbini	**( )**
	Ukhohlo-khohlo olungaphezu kwentsuku ezimbini	**( )**
	Ukukhohlela igazi	**( )**
	Iintlungu zesifuba	**( )**
	Iphika	**( )**
	Ukubila ebusuku, nokuba sekubanda	**( )**
	Ifiva	**( )**
	Ukudinwa	**( )**
	Ukwehla komzimba	**( )**
	Ezinye (cacisa)**…….. ……**	
26	**kwenzeka ntoni kwintsuku zakho zokuqala usiya e kliniki/ esibhedlele/ okanye kwa griqha, le mpendulo uyikhethe ku namba 21, (ungakhetha izizathu ezingaphezu kwesinye)**	
	Zange uzixele zonke iimpawu	( )
	Ndanikwa ipilisi (antibiotics)	( )
	Kwathiwa mandinikezele iskhohlela	( )
	Izikhohlela ezibini zazingenazo iimpawu ze TB	( )
	Kwathiwa mandiye kwi X-ray	( )
	Andisakhumbuli	( )

	Ezinye chaza …….. ……		
27	Zathatha ixesha elingakanani iziphumo zoxilongo lwe TB, emva kokuba zithathiwe izikhohlela? Ndazifumana kwintsuku ezimbini ( ) Emva kwentsuku ezimbini ( )		
28	**Ukuba impendulo yakho ithi kwakusemva kwentsuku ezimbini, yayiyiyintoni isizathu?**	**Ewe**	**Hayi**
	Zange ndiye e kliniki emva kokuba isikhohlea sithathiwe		
	Zange ndiye ngexesha ukuyokuthatha ingxelo (results)		
	Usuku endandilinikwe ukuba mandiyokuthatha ingxelo lwalungaphezu kwentsuku ezimbini		
	Ezinye izizathu(cacisa)…… ……		
29	Phakathi kwe kliniki, esibhedlele okanye kwagqirha ohlawulelwayo, yeyiphi indawo ekwafunyaniswa kuyo ukuba une TB?	Ekliniki ( ) Esibhedlele ( ) Kwagqirha ohlawulelwayo ( )	
30	Kuthathe ixesha elingakani ukuba ufumane unyango, emva kokuya **kwakho okokuqala** ekliniki, sibhedlele, okanye ugqirha (impendulo oyikhethileyo ku 22)	Kwintsuku ezimbini ( ) Kwintsuku ezintathu ukuya kwezintandathu ( ) Kwiveki enye ukuya kwezimbini 1 – 2 ( )	

		Kwiveki ezimbini ukuya kwezine 2 - 4 ( ) Kwinyanga enye ukuya kwezimbini 1- 2 ( ) Kwinyanga ezimbini ukuya kwezine 2 -4 ( ) Emva kwenyanga eziyi 4, nangaphezulu ( ) Ukuba kungaphezu kwenyanga **ezine** cacisa…….
31	**Waya amatyeli amangaphi ekliniki, okanye esibhedlele okanye kwagqirha usisa impawu zesifo sephepha phambi kokuba ifumaneke/ bayibone kuwe i TB? .....**	
32	**Ukuqala kwakho ukuva impawu zeTB, wafuna awaphi amancedo kula angezantsi? (bhala ngokolulandelalelana kwawo (umzekelo 1st , 2nd, etc)**	
	Waya exhweleni ( ) Waya kumthandazeli ( ) Wasela amayeza esintu ( ) Wasela amayeza asekhemesti ( ) Zange wenze nanye kwezi zingentla ( ) Ezinye (cacisa)……**…….....**	

Inxaxheba yesebe lezempilo ukulumkisa uluntu malunga nesifo sephepha/ imbono/izimvo zesigulana

N0	Imibuzo	Bhala impendulo yakho apha
33	Wawuyazi ukuba sikhona isifo sephepha phambi kokuba ufunyansiwe unaso?	Ewe **( )** Hayi **( )**

34	**<u>Ukuba wawuyazi</u>, wawuve ngabani/ njani? Phambi kokuba ufunyaniswe une TB, ungakhetha iimpendulo enye nangapehzulu**			
	Ngabantu basekhaya okanye izihlobo ( ) Kwi radio/ TV, nasemaphepheni ( ) Onompilo/nontlalo ekuhlaleni ( ) Xa ndisekliniki kunikezelwa iingcebiso ( ) Enye indlela (cacisa) ……			
35	**Ngeziphi izinto eziyinyaniso malunga ne TB kwezi zilandelayo (khetha, u ewe/hayi/andiyazi)**	**Ewe**	**Hayi**	**Andiyazi**
	I TB yenziwa yintsholongwane			
	I TB yenziwa yimimoya emdaka (ubugqwirha)			
	ITB iyanyangeka			
	I TB iyasulela			
	I TB iyafumaneka ngokwemfuzo (umzekelo, ukuba umzali wakho wayenayo nawe uzakubanayo)			
	Amadoda kufuneka azinyange ngokwawo (ingakumbi xa engekaguli kakhulu)			

Ukubandlululwa kwabantu abanesifo se TB (khetha u ewe, hayi, andiyazi)

No	Imibuzo	EWE	HAYI	ANDIYAZI
36	Ndiziva ndinentloni ngokuba nesifo se TB			
	Andifuni abanye abantu bazi ukuba ndinesifo se TB			
	I TB iyayichaphazele kakubi indlela endihlala ngayo nabanye abantu			
	I TB iyayichaphazela kakubi indlela endisebenza ngayo emsebenzini			
	Wonke umntu one TB unesifo sika gawulayo			

	Mancinci amathuba okuba umntu obhinqileyo one TB angatshata			
	Andifuni kuba secaleni komntu one TB			
	Kuyacalulwa/ kukho unukunezwa malunga nokuya e kliniki ye TB			

Ukufumana uncedo lwezempilo

	Imibuzo	Khetha impendulo yakho apha
37	Ukhwela ntoni xausuka ekhaya usiya kwi kliniki/isibhedlele esikufutshane?	Ndiya ngenyawo ( ) Ndisebenzisa i taxi ( ) ndinesam isithuthi ( )
39	Kuthatha ixesha elingakanani ukusuka ekhaya usiya ekliniki/sibhedlele usebenzisa ngesithuthi osisebenzisayo	imizizu engaphantsi kwi 15 ( ) 15-30 imizuzu ( ) 30-60 imizuzu ( ) imizuzu engaphezu ku 60 ( )

Uphando malunga nesebe lezempilo kuMasipala wase Makana

39. wawuhlala apha e Makana ukuqala kwakho ukuva impawo zesifo sephepha?

EWE ( ) HAYI ( )

40. Wawuhlala apha e Makana ukufunyaniswa kwakho unesifo sephepha?

EWE ( ) HAYI ( )