FACTORS AFFECTING THE UPTAKE OF COMMUNITY TB CARE IN LOBATSE DISTRICT OF BOTSWANA AS EXPERIENCED BY PATIENTS

by

OMPHEMETSE RANKOSHA

Submitted in accordance with the requirements

For the degree of

MASTER OF PUBLIC HEALTH

at the

UNIVERSITY OF SOUTH AFRICA

SUPERVISOR: PROF VJ ELHERS

NOVEMBER 2014

DEDICATION

To my husband Proctor and sons, Oabile and Oteng for their continual support, understanding and encouragement. Also in loving memory of my mother Edith, my brother Sylvester and my research assistant Tumo who passed on while I was still pursuing this work.

STUDENT NUMBER: 33347093

DECLARATION

I declare that FACTORS AFFECTING THE UPTAKE OF COMMUNITY TB CARE AS EXPERIENCED BY PATIENTS IN LOBATSE DISTRICT OF BOTSWANA is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references and this work has not been submitted before for any other degree at any other institution.

…… …….

Full names Date

ACKNOWLEDGEMENTS

I would like to express my profound thanks to my Lord God Almighty who gave me the grace to complete this study. Further, I would like to appreciate my supervisor Professor Valerie J Ehlers at the University of South Africa for her patience, guidance and tireless support throughout the tedious journey of the study. She attended to my documents several times and stood by me during challenging times of the study.

I wish to thank the Permanent Secretary and the Health Research Development Committee of the Ministry of Health-Botswana for allowing me access to health facilities and the respondents. Also I would like to appreciate the Lobatse Institutional Review Board for making a recommendation for approval of my study's proposal. I thank the Gaborone and Lobatse DHMT management for allowing me access to their health facilities and colleagues who willingly assisted in those health facilities. Moreover I would like to thank the management and colleagues at Institute of Health Sciences Lobatse for their support and encouragement.

I would like to appreciate the dedication and support of my research assistants who timeously collected the data. I thank the Statistical Service Unit Coordinator of the University of Botswana, Mr Boipuso Mabotho who assigned Mr Kesaobaka Molebatsi to assist with data analysis. In the midst of his busy teaching schedule Mr Molebatsi patiently assisted with the data analysis at the time when Mr. Kenosi was no longer available due to work-related commitments.

I wish to thank Mr Anil at Limkonkweng University of Creative Technology- Botswana for his assistance with data entry and Mr, Tiroyaone Tshikantwa for his assistance with translation.

Last but not least I would like to thank my family and friends for every support they gave me to achieve this degree.

Student number 3334 709 3

Student: Omphemetse Rankosha

Degree: Master of Public Health

Department: Health Studies, University of South Africa

Supervisor: Prof VJ Ehlers

ABSTRACT

The study aimed to assess factors affecting the uptake of community-based Tuberculosis care (CTBC) as experienced by patients in Lobatse in order to make recommendations to enhance the uptake of CBTC in this area.

A cross-sectional study was conducted, using structured interviews amongst 101 TB patients in Lobatse who registered for directly observed treatment (DOT) for TB in the GOB's health facilities from January 2011 to August 2013. The SPSS (version 21) was used to analyse the data. Univariate logistic regression models were used. Participation in CTBC was an outcome.

The main predictors for participation in CBTC included, knowledge and attitudes towards CTBC (p=0.0003), perceived barriers and enablers towards this programme (p=0.0279), and patient satisfaction with this programme (p=0.0315).

The research findings pertain to TB services in Lobatse, because the study was conducted in government health facilities implementing the Botswana National Tuberculosis Programme (BNTP) CTBC guidelines only in Lobatse.

Key words: Botswana's tuberculosis programme, directly observed treatment (DOT), experiences of tuberculosis patients, Health Belief Model, tuberculosis, uptake of community-based tuberculosis care

TABLE OF CONTENTS

CHAPTER 1

ORIENTATION TO THE RESEARCH

CHAPTER 2

LITERATURE REVIEW

CHAPTER 3

RESEARCH METHODOLOGY

CHAPTER 4

ANALYSIS AND DISCUSSION OF THE RESEARCH FINDINGS

CHAPTER 5

CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

LIST OF TABLES

LIST OF FIGURES

LIST OF ANNEXURES

LIST OF ACRONYMS AND ABBREVIATIONS USED IN THE DISSERTATION

ACSM	Advocacy, Communication & Social Mobilization Strategy 2013-2017
AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal Care
ART	Anti-Retroviral Treatment
ATT	Anti-Tuberculosis Therapy
BNTP	Botswana National Tuberculosis Programme
CTBC	Community TB Care
CPT	Cotrimoxazole Preventive Therapy
CSO	Central Statistics Office
CSO	Community Supported Organisations
CVI	Content validity index
DHMT	District Health Management Team
DOT	Directly Observed Therapy
DOTS	Directly Observed Therapy Short Course Strategy
EPTB	Extra pulmonary tuberculosis
ETR	Electronic Tuberculosis Register
FBOs	Faith-based organisations
FBTC	Facility-based Tuberculosis care
GOB	Government of Botswana
HBM	Health Belief Model
HCW	Health care worker
HEAs	Health education assistants
HIV	Human immunodeficiency virus
IHS-L	Institute of Health Sciences, Lobatse
IPT	Isoniazid Preventive Therapy
KAP	Knowledge, attitudes and practices

LTBI	Latent TB infection
MDG	Millennium Development Goal
MDR TB	Multidrug-resistant tuberculosis
MLG	Ministry of Local Government
MOH	Ministry of Health
MTB	Mycobacterium tuberculosis
NGO	Non- governmental organisation
NTRL	National Tuberculosis Reference Laboratory
OPD	Out patient department
PCC	Patient centred approach to care
PHC	Primary health care
PMTCT	Prevention of mother-to-child transmission of HIV
PTB	Pulmonary Tuberculosis
SA	South Africa
SSA	Sub-Saharan Africa
SPSS	Statistical Package for the Social Sciences
TB	Tuberculosis
TB/HIV	Tuberculosis and Human Immuno Deficiency Virus co-infection
UB	University of Botswana
Unisa	University of South Africa
WHO	World Health Organization
XDR TB	Extensively-drug resistant TB

CHAPTER 1

ORIENTATION TO THE RESEARCH

1.1 INTRODUCTION

Tuberculosis (TB), though declining, continues to be a catastrophic health problem alongside Human Immuno Deficiency Virus (HIV) infections across the globe. The World Health Organization (WHO) estimates that 8.7 million TB cases occurred in 2011 and 13.0% of these cases were HIV positive persons. In the same year, globally 1.4 million TB deaths occurred (WHO 2012a:1), despite the availability of high quality and effective TB treatment. Tuberculosis is primarily a lung disease caused by the tubercle bacillus, known as Mycobacterium Tuberculosis (MTB), transmitted from "human-to-human" (Ministry of Health [MOH] 2011a:9). This demands a concerted effort to reach all TB patients, even the "unreached" as the WHO puts it, through early diagnosis and treatment.

During 2011, Sub-Saharan Africa (SSA) disproportionately reported TB incident cases exceeding 260 cases per 100 000 population (WHO 2013a). The TB burden in SSA is driven by the HIV scourge and poverty which overburden the already overstretched health care system. Out of the reported 1.1 million cases who were both HIV-positive and incident TB cases, 79% were attributed to the SSA region (WHO 2013b). Botswana's incident (new) TB cases were estimated by the WHO to be 455 per 100 000 population in 2011 (MOH 2013a:2), which "is unacceptably high for an upper middle-income economy" (MOH 2013b:3).

The dual epidemic in SSA has necessitated re-thinking of other more economically viable methods for TB control such as community-based TB care (CTBC) (MOH 2011b:6). Botswana has embraced CTBC which has a low rate of uptake and has faced many challenges such as high attrition rates of volunteers and negative attitudes of health care workers (MOH 2011b:7-8; MOH 2011c:36-37; MOH 2013a:12).

1.2 BACKGROUND TO THE RESEARCH PROBLEM

Polit and Beck (2012:73) define a research problem as a disturbing state of affairs that requires a solution. The background to the problem considers CTBC implementation in Botswana at different levels, the challenges experienced globally, in SSA, in Botswana and in Lobatse.

1.2.1 Community tuberculosis care implementation in Botswana

Community involvement is the component of the "WHO Stop TB Strategy" that is aimed at community empowerment. The WHO's internationally acclaimed Directly Observed Therapy (DOT) programme is the cornerstone of the "Stop TB Strategy" that is embodied in community-based care. The TB patient is regarded as a partner and has a shared responsibility with the treatment supporter towards completion of treatment. Community-based care has the potential for improving treatment outcomes, but it requires a well-established reporting system, diagnostic services and secure drug supply (Sukumani, Lebese, Khoza & Risenga 2012; WHO 2010:76).

Community-based initiatives in Southern Ethiopia improved the accessibility of TB diagnostic and treatment services and improved treatment outcomes (Yassin, Datiko, Tulloch, Markos, Aschalew, Shargie, Dangisso, Komatsu, Sahu, Blok, Cuevas & Theobald 2013:e51828), just like in other parts of SSA. There were similar findings in the eastern region of Ghana which also contributed to reduction of TB-associated stigma in the community (Boateng, Kodama, Sata, Bonsu & Osawa 2012:357-365). A study conducted in Tanzania (Mkopi, Range, Lwilla, Egwaga, Schulze, Geubbels & Van Leth 2012) also acknowledged the fact that "Adherence to TB therapy under home-based directly observed treatment can be ensured in programmatic settings".

Botswana is a signatory to the WHO's "Stop TB Strategy". Central to the concept of Botswana's National TB Programme (BNTP) is primary health care (PHC) which promotes community involvement as is done in other parts of SSA. The WHO's directly observed therapy short-course strategy (DOTS) is the cornerstone of BNTP, together with CTBC, intending to make TB treatment affordable, accessible and

available to the community. Depending on eligibility, TB patients are given the opportunity to opt for the DOT point of their choice within at least two weeks of initiation of TB treatment. Botswana embraced a phased-in CTBC in 2004, following the pilot project that was co-ordinated by the WHO in SSA including Botswana between 1996 and 2000. The studies showed that community participation could improve TB treatment outcomes (MOH 2011b:6 &10-11). Studies conducted in Botswana have identified challenges in the implementation of CTBC (MOH 2011d:12; MOH 2012:23; MOH 2013b:3, 12). These challenges have resulted in the sluggish uptake of CTBC despite the documented benefits attributed to it in Botswana and in other parts of SSA. The CTBC does not meet Botswana's 75% target of enrolment of TB patients on CTBC (MOH 2013b:3).

1.2.2 Challenges faced by Botswana's community-based TB care implementation

The WHO identified structural problems associated with community-based care in 2008 across participating countries, including SSA and Botswana. Based on these problems, guidelines were developed to enhance community involvement in TB care.

Challenges include a lack of clear implementation guidelines and indicators of success and poor reporting systems (WHO 2012a:2). The 2010 CTBC evaluation report confirms similar findings in Botswana (MOH 2010a:22). Community-based care aims at enhancing early diagnosis and effective treatment. Studies conducted in SSA show that there are patient and health system-related factors that contribute to the delay of TB detection (Belay, Bjune, Ameni & Abebe 2012:369; Saifodine, Gudo, Sidat & Black 2013:559). These findings might apply to Botswana.

Several assessments were carried out in Botswana including the 2010 CTBC evaluation, the TB/HIV Knowledge, Attitudes and Practices (KAP) study and the 2011 TB/HIV Implementation Report, revealing several challenges connected to CTBC implementation. These findings show how the uptake of CTBC can be undermined by barriers emphasising issues that need to be addressed in relation to the programme. Most challenges or barriers, amenable to health education, as spelled out in the CTBC policy (MOH 2011b:13-14; MOH 2011c:21, 30, 36-37; MOH

2013a:14), fall into groups of factors classified as being patient, socio-cultural, economic, structural or health care system-related.

- **Patient-related factors**

Patient-related factors, impacting on the uptake of TB treatment, include:

- Knowledge gaps regarding signs and symptoms of TB and a lack of awareness of the CTBC programme by TB patients
- Misconceptions of TB transmission amongst TB patients
- Lack of knowledge about TB transmission
- Inadequate knowledge about the nutritional requirements of TB patients
- Inadequate knowledge about the relationship between TB and HIV
- "Self-stigma" when some patients do not disclose their TB status, this could interfere with the early diagnosis and treatment of TB and aggravate the spread of TB throughout the communities concerned (Masisi 2011; MOH 2011c:21, 30; MOH 2013a:14).

- **Socio- cultural factors**

Cultural beliefs and misconceptions concerning transmission, prevention, and treatment of TB (such as regarding coffee as a cure for TB) were also identified (MOH2011c:30, 39). These misconceptions might lead to delayed health seeking behaviours, jeopardising the possibility of early diagnosis and effective treatment of TB.

- **Economic factors**

Poverty contributes to poor nutritional status which is a potential barrier to TB treatment adherence (MOH 2011c:30). Poverty might also contribute to delayed health care seeking behaviours in cases where people might not have money to pay for transport to reach health care facilities.

There is poor retention of community volunteers supporting TB care due to discrepancies in incentives for rewarding the volunteers. This has led to a questionable sustainability of existing community models of care due to limited multi-

sectoral collaboration. Disparity in incentives has also caused negative attitudes of volunteers towards CTBC which has led to low geographic coverage of the programme in Botswana (MOH 2010a:34, 43; MOH 2011b:7-8; MOH 2013a:12; MOH 2013b:12).

- **Structural factors**

There were no clear guidelines for the implementation of the CTBC up until 2010 (MOH 2012:23).The Botswana CTBC policy guidelines were launched in 2011. There was inadequate training of volunteers and health care workers (HCWs) on the implementation of CTBC and inadequate co-ordination with other care givers (MOH 2013a:4). Inadequate training could explain the negative attitudes of both volunteers and HCWs about CTBC as well as weak monitoring and co-ordination of the programme. "Weak monitoring and supervision of … community based projects pose a challenge" (MOH 2013a:12) to the implementation of CTBC (see quotation in annexure 14 of this dissertation). The TB treatment supporters lacked basic supplies such as pill boxes and medicine cabinets that could be securely locked up (MOH 2013a:4).

CTBC activities were not well integrated with the community HIV home-based care programme, hence the implementation of TB/HIV interventions at community level remained vertical (MOH 2011d:12; MOH 2013b:12). "Vertical models are those in which HIV or TB services stand alone and cross-refer patients to the other service for testing and treatment" (Chimbindi, Bärnighausen & Newell 2013:237-240).

- **Health care system-related factors**

Irregular provision of services at a sub-national level, such as TB/HIV diagnostic services and TB drug depletions, were documented (MOH 2011c:37). This situation poses a threat for continuous optimal performance with respect to reaching and maintaining Botswana's TB targets, possibly resulting in sustained sub-optimal services.

Botswana is at the stage of restoring its CTBC and the revised Botswana target was set at 75% during 2011. The CTBC uptake was raised from 9% in 2009 to 45% in 2011. Lobatse was amongst the sub-optimal performing areas at a rate of 9% in 2009 and 63.5% in 2012 which still falls short of the Botswana revised target of 75% (Lobatse District Health Management Team [DHMT] 2013:2; MOH 2010b:34; MOH 2012:23). Lobatse was chosen for the study on the basis of high TB-related death rates, cumulatively at 11% between January 2011 and August 2013 despite the availability of free TB treatment at government facilities. These sub-optimal treatment outcomes, as well as low CTBC uptake, have prompted the study.

It is important to understand factors affecting the uptake of CTBC in Lobatse so that existing gaps in the implementation of the programme could be bridged as Lobatse is falling short of reaching “the unreachable persons” through diagnosis and treatment. It is not clear why some patients continue to die during treatment in the presence of free TB therapy and free anti-retroviral treatment (ART) in Lobatse. The smear positive (most infectious) proportion of the total number of cases of pulmonary TB (PTB) was 77.2% in 2010, 64.1% in 2011 and 65.3% in 2012. The 2008-2012 national strategic plan, as well as the global target, aimed to achieve 70% (MOH 2012:2; Lobatse Electronic TB Register [ETR] 2013) and provides evidence for the need to improve finding persons suffering from TB, diagnosing and treating them, referred to as “case finding” in the local TB services.

The treatment success (cured and completed) rate for new smear positive TB cases for the cohort was 76.1% in 2010, 86.4% in 2011 and 71.2% in 2012 in Lobatse compared to the national and international targets of 85% during the periods under review (Lobatse DHMT 2013:2; Lobatse ETR 2013), as shown in Annexure 1. As long as persons who suffer from TB are not traced, diagnosed and treated effectively, they will continue to spread TB to other persons in their communities, increasing the number of TB sufferers in these communities.

1.3 STATEMENT OF THE RESEARCH PROBLEM

Studies conducted in Africa, SSA and Botswana have revealed factors affecting the uptake of community-based TB programmes as patient-related, socio-cultural, economic, structural and health care system-related (MOH 2012:23; MOH 2013a:4; Mugisha, Semo, Ledikwe, Ncube, Firth, Achoki, Lere, Machao, Mwangemi, Makadzange, Mabreaden, Katholo, & Nkomo 2013:S93; Uwimana, Zarowsky, Hausler & Jackson 2012:233; WHO 2012a:2). Studies have shown that CTBC has better treatment outcomes compared to facility-based TB care (FBTC), but there is a need for intensified TB case finding and reduction of stigma (Mugisha et al 2013:S93). Studies on factors affecting the uptake of CTBC in Lobatse have not been documented. Adequate knowledge of patients on the benefits of CTBC and adequate support of the programme could enhance effective uptake of the programme hence improving treatment outcomes and reducing stigma and avoidable deaths. Little is known about knowledge and involvement of TB patients in Lobatse's CTBC and the extent to which CTBC is supported in Lobatse has not been documented. Adequate support for a TB programme in rural Malawi has contributed to low levels of drug resistance (Mboma, Houben, Glynn, Sichali, Drobniewski, Mpunga, Fine, French & Crampin 2013) and the same could be expected from effective CTBC in Botswana.

1.4 AIM OF THE STUDY

In this section the research purpose, objectives and questions will be addressed.

1.4.1 Research purpose

The purpose of the study was to assess factors affecting the uptake of CTBC, as experienced by patients in Lobatse, in order to make recommendations to enhance the uptake of CTBC in this area so that the TB treatment outcomes could be improved.

1.4.2 Research objectives

The main objectives of the study were to determine:

- Demographic characteristics of the respondents
- Patients' knowledge about TB
- Patients' knowledge of and attitudes concerning CTBC
- Support structures used by TB patients participating in CTBC
- Patients' perceptions about factors influencing the adoption of a specific DOT option
- Factors influencing participation of TB patients in the CTBC

1.4.3 Research questions

The following research questions had to be addressed in order to achieve the research objectives:

- What are the demographic characteristics of the respondents?
- What do patients know about TB?
- What do patients know of and think about CTBC
- What support structures do patients have who utilise the CTBC option of TB treatment?
- What factors influence patients' decisions in the adoption of a specific DOT option?

1.5 SIGNIFICANCE OF THE STUDY

It is important to identify factors affecting the uptake of CTBC in Lobatse in order to reduce TB-related deaths and enhance the early diagnosis and treatment of TB and so that improved TB-treatment outcomes can be achieved in this district. This would reduce the number of TB patients in the communities, reducing the risk of TB infection of community members, and reducing health-care costs as well as reducing the TB-related mortality and morbidity rates in the communities concerned. The study will help to address the potential knowledge gap about CTBC amongst TB patients in Lobatse which could impact negatively on the utilisation of CTBC services in this geographic area.

Furthermore, the study could enhance the CTBC model through its research findings and expand the TB patients' knowledge base about their important role in the CTBC which could influence its uptake in Lobatse and reduce TB-associated stigma. The study will attempt to generate ideas which could influence policy making about the involvement of patients in CTBC activities. The actual implementation of the policy at clinic level should be evaluated through the patients' reported experiences. Based on the study's findings, recommendations could be made to address patient-related, socio-cultural, economic, structural and health care system-related factors influencing CTBC in Lobatse. The information generated by the study might help to form a basis for curriculum development on issues of TB and CTBC in Botswana and form a basis for further research about community participation concerning TB-related issues.

1.6 DEFINITIONS OF KEY CONCEPTS

The following concepts are defined as used throughout the study and during the report writing in order to ensure that the readers will share the researcher's understanding of these concepts. First the theoretical definitions of concepts will be provided followed by operational definitions, indicating the application of concepts in the current study.

1.6.1 Tuberculosis (TB)

"Tuberculosis is a communicable disease caused by the bacteria *Mycobacterium tuberculosis [MTB],* also known as the tubercle bacillus…Almost 80% of TB occurs in the lungs" (MOH 2011a:9).

1.6.2 Community-basedTB care

The CTBC involves direct delivery of TB services within the environment where the patient lives through community participation such as TB treatment supporters and volunteers of the patient's choice. This enhances accessibility, acceptability, and affordability of TB care (MOH 2011b:9).

1.6.3 Directly observed therapy (DOT)

DOT is a WHO recommended TB treatment method of supervision by a designated person who observes and records the intake of every dose which could be done at the health facility, at home, in the community or at the work place (WHO 2010:77).

1.6.4 Factor

A factor is “an element or cause that contributes to a result” (The Free On-line Dictionary of Computing 2013).

1.6.5 TB Patient

A TB patient is someone who has been diagnosed with tuberculosis and has been put on a full course of TB treatment (WHO 2010:24).

1.7 OPERATIONAL DEFINITIONS

The following operational terms were defined as used throughout this study and report writing in order to enhance a common understanding of the terms between the readers and the researcher.

1.7.1 Community TB care

The CTBC in this study refers to the community TB DOT programme, as recommended by Botswana’s MOH (2011a:1).

1.7.2 Patient

A patient is a TB patient on facility-based TB DOT or community-based TB DOT appearing in Lobatse’s TB Electronic Register and Paper Based Tuberculosis Register as from January 2011 till August 2013. They might have completed their TB treatment or might still be taking it.

1.7.3 Uptake

Uptake refers to the utilisation of CTBC by individual patients aged 21-64 in Lobatse.

1.7.4 Participation

Participation implies the uptake of CTBC by patients including their active role in supporting TB treatment and reducing TB-related stigma and discrimination.

1.7.5 Support

Support refers to the effective role played by the TB patients, health facilities, community supported organisations (CSOs), faith-based organisations (FBOs), non-governmental organisations (NGOs), and the community to enhance TB treatment outcomes through CTBC.

1.7.6 Factor

A factor implies any patient-related, socio-cultural, economic, structural and health care system-related aspects which could impact on the uptake of CTBC in Lobatse.

1.8 THEORETICAL FOUNDATION OF THE STUDY

The theoretical foundation adopted for this study is the Health Belief Model (HBM).

1.8.1 Health Belief Model (HBM)

This quantitative study was based on a theoretical framework so that the findings could be contextualised within this framework (Polit & Beck 2012:131). Becker's Health Belief Model (HBM), as articulated by Weitz (2013:38-39), was adopted as an appropriate conceptual framework to enable the researcher to analyse findings and make recommendations to the Lobatse DHMT in terms of implementing effective TB care within the community context. A theoretical framework explains phenomena of

interest and provides a basis for assumptions and a philosophical stance to the study (Burns & Grove 2009:135). The model has been designed to rationalise the adoption of healthy behaviours by healthy people (Weitz 2013:38). Becker's HBM helped to assess factors that affected the uptake of CTBC in Lobatse, as there had been a low uptake of CTBC falling below the Botswana target of 75%. Factors that were assessed included those that hinder or facilitate the uptake of CTBC. The underlying concept of the HBM is that health-related behaviour (uptake of CTBC) is affected by personal beliefs or perceptions of a risk (defaulting TB treatment and not getting cured from TB) presented by a health problem (acceptability, accessibility and affordability of TB treatment) and the value attached to the mitigating factors of the risks, implying the barriers and enablers influencing the utilisation of the CTBC services (Polit & Beck 2012:136).

The basic assumption of this study implied that there was a knowledge gap about CTBC in Lobatse which impacted negatively on the utilisation of CTBC services by TB patients in this area. The study further acknowledged that there might have been an interplay of an array of factors affecting the utilisation of CTBC services by TB patients in Lobatse. The HBM was appropriate to assess factors affecting the uptake of CTBC in Lobatse. This is the case because personal perceptions about the CTBC, as a strategy to enhance adherence to TB treatment and reduce the risk of spreading TB and multi-drug resistant tuberculosis (MDR TB), might have been influenced by a spectrum of factors. Perceived barriers influencing the uptake of CTBC could predict the participatory role played by TB patients in TB control. The model might help to assess factors that influenced other TB patients to participate in CTBC or not to do so. The HBM is a framework designed to assess compliance with medical advice (Weitz 2013:38). In this study's context medical advice implies the uptake of CTBC to enhance treatment outcomes. More details of the HBM model are discussed in chapter 2 of this dissertation.

1.8.2 Theoretical constructs of the Health Belief Model (HBM)

According to Weitz (2013:38-39) there were originally four main theoretical constructs of the HBM model, namely:

- Perceived susceptibility - beliefs of susceptibility to a given health problem (implying the risk of getting a disease or condition such as becoming infected with TB)
- Perceived threat (severity) - beliefs of the seriousness or the health problem which is TB in the case of the current study
- Perceived benefits and costs - beliefs that embracing preventive strategies will significantly reduce the risk of getting the disease/condition (TB)
- Perceived barriers - beliefs that no substantial impediments will make it hard for a person to adhere to the strategies preventing a disease of condition such as TB (Glanz, Rimer & Lewis 2008, cited in Remocker & Shea 2011; Weitz 2013:39)

A revised version of the HBM has added, cues to action, motivating factors and self-efficacy which can affect the initial four factors. Individuals' behaviour can be explained through these perceptions or beliefs and the additional constructs of the HBM (Polit & Beck 2012:136; Weitz 2013:39). The HBM helped to assess self-efficacy through the level at which TB patients in Lobatse were motivated and exerted themselves in terms of achieving treatment outcomes. This was assessed in the form of informational inputs offered to TB patients by the health care workers and related entities.

Modifying factors of the perceptions or beliefs include personality variables, patient satisfaction, demographic variables, psychosocial variables, and structural factors (Polit & Beck 2012:136; Weitz 2013:39). Several studies have shown that barriers and perceived susceptibility gain pre-eminence in predicting healthy behaviours (Ogden 2012:50). Studies related to community TB projects show that perceived barriers such as stigma influence the uptake of such projects. An example includes a study by Uwimana et al (2012:233) that identified HIV stigma and lack of disclosure in the community as affecting the utilisation of TB services. Figure 1.1 presents the tenets of the HBM and shows linkages that predict health behaviours. The model is explained in more detail in chapter 2.

1.8.3 Assumptions

Assumptions involve statements that are taken to be true without having been subjected to scientific methods (Burns & Grove 2009:40). The objectives of this study were based on the assumption that TB patients might have limited knowledge about CTBC in Lobatse which could impact negatively on their utilisation of CTBC services in this area.

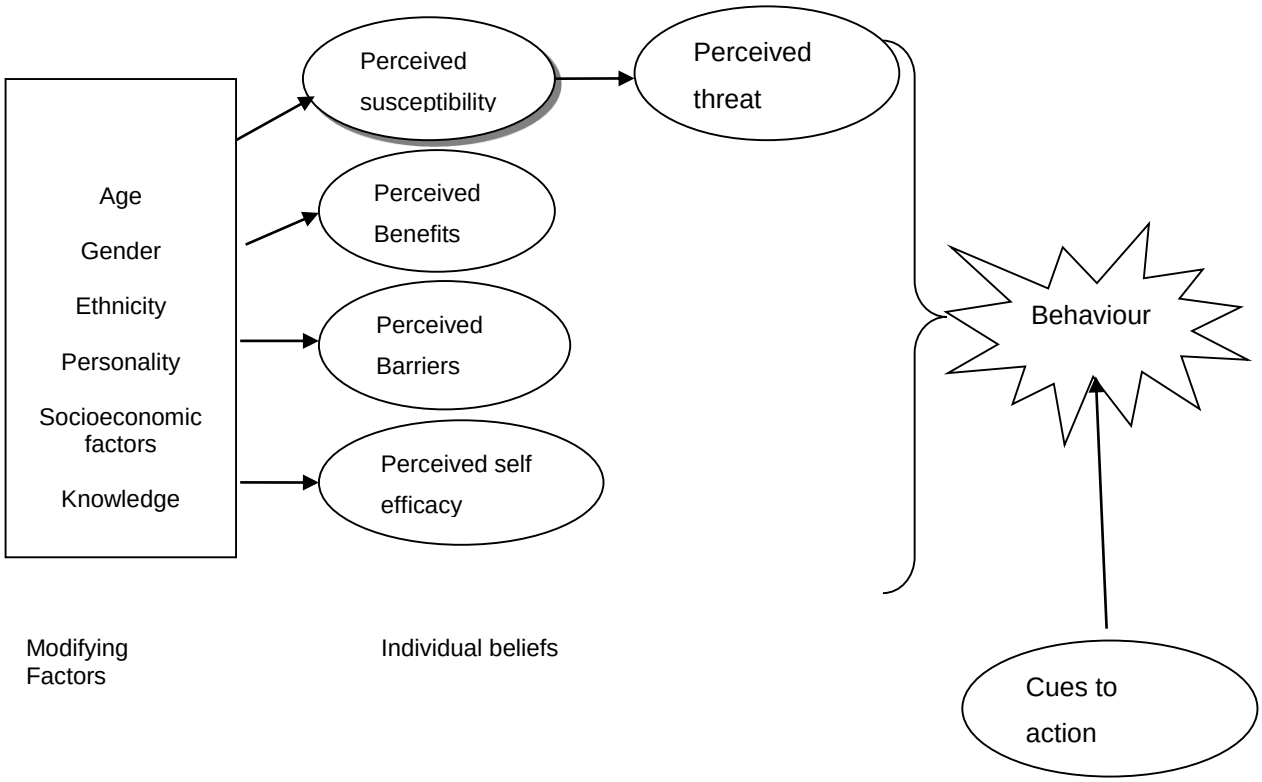


Figure 1.1 Health Belief Model: components and linkages

(Glanz et al 2008, cited in Remocker and Shea 2011)

1.9 RESEARCH METHODOLOGY

Every research method has both strengths and weaknesses (Babbie 2013:114). This section briefly outlines the research design and methods adopted during the current study. The research methodology will be discussed in detail in chapter 3 of this dissertation.

1.9.1 Research design

According to LoBiondo-Wood and Haber (2010:159), the research design serves unique multiple purposes that overlap, in a quantitative study. The research design reflects methods for addressing the research question and also presents a plan for data collection (Polit & Beck 2012:58). The statement is corroborated by Burns and Grove (2009:236) who stated that it is “the blueprint for conducting a study” and gives the researcher maximum control, thereby improving the validity of the study’s findings. The research design was meant to detail all the steps of this research project (Babbie 2013:112).

A quantitative descriptive cross-sectional study design was adopted, which was non-experimental to assess factors affecting the uptake of CTBC in the Lobatse district of Botswana.

1.9.2 Quantitative design

According to Polit and Beck (2010:16-17), a quantitative research design involves the collection of empirical data in a positivist paradigm; it deals with figures and quantities and involves precise measurements and statistical analyses of data. It is advantageous in that numbers used in a quantitative study enable measurement of quality hence making observations (factors affecting the uptake of CTBC) clearer. It has shortcomings in that it does not capture the broad spectrum of human experience. Further full meaning of phenomena (factors affecting the uptake of CTBC) might be lost in the quantitative data (Babbie 2013:25). The data collection instrument was a structured interview schedule, based on the objectives, the literature reviewed and the CTBC policy of Botswana guided by the HBM.

1.9.3 Descriptive study

A descriptive study involves the systematic collection and presentation of data to provide a clear picture of a particular phenomenon in a real life situation. The descriptive study could help to detect health practice-related problems but is not meant to measure causality (Burns & Grove 2009:237). The researcher makes

observations and describes these observations (Babbie 2013:91). The study helped to objectively assess and describe factors hindering or facilitating the uptake of CTBC, as reported by patients in Lobatse.

1.9.4 Cross-sectional study

A cross-sectional design was used for this study as it "involves observations of a sample, or cross-section, of a population or phenomenon that are made at one point in time" (Babbie 2013:105). The data were collected all at the same time on relevant variables and from respondents who met the study's inclusive criteria**.**

1.9.5 Research setting

The study was conducted at the six Government of Botswana's (GOB's) health facilities implementing Botswana's CTBC policy guidelines, and other places convenient to the TB patients (respondents) in Lobatse.

1.9.6 Research population

A population can be persons, animals, events, or subjects with stipulated characteristics (LoBiondo-Wood & Haber 2010:221). In agreement with this study's context, Babbie (2013:115) says a population is usually a set of people about whom the researcher wants to draw inferences. The population comprised 377 TB patients in Lobatse who were registered for DOT in the GOB's health facilities from January 2011 to August 2013, and who had been on treatment for at least three weeks, as they should have been taught about the CTBC option by that time, according to the 2011 CTBC guidelines (data obtained from Lobatse's ETR).

1.9.7 Data management and analysis

Quantitative data were captured and analysed using the Statistical Package for Social Sciences (SPSS) version 21. Descriptive statistics were produced to present the data in frequency tables and cross tabulations as well as graphs and charts to

display the findings' distributions. A statistician assisted the researcher with the data management and analysis (See Annexure 2 of this dissertation).

1.9.8 Data collection instrument

A self-designed structured interview schedule, based on the study's objectives, the literature reviewed, and the CTBC policy of Botswana, was used to collect data from the respondents.

1.9.9 Data collection

Data collection involves gathering information relevant to the research questions stipulated by the study (Creswell & Clark 2011:171). A structured interview schedule with closed-ended and open-ended questions was used in face-to-face individual interviews (see Annexure 3 – English and Setswana structured interview schedules).

1.10 ETHICAL CONSIDERATIONS

The study was cognisant of the three basic principles of the Belmont Report as stipulated in Amdur and Bankert (2011:19). These principles covered respect for persons, beneficence, and justice. The ethical issues pertaining to this study will be discussed in chapter 3 of this dissertation.

1.11 SCOPE AND LIMITATIONS OF THE STUDY

The major limitation of this study is that the study focused only on one district, namely Lobatse, hence results might not be generalised beyond this study site. Only structured interviews were used to collect data. Consequently no in-depth information could be obtained about the TB patients' lived experiences of CTBC in the Lobatse district.

1.12 STRUCTURE OF THE DISSERTATION

This dissertation comprises five chapters, namely:

Chapter 1: Orientation to the research

Chapter 2: Literature review

Chapter 3: Research Methodology

Chapter 4: Analysis and discussion of the research findings

Chapter 5: Limitations, conclusions and recommendations.

1.13 SUMMARY

Chapter 1 provided background information about the occurrence of TB globally, regionally and nationally. The implementation of CTBC in Botswana was discussed alongside its implementation challenges. The following areas were addressed: the research problem, aim of the study, significance of the study, definitions of key concepts, theoretical foundation of the study, research methodology, ethical considerations, scope and limitations of the study, as well as the structure of the dissertation and a summary.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

LoBiondo-Wood and Haber (2010:57) define a literature review as “a systematic and critical appraisal of the most important literature on a topic, as a key step in the research process that provides the basis of a research study”. This statement is corroborated by Polit and Beck (2012:57-58) as well as by Burns and Grove (2012:97) who stated that a quantitative study is usually done on the basis of published prior knowledge of scholars on a topic of interest and is written in an organised manner. The literature review serves the purpose of giving the study direction from development to implementation using both theoretical and empirical sources that are current in terms of the problem of interest (Burns & Grove 2009:90-91). “A theoretical framework, which may have a schematic representation showing the suggested interconnectedness of the concepts, is usually subsumed under this section” (LoBiondo-Wood & Haber 2010:57) (see figure 1.1).

The purpose of this chapter is to present the literature review relating to factors affecting the uptake of CTBC as experienced by patients in Lobatse.

2.1.1 Literature review strategy

The literature review was based on both published and unpublished sources in accordance with the seven constructs of the HBM and the associated modifying factors likely to affect the TB patients’ uptake of CTBC. The literature was reviewed such that it could help to identify factors affecting the uptake of CTBC. Ncho and Wright (2013) maintain: “To understand the process of decision making, it is always important to understand how people make decisions and the factors that influence their decisions”. Hard copies and electronic reports on TB were obtained from the Lobatse DHMT, Botswana MOH, Botswana Central Statistics Office (CSO) and

WHO Country Representative Office in order to obtain local, national and international statistics and narrative data. Academic health databases including Google Scholar, SAGE, EBSCOHost, PubMed and ScienceDirect in the University of Botswana's (UB) online library and the University of South Africa's (Unisa's) library were accessed. Other relevant databases such as CSO and digital forensics were accessed. Only documents written in English were selected. The literature search concentrated on high burden TB and HIV countries including SSA and Botswana to obtain data on experiences of patients about CTBC care. The reviewed literature was limited in terms of addressing the question of interest "factors affecting the uptake of community TB care as experienced by patients in the Lobatse District of Botswana". The literature review assisted in identifying factors influencing the adoption of health-enhancing behaviours including adherence to TB treatment, community TB and HIV projects. The main themes used in the literature search included:

- Care seeking behaviour - community based
- Tuberculosis treatment adherence - community-facility
- Factors associated with low TB cure rates
- Utilisation of TB health care services
- Patient centred care
- Community-based TB care
- Patient and system delays in providing/using TB services
- TB morbidity and mortality
- TB country specific reports
- TB in SSA
- TB and the HBM

The study findings in this literature review are presented with some caution because the reviewed research topics did not accurately address the topic of interest (factors affecting the uptake of [CTBC] in Lobatse). Challenges experienced by patients in the literature review were treated as factors influencing the health behaviour (uptake of CTBC) and were contextualised in this dissertation through the help of the HBM.

2.2 Summary of reviewed literature

A summary of the literature review is presented according to the overview of TB and CTBC as well as the contextualisation of this information within the HBM's major tenets.

2.2.1 Overview of Tuberculosis (TB)

The discussion that follows under this section covers, TB definitions, modes of transmission of TB, factors influencing TB transmission, risk for developing TB, TB diagnosis, TB treatment, DOTS, supervision and support of TB patients, TB treatment outcomes and CTBC. Such an overview of TB-related issues could help to understand the background against which CTBC was implemented in the Lobatse district of Botswana

2.2.1.1 What is Tuberculosis?

The "Stop TB Strategy" envisions a "TB-free world" (WHO 2012b:4). The causative organism for TB is MTB which is a bacterium also called the tubercle bacillus. The bacillus is an organism that requires oxygen for metabolism (an aerobe) and takes time to grow, thriving better in oxygen-rich environments of the body. An example includes the oxygen-rich apices of the lungs which explains why approximately 80% of TB occurs in the lungs (PTB). Other different body tissue locations might be affected by TB known as extra-pulmonary TB (EPTB) such as TB of the larynx (MOH 2009:5; MOH 2011a:9;WHO 2012b:3).

2.2.1.2 TB transmission in the general population

Tuberculosis spreads from a lung or larynx of a TB infected person to other people through coughing, talking, sneezing, singing or any means that can cause the spread of the droplet nuclei (also known as TB bacilli) into the air. The droplet nuclei harbour MTB, and are as tiny as 1-5 microns in size such that they cannot be seen with a naked eye. The bacilli can quickly get killed when directly exposed to sunlight and good ventilation, both natural and mechanical. The end result of inadequate

ventilation is the suspension of the droplet nuclei in the air for some hours. Inhalation of these droplets by TB free persons who share the same airspace with the TB patient could result in TB infection. If the inhaled bacilli reach the alveoli of the lungs, they might be destroyed by macrophages (white blood cells that ingest bacteria or foreign organisms found in the body - including the alveoli of the lungs in the case of TB). Infection is established through the multiplication of bacilli to the extent that they cannot be contained by the alveolar macrophages. The bacilli may be transported to other body organs through the blood stream or the lymphatic system. A competent immune response to TB usually prevents the development of the disease (MOH 2009:5; MOH 2011a:9-10; WHO 2012b:3).

Socio-economic status has been identified as a critical factor in the epidemiology of TB. Environments exposing people to TB bacilli include overcrowding, poor lighting and poor ventilation which increase the risk for TB transmission. Severe malnutrition is also a risk factor for “developing TB”. This implies that poverty-stricken parts of the developing world (including SSA and Botswana to a certain extent) are experiencing a high incidence of TB because of unfavourable socio-economic conditions (MOH 2009:6; MOH 2011a:10; MOH 2011c:36), aggravated by the HIV pandemic in these areas of the world.

2.2.1.3 Factors that influence TB transmission

Highly infectious TB patients are at a greater risk of transmitting TB to other people. Infectiousness is determined by the amount of droplet nuclei expelled by the patient into the air (MOH 2009:5).

Factors influencing infectiousness include:

- Patients with TB of the lungs or larynx
- Poor cough etiquette
- Patients with smear positive sputum (most infectious)
- Patients with cavities in the lungs
- Patients undergoing bronchoscopy or sputum induction
- Delayed initiation of anti-TB therapy (ATT) (MOH 2009:5)

Early diagnosis and effective treatment, as well as health education about the spread of TB, can help to reduce the number of persons suffering from TB in specific communities.

2.2.1.4 Risk for developing TB disease following infection

The stage at which the body has the ability to contain TB infection such that it does not become active TB is called latent TB infection (LTBI). Generally the competent immune system of healthy people arrests MTB so that it does not multiply to cause disease (MOH 2009:7). Risk factors for TB disease following infection include:

- HIV/AIDS
- Diabetes
- Cancer
- Immunosuppressive medication
- Silicosis
- Severe kidney disease
- Alcoholism
- Smoking
- Drug use
- Malnutrition and
- Being a child younger than 5 years of age (MOH 2009:7; MOH 2011a:10; WHO 2012a:1).

The probability of developing TB is greatly increased at 10% per annum in people living with HIV as opposed to a 10% lifespan risk in HIV negative people. The progression from the LTBI to active TB is much faster in people living with HIV as opposed to HIV-negative people (MOH 2009:8; MOH 2011a:56; WHO 2013c) because HIV weakens the immune system (MOH 2011a:10) by decreasing the person's CD4 cell count. The resurgence of TB came about in the 1980s with the advent of the HIV epidemic, primarily in SSA (MOH 2011a:9). According to the WHO (2012b:3) there were close to 9 million new cases of TB across the globe in 2011 and 1.4 million TB deaths of which 430 000 were attributed to TB/HIV co-infections.

In the same period under review, SSA reported more than 260 per 100 000 population of new (incident) cases of TB and 79% of the world's TB/HIV incident dual infections of TB and HIV (WHO 2013b). More than 95% of people who died from TB or TB-associated conditions during 2012 were in Africa (WHO 2013c). Botswana's TB/HIV co-infection rate in 2010 was estimated at 68% and in 2011 was estimated at 64%, indicating that Botswana was experiencing a high rate of the TB/HIV dual infections like other parts of SSA. In the same period under review Botswana experienced an estimated 455 per 100 000 population of incident TB cases, which does not tally with the country's upper middle income economic status (MOH 2013b:3), as shown in Annexure 4 of this dissertation. The preliminary report of the fourth Botswana AIDS Impact Survey (BAIS IV) demonstrated a national HIV decline from 17.6% in 2008 to 16.9% in 2013 according to Botswana's President Lieutenant General Seretse Khama Ian Khama (Masolotate 2013:3 - see Annexure 5).

Millennium development goal (MDG) 6 is committed to "combating HIV/AIDS, malaria and other diseases including TB… [to] have halted by 2015 and begun to reverse the incidence, prevalence and death rates associated with tuberculosis" (MOH 2013b:16). The WHO declared TB as an emergency in the African region in 2005 and advocated for unusual measures that could urgently contain the TB epidemic. Emergency strategic plans had to be put in place with the aim of improving TB case findings and treatment success rates (MOH 2013b:16; WHO 2012b:3). The world is reported to be on track with respect to containing TB morbidity and mortality. There has been a global sustained decline of TB incidence over the years which was reported at the rate of 2.2 between 2010 and 2011. Since 1990, TB deaths have gone down by 41% against a 50% target set for 2015 (WHO 2012b:8)

Men are at a higher risk of developing TB than women and adults in the income generating age group are mostly affected by TB (WHO 2012b:3). CTBC might help to identify patients with smear positive TB, and TB of the lungs and the larynx. If these patients are diagnosed early and treated effectively the risk of spreading TB in the community can be reduced.

Smear positive PTB patients are likely to spread TB to other people and should be the focus of TB infection control and contact tracing efforts (MOH 2011a:14; WHO

2010:25) especially in the homes of infectious TB patients. Contact tracing plays a vital role in identifying TB patients as well as in containing the spread of TB in the community. Once a patient has been diagnosed with smear positive PTB, the health facility TB focal person, and the community volunteer must trace all close contacts and screen them for signs and symptoms of TB. Following screening, TB suspects should be subjected to sputum smear microscopy. Close contacts might involve a family member, a school mate or a working colleague closely interacting with the infectious TB patient (MOH 2011a:16). The longer a person stays in close contact with an infectious patient, the greater the risk of getting infected. The degree to which one is at increased risk of getting infected with TB is also determined by the intensity of exposure to TB infection (MOH 2009:6; MOH 2011a:14). The presence of preventive services, such as CTBC aiming at early diagnosis and early treatment of infectious TB patients, could reduce the spread of TB in the community. These services might prevent the occurrence of TB disease in TB infected patients by the use of Isoniazid Preventive Therapy (IPT) (MOH 2009:6). Factors such as poor cough etiquette and delay in initiation of ATT could also be curbed through health education provided to the community through CTBC services.

2.2.1.5 TB diagnosis

Prevention of morbidity and mortality and TB transmission could be achieved through early and accurate diagnosis of TB. Initially a person (TB suspect) is screened for signs and symptoms of TB, and then assessed through medical history and physical examination to determine the possibility of being a TB patient. The radiographic and microbiologic methods then follow to confirm the diagnosis of TB (MOH 2011a:18). Across the globe, diagnosis of TB is usually achieved through sputum smear microscopy in which the sputum samples are subjected to microscopic scrutiny to observe TB bacteria. With recent TB diagnostic trends, rapid molecular tests for the diagnosis of TB and drug-resistant TB are increasingly used. Culture methods which are the current yard stick for the diagnosis of TB patients are used in countries with advanced laboratory capacity (WHO 2012b:3).

Reaching TB suspects early and diagnosing them via quality assured bacteriology is an aspect of the WHO DOTS strategy (WHO 2012b:4). The international targets

advocate for a 70% diagnosis of sputum-smear positive TB people by 2015 (MOH 2013b:16). Reportedly there is either an underreporting or a failure to reach a third of persons considered to have TB within existing health systems (WHO 2012a:1).

In Botswana sputum culture is done at the National TB Reference Laboratory (NTRL) in Gaborone for selective patients and smear microscopy is commonly used because of its cost-effectiveness and ability to yield results within 24-28 hours (MOH 2011a:19-20). In principle, all HIV positive people in Botswana have to be screened for TB and also, all TB patients have to be screened for HIV. Co-infection with TB/HIV renders a person prone to EPTB which may complicate the diagnosis of TB (MOH 2011a:18). TB/HIV dual infection constitutes a deadly combination both expediting the progression of each other from infection to disease. The WHO has recommended an integration of TB/HIV services which encompass preventive and curative strategies to decrease the number of deaths attributable to these conditions (MOH 2011a:10, 18; WHO 2013c).

2.2.1.6 TB treatment

There is a need for early diagnosis in TB suspects and for the rapid initiation of TB treatment for sputum smear positive patients. Infectiousness of a TB patient can be effectively decreased through the early initiation of TB treatment which reduces the risk of infectiousness within two weeks of commencement. The mortality rate of TB increases with delayed initiation of ATT (MOH 2009:6; MOH 2011a:18 & 29). Early diagnosis and treatment of TB patients can reduce TB-related deaths in Lobatse.

According to the Botswana's MOH the main objectives of TB treatment include:

- Curing the patient and restoring his/her quality of life and productivity
- Preventing death from active TB or its subsequent effects
- Preventing relapse of TB
- Preventing the development of drug-resistance
- Preventing the transmission of TB to others (MOH 2011a:29).

A 95% cure rate of TB is possible with DOTS (MOH 2011a:29). The WHO international targets aim at an 85% cure rate for smear positive TB patients by 2015 but the highest rate ever attained was 87% in 2010 (MOH 2011a:29; MOH 2013b:10). In 2010 Botswana's treatment success rate was at 81.4 % indicating a sub-optimal performance against the 85% international target (MOH 2013b:10).

In summary TB treatment objectives indicate that the overall success of TB therapy is beneficial to the patient, close contacts and the community at large. Drug-sensitive TB is treated for a period of six months with four drugs in the standard regimen of first-line drugs which include: isoniazid, rifampicin, ethambutol and pyrazinamide. Both new and retreatment cases of TB are treated by first-line TB drugs. Treatment for drug-resistant TB takes longer and is expensive with toxic drugs. The current TB treatment regimens recommended by the WHO to treat patients with MDR TB takes up to 20 months (WHO 2012b:3). The management of TB is complicated by MDR TB and extensively drug-resistant TB (XDR TB) (MOH 2011a:9). The type of bacteria that is resistant to at least isoniazid and rifampicin, the most powerful first line TB drugs, cause MDR TB. Other underlying factors attributed to MDR TB include: inappropriate administration of TB treatment such as use of poor quality drugs and incorrect drug use. MDR TB is responsive to second-line TB treatment but it has limited options (WHO 2013c).

The WHO estimates that 3.7 % of new cases and 20% of cases treated in the past have MDR TB (WHO 2012b:8). The most unresponsive TB (XDR TB) is the type of MDR TB that responds to a very limited number of TB drugs, indicating the need to employ effective strategies to treat TB (WHO 2013c). Approximately nine cases of XDR-TB cases have been reported in Botswana by 2012 (MOH 2013a:3). Patients with dual infection are at an increased risk of mortality hence interventions such as co-trimoxazole preventive therapy (CPT) and ART might be beneficial to them (MOH 2011a:18), especially if the diagnosis is made early and treatment commenced timeously. Low-and middle-income countries (including SSA and Botswana) account for 95% of TB-associated deaths (WHO 2013c). In Botswana 13% of adult deaths are attributed to TB, claiming 40% of lives of people living with HIV/AIDS (MOH 2013b:10). Botswana has a successful national ART programme. However, only an estimated 45% of people with TB/HIV co-infection have been provided with ART in

2011 indicating sub-optimal performance against national targets, based on the international targets (MOH 2013a:3). The 2008-2012 Botswana National Strategic Plan indicated that 90% of the TB/HIV co-infected patients would have started ART by 2012 (MOH 2012:2).

2.2.1.7 The Directly Observed Treatment Strategy (DOTS)

In a quest to contain the problem of MDR TB and XDR TB, the WHO recommended DOTS as a cost-effective approach in 1993 (MOH 2011a:9; WHO 2012b:3). The WHO "Stop TB Strategy" was launched in 2006 with DOTS as its foundation as well as advancing the interests of DOTS (Raviglione & Uplekar 2006:952-955, cited in WHO 2010:15). Pursuing and expanding high quality DOTS is the first component of the "Stop TB Strategy". Standardised treatment, supervision and support of the patient are critical aspects subsumed under DOTS. The DOTS also advocates for the effective supply of drugs and their management as well as monitoring and evaluation of "performance and impact" (WHO 2012b:4) which could be measured through TB treatment outcomes. Services offered under CTBC, are patient centred in that they have the potential to reach even the person in the utmost remote areas to provide TB diagnosis and treatment services.

2.2.1.8 Supervision and patient support

In order to enhance adherence to TB treatment, the WHO DOTS advocates for supervision and support of TB patients during the treatment period. Supervision and support constitute a comprehensive framework that is cognisant of the patient's clinical and social needs.

Patients undergoing TB care are treated as partners in accordance with the "Patients' Charter for TB Care" and they are expected to play an effective role in TB control such as adhering to treatment and improving community health. In their partnership role, patients must be assisted to take their TB treatment regularly till completion. The health care system, however, retains the responsibility for providing adequate and appropriate diagnostic and treatment services and for monitoring the outcomes of TB treatment. Providers of care also have the responsibility to render

appropriate care and to identify and address treatment interruptions. The patient has to be watched taking every dose to ensure that the right drug, the right dose and the right time are observed during the course of TB treatment (MOH 2011a:30; WHO 2010:77). Regular supervision and support also imply TB-related health education and the resolution of identified stumbling blocks that might affect the TB patient's treatment adherence levels. Non-adherence to treatment, adverse reactions to drugs and a declining physical condition of the TB patient should be identified and referred for remedial actions (WHO 2010:77). A Tanzanian study showed that a TB patient does not necessarily have to be observed on a daily basis for adherence to TB treatment. However, these authors did not dispute the fact that there is a need for regular motivation and supervision of TB patients (Mkopi et al 2012:e51828) which could be attained through CTBC.

Adherence to long-term treatment has different facets that could be influenced by the interaction of five sets of factors, namely: patient-related and treatment-related factors, condition-related factors, socio-economic factors, health care team and system-related factors (WHO 2003:11-15 cited in Muture, Keraka, Kimuu, Kabiru, Ombeka & Oguya 2011:696). Socio-economic factors such as inadequate income, financial challenges, lack of social support, low educational status and the inability to afford health services have been associated with poor adherence to TB treatment in SSA (Dodor & Afenyandu 2005:827-832 cited in Muture et al 2011:696). Preventive care services such as CTBC have been put in place to advance DOTS services in order to curb the problems of adherence and enhance treatment outcomes. This study has the potential of identifying factors affecting TB treatment adherence alongside the primary outcome of the study which is factors affecting the uptake of CTBC in the Lobatse district of Botswana.

In order to promote adherence to TB treatment and attain success, the cooperation of the patient has to be solicited. Daily provision of DOT could be done either by the HCW or the treatment supporter through FBTC or CTBC. A patient-centred approach (PCC) is critical in ensuring adherence as it considers the patient's needs such as enhancing access to treatment, convenience, and meeting other needs, such as psychosocial needs. The PCC approach goes a long way in reaching people of low social status and the most at risk groups. Hence it has the potential for reaching the

"unreached" persons providing early diagnosis and rapid treatment services. The WHO also advocates for removal of stumbling blocks affecting adherence to treatment such as irregular supplies of drugs, TB treatment that is not free or not affordable, the lack of incentives for patients and negative attitudes of health care providers (WHO 2010:77-79).

2.2.1.9 Tuberculosis treatment outcomes and targets

Accuracy and timelines are the vital necessities in reporting treatment outcomes and when evaluating TB control efforts, as shown in box 1. The treatment outcome for each patient has to be recorded in the facility and TB register by the HCW at the completion of treatment (MOH 2011a:35). The "Stop TB Partnership" has come up with a quantitative framework for measuring the decline in TB prevalence and mortality rates in order to operationalise the MDG's objectives. Eradication of TB by 2050 is a goal of the "Stop TB Partnership" (MOH 2013b:16).

BOX 1

Definitions of treatment outcomes for patients suffering from drug-susceptible TB

Cured: A patient who was initially sputum smear-positive and who was sputum smear-negative in the last month of treatment and on at least one previous occasion
Completed treatment: A patient who completed treatment but did not meet the criteria for cure or failure. This definition applies to sputum smear-negative patients with pulmonary TB and to patients with extra-pulmonary disease
Died: A patient who died from any cause during TB treatment
Failed: A patient who was initially sputum smear-positive and who remained sputum-smear positive at month five or later during TB treatment
Defaulted: A patient whose treatment was interrupted for two consecutive months or more
Not evaluated: A patient whose TB treatment outcome is unknown
Successfully treated: A patient who was cured or who completed treatment
Cohort: A group of patients in whom TB has been diagnosed, and who were registered for treatment during a specified time period (such as the cohort of new sputum smear-positive cases registered in the calendar year 2010). This group forms the denominator for calculating treatment outcomes. Some countries monitor outcomes among cohorts defined by sputum smear/or culture, and define culture and failure according to the best laboratory evidence available for each patient.

Source: WHO 2012b:38

2.2.1.10 Community-based TB care

Component 5 of the “Stop TB Strategy” is two-pronged because it aims to involve both the patient and the community where the patient assumes TB control (WHO 2012b:4). This implies that health services are being taken to the community, hence making CTBC the cornerstone of DOT.

The TB patient and the community members are expected to be actors (partners) in TB control. Patients who are cured of TB, alongside family members and co-workers of TB patients, FBOs and other community members and CBOs, including NGOs, can play roles in CTBC (MOH 2011b:4; WHO 2010:78). The TB patient plays an active role in selecting the treatment supporter (MOH 2011b:9). A study in China demonstrated that patients, who had doctors as their treatment supporters, had a reduced risk for non-cure as opposed to those without a treatment supporter. Also patients having family members as their treatment supporters had a lower risk of non-cure than patients without treatment supervisors (p=0.07) (Ai, Men, Guo, Zhang, Zhao, Sun, Zhang, He, Van Der Werf & Van Den Hof 2010:112), indicating the importance of treatment support. The essence of CTBC is to make TB treatment accessible, acceptable, affordable, available and convenient to the TB patient (MOH 2011b:9; WHO 2010:75-76). It is important to give health education to both the patient and the treatment supporter to prevent treatment interruptions (MOH 2011b:13).

CTBC has the potential to enhance early diagnosis and treatment of TB and treatment adherence hence preventing MDR TB and XDR TB. Prevention of untreatable or hard to treat TB might reduce TB morbidity and mortality hence improving the quality of life of communities and saving the nation of Botswana and Lobatse DHMT extra health care costs.

Former TB patients are well positioned to stem TB-associated stigma and contribute to the development of community TB control measures as they have first-hand experience with TB (WHO 2010:75). The involvement of cured former TB patients as ambassadors for TB control in the community also goes a long way to remove barriers to TB diagnosis and treatment.

2.3 Health Belief model (HBM)

The HBM is applied to identify possible factors associated with the uptake of CTBC. The HBM is operationalised such that it could provide insights about CTBC and also assist with data analysis. The subheadings that follow were adapted according to the major constructs of the HBM and the modifying factors.

2.3.1 TB patients' beliefs about their susceptibility to default TB treatment

If patients do not perceive the threat to default treatment and not getting cured from TB, they might not see the need to embrace the CTBC concept. The assumption is that people who are knowledgeable about the advantages of CTBC (especially with respect to prevention of defaulting treatment) are likely to embrace the programme and improve treatment outcomes.

According to Botswana's CTBC guidelines every patient has to be taught about both CTBC and FBTC TB treatment options, including the advantages and disadvantages of each DOT option. Advantages of CTBC include those for the patient (such as the likelihood to enhance compliance and treatment outcomes and enhancement of health seeking behaviour by the family of the patient), community and health facility (MOH 2011b:9-11). This is meant to assist the patient to evaluate the personal risk of defaulting treatment and make an informed choice about the DOT option. The concept of CTBC endorses the "Stop TB Strategy" of involving TB patients and their communities in enhancing adherence to TB treatment and it has been found to be the most effective "Stop TB" treatment strategy built upon DOTS (MOH 2011b:6). "DOTS is considered to be a cost-effective, safe and effective mainstream strategy to control TB" (Stop TB country profile 2006; Hane et al 2007:541 cited in Sukumani et al 2012). Patients might have reasons for adopting CTBC (MOH 2011b:11) despite living in close proximity to the health facility as such they should be allowed a DOT option of their choice. Mkopi, Range Amuri, Geubbels, Lwilla, Egwaga, Schulze and Van Leth (2013:101) found that a quarter of the patients in their study in Tanzania were not given any chance to choose a DOT option which could impact negatively on TB treatment outcomes.

2.3.2 TB patients' beliefs about the seriousness of TB, defaulting TB treatment and not getting cured from TB

A study conducted in remote poor areas of the Shaanxi Province in China by Ai et al (2010:112) recommended that family members of TB patients should be adequately trained to be treatment supporters to augment for lack of doctors in remote areas in order to reduce interruptions of TB treatment resulting in non-cure treatment outcomes. The reviewed literature across the globe, including SSA, shows that failure to adhere to TB treatment comes with setbacks such as MDR-TB, resulting in sub-optimal TB cure rates (Werb, Mills, Montaner & Wood 2010:464-469 cited in Mkopi et al 2012:e51828; Naidoo, Peltzer, Louw, Matseke, Mchunu and Tutshana 2013:396). A study on adherence to TB therapy conducted in the United Republic of Tanzania among patients on CTBC showed that non-adherence is rectifiable and cannot with certainty predict poor treatment outcomes (Mkopi et al 2012:e51828). Non-adherence is complex and dynamic with an interplay of a wide spectrum of factors affecting treatment behaviour (Munro, Lewin, Smith, Engel, Atle & Volmink cited, in Cramm; Finkenflügel, Møller & Nieboer 2010:72). One of the contributing factors to non-adherence to TB therapy is HIV/TB co-infection (Naidoo et al 2013:396).

For the reason that non-adherence factors are numerous and unique to individuals, the WHO advocates for PCC such as CTBC which includes volunteers to reach even the utmost rural areas (WHO 2010:78-79). The potential shortcoming of this PCC endeavour is that adherence to treatment cannot be guaranteed when done by someone who is not a HCW (Mkopi et al 2012:e51828). Inadequate implementation of key elements of the PCC by HCWs may impact negatively on adherence of patients and subsequently on TB treatment outcomes (Mkopi et al 2013:101). In line with the WHO guidelines, the CTBC in Botswana attempts to bridge this gap through offering health education to both the patient and the treatment supporter as well as by regular consultative meetings between the treatment supporter and the nurse.

Amongst infectious diseases across the globe, TB remains an important factor affecting morbidity and mortality rates (Lonnroth, Castro, Chakaya, Chauhan & Floyd 2010:1814-1829 cited in Reed, Choi, Lee, Lee, Kim, Park, Lee, Zhan, kang, Hwang, Carroll, Cai, Cho, Barry, Via & Kornfeld 2013 ; Gupta, Wood, Kaplan, Bekker & Lawn 2013). Investigating TB-related morbidity and mortality is not part of this research, should the aetiology for TB-associated morbidity and mortality surface during data collection it shall be captured under chapter four of this study.

There is a need to emphasise to TB patients that the benefits of cure from TB (such as embracing CTBC) outweigh the barriers to adherence to treatment (MOH 211b:13). A study on patients with TB or HIV infection in Burkina Faso identified that being aware of how a disease is transmitted is one of the TB treatment adherence predictors (Méda, Lin, Sombié, Maré, Moresky & Chen 2013). On the contrary the study by Cramm et al (2010:72) found that knowledge is not always a predictor of treatment initiation and adherence, but that health seeking behaviour might also be affected by other factors such as stigma.

The assumption is that when people believe that TB is curable, but that it might have catastrophic consequences with delayed diagnosis and treatment and defaulting treatment, they are more likely to embrace CTBC. However, other contributing factors affecting health seeking behaviour, such as stigma, need to be assessed in this study as well.

2.3.3 The belief that embracing CTBC will significantly reduce the risk of spreading TB and MDR-TB and of treatment failure

The study by Yassin et al (2013:e63174) in Ethiopia has identified a wide scope of potential benefits associated with the adoption of community-based initiatives which include improved accessibility of TB diagnostic and treatment services even to marginalised persons such as women, children and the poor. The community-based approaches resulted in improved treatment outcomes (Yassin et al 2013:e63174).

Free TB services, including diagnosis and treatment services, are offered in the GOB's health facilities and this should be known by patients, families and communities. Kabongo and Mash (2010) conducted a study in the Kweneng district of Botswana and identified CTBC as being complementary to FBTC, not necessarily that it supersedes the latter in terms of enhancing treatment outcomes. The overall success rate for both patients on CTBC and FBTC was 83% which was slightly lower than the WHO target of 85%. Contrary to these findings, Mugisha et al (2013:S93) found that "CTBC offers better treatment outcomes than FTBC care in the Botswana setting", with a success rate of 89.5%.

The two studies by Kabongo and Mash (2010) and Mugisha et al (2013:S93) addressed a common objective of assessing the outcomes of CTBC versus FBTC. However, they used different study designs and populations which could have influenced their study findings. Kabongo and Mash (2010) used mixed methods (of both quantitative and qualitative designs) which had an added advantage of gathering data about patients' experiences of both DOT options, including those who mixed the options. The study managed to enumerate advantages and disadvantages of both DOT options but it was confined to the Kweneng west sub-district. The focus of the study was on the effectiveness of CTBC. Mugisha et al's (2013:S93) study used a cross-sectional cohort analysis design involving 14 districts in Botswana by retrospectively reviewing routinely available data. The focus in Mugisha et al's (2013:S93) study was on treatment outcomes, hence the study could not generate lived experiences of patients concerning their DOT options as the data were collected from the patients' TB registers only.

The common agreement across both studies is that the CTBC is good but contact tracing, which remains a challenge, has to be intensified. There is no evidence in both studies indicating any follow-up visits of the treatment cohorts to establish their true outcomes. Complete and accurate records of routinely recorded data rarely exist and this might have had an impact on both studies' findings with respect to treatment outcomes. The Kabongo and Mash (2010) study, which was evaluating the effectiveness of CTBC, used the routinely available data including patients' cards but also conducted in-depth interviews with different sub-groups that comprised the study population. Varied sub-groups which comprised patients on DOT options,

volunteers and HCWs were likely to provide information on diverse experiences about CTBC and FBTC towards the improvement of CTBC. One of the limitations reported by the authors was that there was “late” introduction of CTBC in the Kweneng sub-district which is likely to account for uneven enrolments in DOT options. One of the recommendations of the study was that research should be conducted to explore the benefits of allowing patients to choose their own DOT options.

This study has the potential of identifying the benefits of both options (FBTC and CTBC) during conducting structured interviews on factors affecting the uptake of CTBC. There are many factors which might have led to the preference of a given DOT option, such as convenient access. However, it is important to identify factors that might influence the uptake of CTBC in Lobatse. If these factors could be identified and addressed, TB morbidity and mortality rates might decline in this area. According to Botswana’s MOH, limited operational CTBC research has been done in Botswana implying that the effectiveness of CTBC remains largely unknown in this country (MOH 2013a:16). The assumption is that when patients perceive the benefits of CTBC with respect to early diagnosis and treatment, as convenient, cost effective, acceptable and available, they are more likely to participate in the programme than patients who do not have this information.

2.3.4 TB patients’ beliefs about barriers and enablers influencing their participation in the CTBC programme

Mkopi et al (2013:101) concluded that in order for PCC to be effective, there is a need for HCWs to be trained regularly and to be effectively supervised in a supportive milieu. HCWs might sometimes pose barriers to the adoption of patients’ health seeking behaviours such as portraying negative attitudes towards CTBC (MOH 2011b:8, MOH 2013a:12). These findings are corroborated by Moser et al (2006:176 cited in Ncho & Wright 2013) who reported that negative attitudes of HCWs have been found to delay health seeking behaviours. Delays in health seeking behaviours such as late diagnosis of TB has been associated with both

patient-related factors (such as a lack of knowledge) and health care-related factors (Belay, Bjune, Ameni & Abebe 2012:369; Saifodine et al 2013:559). A study conducted in Botswana reported that perceived barriers to TB control included irregular laboratory and X-Ray services at clinic level (MOH 2011c:36-37).

Several studies have identified stigma as the main barrier to health seeking behaviour, delaying early diagnosis and treatment of TB (Cramm et al 2010:72; Dias, De Oliveira, Turato & De Figueiredo 2013:595; Murray, Bond, Marais, Godfrey-Faussett, Ayles & Beyers 2012; Uwimana et al 2012:233). However, stigma might not always impact on health seeking behaviours. A South African study found that most patients utilised the clinics closest to their homes for TB and HIV services, indicating that stigma did not impact on their decisions about the place of health care utilisation (Chimbindi et al 2013). Their chances of being recognised by family members and friends at these clinics did not deter them from visiting the nearest clinics. These patients demonstrated an element of self-efficacy. “The term stigma does not imply that a condition is immoral or bad, only that it is commonly viewed that way” (Weitz 2013:138). Similarly, Bowling (2009:31-32) says stigma is the resultant effect of the way a society reacts in respect of a health condition (TB) which manifests through labelling of people as deviants hence, damaging their identity. TB is further stigmatised by the advent of HIV that has led to its resurgence in SSA, including Botswana, and reversing the gains that had been made on controlling and eliminating TB. A study, conducted in the Eastern Cape Province of South Africa, a place disadvantaged by poverty and unemployment, reported that respondents had misconceptions that everyone with TB infection would also get HIV eventually. “[A] full 95% of respondents believe[d] people with TB tend to hide their TB status because they are afraid of what others may say” (Cramm et al 2010:72). The results are consistent with the Botswana TB/HIV 2011 KAP study’s findings in which some people in certain areas of the community reported “self-stigma” to the extent that they did not want to be associated with taking TB treatment and they associated TB and/or HIV with promiscuity. However, in the same study 83.5% of the interviewed households disagreed with the statement that “All TB patients also have HIV”, implying that they did not necessarily regard all TB patients as being HIV-positive (MOH 2011c:27, 30).

Some people manage stigma through confronting its basis (Weitz 2013:138). Patients have to serve as ambassadors in the fight against TB and HIV-associated stigma and their role can be more conspicuous in CTBC. Enshrined in the patients' charter are patients' rights, responsibilities and obligations geared towards "Stop TB" initiatives. These aspects include the right to adhere to treatment and the right to contribute to community health through health education. People with tuberculosis have first-hand experience with TB. Hence they could help to effectively reduce stigma in the community and enhance treatment completion of other patients (MOH 2011a:117-118; WHO 2010:75).

2.3.5 Health education offered to patients and their families by HCWs

Srinivasan (2009 cited in Ncho & Wright 2013) asserts that insufficient knowledge, concerning treatment options, might interfere with health seeking behaviours. A cross-sectional study in Tanzania by Mkopi et al (2013:101) showed that proper health education of TB patients and reliable treatment supporters and understanding the treatment plan, positively affected treatment completions in the CTBC programme. These findings indicate that adequate health education, and quality treatment supporters can serve as reminders (cues to action) about adopting desired health behaviours such as CTBC that influence treatment outcomes. The presence of volunteers in the community such as family members or co-workers might influence participation of both active TB patients and former TB patients in CTBC services. Patients' adequate TB knowledge cannot be overemphasised as it guides decision making towards health behaviours. Saifodine et al (2013:559) emphasised the need for improved TB knowledge to reduce patients' delays in seeking health care and in dispelling misconceptions.

Having knowledge about the signs and symptoms and transmission of TB enables the community to embrace health seeking behaviours thus curtailing the spread of TB. Such data are vital in informing policy making concerning information, education and communication modalities aimed at TB control (Sreeramareddy, Kumar & Arokiasamy 2013:16).

2.3.6 Patients' motivation to achieve TB treatment cure outcomes

Self-efficacy is "the belief in one's ability to perform a certain task, self-efficacy is a key construct in understanding and modifying health behaviours" (Bandura 1986, 1995 cited in LoBiondo-Wood & Haber 2010:485). A study in the Netherlands has identified "a lack of patients' motivation to make lifestyle changes" (Geense, Van De Glind, Visscher & Van Achterberg 2013) as one of the barriers influencing health promotion activities. This might be the case with the adoption of CTBC. Health promotion, in respect of TB, is achieved through the advocacy, communication and social mobilisation strategy (ACSM) in Botswana with the aim of building "community efficacy to combat TB" (MOH 2013a:8). In this study's context, self-efficacy for health behaviours is defined by the partnership role played by patients in terms of TB control. The patients' charter for TB care states that patients are active members in TB care services with respect to information sharing with the health provider, observing treatment and educating the community, thereby reducing TB-associated stigma (WHO 2012:75). Participation of TB patients in CTBC in the context of this study is considered as confidence to adhere to treatment and contribute to early TB diagnosis and treatment in the community.

2.3.7 Modifying factors

Modifying factors of the beliefs include patients' satisfaction levels with the services, demographic variables, psychosocial variables, and structural factors that might influence TB patients to choose a DOT option. Several studies have revealed that diverse variables might impact on health seeking behaviours of individuals. A Chinese systematic review and meta-analysis study found that the major determinants of patients' diagnostic delays encompassed socio-economic and demographic factors. Findings were mainly blamed on low educational status, poverty, stigma and poor TB knowledge. Health facility factors included being under resourced, lack of expertise and geographical barriers (Li, Ehiri, Tang, Li, Bian, Lin, Marshall & Cao 2013:156). Botswana's national health policy also attests to the fact that varied socio-economic needs impact on one's health (MOH 2011e:10).

2.3.7.1 Patients' satisfaction with health care services

Mkopi et al (2012: e51828) concluded that regular treatment supplies, meticulous identification of supporters and close proximity to the patients' residences are critically important in adherence of patients receiving community DOT. Treatment supporters might include family members or any one chosen and accepted by the patient (MOH 2011b:9). The 2011 KAP study in Botswana identified inconsistencies in service provision such as irregular diagnostic services and TB treatment shortages as potential impediments to the control of TB (MOH 2011c:36-37). These findings might apply in Lobatse. Secure drug supplies, access to diagnostic services and effective reporting systems are pivotal to the success of CTBC in terms of expanding access (WHO 2010:76). The smooth running of CTBC is an indicator of patient satisfaction that can influence its uptake in the community. Integral to DOTS is its sensitivity and supportive role to the needs of the patient indicated by the PCC approach (WHO 2010:78). Negative attitudes of both the HCWs and the volunteers have been implicated in low uptakes of CTBC in Botswana (MOH 2013a:12; MOH 2011c:8). Another way of enhancing patients' satisfaction is through observance of the patients' charter. The charter includes "the right to care, dignity, information, privacy, food supplements and/or other types of support and incentives, if needed" (WHO 2010:75). The theory of self-efficacy advocates that self-determination and self-motivation (Bowling 2009:44) enable individuals to embrace health seeking behaviours such as CTBC.

2.3.7.2 Demographic variables

A cross-sectional household survey in India, comprising 198 718 participants with a response rate of 91.6%, associated knowledge about TB transmission with being male, being a Hindu or Muslim, and listening to the radio (Sreeramareddy et al 2013:16). Knowledge informs decision making hence demographic factors such as gender play an important role in acquiring knowledge. However, a South African study did not show any discrimination concerning attitudes and perceptions across age groups or educational levels indicating commonality of perceptions and attitudes across the study population. The study further showed that knowledge about

TB and demographic variables such as age and level of education were superseded by predominant attitudes and perceptions such as stigmatisation of TB and considering TB to be an African disease in the studied community (Cramm et al 2010:72).

- **Age**

A study conducted in China indicated that age did not have any relationship with patients' delays in seeking diagnosis and treatment. A patient aged 60 or older was not at a greater risk of delay than younger persons (Li et al 2013:156). A Nigerian study showed that awareness of TB signs increased with age, implying that lifetime experiences increased patients' TB knowledge (Desalu, Adeoti, Fadeyi, Salami, Fawibe & Oyedepo 2013). In a conflicting report, adherence to treatment was likely to occur amongst the young patients. In Tanzania , the probability of adherence to TB treatment by patients in the 35-44 year age group was lower than in the patients aged 25 or younger (OR: 0.77; 95%CI: 0.59-0.99;p<0.049) (Mkopi et al 2012:e51828). A study conducted in Korea "to evaluate the differences in clinical characteristics and treatment outcomes between older and younger tuberculosis (TB) patients" found that there was no difference in treatment success and adverse drug reaction rates between the old and the young patients (Kwon, Chi, Oh, Kim, Kim, Lim, & Kim 2013:121).

- **Gender**

Gender might influence one's health seeking behaviours. A study in China reported that the probability of female patients' delay in health seeking behaviours was higher than among male patients (Li et al 2013:156). In Indonesia, care seeking behaviour among individuals with TB symptoms was associated with being female and presenting with many symptoms. The delay in seeking medical help was identified amongst men, students and the self-employed (Ahmad, Richardus & De Vlas 2013:51-57). A study in Tanzania showed that the probability of adherence to treatment by females was double that of their male counterparts (OR:2.04; 95%CI:1.24-3.02;=0.003) (Mkopi 2012:e51828). In another study conducted in South-Africa, being male was associated with non-adherence to TB treatment (Naidoo et al 2013:396).

These findings generally imply that gender is associated with decisions about health seeking behaviour such as adopting CTBC. This study is yet to show whether gender had any impact on the uptake of CTBC in Lobatse.

- **Educational status**

The findings of a study investigating awareness of warning signs, risk factors, and TB treatment among urban Nigerians presented predictors of awareness of TB warning sign as: "age(r+0.12), higher family income(r+0.10), higher level of education (r+0.10) and belonging to Christian faith (r+0.11)" (Desalu et al 2013). Other studies have associated educational level, with socio-economic status, patients' TB knowledge, cultural beliefs and decision making such as delays in seeking help. In Mozambique, some groups who were disadvantaged in terms of social status, education, and employment experienced delays in terms of seeking health care (Saifodine 2013:559). Findings show that educational status plays a decisive role in health seeking behaviour and might impact on someone's social status and other economic dimensions. Poor social status has been attributed to poor adherence to treatment including TB treatment and ART (Naidoo et al 2013:396). The WHO has recommended the use of incentives for TB patients such as food rations (WHO 2010:79) in an attempt to bridge the socio-economic gap and improve treatment adherence.

- **Marital status**

In the reviewed literature there was no record of the relationship between marital status and health seeking behaviour. Should any information in relation to marital status crop up during data collection, it shall be captured in chapter four.

- **Psychosocial variables**

The provision of pyscho-social support by the community, including former TB patients, remains a critical aspect during the course of TB treatment (MOH 2011c:36; WHO 2010:76&78). The aim of Botswana's 2013-2017 National TB strategic framework "is to reduce the morbidity, mortality and psycho-socio-economic burden

and impact associated with TB, by 2017" (MOH 2011c:14). In agreement, Naidoo et al (2013:396) concluded that there is a need for an all-encompassing programme to address the needs of TB patients with or without HIV, including psychosocial counselling, poverty, alcohol abuse and tobacco use. This conclusion follows findings in the same study that psychosocial aspects such as poverty, HIV status of one's partner, co-morbidity, being a high risk for alcohol-abuse are critical predictors of non-adherence and HIV treatment. These studies' findings indicate that psychosocial needs of TB patients might influence their decision making with respect to health seeking behaviours and might apply to factors affecting the uptake of CTBC in Lobatse. The assumption is supported by Mavhu et al (2010 cited in Murray et al 2012) that HIV/AIDS has a negative social impact on TB in terms of affecting patient behaviour. Provision of psychosocial support (which is central to CTBC) remains one of the vital necessities to reaching out to the community in terms of TB control (MOH 2011c:36). In agreement Dias et al (2013:595) concluded that TB treatment affects patients' psychosocial wellbeing in different ways hence health workers have to explore mitigating factors and facilitate sharing of the patients' anxiety, suffering and biological and psychological changes. Peer pressure such as use of ART "adherence" clubs has positively influenced health seeking behaviour in Malawi (Luque-Fernandez, Cutsem, Goemaere, Hilderbrand, Schomaker, Mantangana, Mathee, Dubula, Ford, Hernàn & Boulle 2013). The CTBC guidelines in Botswana, in line with the WHO "Stop TB Strategy", recommend patient support groups and participation of former TB patients as role models in the CTBC programme (MOH 2011b:14; MOH 2013a:6-7).

- **Cultural beliefs**

Global studies, including SSA and Botswana, have identified cultural beliefs as one of the impediments to early TB diagnosis and treatment and to TB treatment adherence. There also is a noted interplay between cultural beliefs and socio-economic status which might influence health seeking behaviour. This assumption is supported by Ncho and Wright's (2013) findings that some family members had to calculate the financial cost before they could decide whether to visit the health facility or the traditional practitioner. Storla et al (2008 cited in Murray et al 2012) agree that

a broad spectrum of social factors such as poverty, preference for traditional practitioners, low educational status, low awareness of TB and other related factors are the main contributing factors to delay the utilisation of “a well-run treatment service” that observes the WHO DOTS strategies. These findings imply that socio-economic and cultural factors may cause delays in adopting CTBC, which might apply to the CTBC in the Lobatse district.

- **Structural factors**

The WHO recommends structural initiatives such as concomitant treatment of HIV and patient and peer support groups to reduce stigma associated with TB. People with TB/HIV co-infection have an increased risk of mortality (WHO 2012b:79). In response to the co-epidemics of TB and HIV, the WHO launched the monitoring of “the implementation and expansion of collaborative TB/HIV activities in 2004” (WHO 2012b:75). In line with the WHO guidelines TB/HIV activities in Botswana are integrated at community level even though still on a small scale (MOH 2013b:12-13). The Botswana TB ACSM Strategy 2013-2017 has been launched in 2013 in an attempt to provide a framework for ACSM interventions related to TB (MOH 2013a:iv) which might scale up TB/HIV collaborative services and bridge TB knowledge gaps. The Botswana 2011 KAP study identified key knowledge gaps on TB transmission amongst TB patients despite the fact that they could successfully identify signs and symptoms associated with TB: for example 85.7% of patients could at least identify one major symptom of TB (MOH 2011c:20-21). These findings are consistent with studies conducted elsewhere. Results from a nation-wide cross-sectional household survey in India showed that only 29.7% of the study’s respondents had no misconceptions about TB transmission (Sreeramareddy et al 2013).

Botswana’s Minister for Presidential Affairs and Public Administration, Honourable Masisi, in his official opening speech during the 2011 World TB Commemoration Day, mentioned that CTBC is one of the cornerstones of TB control in Botswana. However, the challenge is that there has been a lack of awareness of CTBC among the TB patients contributing to its low uptake (Masisi 2011). Inadequate knowledge

about TB and CTBC, concerning patients in Lobatse, is an assumption underlying this study. The Kabongo and Mash (2010) study, conducted in the Kweneng west sub-district of Botswana, indicated organisational issues including inadequate knowledge of patients about the existence of CTBC. The findings of the same study also revealed knowledge gaps of CTBC amongst volunteers. The recommendations to that effect were that volunteers might benefit from continuous support in the form of training and HCWs' support, incentives and basic equipment. According to Botswana's CTBC guidelines, Namibia which is a relatively small population, just like that of Botswana, has been found to be performing very well in respect of treatment success. Factors contributing to its success include effective pathways including a multi-sectoral approach, such as the use of family members as treatment supporters, high levels of community involvement and community support organisation, paid community health promoters and urban DOT points (MOH 2011b:8). Botswana has embraced some of these initiatives such as urban DOT points (MOH 2012:23).

2.4 SUMMARY

The literature review covered the overview of TB and studies that could possibly lead to the identification of factors affecting the uptake of CTBC in Lobatse. Studies were mainly considered according to their relevance to the topic of interest in different countries with high burden of TB and HIV. The presentation of the literature review was based on the major constructs of the HBM model and its modifying factors. Factors identified in the review that are likely to affect CTBC include patient-related factors, socio-cultural factors, economic factors, structural factors and health care system-related factors.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

Research methodology implies “the process of research” (Creswell & Clark 2011:41). In this section the following aspects are addressed: study design, research methods, data collection methods, data analysis, ethical considerations, scope and limitations of the study. The study adopted a quantitative research methodology, and data were collected through structured face-to-face interviews conducted by four research assistants and the researcher using a self-designed structured interview schedule (see Annexure 3).

3.2 STUDY DESIGN

The researcher adopted a quantitative descriptive cross-sectional study design to assess quantifiable factors affecting the uptake of CTBC as experienced by patients in Lobatse. The researcher aims at selection of a study design that yields both internal and external validity (LoBiondo-Wood & Haber 2010:170).

3.2.1 Internal validity

Internal validity refers to the appropriate selection of a study population and absence of errors in measurement in the study (Friis & Sellers 2009:386). In this study, the researcher ensured that the questions in the tool addressed the study objectives and the respondents interviewed met the inclusion criteria. The statistician and the study’s supervisor were requested to ensure that every item in the structured interview schedule addressed the objectives of the study. The statistician ensured that no errors of measurement occurred.

3.2.2 External validity

Friis and Sellers (2009:389) defined external validity as the extent to which the results of a study can be generalised "beyond a set of observations to some universal statement". In this study generalisation of the results might be limited only to the TB patients in Lobatse who are on DOT in government facilities, as this study was done to fulfil the requirements of a dissertation of limited scope.

3.2.3 Quantitative design

Factors affecting the uptake of CTBC were summarised and described by using the Statistical Package for Social Sciences (SPSS) version 21. Quantification enables aggregation, comparison and summarisation of data (Babbie 2013:25).

3.2.4 Descriptive study

Factors hindering or facilitating the uptake of CTBC, as reported by patients in Lobatse, were assessed, described and categorised. The researcher wanted to assess whether limited knowledge about CTBC could be a factor influencing the patients' utilisation of CTBC services in Lobatse.

3.2.5 Cross-sectional study

A cross-section of TB patients (N=101) aged 21-60 years, who were registered for DOT across the six GOB health facilities implementing CTBC guidelines, were interviewed face-to-face by using a structured interview schedule about factors affecting their uptake of CTBC in Lobatse.

Each respondent was interviewed only once. The researcher and the four research assistants managed to conduct face-to-face interviews with all 101 accessible TB patients within 16 days, from 8th to 23rd November 2013.

3.2.6 Research setting

The research was conducted at participating GOB's clinics including: Motswedi Clinic , Peleng Central Clinic, Peleng East Clinic, Tsopeng Clinic, Wood Hall Clinic and Athlone Hospital Out Patients' Department (OPD) in Lobatse. These GOB health care facilities provide both facility DOT and CTBC. Other respondents who were registered for DOT at all the five council clinics and Athlone Hospital's OPD were met at their homes or any neutral places convenient for them. Lobatse is an urban area with people of low socio-economic status concentrated at Peleng and Wood Hall neighbourhoods, where four of the five GOB's clinics are located.

For reporting purposes to the MOH of Botswana, GOB's health facilities offering TB services in Lobatse are captured under Lobatse district, excluding health care facilities within the catchment area because of logistic reasons. In 2011, Lobatse's population was estimated to be 29 007 according to the 2011 Central Statistics Office (CSO 2011).

The 2001-2013 population projections of Botswana estimated Lobatse's 2011 population at 31 075 and the 2013 population at 31 835 (CSO 2005). According to the 2001-2013 population projections, there is a significant decline in the population of Lobatse. The 2013 population is likely to decrease because some institutions were closing down and relocating to locations outside Lobatse such as Lobatse Tiles and the Botswana High Court of Justice. Other than regular transfers, completion of studies and quest for employment, this contributes to high mobility of people in and out of Lobatse. The Botswana Meat Commission also has significantly reduced its staff numbers.

3.3 RESEARCH METHODS

This section covers the steps followed in data collection for this study and includes population, target population, sampling frame, accessible population, advocacy, sampling technique and sample size determination.

3.3.1 Population

The population comprises the total aggregate of elements of the researcher's interest and it is composed of two groups. It comprises the target population and the accessible population (Burns & Grove 2009:344; Polit & Beck 2012:273-274). A sample is selected from a study population as its subset (De Vos, Strydom, Fouché & Delport 2011:223).

The population comprised 377 TB patients in Lobatse who were registered for DOT at the GBO's health facilities where CTBC guidelines had been implemented from January 2011 till August 2013. The study population had to be on TB treatment for at least three weeks as it is expected that they would have been taught about the CTBC option according to 2011 CTBC guidelines by that time (data obtained from Lobatse's TB register, see Annexure 1).

3.3.2 Target population

The target population implies the total number of respondents to which the researcher wants to generalise the findings of the study and who meet the eligibility criteria to participate in the study (Bothma, Greef & Mulaudzi 2010:124; Burns & Grove 2009:343-344; Polit & Beck 2012:274). The target population for this study were all TB patients in Lobatse who were registered for DOT at the GOB's health facilities from January 2011 to August 2013 (N=377), excluding those patients in the selected three cohorts who died, transferred, were not evaluated and those who were younger than 21 and older than 64 years (n=154) at the time of data collection. This implies that the target population size was estimated by determining that the total population comprised 377 persons and subtracting those 154 who did not meet the inclusion criteria, yielding a total of 223 persons (377-154=223).

3.3.3 Sampling frame

A sampling frame comprises all eligible TB patients residing in Lobatse who were registered for DOT at the GOB clinics in Lobatse's and at Athlone Hospital's OPD between January 2011 and August 2013 and who were 21-64 years old at the time

of the study. They were 223 (N=223), according to statistics supplied by the TB co-ordinator and as calculated in section 3.3.2.

3.3.4 Accessible population

The accessible population (N=223) comprised eligible TB patients residing in Lobatse who registered for DOT from Lobatse GOB clinics and Athlone Hospital's OPD between 1 January 2011 and 31 August 2013 and were 21-60 years old. The target population was accessible within Lobatse's geographical area. The researcher and four research assistants used their own cars to reach the respondents during data collection with the help of the information obtained from the health facilities about patients' particulars. The research team carried the list of the target group with them in case some of the respondents might need to be replaced when they could not be found or reached on the contact numbers.

3.3.5 Advocacy

The creation of awareness about the research started during the week of the 1st November 2013 and continued throughout the data collection period. The research team members were introduced to the prospective respondents (for familiarisation and for giving consent) by the primary care givers at the participating health facilities and at patients' homes.

Prior to meeting the research team members, the potential respondents were made aware of the study by the nurses, TB focal persons, health educators, health education assistants (HEAs), health promoters, and treatment supporters (primary care givers) as patients came for their daily DOT and routine visits to these clinics. Those patients who had completed treatment were informed by the TB focal persons and health facility staff as well as DOT supporters (mostly family members) about their possible involvement in the study. Community volunteers could not assist as they were involved in a measles campaign during this phase of data collection. Prospective respondents who did not have phone numbers were followed up by the health education assistants. These potential respondents were briefed about the

purpose of the study by the primary care giver which was later reinforced by a research team member.

3.3.6 Sampling technique

The researcher used systematic random sampling to select patients who were registered at the GOB's health care facilities where Botswana's CTBC policy guidelines were implemented. Systematic random sampling was used to select respondents from the sampling frame (N=223), Lobatse ETR, that is, the target population of TB patients in Lobatse who were registered for DOT in the GOB's health facilities from January 2011 to August 2013. In this method, each respondent had a chance to be selected into the sample at predetermined intervals (Polit & Beck 2012:282-283). In order to determine the sample size (n=144 as calculated in section 3.3.7), the (accessible) population (N=223) was accepted. The sampling interval (k) was determined by dividing N by n (K= $\frac{N}{n}$), hence K= 1.5486. Therefore, every 2nd TB patient in the accessible population was selected, starting at patient number three on the list, which means odd numbers such as 3, 5, and 7 were used. This sampling interval allowed the researcher to get only 111 patients from the sampling frame. In order to reach the required sample, the sampling frame was revisited and using even numbers such as 2, 4, 6, the 33 patients were added to make a sample size of 144 patients.

The research team carried the list of the target group with them in case some of the respondents needed to be replaced when they could not be found or reached on the contact numbers. Only (N=101) TB patients meeting the selection criteria were interviewed on a face-to-face basis. The sample size of (N=144) TB patients could not be reached due to deaths, mental illness, refusal to participate in the study, patients receiving streptomycin injections at clinics and inaccessible phone numbers on four separate attempts. Other reasons included the unavailability of contacts, wrong residential addresses, relocations to unknown addresses, patients being ill and hospitalised, and not being found on four separate visits as these homes had seemingly been abandoned (see table 3.1).

This discussion means that 70.1% of the prospective respondents were interviewed. According to Groves and Couper (1998 cited in Bowling 2009:289), a response rate below 60% is generally unacceptable. However a response rate is considered good at 75% or more (Bowling 2009:289). It was apparent during data collection that 29.7% (n=30) of the patients had come from neighbouring villages such as Digawana to stay in Lobatse during the recuperation period to be nearer to the hospital and that they left the area once they had been cured or had completed their treatment. It was also apparent that 80.2 % (n=81) of the patients had rented homes indicating a likelihood that they could move elsewhere. As many as 33.3% (n=27) of those 81 who rented accommodation stayed at crowded places where up to five people rented a room in one house. Being accompanied by a health education assistant in some instances helped to identify homes of people who had agreed to be interviewed. It was difficult to find house numbers because generally house numbers in Lobatse are not ordered according to streets. Some houses had no numbers, some had old (previously assigned) numbers whilst others had new (currently assigned) numbers. The HEAs were helpful as they were familiar with the neighbourhoods around their clinics. Generally TB focal persons did not know patients who had completed treatment because of job rotations that occurred in April 2013 between Athlone Hospital and the five clinics participating in the study. These staff movements in health facilities follow relocations of clinics from the Ministry of Local Government to the MOH on the 1st of April 2010 (MOH 2010c:10).

Where patients had no phone numbers, the TB focal persons also could not help to trace such houses. Moreover 21.8% (n=22) of the respondents stayed at more than one house within Lobatse, adding to the challenges of tracing the respondents. Respondents scheduled their interviews from 6am to 8pm. Ten (9.9%) respondents had to reschedule their interviews because their relatives indicated that they had gone drinking early in the morning of their scheduled interviews. According to the Yamane formula, the researcher has a 95% confidence level that a sample size of 65-75% (70.1% in the case of this study) respondents would be representative of the population being studied (Mora & Kloet 2010).

Patients were introduced to researchers by phone where necessary. The research team consulted or contacted each respondent on the sampling frame to make an

appointment for an interview, if the patient agreed to be interviewed. The patient was requested to identify a suitable date and time and place for the interview, with an option to be interviewed at the participating health facilities. This was deemed essential as some patients might have preferred not to be interviewed at their homes as their TB status could get disclosed by home visits from interviewers. A total of 91 (90.1%) respondents preferred to be interviewed at their homes, three (3.0%) preferred to be interviewed at their work places during their lunch hours and only seven (6.9%) were interviewed at the health facilities, sometimes even after clinic hours.

Cognitively impaired patients, the very ill, the elderly and mentally challenged persons were excluded from the study as they might not have been able to provide objective responses. In this study's context elderly persons (≥65 years according to Lobatse's ETR) were excluded from the study as age might impact on their well-being. The very ill might experience exhaustion due to TB disease and TB-related morbidity. The researcher was available at each study site prior to and during data collection and was able to identify selected respondents falling into these categories that should not be interviewed. The four research assistants helped to identify persons who should not be interviewed. In such cases, additional respondents were selected from the target population, following the same sampling technique as used to select the initial sample.

3.3.7 Sample size determination

To select the sample size, Yamane's formula was used in order to estimate the minimal population size with a 95% confidence interval and a 5% level of precision. Therefore the sample was calculated as follows:

$n = N/ 1+N (e)^2$

where N is the population, n being the sample size and e level of precision taken at 0.05 as shown by Mora and Kloet (2010).

Hence $n = 223/ (1+223(0.05)^2 = 143.1782$

Hence n = 144

TABLE 3.1 REASONS FOR NOT INTERVIEWING 144 RESPONDENTS

Reasons	Frequency	%
Deaths	4	3.3
Mental illness	5	4.1
Declining to participate in the study	4	3.3
Patients receiving streptomycin injections at clinics	3	2.5
Inaccessible phone numbers after four attempts	6	4.9
Unavailability of contacts	8	6.6
Wrong residential addresses	14	11.5
Relocations to unknown addresses	65	53.3
Patients being too ill and/or being hospitalised	3	2.5
Patients not found on four separate visits	10	8.2
Total	**122**	**100.2**

Despite repeated efforts to recruit respondents to achieve the aim of interviewing 144 patients, only 101 could be interviewed.

3.4 DATA COLLECTION METHOD

The discussion on data collection methods include the data collection instrument, reliability and validity of the data collection instrument, and administration of the data collection instrument.

3.4.1 The data collection instrument

The data collection instrument was a structured interview schedule, based on the study's objectives, literature reviewed and the CTBC policy of Botswana. (Please find interview schedule in English and in Setswana, attached as Annexure 3). The instrument was compiled in English and translated into Setswana by the researcher. The four research assistants agreed that the English-Setswana translations conveyed the same meaning for every item/question. Thereafter a Setswana-English translator verified that the meanings were the same in both languages.

3.4.1.1 Reliability

A good research design should be valid and be able to produce reliable results. Babbie (2013:188) defines reliability as the ability of the technique to produce

consistent results when repeated several times on the same object. To ensure reliability, the tool was pre-tested at Bontleng Clinic in Gaborone on nine patients who met the study's inclusion criteria and who were willing to be interviewed. These patients were excluded from participation in the actual study. Each research assistant conducted two interviews and the researcher conducted one interview. The pre-test helped the researcher to check the relevance of the questions, to estimate the time required for interviews during the actual study, check consistency of the responses and also to estimate the non-response rate. No comprehension challenges were encountered during the pre-test interviews, because the four research assistants had access to both the English and the Setswana versions of the interview schedule and could translate any statement. Approximately 30 minutes were required to complete each interview.

The statistician compiled Cronbach alpha coefficients to ensure that there was equivalence of the items. Cronbach alpha coefficients were 0.890 indicating internal consistency of the instrument. The instrument could be considered to have internal consistency if the Cronbach alpha coefficients exceeded 0.70 (LoBiondo-Wood & Haber 2010:299).

The inter-rater reliability coefficient of the four research assistants could not be determined because the same patients was never interviewed more than once. However, the statistician did not identify any major discrepancies in the information obtained by the four interviewers during the pre-test nor during the actual data analysis. The researcher was always available during the data collection phase and checked every completed interview schedule to address potential shortcomings with the interviewer.

3.4.1.2 Validity

Validity shows to which extent a measure accurately measures the concept it is supposed to measure (Babbie 2013:191). To ensure this, the items of the questionnaire were developed in relation to the research objectives so that these questions should provide answers to the set objectives after data collection. Criterion-related validity was assessed by five experts (TB focal persons), working at

five different health care facilities, who ensured that every item was relevant to the TB policy implemented at the clinic. According to Babbie (2013:191) criterion-related validity is the "… degree to which a measure relates to some external criterion". A content validity index (CVI) was compiled by requesting these five persons to indicate to what extent they considered every item to be directly relevant to the TB policy implemented at their clinic on a 5-point scale. In each case 1 indicated no relevance and 5 indicated absolute relevance. The five experts rated 30 items starting from question 9-29 in section B. Eighteen items scored a CVI of 5, 3 items scored a CVI of 4.8, 8 items scored a CVI of 4.6 and only 1 item had a CVI of 4.4 hence no item was discarded because no item scored below a CVI of 4. On the overall the instrument had a CVI of 97.6%, assuring the researcher that the instrument accurately reflects the concept (LoBiondo-Wood & Haber 2010:289).

The interview schedule comprised the following sections:

SECTION A: Biographical data of the respondents

SECTION B: TB-related knowledge of the respondents

SECTION C: CTBC knowledge and attitudes of the respondents

SECTION D: DOT option selected by the respondents

SECTION E: TB patients' responsibilities including adherence to treatment

3.4.4 Administering the data collection instrument

The structured interview schedule was pre-tested on nine TB patients registered at Bontleng clinic in Gaborone and they were excluded from participation in the actual study.

The researcher obtained space at the participating clinics so that the four research assistants could interview patients at these clinics, if the respondent preferred this interview venue. Otherwise interviews were conducted in patients' homes or wherever patients preferred the interviews to be conducted and at a time suitable to each individual respondent.

3.4.4.1 Research assistants

Three lecturers from the Institute of Health Sciences, Lobatse (IHS-L) and a psychology graduate were trained as research assistants to conduct the structured interviews. The researcher also conducted some interviews, amounting to five interviewers. The researcher trained the four research assistants to conduct the interviews and to adhere to ethical principles. They were conversant with research procedures. The research assistants had to explain the purpose of the study, the importance of participating in the study, and the voluntary nature of such participation to the respondents, and obtain informed consent (by signature or finger print) before any interview could commence. Questions were clarified where necessary.

Interviews were conducted in both Setswana and English depending on the language that each respondent preferred. After every interview, the researcher and research assistant checked if all the questions had been answered so that missing items could be addressed before the respondent left the interview site. No respondent was coerced to answer any specific question, explaining why some items remained incomplete.

Each patient's statements were recorded verbatim in English or Setswana as all interviewers were fully bilingual. The researcher translated the Setswana statements into English and a Setswana-English translator checked that the exact meaning was conveyed in the English translations. (A letter verifying the translator's inputs is attached as Annexure 8).

3.5 DATA ANALYSIS

A statistician helped with the data management and analysis. Quantitative data were captured and analysed using the SPSS version 21. A decision was taken to recode the variables on age, educational status, religion, employment and marital status. This decision was informed by the fact that in the use of univariate analysis, some of the categories for educational status, religion and marital status came out empty (with no frequencies) which would render the chi-squares invalid. Age groups of the

respondents were categorised into two groups, age group 21-35 and age group 36 and older. The educational status of the respondents was similarly allocated into two groups, primary and lower and secondary and higher. As for religion, the respondents were categorised into Christians and non-Christians. The employment status of the respondents was categorised into the employed and unemployed, whereas the marital status was categorised into married and not married.

Descriptive statistics were calculated to present data and analysis tools included frequency tables, cross tabulations and custom tables. Independent t-tests were used to check if knowledge about TB varied with gender. The Pearson Chi-square tests were performed to establish relationships between enrolment on the programme and perceptions about the programme. Univariate logistic regression models were used and odds ratios together with their confidence intervals are reported with participation in the CTBC programme (binary-variable) used as an outcome. A significance level of 0.05 was adopted for this study's findings.

The dependent variables under consideration included knowledge about identification of TB, signs and symptoms of TB, TB treatment, TB/HIV co-infection and knowledge and attitudes towards CTBC.

In establishing the level of knowledge, a score of 1 was allocated to a correct response and a score of 0 to an incorrect response in each of the variables that fall under each knowledge variable. All the scores were summed and calculated and means were used. Average scores at or above 50% of the total possible average mean score on TB knowledge were accepted as good knowledge levels and mean scores below average were regarded as having poor knowledge levels. Traditional beliefs about causes of TB were also computed through mean scores of respondents. A similar system for awarding scores and computing mean scores in this section was adopted for assessing CTBC support by patients participating in CTBC. Knowledge variables were constructed from questions 14a to 18j and support questions were constructed from question 27a to 27e (see table 3.2).

TABLE 3.2: CONSTRUCTION OF KNOWLEDGE AND SUPPORT VARIABLES

Variable	Construction
Knowledge about TB (Max= 9)	Sum (Q14a up to Q14i)
Knowledge about signs/symptoms (Max= 5)	Sum (Q15a up to Q15e)
Knowledge about treatment (Max= 10)	Sum (Q16a up to Q16h)
Knowledge about TB/HIV relationship (Max=5)	Sum (Q17a up to Q17e)
CTBC knowledge and attitudes (Max= 10)	Sum (Q18a up to Q18j)
Traditional beliefs about causes of TB	Sum (Q15f up to Q15h)
TB support	Sum(Q27a up to Q27e)

Variables indicating the respondents' perceptions about factors that influence the adoption of a specific DOT option were constructed from question 19a)-19n). An open ended question, 19o was posed to respondents to briefly explain reasons for their choice of DOT option over the other, whether CTBC or FBTC. The respondents' answers were recoded into, patient-related factors, sociocultural-related factors, socioeconomic-related factors, structural-related factors and health system-related factors.

Factors influencing participation of TB patients in the CTBC were analysed through demographic factors of respondents, TB knowledge variables including knowledge and attitudes of respondents regarding CTBC and the HBM variables. Questions addressing specific tenets of the HBM are indicated in table 3.3.

TABLE 3.3: CONSTRUCTION OF THE HEALTH BELIEF MODEL VARIABLES

Questions pertaining to specific tenets of the HBM	
Variable	**Structured interview item numbers**
Perceived susceptibility	Sum (16a, 16c, 18a)
Perceived severity	Sum (16b,16d,18b)
Perceived benefits	Sum (18d,19d,19e,19f,19g)
Perceived barriers and enablers	Sum (16g,18f,18g,19j,18i,19l)
Cues to action	Sum (16i,16j,19b,19c,19h)
Motivation/self-efficacy	Sum (27a-27d)
Patient satisfaction	Sum(18h,18i,19a,19k,19l,19n)
Psychosocial variables Structural factors	Sum (19j, 19m) Sum (17d, 19i)

3.6 ETHICAL CONSIDERATIONS

The study was cognisant of the three basic principles of the Belmont Report as stipulated in Amdur and Bankert (2011:19). These principles imply respect for persons, beneficence, and justice as indicated by LoBiondo-Wood and Haber (2010:250).

Minimal risks were anticipated in the study as only structured interviews were conducted and no physical examinations were done. Some risk was anticipated of unintentional violation of confidentiality if the patient had not disclosed his/her TB status to neighbours and opted to be interviewed at home. The neighbours might know that the home visitors conducted TB-related research. To counteract this risk, each patient had the opportunity to select the date, time and place of the interview when the appointment for the interview was made. Interviews were conducted at convenient times and places for patients to avoid stigma and discrimination if their neighbours became aware of their TB status as a result of home visits to conduct the interviews.

There were no anticipated physical risks. The research assistants were capable of handling minor discomforts encountered by respondents and to accompany any respondent to an appropriate health care worker, if necessary. The researcher was also available by mobile phone to attend to minor discomforts or refer patients. However, only one respondent who completed her TB treatment in 2012 experienced some discomfort by feeling hot and finding it difficult to breathe after signing a consent form. A nurse attended to the respondent in the consulting room of the health facility. The patient rescheduled the interview but later declined to be interviewed.

3.6.1 Specific ethical issues

The special ethical issues covered in this section included, confidentiality, self-determination and autonomy, respect for persons, justice and beneficence.

3.6.1.1 Confidentiality

Confidentiality can be considered as an extension of privacy, which entails agreements between individuals that impose restrictions on private information, (De Vos et al 2011:119). Each research assistant signed a confidentiality form (see Annexure 7) undertaking to treat all information confidentially and not to record any names or identifying information on any interview schedule.

Respondents' signed consent forms were placed into one container and the completed interview schedules into a different container. In this way no signed consent form could be linked to any completed interview schedule, ensuring anonymity. Completed interview schedules were kept under lock and key to assure anonymity and confidentiality. Only the researcher and the statistician and the study's supervisor could access these completed documents. After the acceptance of the research report, these documents would be destroyed and the data entered on the computer (protected by a secure password) would also be deleted.

The researcher compiled a list of the selected respondents' code numbers reflected on their interview schedules and matched these with their clinic file numbers to ensure that auditing would be possible should any information require cross-checking or should the health care authorities wish to confirm any findings. This also ensured that no respondent was interviewed twice. This list was kept under lock and key by the researcher and no one else had access to it.

No respondent's name would be mentioned in any report and no personal identifiers such as cell phone numbers, identification numbers, and residential or postal addresses were recorded.

3.6.1.2 Self-determination and autonomy

The written information on the consent forms was verbally explained to each respondent so that he/she could make an informed decision as to whether or not to participate in the study. Edwards (2009:22 cited in Pera & Van Tonder 2011:62) recognises the need for 'decisional privacy' which involves observance of the

patient's right to make autonomous decisions. The respondents were informed about their right to refuse and/or withdraw from the study at any particular time even after signing the consent form. It was explained to respondents that the study was purely voluntary and that no remuneration would be paid. No respondent was coerced to answer any specific question/item.

3.6.1.3 Respect for persons

According to the Belmont report, respect for persons involves observing a sense of autonomy when dealing with individuals as well as protecting people with diminished autonomy (Amdur & Bankert 2011:20). "With regard to patients, autonomy may be diminished by factors such as age and mental status or affected by illness and/or medication" (Pera & Van Tonder 2011:62). Patients were assured that their participation or non-participation in the study would not affect their treatment at health facilities in any manner whatsoever. Cognitively impaired patients, those who were ill, the elderly and mentally challenged were excluded from the study as they might have been unable to provide objective information or they might have become exhausted due to TB-related morbidity.

3.6.1.4 Justice

Justice entails fairness. Denying persons a benefit they are entitled to for no good reason or undeservedly imposing a burden constitutes injustice (LoBiondo-Wood & Haber 2010:250). The purpose of the study was explained to the prospective respondents as assessing factors affecting the uptake of CTBC by patients in Lobatse. Informed consent was obtained from each respondent through a signed (or thumb printed) consent form (see Annexure 10).

The contact details of the Health Research Unit Health officer in the MOH were given to respondents in case of any queries. The respondents were able to ask questions about the study and the interview before granting consent (see Annexure 10).

3.6.1.5 Beneficence

The principle of beneficence also involves evaluation of the risks and expected benefits of respondents (Amdur & Bankert 2011:24). The current study sought information about the respondents' knowledge about TB and CTBC, their support structures and factors influencing their adoption of a specific DOT option in the Lobatse area. The respondents were informed about the possibility of publication of results as aggregate data, but that no person's name would be mentioned. There was no need to interfere with any treatments. The respondents were not influenced to change their decision about CTBC. Although individual respondents might not benefit directly from being interviewed, their participation might help to enhance the implementation of CTBC, and thereby to help improve the TB treatment outcomes in the Lobatse area. Respondents might experience an indirect benefit in that people close to them such as family members might benefit from CTBC in future because of the exposure that respondents might have gained during the study.

3.6.2 Capacity building and scientific integrity of the study

A thorough literature review on CTBC was done. Integrity was achieved through maintaining veracity in data analysis and report writing, dissemination and publication of results, peer review and approval of the research report. All sources quoted or used in the dissertation were acknowledged by supplying complete and correct references and by including a complete list of references. The statistician checked the data entries on the computer during the data cleaning process and assisted with the data analyses and interpretations.

The study's findings might be presented at the DHMT for the purposes of information sharing with the management and implementers of CTBC. Findings shall further be presented at national and international conferences. The conference will accord the researcher an opportunity to share research findings and benchmark best practices from other presenters in meeting the MDGs, which will be used to enhance the learning and teaching process and also benefit the health care professionals and volunteers working in Lobatse's DHMT.

3.6.3 Permission to conduct the study

The study dealt with human subjects (respondents) hence the proposal had to undergo the scrutiny of ethical committees to assure that methods used were ethically sound (Amdur & Bankert 2011:5). The process was meant to allow vetting and to safeguard the wellbeing of the respondents (Oliver 2010:41).

The protocol was submitted to the University of South-Africa for approval by the Higher Degrees Committee of the Department of Health studies, and for granting ethical clearance. Subsequent to having obtained this clearance the protocol was submitted to Lobatse' Institutional Review Board and Health Research Unit in the MOH of Botswana for ethical approval. Permission to access health facilities and respondents for pre-testing the tool and for conducting interviews for the actual study was sought from the Gaborone DHMT co-ordinator and trom the Lobatse DHMT coordinator.

Following permission to access health facilities the researcher had consultative meetings about the research with the Bontleng Clinic management, Athlone Hospital management, the DHMT nursing superintendent and management for participating clinics including TB focal persons. These meetings were necessary because in order to access sites and individuals, permissions have to be granted by people overseeing sites (Creswell & Clark 2011:175) (see Annexures 11, 12 and 13). Every respondent signed or thumb printed a consent form before any interview commenced.

3.7 SUMMARY

This chapter presented the research method adopted to investigate factors influencing peole's decisions to participate in the CTBC programme in the Lobatse area of Botswana. The study adopted a quantitative, descriptive and cross-sectional design. Structured interviews were conducted with 101 patients. The data were analysed by using the SPSS version 21 software, with the assistance of a

statistician. The ethical considerations that were observed by the researcher and research assistants were explained.

The next chapter will present the analysis and discussion of the data obtained from the 101 structured interviews conducted with the selected patients in the Lobatse area.

CHAPTER 4

ANALYSIS AND DISCUSSION OF THE RESEARCH FINDINGS

4.1 INTRODUCTION

The chapter presents the analysis and discussion of this study's findings, organised according to the broad themes of the study, namely:

- Demographic characteristics
- Knowledge about TB
- Knowledge about and attitudes towards CTBC
- Perceptions about factors that influence the adoption of a specific DOT option
- Support of TB patients participating in the CTBC programme
- Factors influencing participation of TB patients in the CTBC programme

Independent t-tests were used to check whether knowledge about TB varied with gender. The Pearson Chi-square tests were performed to identify relationships between enrolment in the programme and perceptions about the programme. Univariate logistic regression models were used and participation in the CTBC programme (binary-variable) was used as an outcome. A significance level of 0.05 was adopted for this study's findings. Respondents' responses to open ended questions were recoded according to emerging themes, quantified and used to substantiate the quantitative data. Relevant examples of respondents' verbatim statements are given.

4.2 RESPONDENTS' DEMOGRAPHIC CHARACTERISTICS

This section addresses the demographic characteristics of the respondents. In this chapter N indicates the total number of 101 respondents, n indicates any total not amounting to 101, and *f* indicates any frequency within N or n.

4.2.1 Gender

A total of 101 patients were interviewed, of whom 55.4% (*f*=56) were females and 44.6% (f=45) were males, indicating that there were more female than male respondents. Figure 4.1 presents a percentage distribution of the gender of the 101 respondents.

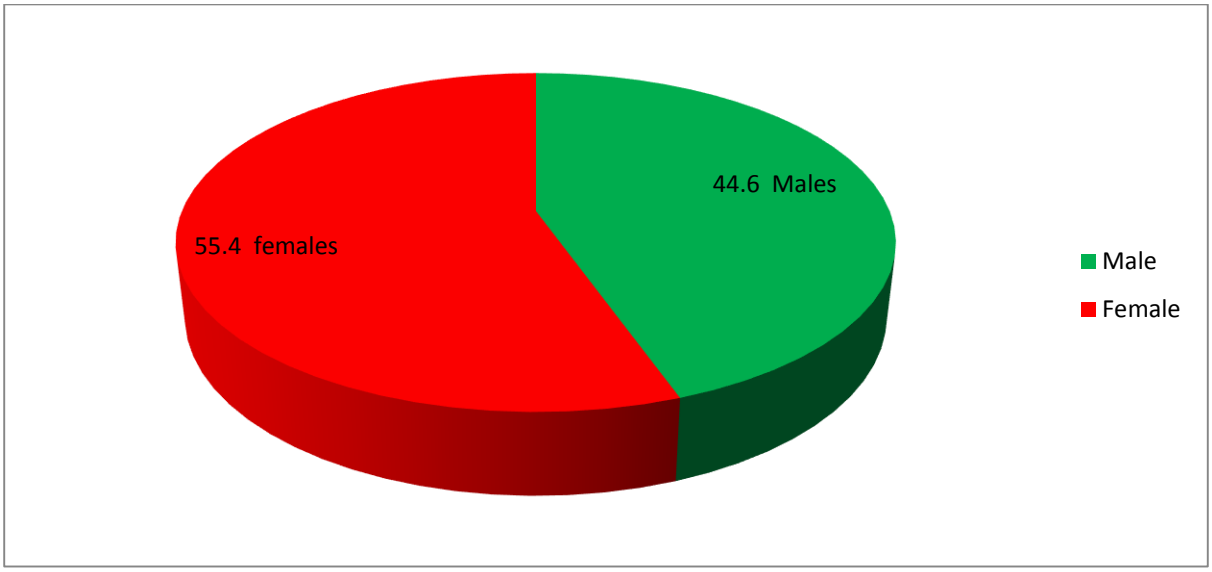


Figure 4.1: Gender of respondents (N=101)

4.2.2 Age

The age distribution of the respondents is presented in table 4.1. Respondents aged 21-25 comprised 5.9% (*f*=6) of the sample, followed by 8.9% (*f*=9) aged 26-30 and 21.8% (*f*=22) aged 31-35, implying that 36.6% (*f*=37) of the sample were up to 35 years old, thus falling within Botswana's 'youth category'. The Revised National (Botswana) Youth Policy defines youth as "…persons of ages 15-35 years" (Ministry of Youth Sports & Culture 2010:5). Regarding other age groups of the respondents, 23.8% (*f*=24) were 36-40 years of age, 15.8% (*f*=16) aged 41-45, 8.9% (*f*=9) aged 46-50, 9.9% (*f*=10) aged 51-55 and 5.0% (*f*=5) aged 56-60**.** These statistics show that TB affects people of different age groups including those in their economically productive ages, indicating a need for CTBC in Lobatse. Adults in the economically productive age group are globally affected by TB, according to the WHO (2012b:3).

Table 4.1: Age group of respondents(N=101)

Age group	Frequency	Percentage
21-25	6	5.9
26-30	9	8.9
31-35	22	21.8
36-40	24	23.8
41-45	16	15.8
46-50	9	8.9
51-55	10	9.9
56-60	5	5,0
Total	101	100.0

4.2.3 Education

Table 4.2 portrays respondents' qualifications showing that 46.5% (*f*=47) had secondary education, 24.8% (*f*=25) had primary education, 14.9% (*f*=15) had no schooling and 9.9% (*f*=10) had obtained certificates (the nature of these certificates was not recorded and thus remains unknown). The diploma and the degree holders comprised 2.0% each respectively. These findings show that the minority (14.9%; *f*=15) of the respondents had no schooling. The "universal primary education" offered in Botswana claimed a national literacy rate of 81.2% for 2003/2004 (MOH 2011e:10), corresponding with this study's finding that 85.1% of the respondents had acquired some schooling.

Table 4.2: Respondents' educational qualifications (N=101)

Education level	Frequency	Percentage
No schooling	15	14.9
Primary	25	24.8
Secondary	47	46.5
Certificate	10	9.9
Diploma	2	2.0
Degree	2	2.0
Total	101	100.1

4.2.4 Respondents' religious affiliations

The religious affiliations of respondents are presented in table 4.3, showing that 84.2% (*f*=85), were Christians, 11.9% (*f*=12) had no religious affiliation, Muslims and Traditional African Religions comprised 2.0% (*f*=2) respectively, implying that the majority of the respondents were Christians. Christianity accounts for approximately 80% of the existing religions in Botswana (Embassy of Botswana 2010), concurring with this study's finding that 84.2% of the respondents were Christians.

Table 4.3: Religious Affiliation of respondents (N=101)

Religion	Frequency	Percent
Christian	85	84.2
Muslim	2	2.0
Traditional African	2	2.0
No affiliation	12	11.9
Total	101	100.1

4.2.5 Respondents' employment status

Figure 4.2 presents the employment status of the 101 respondents and shows that, 38.6% (*f*=39) were formally employed full time, 37.6% (*f*=38) were unemployed, 11.9% (f=12) were self-employed, 6.9% (*f*=7) were part time formally employed and only 5% (*f*=5) were employed doing 'piece jobs'. These findings show that cumulatively 62.4% (*f*=63) of the respondents had some kind of employment. This might be associated with Lobatse being an urban area where people come to seek employment or to study.

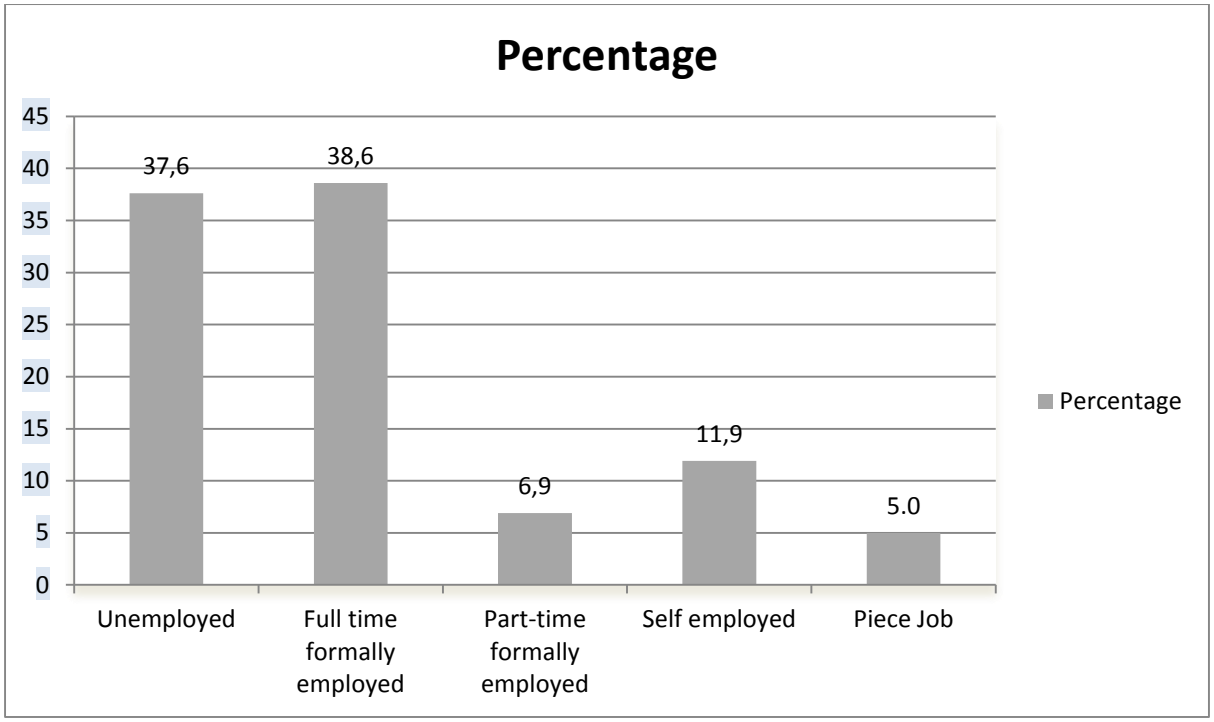


Figure 4.2: Employment status of respondents (N=101)

4.2.6 Marital status

Out of 101 respondents, 52.5% (*f*=53) were single, 25.7 % (*f*=26) were cohabiting, 12.9 (*f*=13) were in committed relationships, 5.9% (*f*=6) were married and those separated, divorced and widowed comprised 1% (*f*=1) each respectively (see table 4.4).

Table 4.4: Marital Status of respondents (N=101)

Marital status	Frequency	Percent
Single	53	52.5
In a committed relationship	13	12.9
Co- habiting	26	25.7
Married	6	5.9
Separated	1	1.0
Divorced	1	1.0
Widowed	1	1.0
Total	101	100.0

4.2.7 Persons normally living in the respondents' homes

Respondents were asked with whom they normally lived in their homes. These findings indicate that 17.8% (*f*=18) lived with their partners, 14.9% (*f*=15) lived with their parents, 13.9 % (*f*=14) lived with their relatives and 13.9% (f=14) lived with their children, 7.9% (*f*=8) lived with their partners and children, while 3.0% (f=3) lived with their spouses and their children and 3.0% (*f*=3) lived with their spouses only. Those who lived alone comprised only 12.9% (*f*=13) of the sample, implying that 87.1% (*f*=88) stayed with someone who could help to implement CTBC. This reasoning might be corroborated by a study conducted in China, which showed that having a family member as a treatment supporter yielded better cure rates as opposed to having no treatment supporter (Ai et al 2010:112). However, the ages of children of respondents in this study, were not determined to find out whether these children were old enough to administer treatment to their parents.

Table 4.5: Persons with whom respondents normally lived in their homes (N=101)

	Frequency	Percent
Alone	13	12.9
Spouses	3	3.0
Parents	15	14.9
Relatives	14	13.9
Siblings	13	12.9
Partners	18	17.8
Partners and children	8	7.9
Children	14	13.9
Spouses and children	3	3.0
Total	101	100.3

4.2.8 The type of TB

Of the 101 respondents, 90.1% (n=91) had PTB while 9.9% (n=10) had EPTB, as shown in figure 4.3. Out of the 91 respondents with pulmonary TB, 46.2% (*f*=42) were males while 53.8% (*f*=49) were females. These findings are consistent with the MOH (2011a:9) report which shows that approximately 80% of TB occurs in the lungs in Botswana.

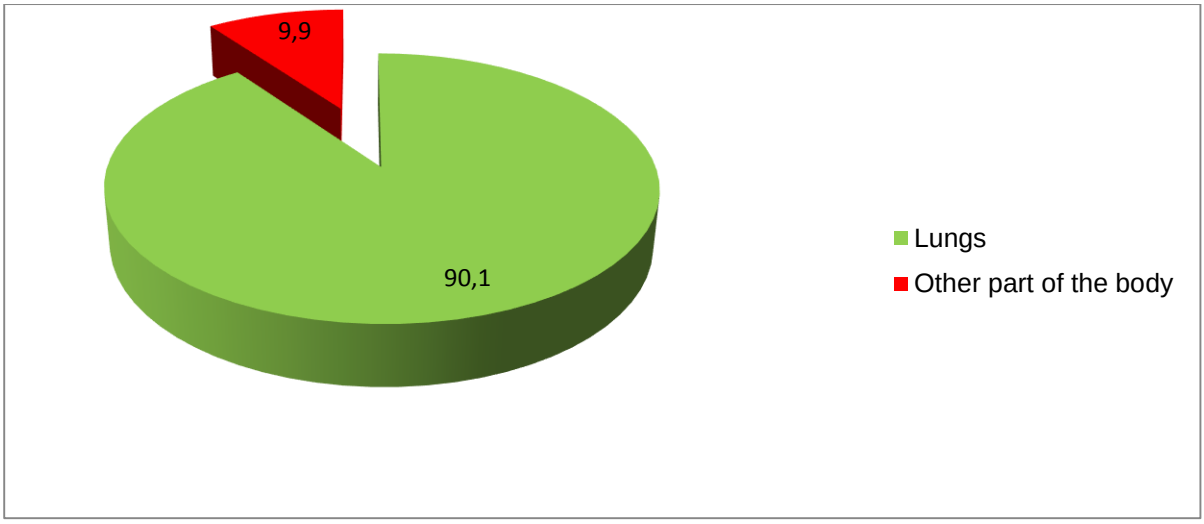


Figure 4.3: Type of TB of respondents (indicated in percentages) (N=101)

4.3 KNOWLEDGE ABOUT TB

Table 4.6 presents respondents' knowledge scores indicating the means (average scores), about TB-related issues (including knowledge variables about TB for males and females and the two groups combined). Table 4.6 presents findings about the respondents' knowledge concerning TB identification, signs and symptoms of TB, traditional beliefs about causes of TB, TB treatment and TB/HIV interaction. These variables are treated individually and their individual relationships with TB patients' gender were examined. Independent t-tests were used to check whether knowledge about TB varied with gender. The only finding that was statistically significant was knowledge about signs and symptoms of TB (p=0.032). Knowledge scores are reported in means per knowledge variable. Average scores at or above 50% of the total possible average score are accepted as being knowledgeable and those with a below average score are considered not to be knowledgeable.

4.3.1 Respondents' knowledge about the identification of TB (N=101)

The 101 respondents scored an average of 6.87 out of a maximum score of 9, about knowledge on the identification of TB, indicating that they were fairly knowledgeable about the identification of TB. Another study in Botswana comprised in-depth

interviews with TB patients. This response to the open ended question showed that the majority of that study's participants knew that TB could be directly transmitted through close contact with an infected individual.

Table 4.6: Respondents' average knowledge scores about TB-related issues (males, females and the two groups combined)

	Male	Female	p-value	Total
Knowledge about TB identification (Max= 9)	7.02	6.75	0.2650	6.87
Knowledge about signs/symptoms of TB (Max= 5)	3.91	3.54	0.032	3.72
Knowledge about TB treatment (Max= 10)	9.38	9.55	0.4720	9.48
Knowledge about TB/HIV relationship (Max=5)	3.76	3.91	0.4400	3.84
Knowledge and attitudes towards CTBC (Max= 10)	7.47	6.89	0.1620	7.15
Traditional beliefs about causes of TB (Max= 3)	1.47	1.37	0.6310	1.41
CTBC support (Max= 5)	2.91	2.79	0.578	2.84

However, other researchers reported TB-related misconceptions (MOH 2011c:23) such as attributing TB to having asthma. The MOH's (2010a:26-27) CTBC report shows that 58% of TB patients knew that coughing could transmit TB but about 21% of TB patients, who participated in that study, believed that sharing eating utensils, eating together, shaking TB patients' hands or touching TB patients could transmit TB (MOH 2010a:26-27). This study's information could not be compared with TB-related misconceptions reported by other researchers in Botswana.

4.3.2 Knowledge about signs and symptoms of TB (N=101)

The 101 respondents scored an average of 3.72 out of 5 on knowledge about the signs and symptoms of TB indicating that they were knowledgeable. Males (44.6%; *f*=45) scored 3.91 indicating a slightly higher knowledge level than females (55.4%; *f*=56) who scored 3.54. An overall mean score of 3.72 out of 5 shows that respondents were knowledgeable about signs and symptoms of TB though knowledge gaps might need to be identified. The Botswana 2011 TB/HIV KAP Study's report, based on interviews conducted with TB patients, identified major gaps in respondents' TB-related knowledge. An example includes "It's like I just got the disease, I don't understand the depth of TB, I just know that I got TB" (MOH 2011c:21). Another Botswana study involving TB patients showed that "… most respondents managed to identify major signs and symptoms of TB such as coughing for more than three weeks, weight loss and chest pains" (MOH 2010a:26). These research reports support the current study's finding that most Botswana TB patients knew the signs and symptoms of TB.

4.3.2.1 Traditional beliefs about causes of TB

All 101 respondents scored an average of 1.41 out of a total score of 3 on traditional beliefs about causes of TB, indicating that traditional beliefs had a limited impact on the respondents' TB-related perceptions. Females (55.4%; *f*=56) scored lower at 1.37, than males (44.6%; *f*=45) who scored 1.47, about traditional beliefs' impact on the causes of TB, indicating that these beliefs had a smaller influence on females in this study. However, a p value of 0.6310 suggests that traditional beliefs about causes of TB were not significantly associated with gender. A study conducted in Nigeria by Desalu et al (2013) showed that awareness of TB signs was predicted by education, income and Christianity. In the current study, respondents with at least secondary education comprised 60.4% (*f*=61) of the sample, indicating that education might have had an impact on knowledge about TB. The employed respondents, including those doing piece jobs, comprised 62.4% (*f*=63) of the sample. The generation of income has been associated with TB-related

knowledge in another study (Cramm, Koolman, Møller & Nieboer 2011:e34) because health-related information can be obtained through social connections (Harling, Ehrlich & Meyer 2008:492-505 cited in Cramm et al 2011:e34). Christianity might have had an influence on the traditional beliefs of respondents because 84.2% (f=85) of the sample were Christians.

4.3.3 Respondents' knowledge about TB treatment

The 101 respondents scored an average of 9.48 out of 10 on knowledge about TB treatment, indicating that the respondents had high knowledge levels about TB treatment. Females (55.4%; *f*=56) scored slightly higher on TB treatment at 9.55 out of 10 compared to males (44.6%; *f*=45) who scored 9.38. Based on p=0.4720 there was no significant association between knowledge about TB treatment and gender. In Africa, including Botswana, generally women are caretakers (MOH 2007 cited in Kabongo & Mash 2010) and this might explain why females had slightly higher knowledge levels about TB treatment than males. As caretakers of family members, women have more frequent contact with health facilities and with health care workers, granting them more opportunities to receive health education about various aspects, including TB, than their male counterparts.

4.3.4 Knowledge about the TB/HIV relationship

Overall the 101 respondents scored an average of 3.84 out of 5 on knowledge about the relationship between TB and HIV. Females (55.4%; *f*=56) scored slightly higher (3.91 out of 5) on knowledge about the relationship between TB and HIV indicating that females were slightly more knowledgeable about the TB/HIV relationship than males who scored 3.76 (44.6%; *f*=45). However, this finding was not significant with a p value of 0.4400. Botswana's health care system offers ante natal care (ANC), prevention of mother-to-child transmission (PMTCT), postnatal care and family planning services where women receive health education about HIV and also about TB and about the correlation between HIV and TB. Thus women's more frequent exposure to TB/HIV health education might have provided the women with more knowledge than their male counterparts had. Botswana's "scaled-up" and "integrated collaborative TB/HIV activities" focus on early diagnosis and treatment of TB, which

is consistent with the WHO's aims (WHO 2013d). The impact of integrating TB/HIV services with maternal, neonatal and child health services in Namibia has shown positive results such as ART coverage of 85% (WHO 2013e) indicating its ability to disseminate TB/HIV related information. This approach has been adopted by other countries, including Botswana, and this might produce similar results in future in Botswana.

4.4 KNOWLEDGE ABOUT AND ATTITUDES TOWARDS CTBC

This section addresses knowledge and attitudes of respondents towards CTBC. The 101 respondents scored an average of 7.15 out of 10 on knowledge and attitudes towards CTBC indicating that they had adequate knowledge and positive attitudes towards CTBC. The males (44.6%; *f*=45) scored higher (7.47out of 10) on knowledge about and attitudes towards CTBC programme compared to females (55.4%; *f*=56) who scored 6.89, indicating that males had higher knowledge levels and more positive attitudes towards CTBC than females. However, males' CTBC enrolment (68.9%; *f*=31) remained lower than that of females 73.2% (*f*=41). These findings were not statistically significant, p=0.1620, indicating no significant association between gender and knowledge about and attitudes towards CTBC (see table 4.6). On the basis of the available evidence, no reasons could be provided to explain why males were more knowledgeable about CTBC than females, as females seemed to be more knowledgeable about other TB-related aspects. Although these findings lacked statistical significance, a KAP study, about TB conducted amongst community members in Ethiopia, also showed that females were less likely than males to:

- have good levels of TB-related knowledge
- show positive attitudes towards TB and
- maintain good TB-related practices (Bati, Legesse & Medhin 2013:734).

Men do not like visiting the health facilities because they perceive that as being a sign of weakness and as bread winners of their families they dislike standing in long queues. This programme might be a convenient option for males in this study because CTBC offers privacy and is less time consuming compared to FBTC.

A study, conducted in Zimbabwe about masculinity as a barrier to men's use of HIV services, showed that men wanted to display a sense of control, strength, good health and economical productivity (Skovdal, Campbell, Madanhire, Mupambireyi, Nyamukapa & Gregson 2011: 13).

4.5 PROVIDING SUPPORT TO TB PATIENTS PARTICIPATING IN CTBC

This section addresses support of TB patients according to gender, treatment completion, enrolment into the CTBC programme and completion of their TB treatment.

4.5.1 Support according to gender (N=101)

A total of 101 respondents scored an average of 2.84 out of 5 on support and participation in CTBC activities such as regular attendance of TB support group meetings/activities, encouraging TB suspects to seek early TB treatment and encouraging other TB patients to adhere to their treatment. The males scored an average of 2.91 out of 5 compared to females who scored an average of 2.79 out of 5 indicating slightly greater participation for males than for females (see table 4.6). Given a p value of 0.578, there was no statistically significant association between CTBC support and gender.

4.5.2 Support according to completion of TB treatment (n=81)

Of the 101 respondents 80.2% (*f*=81) had reportedly completed their TB treatment. Only 50.6% (*f*=41) out of the 81 respondents who had completed treatment, were treatment supporters for other TB patients. These findings show low levels of support provided to other people's TB treatment. As many as 75.9% (*f*=22) of patients on FBTC and 73.6% (*f*=53) of those on CTBC indicated that they were aware of TB patients' rights. As 62.4% (*f*=63) of the 101 respondents were employed, they might have been unable to supervise other patients' TB treatment adequately. Staying alone at home implied that 12.9% (*f*=13) of the 101 respondents might not have had ready access to treatment supporters at home.

The WHO recommends that former TB patients should be involved in CTBC activities including supervising treatment of TB patients (WHO 2010:78). Cured TB patients' responsibilities include contribution to community health and sharing a sense of unity with other patients striving to get cured from TB (MOH 2013a:39).

4.5.3 Support according to enrolment into CTBC (n=72)

Of the 72 CTBC respondents, 12.1% (*f*=7) attended TB support group meetings, 70.7% *(f*=41) encouraged TB suspects to seek treatment, 75.9% *(f*=44) encouraged patients to adhere to their TB treatment, 41.4% *(f*=24) had publicly shared TB-related messages and 44.8% *(f*=26) were treatment supporters.

The CTBC support and participation variables, reported by the 72 patients who participated in the CTBC programme, had percentages below 50% except for two variables: encouraging TB suspects to seek treatment (56.9%; *f*=41) and, encouraging patients to adhere to their TB treatment (61.1%; *f*=44).

4.5.4 Support according to enrolment in the CTBC programme and completion of treatment (n=58)

Out of 72 respondents who had enrolled in the CTBC programme, 80.6% (*f*=58), had reportedly completed their treatment of whom only 12.1% *(f*=7) regularly attended support group meetings, 70.7% *(f*=41) encouraged others to seek treatment, 75.9% *(f*=44) encouraged others to adhere to their treatment, 41.4% *(f*=24) had publicly given health education about TB and 44.8% *(f*=26) were treatment supporters.

Support groups such as "ART adherence clubs" have been found to enhance health seeking behaviour (Luque-Fernandez et al 2013). Positive results of adequate TB programme support, in terms of low levels of drug resistance, were documented in rural Malawi (Mboma et al 2013:e58192). No similar study could be traced that was done in Botswana.

4.6 FACTORS AFFECTING PATIENTS' ADOPTED DOT OPTION (N=101)

This section addresses this study's findings about respondents' factors that influenced TB patients' adoption of the DOT option as either CTBC or FBTC. The cut-off point for determining the major reasons for adopting of CTBC was 75%. The Chi-square test was applied to identify predictors for adopting CTBC. In this study there were more respondents (71.3%; *f*=72) who had enrolled for CTBC than for FBTC (28.7%; *f*=29) as shown in table 4.7. Out of the 72 respondents who had enrolled in CTBC, 43.1% (*f*=31) were males whilst 56.9% (*f*=41) were females. The CTBC enrolment in this study falls short of the Botswana target of 75% (MOH 2013a:4) but some improvement occurred from 63.5% recorded in 2012 (MOH 2012:23).

Table 4.7: Total number and percentages of individuals enrolled in the CTBC programme

CTBC programme enrolment	***F***
Enrolled	72/101 (71.3%)
Not enrolled	29/101 (28.7%)

Table 4.8: Chi-square test of independence: factors influencing patients' option for CTBC or FBTC

Question	**Statement**	CTBC		FBTC		p-value for CTB C
		f	%	*f*	%	
Q 19a)	A chance for a personal decision about my DOT option	60	83.3	18	62.1	0.021
Q19b)	Adequate information on TB	66	91.7	23	79.3	0.083
Q19c)	Adequate information on the DOT option chosen	65	90.3	16	55.2	0.000
Q19d)	Cost saving opportunities	47	65.3	16	55.2	0.343
Q19e)	Desire to fight TB stigma	47	65.3	17	58.6	0.530
Q19f)	Desire to control TB in the community	55	76.4	24	82.8	0.685
Question	**Statement**					p-value

		CTBC		FBTC		for CTBC
Q19g)	Nearness of the DOT option	*f* 61	% 84.7	*f* 26	% 89.7	0.718
Q19h)	Awareness of TB patients' rights	53	73.6	22	75.9	0.734
Q19i)	Adequate integration of TB services with other health care services	54	75.0	23	79.3	0.210
Q19j)	Adequate community support	42	58.3	19	65.5	0.272
Q19k)	Adequate TB drug supply	49	68.1	24	82.8	0.135
Q19l)	Regular TB diagnostic services	48	66.7	25	86.2	0.047
Q19m)	Availability of incentives	40	55.6	18	62.1	0.549
Q19n)	Quality of health care services	51	70.8	22	75.9	0.609

4.6.1 Respondents' perceptions about factors influencing their option for CTBC or FBTC

Table 4.8 presents quantitative data on respondents' perceptions about factors that affected their selection of either the CTBC or the FBTC DOT option. The prominent reasons for adopting CTBC (according to the percentages of respondents) were having adequate information about TB (91.7%; *f*=66), having adequate information about the DOT option selected (90.3%; *f*=65), nearness of the DOT option, an opportunity for making a personal decision about the DOT option (83.3%; *f*=60), the desire to control TB in the community (76.4%; *f*=55) and adequate integration of TB services with other health care services (75%; *f*=54).

Based on Chi-squares, the following factors were important: having a chance to make a personal decision about CTBC (p=0.021), adequate information about the DOT option chosen (p=0.000) and regular TB diagnostic services (p=0.047) were the only significant factors for adoption of CTBC by respondents in this study. Previous studies in Botswana showed that challenges encountered by laboratory and x-ray services contributed to irregular TB service provision (MOH 2011c:37). Moreover, access to diagnostic services has been identified as one of the integral factors to the

success of CTBC by the WHO (2010:76). Thus this study's finding that laboratory and x-ray facilities are important considerations influencing TB patients' treatment decisions, has been supported by both the MOH's and the WHO's standpoints.

4.6.1.1 Respondents' reasons for choosing CTBC (n=72)

This section presents the responses for the 72 respondents regarding their reasons for choosing CTBC in response to an open ended question. The responses were categorised into relevant groups and quantified, providing the following summary:

- Factors related to convenience (27.8%; *f*=20)
- Work-related factors (27.8%;*f*=20)
- Health condition-related factors (13.9%;*f*=10)
- Instruction by HCWs (12.5%; *f*=9)
- Self-efficacy (6.9%; *f*=5)
- Quality of health care services (2.8%;*f*=2)
- Treatment-related factors (2.8%; *f*=2)
- Self-stigma (2.8%; *f*=2)
- Factors related to financial constraints (2.8%;*f*=2)

Although the majority (83.3%; *f*=60) of CTBC respondents made a personal decision to enrol in the programme and as many as 90.3% (*f*=65) had adequate information about this programme, 12.5% (*f*=9) of the enrolled patients were reportedly influenced by HCWs. The MOH recommends adequate health education about DOT options so that each patient can select the option most acceptable, accessible, and convenient to him/her (MOH 2011b:11). The following verbatim statements illustrate some patients' understanding of the CTBC concept and also of making personal choices about the CTBC programme:

"This option helped me to continue working without interruption. The rule at …clinic was that a patient takes treatment for two weeks then joins CTBC programme, like it or not."

"I was not given a chance to choose a DOT option for myself. I was instructed to take treatment at home because my weight had improved and again my sister was there to supervise my treatment."

The convenience of CTBC reported by 27.8% (*f*=20) of the respondents is consistent with the finding that most (84.7%; *f*=61) of the respondents reported nearness of the DOT option as a factor that influenced their choice of CTBC. The choice of the programme was also associated with work, ill health and financial status indicating the convenience of CTBC to the employed (f=27.8%; *f*=20), the very ill (13.9%; *f*=10) and the financially constrained persons (2.8%; *f*=2). The following statements present examples of what respondents reported verbatim regarding factors related to convenience of CTBC:

"I was unable to go to the health facility daily."

"I had a problem of going to the hospital every morning so community TB care was convenient for me."

The privacy offered by the CTBC was reportedly an influential factor to patients experiencing self-stigma (2.8%; *f*=2). Although the desire to fight TB stigma was not rated as a major factor for selecting CTBC programme (65.3%; *f*=47), as shown in table 4.8, the verbatim responses of 2.8% (*f*=2) of the patients indicate an element of stigma in the community. Self-stigma might be exemplified by the following statements:

"I chose CTBC because I was not comfortable to take treatment openly at the clinic."

"I was shy to collect my treatment at the health facility and it was costly to do that. CTBC is convenient for me."

These statements about self-stigma might be corroborated by findings of other studies which indicated that TB patients accept CTBC because of its benefits which include enhancement of TB knowledge and reduction of stigma in the community (Wandwalo, Makundi, Hasler & Morkve 2006:284-289 cited in Mbongo and Mash 2010).

Other factors not related to the findings reported in section 4.6.1, regarding selection of CTBC, include self-efficacy (6.9%; f=5) and treatment-related factors (2.8%; f=2). The following statements are examples of self-efficacy as voiced by some patients in response to an open-ended question:

"I felt community TB care was good in that I could take treatment without cheating myself."

"I chose community TB care because I wanted to be responsible for my treatment."

4.6.2 Factors influencing respondents' FBTC option (n=29)

The major reasons for adopting FBTC were reportedly nearness of the DOT option (89.7%; *f*=26), regular TB diagnostic services (86.2%; *f*=25), adequate TB drug supplies (82.8%; *f*=24), desire to control TB in the community (82.8%; *f*=24), adequate information about TB (79.3%; *f*=23), awareness of TB patients' rights (75.9%; *f*=22) and quality of health care services (75.9%; *f*=22).

4.6.2.1 Responses to an open-ended question for selecting FBTC (n=29)

The following discussion addresses 29 respondents' reasons for the adoption of FBTC in response to an open-ended question. These responses were categorised and quantified (by calculating the frequency and percentage for every category). The identified categories were:

- Treatment-related factors (37.9%;*f*=11)
- Convenience (27.6%; *f*=8)
- Instruction by HCWs (27.6%; *f*=8)
- Family support-related factors (6.9%; *f*=2)

Nearness of the FBTC service point was rated by 89.7% (f=26) of the respondents to influence them to adopt the FBTC programme. Only 27.8% (f=8) of the respondents identified this factor in response to an open-ended question but the following statements illustrate their standpoints:

- *"Most of the time I am at the hospital so it was convenient for me to take treatment there."*
- *"I was nearer to the clinic that is why I chose facility based TB care."*

Though respondents had indicated that a chance for a personal decision about FBTC (62.1%; *f*=18) and adequate information about FBTC (55.2%; *f*=16) influenced their adoption of FBTC, 27.6% (*f*=8) of the respondents reported that they were influenced by the HCWs to adopt the FBTC programme. Srinivasan (2009) cited in Ncho and Wright (2013) emphasised the importance of health education by stating that inadequate knowledge regarding treatment options, might interfere with health seeking behaviours.

The following statements demonstrate respondents' perceptions of HCWs' influences on their decisions:

- *"I have not chosen my DOT option; nurses forced me to take treatment at the clinic. I have never been taught about the possibility of taking treatment at home."*
- *"They did not give me a choice. I was told to come every day for my medication at the clinic."*

The practice of forcing patients to adopt CTBC might impact negatively on TB treatment outcomes (MOH 2011b:11) and is contrary to programme implementation guidelines in Botswana. The MOH advocates for patients to adopt the DOT option of their choice because they might have reasons for adopting CTBC even if they stay closer to the clinic (MOH 2011b:11). However, it cannot be derived from the available information whether or not the HCWs might have had reasons for advising patients to take their TB medicines at the health facilities. These patients might have previously defaulted on their TB treatment, might not have responded to TB treatment or might have additional health-related problems such as diabetes, alcoholism or hypertension.

Other influencing factors for adoption of FBTC mentioned in response to an open-ended question but not reflected under section 4.6.2 (in response to closed ended

questions) of this dissertation include family support (6.9%; *f*=2) and treatment-related factors (37.9%; f=11). Respondents reported as follows:

- *"I chose to collect my treatment from the clinic because at home there was no one committed to assist."*
- *"Facility based TB care is a better option, because the health workers give me due care as compared to community TB care because sometimes family members tend to be negligent and do not care".*

The following statements refer to treatment-related factors that influenced respondents to adopt FBTC:

- *"At the clinic the nurse watches you take treatment. At home one cannot be sure that you are taking treatment."*
- *"I take treatment at the clinic because I have a five year old on TB treatment."*

4.7 FACTORS INFLUENCING PARTICIPATION OF TB PATIENTS IN THE CTBC PROGRAMME

This section addresses findings of a univariate logistic regression model on factors influencing the participation of TB patients in the CTBC programme as presented in table 4.10. These variables are treated individually and their individual relationship with participation of TB patients in the CTBC programme. The discussion is based on the HBM including modifying factors. Odds ratios (OR) are used for categorical variables and regression coefficients are used for continuous variables. The OR is an "estimate of relative risk used in logistic regression as a measure of association; describing the probability of an event" (LoBiondo-Wood & Haber 2010:582). Therefore univariate logistic regression analysis was conducted to examine the effects of the independent variables on the odds of being enrolled in the CTBC programme. The aim of the logistic regression is to determine the accuracy of predicting an outcome (CTBC participation) based on one or more predictor variables (Burns & Grove 2009:560).

The OR of more than one (OR>1.0) indicates that respondents were likely to be influenced by a given variable to participate in the CTBC programme's activities. On

the other hand, the OR of less than one (OR<1.0) indicates that respondents were unlikely to be influenced by a given variable to participate in the CTBC programme (LoBiondo-Wood & Haber 2010:445; Grove et al 2013:575). A variable with a co-efficient of greater than zero (positive) was treated as likely to influence participation of respondents in CTBC and a variable with a coefficient of less than zero (negative) was treated as being unlikely to influence CTBC programme participation.

In the use of univariate logistic regression analysis, some of the categories for educational status, religion and marital status had no frequencies. These variables were recoded. Age groups of the respondents were categorised into two groups; age group 21-35 and age group 36 and older. Age group 21-35 was recoded from the following ages: 21-25 (5.9%; *f*=6), 26-30 (8.9%; *f*=9) and 31-35, (21.8%; *f*=22). Age group 36 and older was recoded from the following ages; 36-40 (23.8%; *f*=24), 41-45 (15.8%; *f*=16), 46-50 (8.9%; *f*=9), 51-55 (9.9%; *f*=10) and 56-60 (5%; *f*=5) (see table 4.1).

The educational status of 101 respondents was similarly allocated into two groups, up to and including primary education and at least secondary education. The respondents with up to primary educational level were recoded from the following groups: primary education (24.8%); *f*=25) and no schooling (14.9%; *f*=15). Recoding for those with at least secondary education was achieved through the following groups: secondary (46.5%; *f*=47), certificate (9.9%; *f*=10), and diploma and degree holders who shared 2% each respectively (see table 4.2).

As for religion, respondents were categorised into Christians and non-Christians and recoded from the following groups: Christians (84.2%; *f*=85) and non-Christians (15.8%; *f*=16), no religious affiliation (11.9%; *f*=12), traditional African religions and Muslims (2%; *f*=2) each, as shown in table 4.3.

The employment status of respondents was categorised into employed and the unemployed. The unemployed (37.6%; *f*=38) category retained the original code of being unemployed while the employed group (62.4%; *f*=63) were recoded from full

time formally employed (38.6%; *f*=39), self-employed (11.9%; *f*=12), part-time formally employed (6.9%; *f*=7) and those doing piece jobs (5.0%; *f*=5) as shown in figure 4.2. The marital status was categorised into married and not married and the married category (8.9%; *f*=9) was recoded from the following: married (5.9%; *f*=6), separated (1.0%; *f*=1), divorced (1.0%; *f*=1) and widowed (1.0%; *f*=1). The not married category (91.1%; *f*=92) comprised the following: single (52.5%; *f*=53), cohabiting (25.7%; *f*=26), being in a committed relationship (12.9%; *f*=13), as shown in table 4.4.

The HBM variables and their modifying factors were constructed from a variety of items under different questions in the interview schedule (see annexure 3) and item numbers are indicated against each variable in this section. Table 4.9 presents the 101 respondents' mean scores in relation to the HBM variables and the modifying factors. A mean score that is at or above 50% of the maximum score is treated as high and a mean score below 50% is taken to be low. These mean scores were used to conduct the regression analyses.

4.7.1 Mean scores for the HBM's modifying factors

This section addresses mean scores for the HBM's modifying factors.

4.7.1.1 Patient satisfaction

A mean score of 2.03 out of a maximum of 6 represents the following variables of patient satisfaction as rated by respondents (with the relevant structured interview schedule item number in brackets):

- Treatment supporters are not difficult to find (18h)
- Health care providers are committed to CTBC (18i)
- A chance for a personal decision about my DOT option (19a)
- Adequate TB drug supply (19k)
- Regular TB diagnostic services (19n)

The mean scores for all items pertaining to patients' levels of satisfaction with the service were below 50% of the maximum score, indicating that the respondents were not satisfied with the services.

4.7.1.2 Psychosocial variables

The respondents scored an average of 0.76 out of 2 on psychosocial variables based on the following variables:

- Adequate community support (19j)
- Availability of incentives (19m)

The mean score of 0.76 for psychosocial variables was below 1 (50% of the maximum score of 2), meaning that respondents' average scores on psycho social factors were low. This implies that the respondents did not receive adequate community support and that incentives were not available, according to their perceptions.

4.7.1.3 Structural variables

The mean score of respondents on structural variables was 1.53 out of 2 which means it was above 50% (or above 1 out of a maximum of 2). This mean score means that respondents regarded CTBC services to be adequately integrated into other health care services. The structural variables were constructed from the following variables:

- TB/HIV services are well integrated into CTBC (17d)
- Adequate integration of TB services with other health care services (19i)

4.7.2 The mean scores for the HBM variables

This section addresses the mean scores for the HBM variables.

4.7.2.1 Perceived susceptibility

The average score for perceived susceptibility was 2.57 out of 3, indicating that respondents' perceived themselves to be susceptible to TB infections. The variables used to construct perceived susceptibility include:

- TB treatment has to be taken daily under direct supervision (16a)
- A TB patient who travels has to arrange with the clinic that he/she gets enough medicines (16c)
- CTBC can reduce the number of people who miss TB treatment (18a)

4.7.2.2 Perceived severity

The mean score of the respondents for perceived severity variables was 2.65 out of 3, showing that respondents were aware of the potential severity of TB infections. Perceived severity variables were constructed from the following variables:

- Missing TB treatment carries the risk of spreading TB that does not respond to treatment (16b)
- A patient with TB of the lungs must have regular sputum checks done (16d)
- CTBC can increase identification of people with TB of the lungs in the community (18b)

4.7.2.3 Perceived benefits

The mean score of respondents on variables of perceived benefits was 1.91. This mean score was below 2.5 out of a maximum of 5 indicating that respondents did not perceive the CTBC programme to hold many benefits for them. The perceived benefits variable was constructed from the following variables:

- I do not see the value of CTBC (18d)
- The programme offers cost saving opportunities (19d)
- Desire to fight TB stigma (19e)
- Desire to control TB in the community (19f)
- Nearness of the DOT option (19g)

4.7.2.4 Perceived barriers and enablers

Respondents scored an average of 4.22 out of 6. This mean score shows that respondents' average score for perceived barriers and enablers was high, implying that they were aware of some factors that impacted negatively (barriers) and positively (enablers) on their utilisation of CTBC services. The following variables comprised the variable of perceived barriers and enablers:

- TB can be cured by traditional medicine (16g)
- CTBC makes me uncomfortable (18f)
- It does not feel good to enrol for the CTBC (18g)
- Adequate community support (19j)
- Health care providers are committed to the CTBC (18i)
- Regular TB diagnostic services (19l)

4.7.2.5 Cues to action

The respondents scored an average of 4.31 out of 5 which means respondents were aware of factors helping them to adhere to their TB treatment. The following variables comprised the cues to action variable:

- I have been given health education on the importance of taking treatment daily (16i)
- My family has been given health education on the importance of taking treatment daily (16j)
- Adequate information on TB (19b)
- Adequate information on the DOT chosen (19c)
- Awareness of TB patients' rights (19h)

4.7.2.6 Self-efficacy

Regarding motivation, the mean score for respondents was 2.30 out of 5 indicating that they might not have perceived themselves to be capable of sustaining their TB treatment due to their own efforts.

Table 4.9: The HBM variables and modifying factors' mean scores (N=101)

HBM variables and modifying factors	Mean score	Maximum score
Perceived susceptibility (Max=3)	2.57	3
Perceived severity (Max=3)	2.65	3
Perceived benefits (Max=5)	1.91	5
Perceived barriers and enablers (Max=6)	4.22	6
Cues to action (Max=5)	4.31	5
Motivation (Max=5	2.30	5
Patient satisfaction (Max=6)	2.03	6
Psychosocial variables (Max=2)	0.76	2
Structural factors (Max=2)	1.53	2

The variables which comprised the variable for motivation included:

- I regularly attend TB support group meetings (27a)
- I encourage others to seek treatment if they experience possible signs of TB (27b)
- I encourage others to adhere to their TB treatment (27c)
- I have publicly given health education on TB-related messages (27d)
- I am a TB treatment supporter (27e).

Table 4.10: Univariate logistic regression of factors influencing respondents' participation in the CTBC programme

Covariate		Odds Ratio	p-Value
Age group	21-35	1.26 (0.21, 7.28)	0.7970
Gender	Male	1.23 (0.52, 2.93)	0.6330
Educational status	Up to primary	0.60 (0.24, 1.49)	0.2661
Employment status	Unemployed	0.42 (0.16, 1.11)	0.0800

Covariate		Odds Ratio	p-Value
Marital status	Not married	1.45 (0.28, 7.45)	0.6536
Covariate		**Odds Ratio**	**p-Value**
The following continuous variables have regression coefficients reported		**Coefficient**	
TB knowledge		0.11 (-0.25, 0.46)	0.5530
Treatment knowledge		-0.13 (-0.58, 0.32)	0.5660
Knowledge of symptoms		0.15 (-0.33, 0.63)	0.5500
TB/HIV relationship knowledge		-0.08 (-0.53, 0.37)	0.7240
Knowledge and attitudes towards CTBC		0.48 (0.22, 0.74)	0.0003
Traditional beliefs about causes of TB		-0.07 (-0.50, 0.37)	0.7700
Perceived susceptibility		-0.05 (-0.82, 0.71)	0.8930
Perceived severity		-0.35 (-1.20, 0.50)	0.4180
Perceived benefits		0.30 (-0.23, 0.83)	0.2670
Motivation		-0.28 (-0.80, 0.25)	0.2997
Perceived barriers and enablers		0.47 (0.05, 0.90)	0.0279
Cues to action		0.31 (-0.09, 0.71)	0.1320
Patient satisfaction		0.56 (0.05, 1.07)	0.0315
Psychosocial variables		0.30 (-0.24, 0.85)	0.2743
Structural variables		-0.05 (-0.65, 0.55)	0.8807

4.7.3 The relationship between modifying factors and the adoption of CTBC

The modifying factors include; demographic characteristics, patient satisfaction, psychosocial variables, and structural factors that might have influenced TB patients to choose a specific DOT option. This relationship was analysed according to the univariate logistic regression findings.

4.7.3.1 The relationship between demographic characteristics and respondents' adoption of CTBC

Being a male enhanced participation in CTBC, OR= 1.23. Respondents in age group 21-35 were more likely to participate in CTBC indicating that being younger

than 36 years of age, influenced participation in the programme, OR=1.26. Respondents who were not married were more likely to participate in CTBC, OR=1.45. The patients with up to primary level education and those who were unemployed were less likely to participate in CTBC, OR=0.60 and OR=0.42 respectively. Based on p values higher than 0.05 for demographic characteristics, demographic factors did not influence respondents' adoption of CTBC. Although not statistically significant these findings are consistent with findings of other studies in which socio-economic and demographic factors reportedly influenced health seeking behaviours. Examples of such studies include; Li et al (2013:156), Saifodine (2013:559) and Ahmad et al (2013:51-57). Contrary to these findings another study reported that knowledge about TB and demographic factors, including age and educational levels, were surpassed by attitudes and perceptions such as stigmatisation of TB (Cramm et al 2010:72).

4.7.3.2 The relationship between patients' satisfaction and adoption of CTBC

Patients' satisfaction levels with the health care services were likely to influence their selection of a specific DOT option with a coefficient of 0.56 and these findings were statistically significant, p=0.0315. Patient satisfaction factors such as regular treatment supplies, cautious identification of supporters and being close to the patients' dwelling places were found to be vital to health seeking behaviour (adherence) of patients on CTBC (Mkopi et al 2012:e51828). Factors linked to patient satisfaction such as lack of confidence of health care workers in community oriented initiatives had previously posed challenges to the CTBC programme in Botswana (MOH 2013a:12).

However 70.8% (f=51) of respondents on CTBC indicated that quality of health care services influenced them to adopt the programme (see table 4.8). The patients' responses to open-ended questions showed mixed feelings of respondents about their choice of DOT options as shown in section 4.6.1.1. Reportedly some patients did not choose the CTBC DOT option as HCWs reportedly made this decision for a few patients (12.5%; *f*=9). However, the reasons for these reported actions of the HCWs are unknown. It is possible that there might have been valid reasons why

HCWs made this decision in the patients' best interests. As many as 83.3% (*f*=60) of the respondents on CTBC selected the programme out of their own free will and 90.3% (*f*=65) understood what CTBC programme encompassed (see table 4.8). These findings are consistent with findings of respondents' knowledge about and attitudes towards CTBC in which the overall mean score of respondents was 7.15 out of 10, indicating good knowledge levels and positive attitudes (see table 4.6).

4.7.3.3 The relationship between psychosocial variables and the adoption of CTBC

A coefficient of 0.30 indicates that psychosocial variables were likely to have influenced the adoption of CTBC. However, p= 0.2743 implies that psychosocial variables did not influence the adoption of CTBC (see table 4.10). There might be reasons as to why psychosocial variables in this study did not influence adoption of CTBC such as the small sample of 101 respondents.

The following sources might exemplify the importance of psychosocial variables in health care seeking behaviours. The Botswana TB ACSM advocates for tackling of psychosocial, cultural and financial barriers to enhance the successful implementation of the "Stop TB Strategy" (MOH 2013a:7) including CTBC. A study conducted in South-Africa about non-uptake of HIV testing showed that there was a need for concerted efforts to involve individuals in the "social support networks" of patients to offer sustained support and motivation (Kigozi, Heunis, Wouters & Van Den Berg 2011:110).

4.7.3.4 The relationship between structural variables and adoption of CTBC

Structural factors were insignificant influences in the patients' choice of CTBC as their preferred DOT option in this study, with a coefficient of -0.05 and p=0.8807. Previous studies in Botswana indicated that structural factors posed barriers to CTBC such as the integration of TB/HIV into community TB services which showed that such incorporation happened on a small scale only (MOH 2013b:12-13).

4.7.4 The relationship between TB knowledge variables and adoption of CTBC

Findings in this section show that TB knowledge and knowledge about TB symptoms were likely to influence the respondents' participation in CTBC, with coefficients of 0.11 and 0.15 respectively. Knowledge and attitudes towards CTBC were likely to enhance participation in CTBC, with a coefficient of 0.48 and these findings were statistically significant, p=0.0003. Tuberculosis treatment knowledge, with a coefficient of -0.13, TB/HIV relationship knowledge with a coefficient of -0.08, and traditional beliefs about causes of TB with a co-efficient of -0.07, were unlikely to influence respondents' participation in CTBC. In view of a p value of less than 0.05, the only TB-related knowledge variable that was associated with adoption of CTBC was knowledge and attitudes towards CTBC (see table 4.10). As indicated by a significance level of p=0.0003, the predictor for adoption of CTBC was respondents' knowledge and attitudes towards this programme (see table 4.10). In another study TB patients emphasised the importance of diffusion of TB/HIV relationship information in their decision making about HIV testing (Kigozi et al 2011:110) indicating the importance of knowledge in health seeking behaviours.

The descriptive information of the current study's findings, as shown in table 4.6, shows a mean score of 7.15 out of 10 on knowledge and attitudes of respondents towards CTBC. This indicates that patients were knowledgeable about and had positive attitudes towards CTBC. Based on the 2012 low uptake of CTBC in Lobatse (63.5%), the assumption of this study as indicated in section 1.8.3 was that TB patients might have had limited knowledge about CTBC in Lobatse which could impact negatively on their utilisation of CTBC services in this area. However, the respondents in this study had high levels of knowledge and positive attitudes which might have influenced their improved uptake levels of CTBC to 71.3% (f=72). Previous observations of CTBC knowledge amongst patients in Botswana were reportedly limited which was associated with the low uptake of the programme (Masisi 2011).

4.7.5 The relationship between the Health Belief Model's variables and the adoption of CTBC

The HBM variables discussed in this section include perceived susceptibility, perceived severity, perceived benefits, and perceived barriers and enablers. Other relevant variables include cues to action and self-efficacy. Their relationship to the adoption of CTBC was analysed through the univariate logistic regression model as shown in table 4.10.

- **Perceived susceptibility**

TB patients' beliefs about their susceptibility to default TB treatment was unlikely to have an impact on these patients' choice of CTBC, with a co-efficient of -0.05 and these findings were statistically insignificant, p=0.8930 (see table 4.10). Literature shows that susceptibility falls within the vital perceptions for informing decisions about adoption of healthier behaviours (Weitz 2013:38; Glanz et al 2008, cited in Remocker & Shea 2011) which in the context of this study is CTBC.

- **Perceived severity**

The TB patients' beliefs about the seriousness of TB, defaulting TB treatment and not getting cured from TB were unlikely to have influenced their selection of the CTBC DOT option, with a coefficient of 0.35 but these findings were statistically insignificant, p= 0.4180 (see table 4.10). The reviewed literature indicated that perceived severity influences health seeking behaviours (Weitz 2013:39; Glanz et al 2008, cited in Remocker & Shea 2011).

- **Perceived benefits**

The belief that embracing CTBC will offer convenience and significantly reduce the risk of spreading TB in the community was likely to have influenced respondents to adopt the CTBC option, with a coefficient of 0.30 but these findings were statistically insignificant, p=0.2670 (see table 4.10). Perceived benefits have been shown in

previous studies' findings to influence health seeking behaviours (Weitz 2013:39; Glanz et al 2008, cited in Remocker & Shea 2011)).

- **Perceived barriers and enablers**

Beliefs about barriers and enablers, influencing respondents' participation in the CTBC programme, were likely to have influenced adoption of the programme, with a coefficient of 0.47. These findings were statistically significant with p=0.0279 suggesting that barriers and enablers influenced respondents' adoption of the CTBC option (see table 4.10). Perceived barriers and perceived susceptibility are the main predictors of healthy behaviours according to Ogden (2012:50).

- **Cues to action**

Health education offered to patients and their families was likely to have influenced the adoption of CTBC, with a coefficient of 0.31 and p=0.1320. This p value exceeding 0.05 suggests that cues to action did not influence the respondents' adoption of CTBC (see table 4.10).The reviewed literature shows that health seeking behaviour is also influenced by cues to action (Weitz 2013:39).

- **Self-efficacy**

The respondents' motivation to achieve TB treatment cure outcomes was unlikely to have influenced respondents to adopt CTBC, with a coefficient of -0.28 and these findings were statistically insignificant at p=0.2997. On the basis of these findings, self-efficacy did not influence adoption of CTBC (see table 4.10). However self-efficacy was one of the emerging themes under the discussion of information obtained in response to the open-ended questions in section 4.6.1.1 though reported by the minority (6.9%; f=5). Self-efficacy has been cited as an influencing factor in adoption of behaviour change in the reviewed literature (Glanz et al 2008, cited in Remocker & Shea 2011).

4.8 SUMMARY

This chapter presented the demographic characteristics of respondents, as well as their knowledge about TB, their knowledge and attitudes towards CTBC, their perceptions about factors affecting the selection of their DOT option and factors influencing participation of TB patients in the CTBC programme.

The descriptive statistics indicate that the respondents' knowledge about signs and symptoms of TB varied with gender p=0.032. There was a good chance that respondents made their own personal decisions about the selection of their preferred DOT option with p=0.021.

Having adequate information about CTBC (p=0.000) and having access to regular TB diagnostic services (p=0.047) were predictors of adopting CTBC. After controlling for confounding variables through logistic regression, it was found that the main predictors for participation of the respondents in CTBC included, knowledge and attitudes towards CTBC (p=0.0279), perceived barriers and enablers towards this programme, and patient satisfaction about this programme (p=0.0315). Findings, obtained in response to open-ended questions, indicated the adoption of a DOT option was influenced by patient-related factors, socio-cultural related factors, socio-economic-related factors, structural-related factors and health system-related factors. Reportedly a minority of the respondents were influenced by HCWs to select a specific DOT option, but there might have been valid reasons for such influences from the HCWs which could not be ascertained on the basis of the available information obtained during the structured interviews.

CHAPTER 5

CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

The main purpose of this study was to assess factors affecting the uptake of CTBC, as experienced by TB patients (aged 21 to 64) in the Lobatse region of Botswana. Based on these research findings, recommendations would be made to enhance the uptake of the CTBC programme in this area. Contrary to what was planned earlier on, the discussion addresses findings for age group 21-60 only. This is so because no respondents were older than 60. The research results, presented and discussed in chapter 4 of this dissertation, form the basis for answering the research questions which were formulated in Chapter 1 as follows:

- What do patients know about TB?
- What do patients know and think about CTBC?
- How do patients support the CTBC programme?
- What do patients perceive as factors influencing the adoption of a specific DOT option?
- What factors influence participation of TB patients in the CTBC programme?

5.2 FINDINGS, CONCLUSIONS AND RECOMMENDATIONS IN TERMS OF THE STUDY'S OBJECTIVES

In order to determine whether the objectives of the study were met, each objective will be listed and relevant findings will be presented so that conclusions can be drawn and recommendations can be made in the same subsection in order to avoid unnecessary repetitions.

5.2.1 Determining patients' knowledge about TB

5.2.1.1 Findings

The 101 respondents had mean scores that exceeded 50% of the maximum scores in all TB-related knowledge variables, indicating that the majority were knowledgeable about TB identification (6.87 out of 9), signs and symptoms of TB (3.72 out of 5), treatment (9.48 out of 10), and the TB/HIV relationship (3.84 out of 5). The overall mean score for traditional beliefs about causes of TB indicated that most respondents knew that traditional healers might be unable to cure TB (1.41 out of 3). The mean scores for knowledge about signs and symptoms of TB were higher than 50% of the maximum scores averaging for males (3.91 out of 5) and for females (3.54 out of 5) and a p value of 0.032 suggests that men were more knowledgeable about TB signs and symptoms than women. Out of the 72 CTBC respondents, 91.7% (*f*=66) had received adequate information about TB and of the 29 FBTC respondents 79.3% (*f*=23) had received adequate information about TB, implying that the CTBC respondents had reportedly received more and/or better TB-related information than those patients who opted for the FBTC.

5.1.1.2 Conclusions

This study's respondents were knowledgeable about TB but CTBC respondents had slightly better TB knowledge than FBTC respondents and men were slightly more knowledgeable than women.

5.1.1.3 Recommendations

The HCWs should be informed that the TB patients were knowledgeable about TB-related aspects and be congratulated with this achievement. However, health education about TB should be sustained and reinforced at every visit to the clinic.

5.2.2 Identifying patients' knowledge about and attitudes towards CTBC

5.2.2.1 Findings

The overall mean score for patients' knowledge and attitudes regarding CTBC (7.15 out of 10) indicates that the majority were knowledgeable about and had positive attitudes towards CTBC. However, as the 72 respondents on CTBC did not score 10 out 10, there is still a need to scale-up CTBC-related health education in Lobatse. The responses discussed in section 4.6.1.1 of this dissertation show that some patients (12.5%; *f*=9) might not have been taught about CTBC and might not have made their own independent decisions to adopt this programme. However, there might have been valid reasons for HCWs' actions in this regard, such as previous defaulting, hypertension, alcoholism, diabetes mellitus or being HIV-positive.

5.2.2.2 Conclusions

Most, but not all, respondents knew about CTBC and had positive attitudes about CTBC. A few respondents did not make their own independent decisions about adopting a specific DOT option.

5.2.2.3 Recommendations

Future research should identify TB patients who lack CTBC information and find out which factors might have impacted negatively on their knowledge levels in order to address such aspects during future health education sessions. Future research should adopt both quantitative and qualitative research designs and involve both TB patients and HCWs to identify whether, and if so why, HCWs do not encourage all TB patients to decide independently on their DOT option.

5.2.3 Determining whether TB patients support the CTBC programme

5.2.3.1 Findings

Based on an overall mean score of 2.84 out of 5 for the 101 respondents, support for the CTBC programme was slightly above average in Lobatse. However, support of the CTBC programme, provided by CTBC patients who completed their TB treatment (n=58) was below average on attendance of TB support group meetings (12%; *f*=7), in publicly giving TB-related health education (41.4%; *f*=24) and being treatment supporters (44.8%; *f*=26).

However, 70.7% (*f*=41) of the respondents encouraged others to seek treatment and to adhere to their treatment (75.9%; *f*=44). As many as 73.6% (*f*=53) of the 72 respondents on CTBC and 75.9% (f=22) of respondents on FBTC were reportedly aware of TB patients' rights.

5.2.3.2 Conclusions

Most respondents supported the CTBC programme. Few patients who completed their TB treatment on the CTBC programme, attended TB support group meetings, provided TB-related health education in public or were TB treatment supporters.

5.2.3.3 Recommendations

Future research should attempt to identify reasons why not all patients supported the CTBC programme's activities and suggest ways of addressing any identified shortcomings. While TB patients receive treatment, they should be informed about TB support group meetings and invited to attend these meetings. At such meetings TB patients, who have completed their treatment, should receive information about and be encouraged to practise providing TB-related health education to the community.

5.2.4 Determining respondents' perceptions about factors influencing their adoption of a specific DOT option

5.2.4.1 Findings

Based on the findings of p=0.021, p=0.000 and p=0.047, self-determination, adequate information about CTBC and regularly available TB diagnostic services influenced patients' choice of DOTS option. The responses to open-ended questions indicated that adoption of a specific DOT option was based on patient-related factors, socio-cultural-related factors, socio-economic-related factors, structural-related factors and health system-related factors.

5.2.4.2 Conclusions

Patients' selection of CTBC or FBTC was influenced by the perceptions of their own self-determination, the adequacy of their information about CTBC and the availability of TB diagnostic services. However, TB patients' selection of a specific DOT option was also influenced by numerous other factors related to the patients themselves, socio-cultural aspects, socio-economic issues, structural factors and aspects related to the health system itself.

5.2.4.3 Recommendations

Future qualitative and quantitative studies should attempt to identify and prioritise TB patients' perceptions about the mentioned aspects that might influence their decisions about their selected DOT option. It is vital that such factors should be identified, prioritised and addressed if Botswana's MOH aims to treat more TB patients in the CTBC programme in future.

5.2.5 Factors influencing participation of TB patients in the CTBC

5.2.5.1 Findings

The findings based on the logistic regression, indicate that the main predictors for participation of the respondents in CTBC included knowledge and attitudes towards CTBC (p=0.0003), perceived barriers and enablers impacting on this programme (0.0279) and patients' satisfaction levels with this programme, p=0.0315.

5.2.5.2 Conclusions

TB patients are more likely to select the CTBC DOT option if they have adequate knowledge about this programme, if their attitudes are positive towards it, if they can overcome barriers and utilise enablers to implement the CTBC option.

5.2.5.3 Recommendations

Not only TB patients but all community members should be informed about TB, and especially about the CTBC programme. Sustained evaluations should be conducted about TB patients' experiences of the CTBC programme and any identified shortcomings should be addressed. Patients should be assisted to identify and address barriers and enablers that might impact on their selection of the CTBC option.

5.3 LIMITATIONS OF THE STUDY

The research findings might be limited to TB services offered by the GOB in the Lobatse area only, because the study was conducted in government health facilities implementing the BNTP guidelines about CTBC in Lobatse. The sample might not be representative of all public health facilities in Botswana that implement the same policy. Lobatse is an urban area and rural areas might encounter different challenges in implementing a CTBC programme.

The study had initially planned to recruit 144 respondents but due to various reasons such as deaths, ill-health, lack of contacts and relocations, 43 of the prospective respondents could not be reached.

The BNTP policy guidelines for CTBC were launched in 2011 in Botswana. Consequently only two years had elapsed since this implementation of the CTBC guidelines and the collection of data for this study. This relatively short period of time since the implementation of the CTBC guidelines, might have impacted on the respondents' answers to some questions during the structured interviews.

This study was quantitative, using only structured interviews to collect data, hence indepth information about factors affecting the uptake of CTBC in Lobatse might not have been obtained.

5.4 CONCLUDING REMARKS

Although progress, in terms of meeting CTBC programme targets, was evident in Lobatse, efforts should be intensified to involve the community and patients who have completed their TB treatment to advance CTBC programme implementation in this area. These patients could become treatment supporters and be part of the ACSM strategy. They could also assist in reaching hard to reach TB patients and TB defaulters in the area and thereby help to improve treatment outcomes. Existing knowledge gaps about TB and CTBC need to be addressed to enhance treatment outcomes and also to help in scaling up the uptake of the CTBC programme. The Lobatse DHMT has to enhance enablers and deal with barriers impacting on the adoption of CTBC. Patients' satisfaction issues regarding CTBC should be monitored consistently.

Effective implementation of the CTBC programme in Lobatse, in Botswana and in many other countries, could help to improve TB treatment outcomes, offer affordable TB treatment to many TB patients, reduce the incidence and prevalence figures of TB in specific communities, combat MDR TB and XDR TB and reduce TB-related morbidity and mortality statistics. These objectives can only be attained if TB patients adopt the CTBC DOT option and if the health services provide effective

health education, support, diagnostic services and medicines. More could be achieved if TB patients who completed their treatment could become treatment supporters and health educators. These aspects need to be addressed by the GOB's health services in Lobatse to enhance the positive outcomes of the CTBC programme in Lobatse, and probably throughout Botswana .

LIST OF REFERENCES

Ahmad, RA, Richardus, JH & De Vlas, SJ. 2013. Care-seeking behaviour among individuals with TB symptoms in Jogjakarta Province, Indonesia: a community-based study. *International Health Medicine* 5(1):51-57. doi:10.1093/inthealth/ihs002

Ai, X, Men, K, Guo, L, Zhang, T, Zhao, Y, Sun, X, Zhang, H, He, G, Van Der Werf, JM & Van Den Hof, S. 2010. Factors associated with low cure rate of tuberculosis in remote poor areas of Shaanxi Province, China: a case control study. *BioMed Central Public Health* 10(112). doi:10.1186/1471-2458-10-112

Amdur, R & Bankert, EA. 2011.*Institutional review board: member handbook*. 3rd edition. Sudbury: Jones & Bartlett.

Babbie, E. 2013. *The practice of social research.* Belmont:WardsworthC-engage Learning.

Badenhorst, C. 2010. Productive writing: becoming a prolific academic writer. Pretoria: Van Schaik.

Bati, J, Legesse, M & Medhin, G. 2013. Community's knowledge, attitudes and practices about tuberculosis in Itang Special District, Gambella Region, South Western Ethiopia. *BioMed Central Public Health* 13:734. doi:10.1186/1471-2458-13-734

Belay, M, Bjune,G, Ameni, G & Abebe,F. 2012. Diagnostic and treatment delay among tuberculosis patients in Afar Region, Ethiopia: a cross-sectional study. *BioMed Central Public Health* 12:369.doi:10.1186/1471-2458-12-369

Boateng, SA, Kodama, T, Sata, F, Bonsu, G & Osawa, E 2012. Community-involvement strategy to improve tuberculosis (TB) treatment outcomes in the Eastern Region of Ghana. *Journal of the National Institutes of Public Health* 61(4):357-365.

Bothma, Y, Greeff, M, Mulaudzi, FM & Wright, SCD. 2010. *Research in health sciences.* Cape Town: Heinemann.

Bowling, A. 2009. *Research methods in health: investigating health and health services*. 3rd edition. Berkshire: Open University Press.

Burns, N & Grove, KS. 2009. *The practice of nursing research: appraisal, synthesis, and generation of evidence*. 6th edition. St Louis: Elsevier.

CSO - see Central Statistics Office (of Botswana)

Central Statistics Office (of Botswana). 2005. Population projections for Botswana:2001-2013. Available from:

www.cso.gov.bw/templates/cso/file/File/Population_Projections.pdf (accessed 7 December 2013).

Chimbindi, N, Bärnighausen, T, Newell, M-L. 2013. An integrated approach to improving the availability and utilisation of tuberculosis healthcare in rural South Africa. *South-African Medical Journal* 103(4): 237-240. doi:10.7196/SAMJ.6423

Cramm, JM, Koolman, X, Møller, V & Neiboer, AP. 2011. Socio-economic status and self-reported tuberculosis: a multilevel analysis in a low-income township in the Eastern Cape, South Africa. *Journal of Public Health in Africa* 2(e34) doi:10.4081/jphia.2011 e.34.

Cramm, JM, Finkenflügel, HJM, Møller, V & Nieboer, AP. 2010. TB treatment initiation and adherence in a South African community influenced more by perceptions than by knowledge of tuberculosis. *BioMed Central Public Health* 10(72)doi:10.1186/1471-2458-10-72.

Cresswell, JW & Clark, VLP. 2011. *Designing and conducting mixed methods research*. 2nd edition. Thousand Oaks: Sage.

Desalu, OO, Adeoti, AO, Fadeyi, A, Salami, AK, Fawibe, AE & Oyedepo, OO. 2013. Awareness of the warning signs,risk factors, and treatment for tuberculosis among Urban Nigerians. *Tuberculosis Research and Treatment* 2013(369717). doi:10.1155/2013/369717. Available from: http://dx.doi.org/10.1155/2013/369717(accessed 11 October 2013).

De Vos, AS, Strydom, H, Fouché, CB & Delport, CSL. 2011. Research at grass roots for the social sciences and human service professions. 4th edition. Pretoria: VanSchaik

DHMT - see Lobatse District Health Management Team

Dias, AAL, De Oliveira, DMF, Turato, ER & De Figueiredo, RM. 2013. Life experiences of patients who have completed treatment: a qualitative investigation in Southeast Brazil. *BioMed Central Public Health* 13:595 doi:10.1186/1471-2458-13-595.

Embassy of Botswana (Tokyo,Japan). 2010. Beliefs, values and practices: Tumelo (Religion). Available from: www.botswanaembassy.or.jp/gene_info/c_belief.html (accessed 15 September 2014).

Friis, RH & Sellers, TA. 2009. Epidemiology for public health practice. 4th edition. Sudbury: Jones & Bartlett.

Geense, WW, Van De Glind, IM, Visscher, TLS & Van Archterberg, T. 2013. Barriers, facilitators and attitudes influencing health promotion activities in general practice: an explorative pilot study. *BioMed Central Family Practice 14*(20). doi: 10.1186/1471-2296-14-20.

Glanz, K, Rimer, BK & Lewis, FM. 2002. *Health behaviour and health education*: *theory, research and practice*. San Francisco: John Wiley & Sons.

Glanz, K, Rimer, BK & Viswanath, K. 2008. *Health behaviour and health education*: *theory, research and practice. 4th edition*. San Francisco: John Wiley & Sons.

Grove, KS, Burns, N & Gray, JR. 2013. *The practice of nursing research: appraisal , synthesis and generation of evidence*. 7thedition. St Loius: Elsevier.

Gupta, A, Wood, R, Kaplan, R, Bekker, L-G & Lawn, SD. 2013. Prevalent and incident tuberculosis are independent risk factors for mortality among patients accessing antiretroviral therapy in South-Africa. *PLoS ONE* 8(2):e55824. Doi:10.1371/journal.pone.0055824.

Kabongo, D & Mash, B.2010. Effectiveness of home-based directly observed treatment for tuberculosis in Kwenengwest subdistrict, Botswana. *African Journal of Primary Health Care and Family Medicine.* doi:10.4102/phcfm.v2i1.168.

Kigozi, GN, Heunis, CJ, Wouters, E & Van Den Berg, HS. 2011.Tuberculosis patients' reasons for, and suggestions to address non-uptake of HIV testing: a cross-sectional study in the Free State Province, South Africa. *BioMed Central Health Services Research* 11:110 doi:10 1186/1472-6963-11-110

Kwon, YS, Chi, SY, Oh, IJ, Kim, KS, Kim, IY, Lim, SC, Kim, YC & Kim, CY. 2013. Clinical characteristics and treatment outcomes of tuberculosis in the elderly: a case control study. *BioMedCentral Infectious Diseases* 13:121 doi:10.1186/1471-2334-13-121.

Li, Y, Ehiri, J, Tang, S, Li, D, Bian, Y, Lin, H, Marshall, C & Cao, J. 2013. Factors associated with patient, and diagnostic delays in Chinese TB patients: a systematic review and meta-analysis. *BioMedCentral Medicine.* 11:156 doi:10.1186/1741-7015-11-156.

Lobatse DHMT - see Lobatse Town Council District Health Management Team

Lobatse ETR - see Lobatse Town Council Electronic Tuberculosis Register

Lobatse Town Council Electronic Tuberculosis Register (Botswana). 2013. *Electronic Tuberculosis Register*. Lobatse. Available from:file://C:\ETR.Net\Reports\Treatment Outcome Reports\Treatment Outcome _Year2013 (accessed 12 August 2013).

Lobatse Town Council (Botswana). 2013. *District Health Management Team TB/HIV briefing notes to ACHAP CEO.* Lobatse.

LoBiondo-Wood, G & Haber, J. 2010. Nursing research: methods and critical appraisal for evidence-based practice. 7th edition. St Louis: CV Mosby.

Luque-Fernandez, MA, Van Cutsem, G, Goemaere, E, Hilderbrand, K, Schomaker, M, Mantangana, N, Mathee, S, Dubula, V, Ford, N, Hernán, MA & Boulle, A. 2013. Effectiveness of patient adherence groups as a model of care on stable patients on antiretroviral therapy in Khayelitsha, Cape Town, South Africa. *PLoSONE 8(2):e56088.doi:10.1371/journal.pone.0056088.*

Masisi, MEK.2011. The world TB day commemoration speech by the Minister for Presidential Affairs and Public Administration Honourable Mokgoetsi EK Masisi at old Naledi. 24/03/11. Available from: http://www.gov.bw/Global/OP%20Ministry/Republic%20of%20Botswana%20TAUTONA%20TIMES%20vol%205.pdf (accessed10 July 2013).

Masolotate, B. 2013. Efforts against HIV pay off. *Daily News*, December3.

Mboma, SM, Houben, RMGJ, Glynn, JR, Sichali, L, Drobniewsk, F, Mpunga J, Fine, PEM, French, N & Crampin, AC. 2013. Control of (multi) drug resistance and tuberculosis incidence over 23 years in the context of a well-supported tuberculosis programme in rural Malawi. *PLoS ONE 8(3):e58192doi:10.1371/journal.pone.0058192.*

Méda, CZ, Lin, Y, Sombié, I, Maré, D, Morisky,ED & Chen, AY. 2013.Medication-adherencepredictors among patients with tuberculosis or human immunodeficiency virus infection in Burkina Faso.*International Journal of Epidemiology*. Available from: http://www.e-jmii.com/article/S1684-1182(13)00080-7/fulltext (accessed 30 September 2013).

Ministry of Health (of Botswana). 2009. *Tuberculosis infection control guidelines.* Gaborone: Government Printer

Ministry of Health (of Botswana). 2010a. *Assessment of the performance of the community based tuberculosis control (CTBC) program in Botswana (2004-2010).*Gaborone: Government Printer.

Ministry of Health (of Botswana). 2010b. *Tuberculosis and Leprosy annual report 2009.* Gaborone:Government Printer.

Ministry of Health (of Botswana). 2010c. Botsogo News 1 (4) April 2010.

Ministry of Health (of Botswana). 2011a. *National Tuberculosis programme manual*. 7thedition. Gaborone: Government Printer.

Ministry of Health (of Botswana). 2011b. *Botswana National Tuberculosis programme(BNTP): Botswana CommunityTuberculosis care policy guidelines.* Gaborone: Government Printer.

Ministry of Health (of Botswana). 2011c. *Botswana TB/HIV knowledge, attitudes and practices study report 2011.* Gaborone: Government Printer.

Ministry of Health (of Botswana). 2011d. *TB/HIV policy guidelines.* Gaborone: Government Printer.

Ministry of Health (of Botswana). 2011e. *National health policy*: towards a healthier Botswana. Gaborone: Government Printer.

Ministry of Health (of Botswana). *2012. Botswana Tuberculosis and leprosy report 2010-2011.* Gaborone: Government Printer.

Ministry of Health (of Botswana). 2013a. *Tuberculosis control advocacy, communication & social mobilization strategy* 2013 – 2017. Gaborone: Government Printer.

Ministry of Health (of Botswana). 2013b. *National Tuberculosis programme.Strategic plan 2013-2017.* Gaborone: Government Printer.

Ministry of Youth, Sport & Culture (of Botswana). 2010. *Revised national youth policy: August 2010.* Gaborone: Government Printer

Mkopi, A, Range, N, Amuri, M, Geubbels, E, Lwilla, F, Egwaga, S, Schulze, A & Van Leth, F. 2013. Health workers' performance in the implementation of patient centred tuberculosis treatment (PCT) strategy under programmatic conditions in Tanzania: a cross sectional study. *BioMed Central Health Services Research* 13:101. doi: 10.1186/1472-6963-13-101.

Mkopi, A, Range, N, Lwilla, F, Egwaga, S, Schulze, A, Geubbels, E & Van Leth, F.2012. Adherence to tuberculosis therapy among patients receiving home-based directly observed treatment: evidence from the United Republic of Tanzania. *PLoSONE* 7(12):e51828. doi: 10.1371/journal.pone.0051828.

Mkopi, A, Range, N, Lwilla, F, Egwaga, S, Schulze, A, Geubbels, E & Van Leth, F. 2013. Health workers' performance in the implementation of patient centred Tuberculosis treatment (PCT) strategy under programmatic conditions in Tanzania: a cross sectional study. *BioMed Central Health Services Research*, 13:101. DOI:10.1186/1472-6963-13-101.

Mora, R-J & Kloet, BK. 2010. *Digital forensic sampling: the application of statistical sampling in digital forensics. Version: 1.0.* Available from: http://articles.forensicfocus.com/tag/digital-forensic-sampling/ (accessed 22 August 2013).

Mugisha, K, Semo, B, Ledikwe, J, Nucbe, RT,Firth, J, Achoki, T, Lere, T, Machao, G, Mwangemi, F, Makadzange, P, Mabreaden, A, Katholo,T & Nkomo, B. 2013. Cohort analysis of treatment outcomes from facility-based and community-based tuberculosis

care in Botswana: a cross-sectional survey. *The Lancet* 381:S93.doi: 10.1016/S0140-6736(13)61347-1

Murray, EJ, Bond, VA, Marais, BJ, Godfrey-Faussett, P, Ayles, HM & Beyers, N. 2012. High levels of vulnerability and anticipated stigma reduce the impetus for tuberculosis for diagnosis in Cape Town, South Africa. *Health Policy and Planning (2012)* doi:10.1093/heapol/czs072.

Muture, BN, Keraka, MN, Kimuu, PK, Kabiru, EW, Ombeka, VO & Oguya, F. 2011. Factors associated with default from treatment among tuberculosis patients in Nairobi province, Kenya: a case control study. *BioMedical Central Public Health.*11:696. doi:10.1186/1471-2458-11-696.

Naidoo, P, Peltzer, K, Louw, J, Matseke, G, Mchunu, G & Tutshana, B. 2013. Predictors of tuberculosis (TB) and antiretroviral (ARV) medication non-adherence in public primary care patients in South Africa: a cross sectional study. *Biomed Central Public Health*. 13:396. doi: 10.1186.1471-2458-13-396.

Ncho, CD & Wright, SCD. 2013. Health maintenance and lowsocio-economic status: a family perspective. *Curationis 36(1)* Available from*:* *http://dx.doi.org/10.4102/curationis.v36i1.22* (accessed 20 September 2013).

Ogden, J. 2012. *Health psychology: a text book*. London: Open University Press.

Oliver, P. 2010. *The student's guide to research ethics*. 2nd edition. Maidenhead: McGraw Hill.

Pera, S & Van Tonder, S. 2011. Ethics in health care. 3rd edition. Lansdowne: Juta.

Polit, DF & Beck, CT. 2012.*Nursing research: generating and assessing evidence for nursing practice.* 9th edition*.* Philadelphia: JB Lippincott.

Polit, DF & Beck, CT. 2010.*Essentials of nursing research: appraising evidence for nursing practice*. 7th edition. Philadelphia: Lippincott Williams & Wilkins.

Reed, GW, Choi, H, Lee, SY, Lee,M, Kim, Y, Park, H, Lee, J, Zhan, X, Kang, H, Hwang, S, Carroll, M, Cai, Y, Cho, S-N, Barry, CE, Via, LE & Kornfeld, E. 2013. Impact of diabetes and smoking on mortality in tuberculosis. *PLoSONE* 8(2):e58044 doi:10.1371/journal.pone.0058044.

Remocker, C & Shea, N. 2011. Introduction to the Health Belief Model (HBM). Available from:http://www.course-readings-and-resources.bestpractices-healthpromotion.com/attachments/File/2011_HP_Course_PowerPoints_and_resources/Nicole_Shea_and_Catriona_Remoker_The_Health_Belief_Model_2011.pdf (accessed 23 August 2014).

Saifodine, A, Gudo, PS, Sidat, M & Black, J. 2013. Patient and health system delay among patients with pulmonary tuberculosis in Beira city, Mozambique. *BioMed Central Public Health* 13:559doi: 10.1186/1471-2458-13-559.

Skovdal, M, Campbell, C, Madanhire, C, Mupambireyi, Z, Nyamukapa, C & Gregson, S. 2011. Musculinity as a barrier to men's use of HIV services in Zimbabwe. *Globalization and Health* 7:13. doi:10.1186/1744-8603-7-13.

Sreeramareddy, CT, Kumar, HNH & Arokiasamy, JT. 2013. Prevalence of self-reported tuberculosis, knowledge about tuberculosis transmission and its determinants among adults in India: results from a nation-wide cross-sectional household survey. *BioMedCentral Infectious Diseases* 13:16. doi:10.1186/1471-2334-13-16.

Statistics Botswana. 2013. 2011 Botswana population and housing census:alphabetical index of districts. Available from: www.cso.gov.bw/index.php?option=com_content1&id=2&site=census (accessed 7 December 2013).

Sukumani, JT, Lebese, RT, Khoza, BL & Risenga, PR. 2012. Experiences of family members caring for tuberculosis patients at home in the Vhembe district of the Limpopo Province. *Curationis 35(1). Available from:* http://dx.doi.org/10.4102/curationis.v35i1.54 (accessed11 July 2013).

The free On-line Dictionary of computing. 2013. Available from: http://dictionary.reference.com/browse/factor (accessed 20 August 2013).

Uwimana, J, Zarowsky, C, Hausler, H & Jackson, D. 2012. Engagement of non-government organisations and community care workers in collaborative TB/HIV activities including prevention of mother to child transmission in South Africa: opportunities and challenges. *BioMed Central Health Services Research 12:233*. doi: 10.1186/1472-6963-12-233.

Weitz, R. 2013. *The sociology of health, illness, and health care: a critical approach*. 6th edition. Wadsworth: C-engage Learning.

WHO see World Health Organization

World Health Organization. 2010. *Treatment of tuberculosis guidelines.* 4th edition. Geneva.

World Health Organization. 2012a. *Engage-TB.Integrating community-based tuberculosis activities into the work of nongovernmental and other civil society organizations: operational guidance.* Geneva.

World Health organization. 2012b. *Global tuberculosis report 2012*. Geneva.

World Health Organization. 2013a. *TB fact sheet N104*. Available from: www.who.int/mediacentre/factsheets/fs104/en (accessed 26 September 2013).

World Health Organization. 2013b. *TB/HIV/HIV-associated TB facts 2013*. Available from: http://who.int/tb/challenges/hiv/ (accessed 26 September 2013).

World Health Organization. 2013c.*Tuberculosis fact sheet N°104: reviewed February2013*. Available from: http://www.who.int/mediacentre/factsheets/fs104/en (accessed 18 October 2013).

World Health Organization. 2013d. *Global TB programme*. Available from: www.who.int/tb/publications/CORPORATEFACTSHEET_2013.pdf (accessed 19 June 2013).

World Health Organization. 2013e. *Workshop to scale up the implementation of collaborative TB/HIV activities in Africa*. Available from: www.who.int/tb/challenges/hiv/implementation_workshop_report.pdf (accessed 19 June 2013).

Yassin, MA, Datiko, DG, Tulloch, O, Markos, P, Aschalew, M, Shargie, EB, Dangisso, MH, Komatsu, R, Sahu, S, Blok, L, Cuevas, LE & Theobald, S. 2013. Innovative community-based approaches doubled case notification and improved treatment in Southern Ethiopia. *PLoS ONE8(5):e63174.doi:10. 1371/journal.pone.0063174.*

==========

ETR.Net
The Electronic Tuberculosis Register

LOBATSE Tuberculosis Programme

Treatment Outcome Report

LOBATSE Quarter 1-4 of 2010

Category	Outcome status	No	%
All TB Cases	**Treatment success**	116	74.8%
	Treatment failure*	3	1.9%
	Treatment not completed		
	- Died during treatment	16	10.3%
	- Defaulted from treatment	8	5.2%
	Transferred to another BMU	12	7.7%
	Patients not evaluated	-	0.0%
	Total	**155**	**100.0%**
	* Of which 0 were diagnosed as MDR TB.		
New Sputum Smear Positive Cases	**Treatment success (76.1%)**		
	- Cured	43	60.6%
	- Treatment completed	11	15.5%
	Treatment failure**	3	4.2%
	Treatment not completed		
	- Died during treatment	7	9.9%
	- Defaulted from treatment	3	4.2%
	Transferred to another BMU	4	5.6%
	Patients not evaluated	-	0.0%
	Total	**71**	**100.0%**
	** Of which 0 were diagnosed as MDR TB.		
Re-treat Sputum Smear Positive Cases	**Treatment success (73.7%)**		
	- Cured	10	52.6%
	- Treatment completed	4	21.1%
	Treatment failure***	-	0.0%
	Treatment not completed		
	- Died during treatment	3	15.8%
	- Defaulted from treatment	2	10.5%
	Transferred to another BMU	-	0.0%
	Patients not evaluated	-	0.0%
	Total	**19**	**100.0%**
	*** Of which 0 were diagnosed as MDR TB.		

Created by: Dianah Gaonewe
Date created: 12/08/2013

ETR.Net
The Electronic Tuberculosis Register

LOBATSE Tuberculosis Programme

Treatment Outcome Report

LOBATSE Quarter 1-4 of 2011

Category	Outcome status	No	%
All TB Cases	**Treatment success**	110	76.9%
	Treatment failure*	2	1.4%
	Treatment not completed		
	- Died during treatment	21	14.7%
	- Defaulted from treatment	4	2.8%
	Transferred to another BMU	3	2.1%
	Patients not evaluated	3	2.1%
	Total	**143**	**100.0%**
	* Of which 0 were diagnosed as MDR TB.		
New Sputum Smear Positive Cases	**Treatment success (86.4%)**		
	- Cured	29	49.2%
	- Treatment completed	22	37.3%
	Treatment failure**	1	1.7%
	Treatment not completed		
	- Died during treatment	4	6.8%
	- Defaulted from treatment	2	3.4%
	Transferred to another BMU	1	1.7%
	Patients not evaluated	-	0.0%
	Total	**59**	**100.0%**
	** Of which 0 were diagnosed as MDR TB.		
Re-treat Sputum Smear Positive Cases	**Treatment success (66.7%)**		
	- Cured	4	26.7%
	- Treatment completed	6	40.0%
	Treatment failure***	1	6.7%
	Treatment not completed		
	- Died during treatment	2	13.3%
	- Defaulted from treatment	-	0.0%
	Transferred to another BMU	-	0.0%
	Patients not evaluated	2	13.3%
	Total	**15**	**100.0%**
	*** Of which 0 were diagnosed as MDR TB.		

Created by: Dianah Gaonewe
Date created: 12/08/2013

ETR.Net
The Electronic Tuberculosis Register

LOBATSE Tuberculosis Programme

Treatment Outcome Report

LOBATSE Quarter 1-4 of 2012

Category	Outcome status	No	%
All TB Cases	**Treatment success**	108	69.2%
	Treatment failure*	1	0.6%
	Treatment not completed		
	- Died during treatment	15	9.6%
	- Defaulted from treatment	-	0.0%
	Transferred to another BMU	9	5.8%
	Patients not evaluated	23	14.7%
	Total	**156**	**100.0%**
	* Of which 0 were diagnosed as MDR TB.		
New Sputum Smear Positive Cases	**Treatment success (71.2%)**		
	- Cured	38	52.1%
	- Treatment completed	14	19.2%
	Treatment failure**	1	1.4%
	Treatment not completed		
	- Died during treatment	3	4.1%
	- Defaulted from treatment	-	0.0%
	Transferred to another BMU	5	6.8%
	Patients not evaluated	12	16.4%
	Total	**73**	**100.0%**
	** Of which 0 were diagnosed as MDR TB.		
Re-treat Sputum Smear Positive Cases	**Treatment success (100.0%)**		
	- Cured	5	83.3%
	- Treatment completed	1	16.7%
	Treatment failure***	-	0.0%
	Treatment not completed		
	- Died during treatment	-	0.0%
	- Defaulted from treatment	-	0.0%
	Transferred to another BMU	-	0.0%
	Patients not evaluated	-	0.0%
	Total	**6**	**100.0%**
	*** Of which 0 were diagnosed as MDR TB.		

Created by: Dianah Gaonewe
Date created: 12/08/2013

ETR.Net
The Electronic Tuberculosis Register

LOBATSE Tuberculosis Programme

Treatment Outcome Report

LOBATSE Quarter 1-4 of 2013

Category	Outcome status	No	%
All TB Cases	**Treatment success**	3	3.8%
	Treatment failure*	-	0.0%
	Treatment not completed		
	- Died during treatment	5	6.4%
	- Defaulted from treatment	-	0.0%
	Transferred to another BMU	2	2.6%
	Patients not evaluated	68	87.2%
	Total	**78**	**100.0%**
	* Of which 0 were diagnosed as MDR TB.		
New Sputum Smear Positive Cases	**Treatment success (7.1%)**		
	- Cured	2	7.1%
	- Treatment completed	-	0.0%
	Treatment failure**	-	0.0%
	Treatment not completed		
	- Died during treatment	1	3.6%
	- Defaulted from treatment	-	0.0%
	Transferred to another BMU	1	3.6%
	Patients not evaluated	24	85.7%
	Total	**28**	**100.0%**
	** Of which 0 were diagnosed as MDR TB.		
Re-treat Sputum Smear Positive Cases	**Treatment success (0.0%)**		
	- Cured	-	0.0%
	- Treatment completed	-	0.0%
	Treatment failure***	-	0.0%
	Treatment not completed		
	- Died during treatment	-	0.0%
	- Defaulted from treatment	-	0.0%
	Transferred to another BMU	-	0.0%
	Patients not evaluated	4	100.0%
	Total	**4**	**100.0%**
	*** Of which 0 were diagnosed as MDR TB.		

Created by: Dianah Gaonewe
Date created: 12/08/2013

P.O BOX 602122
Gaborone
+267 71862509
thapelokenosi@yahoo.com

12th July 2013

Ms O Rankosha
P.O.BOX 1530
Lobatse

RE: AGREEMENT TO ASSIST YOU WITH DATA MANAGEMENT AND ANALYSIS DURINGYOUR RESEARCH STUDY.

This communiqué serves as a confirmation of an agreement made between you and I that I shall assist you with data management and analysis during the undertaking of your research titled "FACTORS AFFECTING THE UPTAKE OF COMMUNITY TUBERCULOSIS CARE AS EXPERIENCED BY PATIENTS IN LOBATSE DISTRICT OF BOTSWANA".

With my BA degree in Statistics and Psychology, I have both practical and theoretical understanding of research methods and statistics.

Thank you.

Thapelo Kenosi (Mr.)

STRUCTURED INTERVIEW SCHEDULE: PATIENTS

RESEARCH PROJECT: FACTORS AFFECTING THE UPTAKE OF CUMMUNITY TUBERCULOSIS CARE AS EXPERIENCED BY PATIENTS IN LOBATSE DISTRICT OF BOTSWANA.

Instructions to the interviewers:

Where required please indicate your interviewee's answer with a cross (X) in the appropriate box or write a response in the space provided, using a black ballpoint pen. For the open-ended questions, please write your interviewee's responses clearly and legibly in the space provided.

Respondent Code Number ----------Interviewer number ----------Date of interview

SECTION A: BIOGRAPHICAL DATA

Indicate your interviewee's choice by marking the appropriate selected blank block with an "X".

The following questions are **for statistical purposes only**.

Q1. Gender:

Male	1	
Female	2	

Q2. Age in years:

21 – 25 years	1	
26 – 30 years	2	
31-35 years	3	
36 – 40 years	4	
41 – 45 years	5	
46-50 years	6	
51-55 years	7	
56-60 years	8	
61-64 years	9	

Q3. Educational status:

No schooling	1	
Primary	2	
Secondary (Junior/Senior)	3	
Certificate	4	
Diploma	5	
Degree	6	
Masters	7	
PHD	8	
Others (specify)	9	

Q4. Religion:

Christian	1	
Muslim	2	
Traditional African	3	
No affiliation	4	
Others (specify)	5	

Q5. What is your employment status?

Unemployed	1	
Full time formally employed	2	
Part-time formally employed	3	
Self employed	4	
Others (specify)	5	

Q6. What is your home language?

Q7. What is your marital status?

Single	1	
In a committed relationship with a man	2	
In a committed relationship with a woman	3	
In an open relationship (multiple partners)	4	
Co-habiting (living together)	5	
Married	6	
Separated	7	
Divorced	8	
Widowed	9	
Others (specify)	10	

Q.8. Who do you normally live with?

Alone	1	
Spouse	2	
Parents	3	
Others (specify)	4	

SECTION B: TB KNOWLEDGE

Q9. When were you first diagnosed with TB? Please state the month next to the appropriate year.

2009	1	
2010	2	
2011	3	
2012	4	
2013	5	
Others (specify)	6	

Q10. What type of TB were you diagnosed with?

Lungs	1	
Other parts of the body	2	

Q11. Which of the following signs and symptoms led you to seek treatment? Please state each sign or symptom that applies to you.

Coughing for ‹ 2 weeks	1	
Coughing for › 2 weeks	2	
Coughing up blood	3	
Chest pains	4	
Shortness of breath	5	
Sweating at night	6	
Fever	7	
Loss of appetite	8	
Loss of weight	9	
Others (specify)	10	

Q12. How long did the above signs and symptoms take before seeking medical help?

Q13.Where did you first go for treatment when you experienced signs and symptoms of TB?

Health facility	1	
Herbalist	2	
Traditional doctor	3	
Sangoma	4	
Church	5	
Others (specify)	6	

Q14. Please indicate whether the following statements are true or false in terms of Identification of TB

Question	Statement	True	False	Do not know
Q14a)	TB is preventable	1	2	3
Q14b)	TB is curable	1	2	3
Q14c)	Coughing without covering the mouth by a patient with TB of the lungs can spread TB germs and infect other persons without TB	1	2	3
Q14d)	Sneezing by a patient with TB of the lungs can cause TB infection of other people	1	2	3
Q14e)	TB of the lungs is spread through talking	1	2	3
Q14f)	Plenty of fresh air reduces the chances of spreading TB	1	2	3
Q14g)	Covering the mouth and nose with hands when coughing or sneezing is an effective way of preventing the spread of TB germs.	1	2	3
Q14h)	TB infected sputum can spread TB germs and infect other people with TB	1	2	3
Q14i)	People living with a TB patient have a low risk of getting TB	1	2	3

Q15. Please indicate whether each of the following TB-related statements is true or false

Question	Statement	True	False	Do not know
Q15a)	Coughing for more than two weeks	1	2	3
Q15b)	Fever for two days	1	2	3
Q15c)	Shortness of breath with persistent cough	1	2	3
Q15d)	Chest pains with night sweats	1	2	3
Q15e)	Blood stained sputum	1	2	3
Q15f)	TB is caused by poisoning “sejeso”	1	2	3
Q15g)	Thibamo “birth complications” spread TB	1	2	3
Q15h)	Sleeping with a widow/ widower spreads TB	1	2	3

Q16. Please indicate whether each of the following TB treatment-related statements is true or false

Question	Statement	True	False	Do not know
Q16a)	TB treatment has to be taken daily under direct supervision	1	2	3
Q16b)	Missing TB treatment carries the risk of spreading TB that does not respond to treatment	1	2	3
Q16c)	A TB patient who travels has to arrange with the clinic that he/she gets enough medicines	1	2	3
Q16d)	A patient with TB of the lungs must have regular sputum checks done	1	2	3
Q16e)	A TB patient has to know the drugs he/she takes	1	2	3
Q 16f)	A TB patient has to know side effects of drugs he/she takes	1	2	3
Q16g)	TB can get cured by traditional medicine	1	2	3
Q16h)	Healthy food is an important factor to cure TB	1	2	3
Q 16i)	I have been given health education on the importance of taking treatment daily	1	2	3
Q 16j)	My family has been given health education on the importance of taking treatment daily	1	2	3

Q17. Please indicate whether each of the following TB/HIV-related statements is true or false

Question	Statement	True	False	Do not know
Q17a)	A person can suffer from TB and HIV at the same time	1	2	3
Q17b)	All TB patients should be examined for HIV	1	2	3
Q17c)	Early treatment of TB and HIV can improve the chances of curing TB	1	2	3
Q17d)	TB/HIV services are well integrated into CTBC	1	2	3
Q17e)	HIV infection is a definite cause of TB	1	2	3

SECTION C: CTBC KNOWLEDGE AN**D** ATTITUDES

Q18. Please rate each of the following as "Yes", or "No", or "Uncertain".

Question	Statement	Yes	No	Uncertain
Q18a)	Can reduce the number of people who miss TB treatment	1	2	3
Q18b)	Can increase the identification of people with TB of the lungs in the community	1	2	3
Q18c)	Has been fully explained to me	1	2	3
Q18d)	I do not see the value of the CTBC	1	2	3
Q18e)	I have already enrolled in the CTBC	1	2	3
Q18f)	CTBC makes me uncomfortable	1	2	3
Q18g)	It does not feel good to enroll for the CTBC	1	2	3
Q18h)	Treatment supporters are not difficult to find	1	2	3
Q18i)	Health care providers are committed to the CTBC	1	2	3
Q18j)	I am tired of learning about the CTBC	1	2	3

SECTION D: DOT OPTION

Q19. Please indicate factors that are likely to have influenced your current DOT option as (either FBTC or CTBC) "Yes", or "No", or "Uncertain

Question	Statement	Yes	No	Uncertain
Q 19a)	A chance for a personal decision about my dot option	1	2	3
Q19b)	Adequate information on TB	1	2	3
Q19c)	Adequate information on the DOT option chosen	1	2	3
Q19d)	Cost saving opportunities	1	2	3
Q19e)	Desire to fight TB stigma	1	2	3
Q19f)	Desire to control TB in the community	1	2	3
Q19g)	Nearness of the DOT option	1	2	3
Q19h)	Awareness of TB patients' rights	1	2	3
Q19i)	Adequate integration of TB services with other health care services	1	2	3
Q19j)	Adequate community support	1	2	3
Q19k)	Adequate TB drug supply	1	2	3
Q19l)	Regular TB diagnostic services	1	2	3
Q19m)	Availability of incentives	1	2	3
Q19n)	Quality of health care services	1	2	3

Question 19o) – briefly explain reasons for your choice of DOT option over the other

----

SECTION E: TB AND MY RESPONSIBILITIES

Q20. Are you currently on TB treatment?

Yes	1	
No	2	

Q21. When did you start TB treatment? Please indicate the month and year.

……

Q22a. Have you completed your treatment?

Yes	1	
No	2	

Q22b. If yes, when did you complete your treatment? Please indicate the month and year.

……

Q22c. If no, please state the reasons for having not completed your treatment?

……

……

……

Q23a. Are you cured of TB?

Yes	1	
No	2	

Q23b. If no, please state the reasons for not being cured?

……

…… ……

……

Q24a. Have you ever missed a dose of your treatment?

Yes	1	
No	2	

Q24b. If yes, for how long did you miss your treatment dosage?

1 day	1	
2 days	2	
Others (specify)	3	

Q24c. Please state the reasons for missing your treatment

Q25a. Have you ever been re-started on treatment?

Yes	1	
No	2	

Q25b. if yes, please state the reasons you were re-started on treatment?

……

……

……

Q26a. Have you ever stopped taking your treatment?

Yes	1	
No	2	

Q26b. If yes, for how long did you stop taking your treatment?

‹ a month	1	
1 month	2	
2 months	3	
Others (specify)	4	

Q26c. If yes, please state the reasons for stopping treatment?

……

……

……

Q27. Please rate each of the following TB patient- related responsibility statements as "Yes", or "No", or "Uncertain".

Question	Statement	Yes	No	Uncertain
Q27a)	I regularly attend TB support group meetings	1	2	3
Q27b)	I encourage others to seek treatment if they experience possible signs of TB	1	2	3
Q27c)	I encourage others to adhere to their TB treatment	1	2	3
Q27 d)	I have publicly given health education on TB related messages	1	2	3
Q27e)	I am a TB treatment supporter			

Q28a. Have you done your sputum checks regularly?

Yes	1	
No	2	

Q28b. If no, please state the reasons for failure to do sputum checks regularly.

……

……

……

Q29. Any other comments?

……

……

……

……

Thank you for answering my questions.

Reference number of re MOALO WA THULAGANYO YA POTSOLOTSO: BALWETSE

LENANEO LA PATLISISO: MABAKA A A AMANANG LE KAMOGELO YA LENANEO LA TLHOKOMELO YA MOLWETSE WA TB KWA LWAPENG JAAKA LE ITEMOGELWA KE BALWETSE MO KGAOLONG YA LOBATSE MO BOTSWANA.

Ditaelo go ba botsolotsi:

Fa go tlhokegang teng o kopiwa go supa karabo ya ***moarabi ka letshwao la sefapano (X) mo lebokosong le le lebanyeng kana kwala karabo mo phatlheng e o e filweng, o dirisa pene e ntsho. Mo dipotsong tse di tlhokang tlhaloso, o kopiwa go kwala dikarabo tsa moarabi ka tsela ee tlhaloganyesegang le mokwalo o o balegang mo phatlheng e o e filweng.***

Nomoro ya sephiri ya moarabi---------- nomoro ya mmotsolotsi ----------letsatsi la potsolotso

KAROLO YA NTLHA: DINTLHA KA BOTSHELO JWA GAGO

Supa tlhopho ya moarabi ka go dirisa letshwao la sefapano "X"mo lebokosong le le senang sepe lele lebanyeng.

Dipotso tse di latelang ke tse **di dirisediwang go itse dipalo fela.**

Potso 1. Bong:

Monna	1	
Mosadi	2	

Potso 2. Dingwaga tsa matsalo:

21 – 25 ya dingwaga	1	
26 – 30 ya dingwaga	2	
31-35 ya dingwaga	3	
36 – 40 ya dingwaga	4	
41 – 45 ya dingwaga	5	

46-50	ya dingwaga	6	
51-55	ya dingwaga	7	
56-60	ya dingwaga	8	
61-64	ya dinwaga	9	

Potso 3. Seemo sa thutego:

Ga ke a tsena sekole	1	
Sekole se se botlana	2	
Sekole se se golwane (fomo 2/3/5)	3	
Setlankana	4	
Dipoloma	5	
Digarata	6	
Dimastas	7	
PHD	8	
Tse dingwe (tlhalosa)	9	

Potso 4. Tumelo:

Mokeresete	1	
Mommoseleme	2	
Badimo	3	
Ga kena tumedi	4	
Tse dingwe (Tlhalosa)	5	

Potso 5. Maemo a tsa pereko?

Ga ke bereke	1	
Phiro e e tlhomameng	2	
Phiro ya nakwana	3	
ke a ipereka	4	

Tse dingwe (tlhalosa)	5	

Potso 6. Teme ya gaeno ke efe ?

Potso 7. Seemo sa nyalo ya gago ke sefe?

Gake a nyala/ nyalwa	1	
Botsalano jo bo tlhoafetseng le monna	2	
Botsalano jo bo tlhoafetseng le mosadi	3	
Ke na le bakapelo ba le bantsi	4	
Re nna mmogo re sa nyalana	5	
Nyetse/ Nyetswe	6	
Re kgaogane e se ka fa molaong	7	
Tlhadile/tlhadilwe	8	
Tlhokafaletswe	9	
Tse dingwe (Tlhalosa)	10	

Potso 8. Ka gale o nna le mang?

ke le esi	1	
Monna/ Mosadi wa lenyalo	2	
Batsadi	3	
Tse dingwe (Tlhalosa)	4	

<u>KAROLO YA BOBEDI: KITSO KA TB</u>

Potso 9. O tshwerwe ka TB leng ele lantlha? O kopiwa go supa kgwedi e e tsamaelang le ngwaga e e lebanyeng.

2009	1	

2010	2	
2011	3	
2012	4	
2013	5	
Tse dingwe (Tlhalosa)	6	

Potso 10. O tshwere ka mofuta o fe wa TB?

Mafatlha	1	
Dikarolo tse dingwe tsa mmele	2	

Potso 11. Ke dife dikai tse dilatelang tse di dirileng gore o batle kalafi? O kopiwa go supa sekai sengwe le sengwe se se go amang.

Go gotlhola mo go fetang lobaka la beke tse pedi	1	
Go gotlhola mo go sa feteng beke tse pedi	2	
Go gotlhola sehuba se senang le madi	3	
Setlhabi sa mafatlha	4	
Go hema ka bonako o hupela	5	
Go fufula bosigo o robetse	6	
Go gotela mmele	7	
Go sulafalelwa ke dijo	8	
Go latlhegelwa ke nama	9	
Tse dingwe (Tlhalosa)	10	

Potso 12. Go tsere lebaka le lekae pele ga o batla thuso ya ba bongaka?

Potso 13. One wa batla kalafi kae lantlha fa o itemogela dikai tsa TB?

Kokelo	1	
Ba ditlhare tsa setso	2	
Ngaka ya setso	3	
Sangoma	4	
Basebeletsi	5	
Ba bangwe (Tlhalosa)	6	

Potso14. O kopiwa go supa gore a diele tse dilatelang di boammaaruri kana nyaa mapapi le go lemoga TB?

Potso	Seele	Go jalo	Ga go jalo	Ga ke itse
Potso14a)	TB e a thibelwa	1	2	3
Potso14b)	TB ea alafesega	1	2	3
Potso14c)	Go gotlhola ga molwetse wa TB ya mafatlha a sa bipe molomo go ka anamisetsa mogare wa TB mo go ba ba senang yone	1	2	3
Potso14d)	Go ethimola ga molwetse wa TB ya mafatlha go ka baka TB go tsena ba bangwe	1	2	3
Potso14e)	TB ya mahatlha e anama ka go bua	1	2	3
Potso 14f)	Phefo e e phepa e ntsi e fokotsa kgonafalo ya kanamo ya TB	1	2	3
Potso14g)	Go itshwara molomo le dinko ka matsogo fa o gotlhola kana o ethimola ke tsela ee nonofileng ya go thibela kanamo ya mogare wa TB	1	2	3
Potso14h)	Segotlhola se senang le mogare wa TB se ka anamisa megare ya TB mo bathong ba bangwe	1	2	3
Potso14i)	Batho ba batshelang le molwetse wa TB ba mo diphatseng tse di ko tlase go ka tsenwa ke mogare waTB.	1	2	3

Potso15. O kopiwa go supa gore a sengwe le sengwe sa diele tse di tsamaelannag le TB tse di latelang se boammaaruri kana nnyaa.

Potso	Seele	Go jalo	Ga go jalo	Ga ke itse
Potso15a)	Go gotlhola go feta beke tse pedi	1	2	3

Potso15b)	Go gotela malatsi a le mabedi	1	2	3
Potso15c)	Gohema ka bonako le go gotlholela ruri	1	2	3
Potso15d)	Setlhabi sa mafatlha le go huhula bosigo o robetse	1	2	3
Potso15e)	Segotlhola se se madi	1	2	3
Potso15f)	TB e bakwa ke sejeso	1	2	3
Potso15g)	Thibamo e anamisa TB	1	2	3
Potso15h)	Go tlhakanela dikobo le motlholagadi/moswagadi go anamisa TB	1	2	3

Potso 16.O kopiwa go supa gore a sengwe le sengwe sa diele tse di tsamaelanag le kalafi ya TB tse di latelang se boammaaruri kana nnyaa.

Potso	**Seele**	**Go jalo**	**Ga go jalo**	**Gakeitse**
Potso16a)	Kalafi ya TB e tshwanetse ya nowa tsatsi le le tsatsi ka fa tlase ga tlhokomelo	1	2	3
Potso16b)	Go tlodisa kalafi ya TB go baka diphatsa tsa go anamisa TB e e sa alafesegeng	1	2	3
Potso16c)	Molwetse wa TB yo o tsayang mosepele o tswanetse go rulaganya le ba kokelwana gore a tseye melemo e e lekanyeng	1	2	3
Potso16d)	Molwetse wa TB ya mafatlha o tshwanetse go tlhomamisa gore segotlhola se tlhatlhobiwa nako ee beilweng	1	2	3
Potso16e)	Molwetse wa TB o tshwanetse go itse kalafi e a e tsayang	1	2	3
Potso16f)	Molwetse wa TB o tshwanetse go itse ditlamorago tsa kalafi e a e tsayang	1	2	3
Potso16g)	TB e ka alafesega ka melemo ya setso	1	2	3
Potso16h)	Dijo tse dinang le dikotla ke karolo e e botlhokwa mo kalafing ya TB	1	2	3
Potso16i)	Ke rutilwe ka botlhokwa ja go tshegetsa ditaelo tsa kalafi	1	2	3
Potso16j)	Ba lwapa lame ba rutilwe ka botlhokwa ja go tshegetsa ditaelo tsa kalafi	1	2	3

Potso 17.O Kopiwa go supa gore a sengwe le sengwe seele sa tse di latelang tse di amanang le TB/ HIV se boammaaruri kana nnyaa.

Potso	Seele	Go jalo	Ga gojalo	Ga ke itse
Potso17a)	Motho o ka nna le mogare wa TB le wa HIV nako e le nngwe fela	1	2	3
Potso17b)	Balwetse botlhe ba TB ba tshwanetse go tlhatlhobelwa HIV	1	2	3
Potso17c)	Go simolola kalafi ya TB le ya HIV ka nako go ka thusa mo phodisong ya TB	1	2	3
Potso17d)	Dithulaganyo tsa TB/HIV di lomagantswe sentle le tsa lenaneo la tlhokomelo ya molwetse wa TB kwa lwapeng	1	2	3
Potso17e)	HIV ka tlhomamo e baka TB	1	2	3

KGAOLO YA BORARO: MAIKUTLO A GAGO

Potso 18. O kopiwa go kala nngwe le nngwe ya diele tse di latelang tse di amanang le tlhokomelo ya balwetse ba TB mo malwapeng ka karabo ya "Ee", "Nnyaa", kgotsa "Ga ke tlhomamise"

Potso	Seele	Ee	Nyaa	Ga ke tlhomamise
Potso18a)	E ka fokotsa dipalo tsa balwetse ba ba sa tseeng kalafi sentle	1	2	3
Potso18b)	E ka oketsa temogo ya batho ba banang le TB mo setshabeng	1	2	3
Potso 18c)	Ke le tlhaloseditswe ka botlalo	1	2	3
Potso18d)	Gake bone mosola wa lenaneo la tlhokomelo ya molwetse wa TB ko lwapeng	1	2	3
Potso18e)	Ke setse ke ikwadisitse mo lenaneong la tlhokomelo ya molwetse wa TB ko lwapeng	1	2	3
Potso18f)	Lenaneo la tlhokomelo ya molwetse wa TB ko lwapeng ga le ntseye sentle	1	2	3
Potso 18g)	Ga go molemo go ikwadisetsa lenaneo la tlhokomelo ya molwetse wa TB kwa lapeng	1	2	3
Potso 18h)	Ga go thata go bona baemanokeng ba kalafi ya TB	1	2	3
Potso 18i)	Ba botsogo ba ikemiseditse goema nokeng lenaneo la tlhokomelo ya molwetsi wa TB kwa lwapeng	1	2	3
Potso18j)	Ke lapiswa ke go ithuta ka lenaneo la tlhokomelo ya molwetse wa TB ko lwapeng	1	2	3

KAROLO YA BONE: THLOPHO YA LENANEO LA GONWA DIPILISI

Potso 19. O kopiwa go supa lengwe le lengwe la mabaka aa lateleng go supa se se ka tswang se go rotloeditse go itlhophela lenaneo la gago la go nwa dipilisi (mo kokelong kana kwa lapeng) ka karabo ya "Ee", "Nnyaa", kgotsa "Ga ke tlhomamise"

Question	**Seele**	Ee	Nnyaa	Ga ke tlhomamise
Potso 19 a)	Sebaka sa go itlhophela lenaneo le le ntshwanetseng	1	3	3
Potso 19b)	Kitso ee lekanyeng ka TB	1	2	3
Potso 19c)	Kisto ee lekanyeng ka lenaneo le ke le itlhophetseng	1	2	3
Potso 19d)	Sebaka sa go somarela ditlamelo	1	2	3
Potso 19e)	Keletso ya go lwantsha kgetholo mabapi le TB	1	2	3
Potso 19f)	Keletso ya go lwantsha TB mo setshabeng	1	2	3
Potso 19g)	Bo gaufi jwa lenaneo	1	2	3
Potso 19h)	Ke tlhaloganya ditshwanelo tsa balwetes ba TB	1	2	3
Potso 19i)	Tomagano ee lolameng ya lenaneo la TB le a mangwe a botsogo	1	2	3
Potso 19j)	Tirisanyo mmogo ee lekaneng go tswa mo setshabeng	1	2	3
Potso 19k)	Melemo ee lekaneng ya kalafi ya TB	1	2	3
Potso 19l)	Ditlhatlhobo tsa bolwetse jwa TB nako le nako	1	2	3
Potso 19m)	Bolengteng ja dithuso ka ditlamelo	1	2	3
Potso 19n)	Boleng jwa ditirelo tsa botsogo	1	2	3

Potso 19o O kopiwa go tlhalosa ka bokhutswane ka tshwetso ya gago ya go nwa dipilisi tsatsi le letsasti

----

KAROLO YA BOTLHANO: BOLWETSE JWA TB LE BOIKARABELO JWA ME

Potso 20. A o santse o tsaya kalafi ya TB?

Ee	1	
Nnyaa	2	

Potso 21. O simolotse leng go alafelwa TB? O kopiwa go supa ngwaga le kgwedi.

……

Potso 22a. A o feditse go tsaya kalafi ya gago?

Ee	1	
Nyaa	2	

Potso 22b. Fa karabo e le ee bolela gore o feditse kalafi leng ? O kopiwa go supa kgwedi le ngwaga .

……

Potso 22c.Fa karabo ele nnyaa, o kopiwa go bolela mabaka a a go kgoreleditseng go fetsa kalafi?

……

……

……

Potso 23a. A o fodile TB?

Ee	1	
Nnyaa	2	

Potso 23b. Fa karabo ele nnyaa,o kopiwa go tlhalosa gore ke eng o sa fola?

……

……

……

Potso 24a. A o kile wa tlodisa go tsaya kalafi ya gago?

Ee	1	
Nnyaa	2	

Potso 24b.Fa karabo ele ee, o tlodisitse go tsaya kalafi ga kae?

1 Letsatsi	1	
2 Malatsi a mabedi	2	
Tse dingwe (Tlhalosa)	3	

Potso 24c. O kopiwa go tlhalosa mabaka a a go dirileng gore o tlodise kalafi

---

Potso 25a. A o kile wa simolodisiwa sesha mo kalafing?

Ee	1	
Nnyaa	2	

Potso 25b. Fa karabo ele ee, tlhalosa mabaka a go simolodisiwa sesha?

……

……

……

Potso 26a. A o kile wa emisa go tsaya kalafi?

Ee	1	
Nnyaa	2	

Potso 26b. Fa karabo ele ee, o emisitse go tsaya kalafi nako ee kae?

Kwa tlase ga kgwedi	1	
Kgwedi e le nosi	2	
Dikgwedi tse pedi	3	
Tse dingwe (Tlhalosa)	4	

Potso 26c. Fa karabo ele ee, o kopiwa go tlhalosa mabaka aa dirileng gore o emise kalafi?

……

……

……

Potso 27. O kopiwa go kala mafoko aa supang boikarabelo jwa molwetse wa TB ka "Ee", "Nnyaa" kgotsa "Ga ke tlhomamise"

Potso	Seele	Ee	Nnyaa	Gaketlhomamise
Potso 27a)	Ketsenelela makgotlana a thotloetso a TB gangwe le gape	1	2	3
Potso 27b)	Ke rotloetsa ba bangwe go kopa kalafi fa ba itemogela kgonafalo ya dikai tsa TB	1	2	3
Potso 27c)	Ke rotloetsa ba bangwe go tsaya kalafi ya TB	1	2	3
Potso 27d)	Ke setse ke kile ka gasa thuto phatlalatsa ya melaetsa ee amanang le TB	1	2	3
Potso 27e)	Ke moema nokeng wa kalafi ya TB	1	2	3

Potso 28a.A o isitse segotlhola sa gago go tlhatlhobiwa ka nako ee beilweng?

Ee	1	
Nnyaa	2	

Potso 28b. Fa karabo ele nnyaa, o kopiwa go tlhalosa mabaka a a go kgoreleditseng go isa segotlhola go tlhathlobiwa ka nako ee beilweng.

……

……

……

Potso 29. A ona le nngwe kakgelo gape?

……

……

……

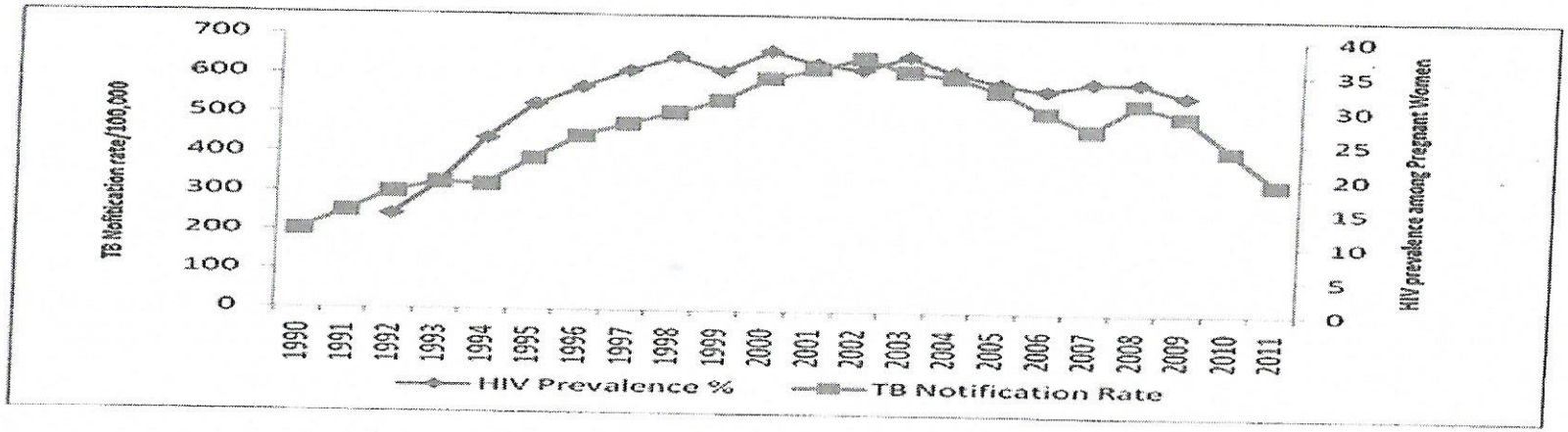
……

Relebogela go araba dipotso tse.

Nomoro ya sephiri ya moarabi.....

Letsatsi.....spondent..... Date.....

Figure 2 Trends in TB Notification and HIV Prevalence in Botswana



The national HIV point prevalence was 17.6% in 2008 and higher for women (20.4%) versus men (14.2%)[7]. The national response to the HIV scourge was a comprehensive national rollout of anti-retroviral treatment (ART) to more than 90% of those in need as of 2010. The consequence has been a corresponding progressive decline in TB incidence, prevalence and mortality. It is however worth noting that HIV remains an important driver of the TB epidemic, with co-infection rates as high as 64% in 2011 and TB still accounts for 13% of all adult deaths and 40% of deaths among people living with HIV/AIDS.

Estimated TB case detection rate was 71% in 2011. It is clear that much needs to be done to bolster efforts targeted at intensified case finding for TB at all points of care. Trends in treatment success have remained sub-optimal over the years and were highest in 2010, at 81.4%, still way off national targets of 85% and global achievements of 87%, See Table 1[8].

[7] Botswana AIDS Impact Survey III, 2008
[8] Botswana Tuberculosis and Leprosy report, 2010-2011

Efforts against HIV pay off

By Bonang Masolotate

RAMOTSWA - Botswana's HIV prevalence has dropped to 16.9 per cent according to the preliminary results of the fourth Botswana AIDS Impact Survey (BAIS IV)

Speaking at the commemoration of the World AIDS Day yesterday, President Lt Gen. Seretse Khama Ian Khama said the new figure showed a reduction from the national HIV prevalence rate of 17.1 per cent in 2004 and 17.6 recorded in 2008 studies.

"Although this may not seem to be a significant difference, it is however a reflection of the benefits we reap from investing in the various national programmes in the past five years and so," he added.

He noted that females continued to record a higher rate at 19.2 per cent compared to their male counterparts at 14.1 per cent.

At district level, Selebi Phikwe continued to be at the top with a prevalence rate of 25.1 per cent followed by Francistown at 23.1 per cent and Mahalapye at 20.2 per cent.

President Khama stated that districts with the lowest prevalence rates were Kgalagadi South, Kweneng West and Southern at 9.9 per cent, 10.6 per cent and 11.2 per cent, respectively. In additional, he said, although safe male circumcision (SMC) started relatively slow it had improved from 11 per cent in 2008 to 24.3 per cent.

"Here, we want to specifically acknowledge targeted school based campaigns for this leap, and encourage other eligible men to come forward."

President Khama also said that the preliminary findings were showing tremendous improvements in many major indicators that have been tracked.

For instance, 97 per cent of those aged 15-49 reported that they had received an HIV test and were informed of their results in the last 12 months, compared to 41 per cent in 2008. "As the clock ticks towards 2016, it is imperative that we leave no stone unturned in coming up with interventions that will make a difference," the President said.

He said he was happy to see new interventions being implemented such as the Tsosoloso HIV Testing campaign, use of treatment for prevention, social media campaigns such as WISE UP and Youth Counselling on Air, among others.

At the structural level, he said the government had accelerated socio-economic interventions to deal with poverty, unemployment, food security and inequality.

For his part, Minister for Presidential Affairs and Public Administration, Mr Mokgweetsi Masisi said since the advent of the virus in 1985, the government had acted swiftly and boldly. He said over the past years, five yearly plans were developed to implement the multi sectoral response to the present national strategic framework, which would take the country to the year 2016.

Further, Mr Masisi said far reaching decisions were made to establish District Multi-Sectoral AIDS Committees, National AIDS Counsel sectors, and civil society and private sectors umbrella organisations.

In her remarks, Balete paramount chief, Kgosi Mosadi pleaded with the government to support the traditional initiation schools as they could instil discipline among the society and also influence positive behavioural change.

The World Aids Day was commemorated under the theme: 'Getting to zero, zero new infections, zero discrimination and zero AIDS related deaths.' *BOPA*

Annexure 6 Details of staff members involved in the study

Name	Functions	Qualifications
Omphemetse Rankosha	Researcher	BNS, MPH Pursuing
Tiroyaone Tshikantwa	Translator	MSc Microbiology
Thapelo Kenosi	Statistician	BA stats & psych
Tshegofatso Kalake	Research assistant	BNS,MD,RN
Kagiso Lonkokile	Research assistant	BNS,RN
Evars Dehlane	Research assistant	BA(Social Sciences)
Tumo Kalake	Research Assistant	BSc(Hons) Pyschology

Annexure 7 The researchers' declaration of confidentiality

THE RESEARCHER'S DECLARATION OF CONFIDENTIALITY

I Mr/Ms ---------- on the ---- day of ---------- have agreed to participate in a research study titled "**FACTORS AFFECTING THE UPTAKE OF COMMUNITY TB CARE AS EXPERIENCED BY PATIENTS IN LOBATSE DISTRICT OF BOTSWANA."** I declare that I shall hold in confidence whatever privileged information I got about the participants during the study.

Name ----------

Signature ----------

Date----------

Thank you

Annexure 7 The researchers' declaration of confidentiality

THE RESEARCHER'S DECLARATION OF CONFIDENTIALITY

I Mr/Ms ---------- on the ---- day of ---------- have agreed to participate in a research study titled "**FACTORS AFFECTING THE UPTAKE OF COMMUNITY TB CARE AS EXPERIENCED BY PATIENTS IN LOBATSE DISTRICT OF BOTSWANA."** I declare that I shall hold in confidence whatever privileged information I got about the participants during the study.

Name ----------

Signature ----------

Date----------

Thank you