Facilitating factors and barriers to the uptake of HIV counselling and testing among tuberculosis patients in the Free State Province (South Africa)

by

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Declaration

I declare that the thesis I hereby submit for the Ph.D. (Interdisciplinary: Psychology and Health Systems Research) degree at the University of the Free State is my own independent work and that I have not previously submitted it at another university. I furthermore cede copyright of the thesis in favour of the University of the Free State.

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N. G. Kigozi

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Dedication

Dedicated to the Kigozi family: Disan (father), Angela (mother – even though you are no longer with us), John Lubwama (brother), Esther Caroline Nalumansi (sister) and Flavia Nantege (sister)

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Acronyms

AIDS	Acquired immunodeficiency syndrome
AOR	Adjusted odds ratio
ART	Antiretroviral treatment
ARVs	Antiretroviral drugs
CCMT	Comprehensive care, management and treatment
CI	Confidence interval
CHWs	Community health workers
CPT	Cotrimoxazole preventive therapy
DOTS	Directly observed treatment, short course
FSDoH	Free State Department of Health
HBCs	High-burden countries (TB)
HBM	Health belief model
HCT	HIV counselling and testing
HIV	Human immunodeficiency virus
IEC	Information, education and communication
KAB	Knowledge, attitudes and behaviour
KABP	Knowledge, attitudes, beliefs and practices

KAP	Knowledge, attitudes and practices
KBA	Knowledge, beliefs and attitudes
KBP	Knowledge, beliefs and practices
MDG(s)	Millennium Development Goal(s)
MDR	Multi drug-resistant (TB)
MSP	Multiple sexual partners
NACOSA	National AIDS Convention of South Africa
NDoH	National Department of Health (RSA)
NSP	HIV & AIDS and STI National Strategic Plan, 2007-2011
OSP	One sexual partner
OR	Odds ratio
PHC	Primary health care
PHWs	Professional health workers
PICT	Provider-initiated counselling and testing (HIV)
PITC	Provider-initiated testing and counselling (HIV)
PLWHA	People living with HIV/AIDS
PNs	Professional nurses
Ref	Reference (group)
SD	Standard deviation

SPSS	Statistical Package for the Social Sciences
ss+	Sputum smear-positive
ss-	Sputum smear-negative
TB	Tuberculosis
UNAIDS	Joint United Nations Programme on HIV/AIDS
VCT	Voluntary counselling and testing (HIV)
VCCT	Voluntary confidential counselling and testing (HIV)
WHO	World Health Organization

Summary

Counselling and testing is an integral part of the prevention, care and treatment of the human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS). For tuberculosis (TB) patients, HIV counselling and testing (HCT) is a point of entry to services that include access to information about primary prevention of HIV amongst HIV-negative TB patients, and further to cotrimoxazole prophylaxis treatment (CPT), antiretroviral treatment (ART) and welfare support for those testing HIV positive.

Despite the high TB-HIV/AIDS co-infection rate in South Africa, few TB patients know their HIV status. It is also disconcerting that although HCT services are readily available and moreover free of charge at primary health care (PHC) facilities in many parts of the country, few TB patients make use of them. This study has attempted to address this gap by investigating not only the facilitating factors but also the barriers to uptake of HCT amongst TB patients in the Free State Province.

This study formed part of a larger "fact-finding" project aimed at designing, implementing and evaluating an intervention to improve uptake of HCT by TB patients in the Free State. The research was exploratory and cross-sectional, and was conducted in the Thabo Mofutsanyana and Lejweleputswa Districts, which were randomly selected from a total of five in the province. In each of the districts, two sub-districts – one predominantly a city/large town and the other mostly a rural/small town area – were purposively selected. The Maluti-a-Phofung (city/large

town) and Nketoana (rural/small town) sub-districts were selected from Thabo Mofutsanyana, while Matjhabeng (city/large town) and Masilonyana (rural/small town) were chosen from Lejweleputswa.

Data were gathered during February and March 2008. A structured interview schedule was administered in face-to-face interviews among a convenience sample of 600 TB patients. The patients were selected in proportion to the average number of registered TB patients at each of the 61 PHC facilities included in the study. Data analysis employed quantitative and qualitative approaches, including measures of central tendency (e.g. mean), measures of dispersion (e.g. range), tests of association (e.g. chi-square tests, t-tests, logistic regression analysis), as well as content analysis of open-ended questions.

Overall, results indicate that both patient-/individual- and health system-level factors interact in facilitating or impeding TB patients' uptake of HCT. More specific findings are presented in the form of five journal articles, in accordance with the regulations of the University of the Free State. From this study, it would seem that no single solution is able to resolve the problem of non-uptake of HCT amongst TB patients in the Free State. Instead, a multifaceted intervention is called for, one that will both promote/facilitate increased uptake and also overcome barriers at the patient-/individual and health systems levels.

Key words: tuberculosis, HIV/AIDS, HIV testing, Free State, facilitating factors, barriers, TB patients, health systems

CHAPTER 1 – INTRODUCTION

TB is caused, spread and sustained by various factors. To control the epidemic this multiplicity of factors has to be unravelled and coherently addressed (Van Rensburg, Meulemans & Rigouts, 2005).

1.1 Background

Described by Hippocrates as the most widespread and fatal of all conditions (Daniel, 2006), tuberculosis (TB) remains a serious global public health challenge (Mukadi, Mahera & Harries, 2001; World Health Organization [WHO], 2007; 2008; 2009; 2010a). In 2009, 9.4 million (range, 8.9 million–9.9 million) incident cases (an equivalent of 137/100 000 population) of TB were registered globally, of which 30% were in the WHO African Region. In the same year, at 490 000 (range, 400 000-590 000) (970/100 000 population), South Africa reported the third highest number of cases in the world (WHO, 2010a).

The problem of TB is indeed serious: in as early as 1993 the WHO declared this epidemic a global emergency (Grange & Zumla, 2002); in Africa, the epidemic was acknowledged to be an emergency at the WHO African Region Committee Meeting held in Maputo in 2005 (National Department of Health [NDoH], 2007a; WHO, 2005); and shortly afterwards, the NDoH confirmed that TB was a national emergency in South Africa (NDoH, 2007a).

The problem of TB in sub-Saharan Africa is, to a large extent, exacerbated by the spiralling of the HIV/AIDS epidemic (Abdool Karim, Churchyard, Abdool Karim & Lawn, 2009; Achmat, 2006; Coetzee, Hilderbrand, Goemaere, Matthys & Boelaert, 2004; Singh, Upshur & Padayatchi, 2007). More than half of individuals diagnosed with TB in South Africa are moreover co-infected with HIV (Abdool Karim et al., 2009; Day & Gray, 2010; WHO, 2009; 2010a). Other factors contributing to the poor management of TB in the country include macro conditions conducive to the spread of TB (e.g. poverty; unemployment; crowded living conditions; stressful working and living conditions; and unequal access to, and for the most part, poor quality of health care) (Van Rensburg et al., 2005), multi and extremely drug-resistant strains of TB (Gandhi, Moll, Sturm, Pawinski, Govender, Lalloo et al., 2006; Van Rensburg et al., 2005); poor implementation of the national TB control policy (Van Rensburg et al., 2005), limitations on the part of health care staff [e.g. inability to appropriately and continuously apply interpret, implement and supervise TB control policies and treatment guidelines] (Van Rensburg et al., 2005), and, finally, the conduct of the TB patients themselves [e.g. through their ignorance, lifestyle, delay in seeking care, and non-adherence to treatment regimens] (Matebesi, Meulemans & Timmerman 2005; Van Rensburg et al., 2005).

Given the current upsurge in the TB (from 301/100 000 [range, 219-436/100 000] population in 1990 to 970 [789-1168]/100 000 population in 2009) epidemic (WHO 2010a) amidst an escalation of the HIV epidemic (from 0.8% in 1990 to 29.4% in 2009), urgent responses can no longer be delayed, (Abdool Karim et al., 2009). In an

effort to stem the scourge of these epidemics, various countries are diversely involved in advocacy, communication and of social mobilisation initiatives targeted at not only the general public, TB suspects and patients, but also at health care providers, and policy makers (WHO, 2009). The current study thus focused on TB control and patients in the Free State. The research sought to unravel TB patients' experiences of and perspectives on HIV testing as an important entry point to supposedly integrated – the lack of standard definition and delivery model of integration makes it difficult to operationally evaluate (Loveday & Zweigenthal, 2011) – services for both diseases.

1.1.1 Contextualising TB, TB-HIV and HIV testing

An attempt to contextualise TB, TB-HIV and HIV testing amongst TB patients has briefly considered five issues below, including TB incidence and targets, public health-sector TB management, the link between TB and HIV, policy response to TB control in the context of HIV, and HIV testing from a theoretical perspective. By providing this brief overview, the researcher aims at locating her own research within the wider fields of TB, TB-HIV and HIV testing. The research articles presented in Chapters 2, 3, 4, 5 and 6 largely draw on the following notions:

TB incidence and targets

In line with Millennium Development Goal (MDG) 6, *The Stop TB Strategy* aims to have halted and ensured a reverse in the incidence of TB by 2015 (WHO/Stop TB

Partnership, 2006). This strategy considers other targets in line with MDG 6, including: (i) to halve TB-prevalence and -death rates by 2015 from their 1990 levels; (ii) to ensure that at least 70% of incident smear-positive (ss+) cases are detected and treated in DOTS programmes; and (iii) to ensure that at least 85% of incident ss+ cases are successfully treated. In 2007, these targets were adopted in the *Tuberculosis Strategic Plan for South Africa* to guide TB control in South Africa (NDoH, 2007a). The Plan also considers the subsidiary targets presented in Box 1.

Box 1: Main and subsidiary indicators and targets to be achieved by 2011

Main indicators with proposed targets	
Case-detection rate	70%
Cure rate	85%
Treatment-success rate	> 85%
Subsidiary indicators with proposed targets	
Bacteriological coverage	100%
Smear conversion rate at 2 months	85%
Smear conversion rate at 3 months	>85%
Defaulter rate	<5%
Not-evaluated rate	0%
Sputum turnaround time	80% facilities <48 hours
Proportion of MDR-TB patients started on treatment	100%
Proportion of XDR-TB patients started on treatment	100%
Proportion of TB patients offered counselling and testing for HIV	100%
Proportion of HIV-positive TB patients started on CPT	100%
Proportion of HIV-positive TB patients qualifying for ART and started on ART	100%

Source: NDoH (2007a: p20)

South Africa and 21 other countries constitute the 22 high-burden countries (HBCs) (Figure 1). In 2009, the HBCs accounted for 81.0% of the world's TB burden (WHO, 2010a). Figure 1 indicates the 2009 estimates of TB incidence in the 22 HBCs, the WHO African Region and globally. It illustrates the magnitude of the TB problem in South Africa: locally, the incidence of TB is more than twice the estimated figure for the WHO African Region and seven times that of the estimated global incidence.

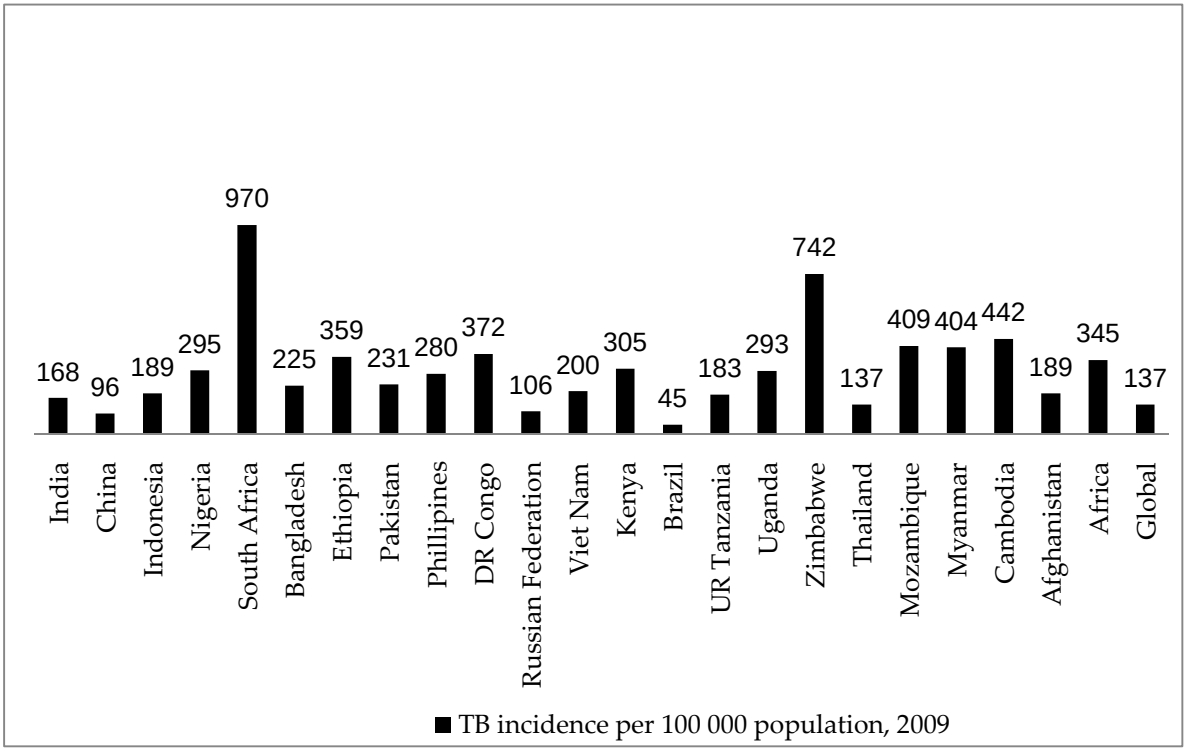


Figure 1: TB incidence in 22 HBCs, WHO African Region and globally, 2009

Source: WHO (2010a)

TB management in the public sector

South Africa is a signatory to the *Declaration of Alma-Ata*[1] on PHC passed on 12 September, 1978 (Engelbrecht, Heunis & Kigozi, 2008; Van Rensburg, 2004). The Declaration endorses universal health care through promotive, preventive, curative

[1] The Declaration was made at the International Conference on Primary Health Care in Alma-Ata where a need was expressed for "*urgent action by all governments, all health and development workers, and the world community to protect and promote the health of all the people of the world*". South Africa reaffirmed its commitment to this Declaration in April 2008.

and rehabilitative services. In line with this Declaration, TB services in South Africa are offered free of charge, are through PHC facilities under the auspices of municipalities or provincial governments (Kironde & Kahirimbanyi, 2002; Van Rensburg, 2004).

TB diagnosis is primarily conducted by means of sputum smear microscopy and treatment is prescribed according to the National TB Guidelines (NDoH, 2004). The premise for TB care at PHC facilities is the internationally recognised directly observed treatment, short course (DOTS) strategy (Kironde & Kahirimbanyi, 2002; Van den Boogaard, Lyimo, Irongo, Boeree, Schaalma, Aarnoutse, et al., 2009; Van Rensburg, 2004; WHO, 1999; 2007; 2008; 2009). In accordance with this strategy, TB patients' treatment intake is supervised either at a PHC facility (by professional/community health care workers [CHWs]) or in the community (by CHWs) (Kironde & Kahirimbanyi, 2002; Ntshanga, Rustomjee & Mabaso, 2009).

Adopted in 1996 by the South African government (Ntshanga et al., 2009), the DOTS strategy has been rendered as a relatively inexpensive and cost-effective approach to the management of TB (WHO, 1999). South Africa has 100% DOTS coverage and the second highest national TB Programme budget (US$ 352 million) amongst the 22 HBCs (WHO, 2009). Nevertheless, the country's TB Control Programme continues to be confronted with serious challenges. For instance, in 2007, South Africa attained a cure rate of only 56.0%, and treatment success of only 67.0% (WHO, 2009).

TB-HIV link

Several years after the discovery of HIV/AIDS, surveillance unveiled a synergistic relationship between TB and HIV (Figure 2). According to the *WHO 2009 Global Tuberculosis Report* (WHO, 2009), in 2007, there were 1.37 million new cases of TB, 79.0% being from the WHO African Region. At 73.0%, South Africa had the highest HIV prevalence among new TB patients. Although this percentage has since declined (to 60% in 2009) it remains the highest amongst the 22 TB HBCs (Figure 3).

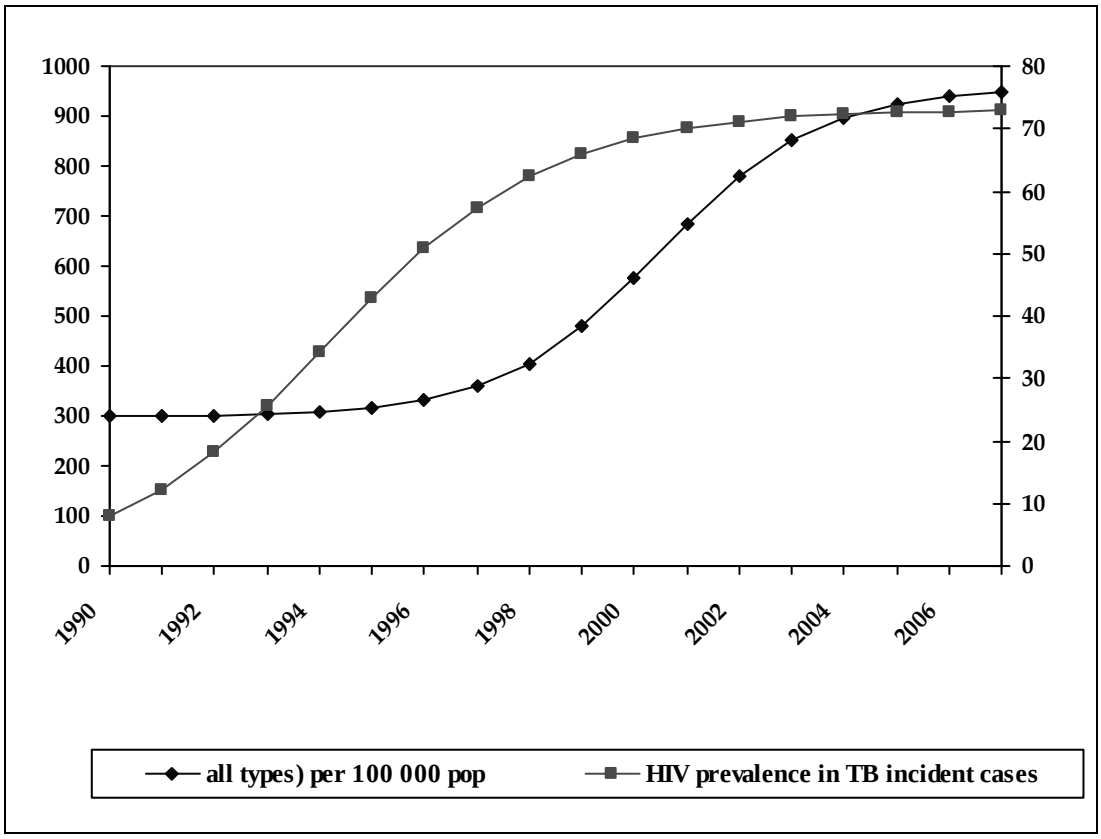


Figure 2: The synergistic relationship between TB and HIV
Source: WHO (2010b)

HIV increases the risk of developing active TB disease, from 10% in the life time of non-infected persons to 10% per annum in HIV-infected persons (De Cock, 2006; Pillay & Sturm, 2007; Sharma, Mohan & Kadhiravan, 2005). This is demonstrated by the fact that 83.7% of the 111 924 patients who died from TB in South Africa in 2007 were co-infected with HIV/AIDS (WHO, 2009). Infection with TB is the commonest cause of death in people infected with (Mukadi et al., 2001; Swaminathan, Ramachandran, Baskaran, Paramasivan, Ramanathan, Venkatesan et al., 2000). Evidence from a study amongst HIV-positive individuals in India revealed that patients who had contracted TB were more likely to die sooner than those who had not contracted TB (Swaminathan et al., 2000). For this reason, TB and HIV are regarded as a dual epidemic necessitating integrated management (Coetzee et al., 2004; NDoH, 2009; Peters & Heunis, 2005).

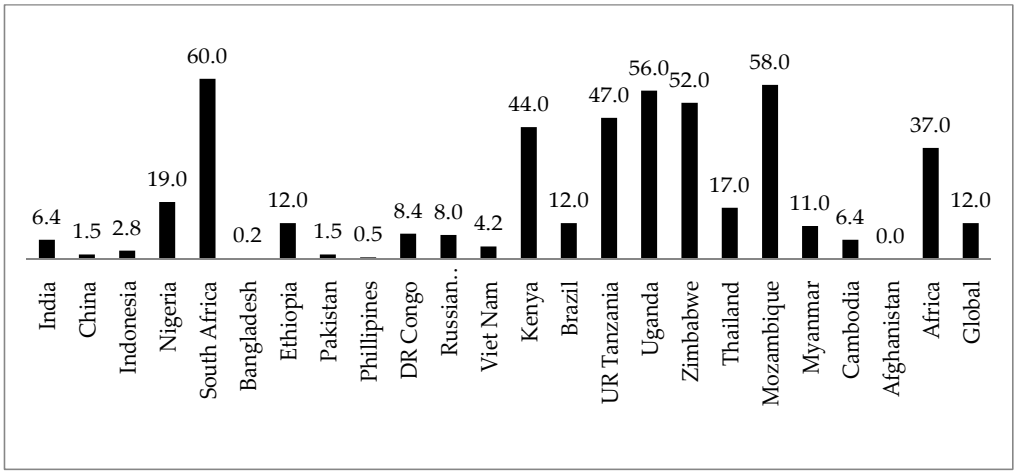


Figure 3: **HIV prevalence in incident TB cases in 22 TB HBCs, WHO African Region and globally, 2009**

Source: WHO (2010a)

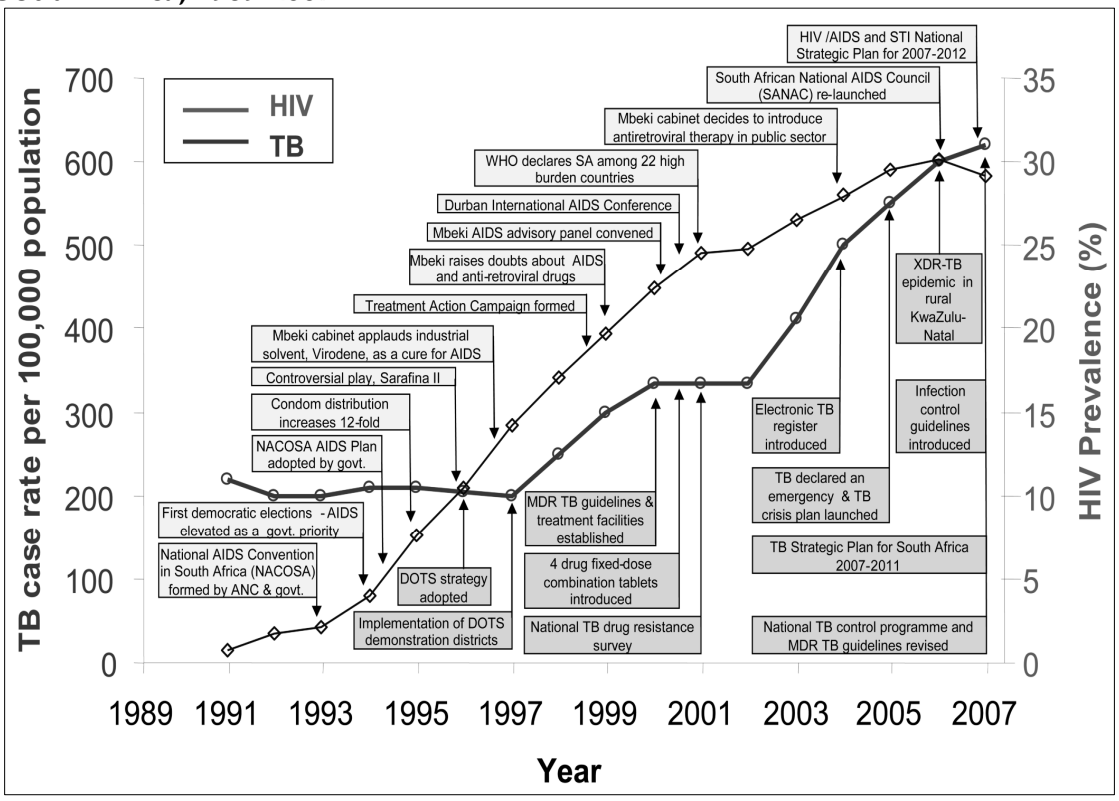
Policy response to TB control amid the HIV epidemic

Box 2 is an excerpt from an account by Abdool Karim et al. (2009) of the historical events surrounding TB and HIV in South Africa and includes policy responses, towards both epidemics since 1989. The authors highlight that:

- Under the apartheid era, the TB control programme was implemented through voluntary organisations serving to provide supportive, preventive and curative services to patients and their families. However, these services were poorly coordinated and racially based.
- Prior to 1990, while the apartheid government paid little attention, the media perpetuated a negative response towards the burgeoning HIV/AIDS epidemic, including promotion of fear and stigma.
- In 1990, a range of anti-apartheid bodies called for the priorisation of HIV/AIDS in South Africa.
- In 1993, the National AIDS Convention of South Africa (NACOSA) constituting both apartheid and anti-apartheid representatives was formed to coordinate activities relating to HIV/AIDS epidemic.
- At the onset of the post-apartheid era in 1994, TB control become aligned with WHO policies, and NACOSA's AIDS Plan gained government's recognition although responses towards these epidemics did not receive much political support.

- By 1998, government's response towards HIV/AIDS was still slow and riddled with controversies. During this time the Treatment and Action Campaign was formed to advance communities' need for treatment.
- In 2001, the government initiated nevirapine treatment for HIV-positive pregnant mothers following the loss of a court case against HIV/AIDS activists. By 2003, free ART was available at public health facilities.
- By 2005, despite commendable progress towards TB control including, the implementation of the DOTS strategy, pronouncing of TB as national emergency, and standardisation of the TB recording system, TB incidence was rising due to the HIV/AIDS epidemic.
- In 2007, HIV/AIDS and TB strategic plans were developed in parallel, to guide the provision of improved care to HIV/AIDS and TB patients.

Box 2: Historical overview of major events in the AIDS and TB epidemics in South Africa, 1989-2007



Source: Adapted from Abdool-Karim et al. (2009: p. 5)

While DOTS[2] is the mainstay in TB control, there has been a gradual shift towards integrated management[3] of TB and HIV (Coetzee et al., 2004; NDoH, 2009; Peters &

[2] DOTS is characterised by activities including, case detection through sputum smear microscopy, standardised treatment regimen of six to eight months, regular uninterrupted supply of TB drugs and standardised recording and reporting using the TB register. (WHO 1999; Van Rensburg et al., 2005). Currently, South Africa has 100% DOTS coverage (WHO 2010a).

[3] In 2004, the WHO issued a multifaceted directive for collaborative TB and HIV activities at national, intermediary (e.g. provincial) and district levels, including establishing joint management, planning and surveillance mechanisms; reducing the burden of TB in HIV-positive patients; as well as reducing the burden of HIV amongst TB patients (WHO 2004; Peters & Heunis 2005; WHO 2010a).

Heunis, 2005; WHO, 2004). Calls for collaborative activities between TB and HIV programmes are mirrored both in national and international policies and in strategic plans (NDoH, 2007a; 2007b; 2009; WHO, 2003; 2004; WHO/[Joint United Nations Programme on HIV/AIDS (UNAIDS), 2007). South Africa embraced the call for integrated TB and HIV programmes when it endorsed the ProTEST initiative of the WHO in 1999 (Peters & Heunis, 2005). In this initiative, major emphasis was placed on the need for TB patients to know their HIV status as early as possible during the TB treatmentperiod (Peters & Heunis, 2005). HIV testing is is an point of entry for TB patients to various interventions, and allows access to life-prolonging ART, care and support (Fujiwara, Clevenbergh & Dlodlo, 2005; Harries, Zachariah & Lawn, 2009; WHO/UNAIDS, 2007; 2009). Both co-infected and HIV-negative TB patients stand to benefit from additional services geared at prevention, support and care as outlined in Box 3.

Box 3: HIV-related services recommended for implementation PITC in health facilities

Basic prevention services for persons diagnosed HIV-negative:
- Promotion and provision of male and female condoms
- Needle and syringe access and other harm-reduction interventions for injecting drug users
- Post-exposure prophylaxis, where indicated

Basic prevention services for persons diagnosed HIV-positive:
- Support for disclosure to partner and couples counselling
- HIV testing and counselling for partners and children
- Safer-sex and risk-reduction counselling with promotion and provision condoms
- Needle and syringe access and other harm-reduction interventions for injecting drug users
- Interventions to prevent mother-to-child transmission for pregnant women
- Reproductive-health services, family-planning counselling and access to contraception

Basic care and support services for persons diagnosed HIV-positive:
- Education, psychosocial and peer support for management of HIV
- Periodic clinical assessment and clinical staging
- Management and treatment of common opportunistic infections
- STI case management and treatment
- Palliative care and symptom management
- Advice and support on other prevention interventions, such as safe drinking water
- Nutrition advice
- Infant-feeding counselling

Source: Adapted from WHO/UNAIDS (2007)

In late 2003, the South African NDoH also launched a *Comprehensive Care, Management and Treatment* (CCMT) *Plan* (NDoH, 2003), the main objective of which was to extend ART to all qualifying individuals. Like the ProTest initiative, the CCMT Plan identified voluntary counselling and testing (VCT) as a key priority and critical entry point into the HIV/AIDS treatment and care programme. Following the inception of the CCMT Plan, VCT services were offered at most PHC facilities countrywide.

The VCT model of HIV testing, also referred to as client-initiated HIV testing, has allowed many people to know their HIV status. However, even with the implementation of the CCMT Plan, and considering the burden of HIV/AIDS in South Africa, the numbers of people – TB patients included – presenting themselves for HIV testing were very low (Heunis, Engelbrecht, Kigozi, Pienaar & Van Rensburg, 2009).

In 2007, in a bid to increase uptake of HIV services and because ART had increasingly become available, the WHO and UNAIDS issued guidelines promoting provider-initiated HIV testing and counselling (PITC) at health care facilities in high HIV-prevalence settings (WHO/UNAIDS, 2007). It was envisaged that health facilities would represent a key point of contact for people infected with HIV, and that PITC – also commonly referred to as *routine HIV testing* – would assist in tapping into missed opportunities to diagnose HIV amongst these people and also facilitate patients' access to HIV treatment, care and support (WHO/UNAIDS, 2007).

PITC is prioritised for all at-risk individuals – TB patients included – who present at health care facilities. Essentially, health care workers are required to recommend and carry out HIV testing as part of a patient's standard medical care (Evans & Ndirangu, 2009; Mahendradhata, Ahmad, Lefèvre, Boelaert & Van der Stuyft, 2008; WHO/UNAIDS, 2007).

PITC guidelines align with the joint UNAIDS and WHO 2004 policy statement (UNAIDS/WHO, 2004) on HIV testing: "*The standard pre-test counselling used in VCT services is adapted to simply ensure informed consent, without a full education and counselling session. The minimum amount of information that patients require in order to be able to provide informed consent is the following:*

- *the clinical benefit and the prevention benefits of testing*
- *the right to refuse*
- *the follow-up services that will be offered and*
- *in the event of a positive test result, the importance of anticipating the need to inform anyone at ongoing risk who would otherwise not suspect they were being exposed to HIV infection*."

Both the South African *Tuberculosis Strategic Plan, 2007-2011* (NDoH, 2007a) and the *HIV & AIDS and STI National Strategic Plan, 2007-2011 (*NDoH, 2007b*)* endorse PITC.

In the early months of 2010, the NDoH also launched the *HIV Counselling and Testing* (HCT) *Policy* (NDoH, 2010). Implementation of the HCT Policy was additional towards realising the goals of the national strategic plans. While the HCT Policy embraces both client- and provider-initiated HIV-testing approaches, emphasis is placed on in-depth pre-test HIV counselling. For this reason, the term '*provider-initiated counselling and testing*' (PICT) is commonly used in the South African context, instead of the universally recognised term, PITC. Both verbal and written consent are required for client-initiated VCT and PICT. Moreover, HIV testing may

be conducted by lay counsellors[4] working under supervision of professional health care workers (NDoH, 2010a; 2010b).

Following the launch of the HCT Policy (NDoH, 2010b), the South African Minister of Health, Dr Aaron Motsoaledi, issued new guidelines for managing HIV (Alcorn, 2010). Amongst others, ART is to be initiated for co-infected TB patients with a CD4[5] count of fewer than 350 cells per cubic millimetre. As well as these guidelines, additional HIV testing sites and a national HIV-testing media campaign were launched. Also, over 4 000 retired health workers were called upon to assist with this particular HIV-testing initiative. It was anticipated that the mentioned combination of efforts would lead to uptake of HIV testing by 15 million adults and adolescents by June 2011.

HIV testing from a theoretical perspective

While health education and behavioural-change specialists increasingly have to rely on strong evidence bases in their efforts to effectuate behavioural change and good theoretical understanding is required to inform interventions, no single theory

[4] Although lay counsellors are permitted to take blood for the purposes of HIV testing, full implementation of this regulation is yet to take place in the Free State.

[5] CD4 cells, also known as T-cells are specialised cells that protect the body against infection. HIV attacks these cells and uses their DNA for replication, in the process destroying them and rendering them unable to protect the body against illness. A CD4 count is therefore performed for HIV-infected people to give an indication of how strong their bodies are in protecting them against illness (Daka & Loha, 2008; NDoH, 2004).

dominates research or practice in either health promotion or education (Glanz, Rimer & Viswanath, 2008a).

Glanz, Rimer & Viswanath (2008b: p. 33), in their review of literature on theory use in studies conducted between 2000 and 2005, demonstrated that application of theory varies with each study. In their review, Glanz et al. (2008b) classified studies along a continuum as being:

- *Informed by the theory*: i.e. a theory was identified, but no or limited application of the theory was used in the specific study components and measures.
- *Applying the theory*: i.e. a theoretical framework was specified and several of its constructs were applied in the study components.
- *Testing the theory*: i.e. a theoretical framework was specified and more than half of the theoretical constructs were measured and explicitly tested.
- *Building/creating the theory*: i.e. new or revised/expanded theory was developed by using the constructs specified, measured, and analysed in the study.

In light of the aforementioned classification, the health belief model (HBM) formed the theoretical basis for the current study (i.e. the study was *informed* by the theory). Because of its exploratory nature, the present study only sought to draw from the

concepts of the HBM and was intended neither to test nor build the constructs thereof in respect of HIV testing.

Initially developed in the early 1950s in response to a failing TB control programme (Hockbaum, 1958 in Champion & Skinner, 2008), constructs of the HBM have further been used to explain a wide range of other health-related behaviour that also included uptake of HIV testing (De Paoli, Manongi & Klepp, 2004; Fraze, Uhrig, Davis, Taylor, Lee, Spoeth, et al., 2009; Walker, 2004). From their research on the acceptability of VCT amongst pregnant women in Tanzania, De Paoli et al. (2004: p. 413) explain that the HBM "*relates psychological theories of decision making to an individual decision about health-related behaviours.*"

According to Champion and Skinner (2008), the HBM posits that preventive health behaviour results from an interplay of several constructs, namely *perceived susceptibility* to disease, *perceived severity* of disease, and *perceived barriers* and *benefits* of undertaking preventive behaviour. Both *perceived susceptibility* and *perceived severity* together form the notion of *perceived threat*. Although these four perceptions constitute the main constructs of the HBM, others have over time been added. These include *cues to action*, *self-efficacy* and *modifying factors* (Champion & Skinner, 2008; Janz & Becker, 1984; Rosenstock, Strecher & Becker, 1988). Examples of *modifying factors* include demographic, socio-psychological and structural variables (Champion & Skinner, 2008).

Hockbaum (1958) (in Champion & Skinner, 2008) maintains that an individual's perceptions are triggered into action by cues within the body (e.g. sneezing) or within the environment (e.g. media messages). Later formulations (e.g. Rosenstock, Strecher & Becker, 1988) of the HBM also include the concept of *self-efficacy*, which essentially represents an individual's conviction that he/she is able to implement behaviour that will lead to certain outcomes (Bandura, 1977 in Champion & Skinner, 2008). Together, the four primary constructs of *perceived susceptibility*, *severity*, *benefits and barriers*; *cues to action*; *self-efficacy*; and *modifying factors*, may indirectly influence individuals' health-related behaviour (Champion & Skinner, 2008).

In the case of TB patients in the present study, it was hypothesised that the likelihood that a TB patient had previously considered or disregarded HIV testing was either an individual or combined function of whether the patient: (1) regarded him/herself to be susceptible to HIV; (2) believed that HIV/AIDS could have potentially serious consequences, such as untimely death; (3) believed that uptake of HIV testing would reduce the perceived susceptibility to or severity of HIV/AIDS; (4) perceived that the anticipated benefits of HIV testing generally outweighed the barriers (or costs) thereof; (5) believed that taking an HIV test would reduce his/her risk of contracting HIV/AIDS – if HIV-negative – or facilitate acceptance in the case of a positive HIV status; and (6) had been informed about the link between TB and HIV. It was also envisaged that other factors could potentially contribute towards their decisions relating to HIV testing: patients' gender, age, education, knowledge regarding TB, HIV and the TB-HIV link, and their familiarity with people living

with HIV/AIDS (PLWHA) or knowing someone who had died of AIDS. The underpinnings derived from the relevant literature, of this hypothesis are elucidated in the respective articles (Chapters 2, 3, 4, 5 and 6).

Uptake of HIV testing amongst TB patients

Despite policy shifts from predominantly client-initiated VCT to routine/PITC/PICT, and given evidence of the associated life-prolonging benefits of ART, the uptake of HIV testing has been relatively low, not only amongst TB patients in parts of South Africa, but also in Africa and globally (Figure 4).

When the fieldwork for the current study was being conducted (February–March 2008), the WHO (2009) estimated that globally fewer than one-fifth (16.0%) of all notified TB patients had undergone HIV testing. Although the proportion of TB patients who were undergoing HIV testing in South Africa (39.0%) and Africa (37.0%) within the same period was more than double the global estimates, the proportions reported were nevertheless very low when one takes into account the extent of the extraordinary TB-HIV co-epidemic in these settings. Recent statistics provided by WHO (2010a) indicate an improvement in the proportion of TB patients who knew their HIV status to 55% and 51% in Africa and in South Africa respectively. It is however disconcerting that the figure for South Africa – a comparatively wealthy country in the African context – was lower than the regional figure.

Data available at the time of conducting this study in 2008 indicated that in 2007, at 818/100 000, the Free State recorded the fourth highest TB incidence among the nine provinces in South Africa. Yet less than half (43.1%) of the notified cases had undergone HIV testing in this province (FSDoH, 2010). Almost seven in every ten (65.3%) TB patients who underwent HIV testing during 2007 received a positive HIV-test result. Within the same period, the two districts considered in this study, i.e. Thabo Mofutsanyana (37.9%) and Lejweleputswa (32.3%) recorded even poorer rates of HIV-test uptake (Figure 5).

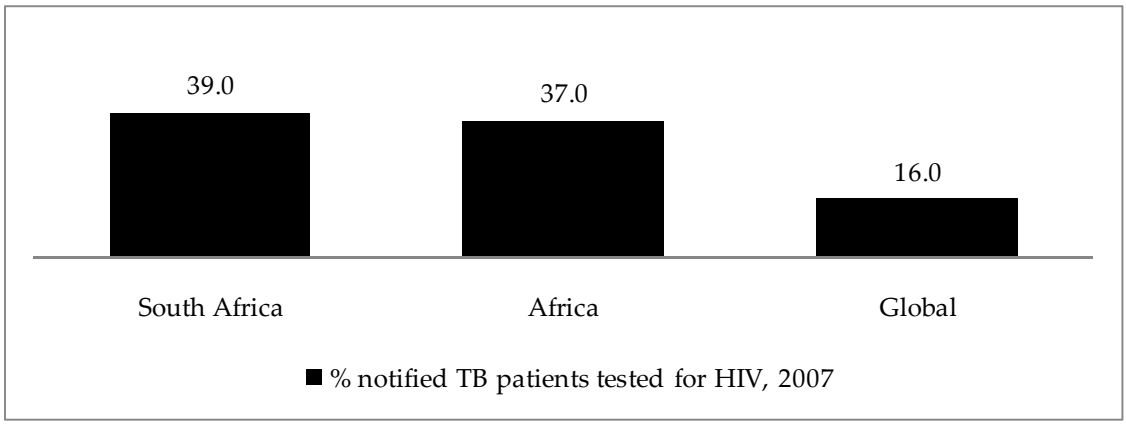


Figure 4: Uptake of HIV testing amongst notified TB patients: South Africa, Africa and globally, 2007

Source: WHO (2009)

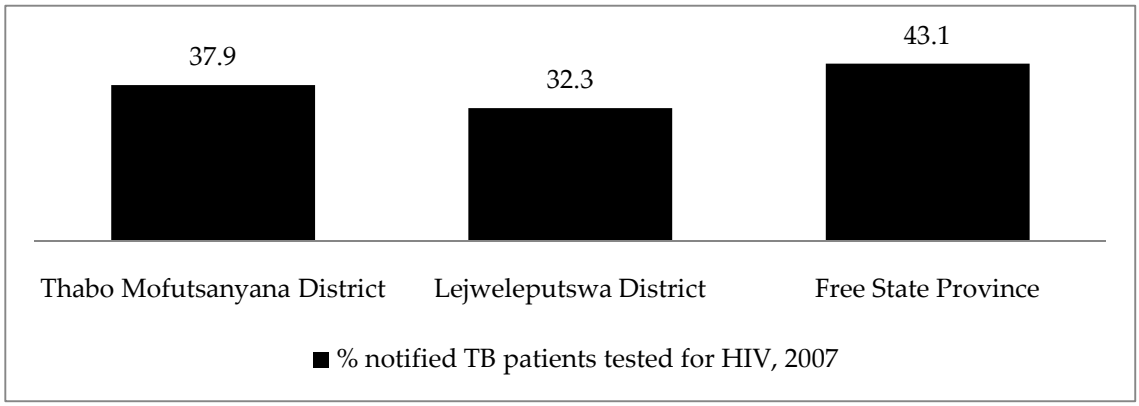


Figure 5: Uptake of HIV testing amongst notified TB patients: Thabo-Mofutsanyana District, Lejweleputswa District, Free State Province, 2007

Source: (FSDoH, 2010)

As indicated in Table 1, existing studies attribute uptake/non-uptake of HIV testing amongst TB patients to various underlying factors.

Table 1: Facilitating factors and barriers to uptake of HIV testing.

Source	Method	Factors
Malawi: Harries, Maher, Mvula and Nyangulu (1995)	Review of 1 095 TB case files of patients registered between April 1993 and March 1994	*Health systems facilitating factors*: hospitalisation (as opposed to ambulatory care) of patients *Health systems barrier*: long duration of HCT process of about 2-3 weeks
USA: Geduld, Brassard, Culman and Tannenbaum (1999)	Retrospective chart review between 1992 and 1995 for a total of 376 TB patients under 51 years old	*Individual/patient facilitating factors*: male sex, aged 30-39 years, ss+ results, having symptoms of TB, having two or more HIV-risk factors *Health systems facilitating factors*: diagnosis of TB by a microbiologist/infectious disease specialist *Individual/patient barriers*: Middle Eastern, North-African or Asian origin
USA: Stout, Ratard, Southwick and Hamilton (2002)	Review of surveillance data for all (3 680) TB cases reported between 1 January 1993 and 31 December 1999	*Individual/patient facilitating factors*: male sex, black race, foreign heritage
Malawi: Zacharia, Spielmann, Harries and Salaniponi (2003)	Interviews with 1 049 new TB patients enrolled between January and December 2000	*Health systems facilitating factors*: integration of VCT into TB circuit; systematic offer of VCT to all TB patients; well-staffed (with trained counsellors) VCT unit; VCT unit with adequate space to ensure privacy; rapid HIV testing; access to CPT, community care and support
South Africa: Gebrekristos, Lurie, Mthethwa and Karim (2005)	Semi-structured interviews with 54 TB patients	*Individual/patient facilitating factors*: knew of/lost someone to AIDS *Individual/patient barriers*: fear of death (due to ignorance regarding ART) *Health systems facilitating factors*: doctor recommendation to test, access to HIV treatment

Source	Method	Factors
Canada: Harris, Panaro, Phypers, Choudhri and Archibald (2006)	Retrospective cohort study of 3 767 TB cases	*Individual/patient facilitating factors*: male sex, aged 15-49 years, diagnosed with both pulmonary and extra-pulmonary TB (EPTB), ss+ results, having at least one risk factor for HIV
Zambia: Jham, Levy, Kancheya, Pankratz, Kaminsa-Kabanje, Jukuvenas et al. (2006)	TB case cohort study of 72 patients enrolled in a pilot programme to implement integrated TB and HIV care at a government clinic	*Health systems facilitating factors:* Offer of diagnostic HCT as part of routine patient care *Individual/patient barriers*: need first to consult spouse, prior knowledge of HIV status, patients '*not ready*'
Uganda: Kawuma, Mafigiri, Nassozi, Nalugwa, Bagundirire, Luzze et al. (2006)	Analysis of 1 988 HIV-counselling records of TB patients attending a TB clinic	*Individual/patient barriers*: belief that '*all*' TB patients are HIV co-infected, belief that TB in PLWHA is incurable
Thailand: Leusaree, Amarinsangpen and Prapantawong (2006)	Evaluation of HIV-TB collaborative activities across 38 hospitals	*Individual/patient barriers*: non-risk behaviour, perceived lack of benefits after HIV testing
United Kingdom: Nnoaham, Pool and Grant (2006)	In-depth interviews with 16 TB patients	*Individual/patient barriers*: fear of stigmatisation
Kenya: Ronald, Lawrence and Micheal (2006)	Cross-sectional study using interviews amongst 312 TB patients and ten health care providers	*Individual/patient barriers*: knowledge that ARVs do not cure AIDS, fear of imminent death if found to be HIV positive
South Africa: Daftary, Padayatchi and Padilla (2007)	Semi-structured in-depth interviews with 21 TB patients	*Individual/patient barriers*: having had a negative experience during previous counselling, male partner disapproval of HIV testing, feeling well, felt stigma and discrimination, uncertainty about eligibility for ART *Health systems facilitating factor:* access to ART

Source	Method	Factors
Burkina-Faso: Dembele, Nuccia, Ouedraogo, Matteelli and Sawadogo (2007)	Analysis of TB-HIV data for 8 118 TB patients registered between 2005 and 2006 to assess implementation of HCT policy	*Individual/patient barriers*: fear of stigmatisation *Health systems barriers*: HIV-test kits out of stock, lack of human resources
Ethiopia: Jerene, Endale and Lindtjørn (2007)	Interviews with 190 TB patients	*Individual/patient facilitating factors*: Unemployment
Zambia: Mwangelwa, Ayles, Beyers, Godfrey-Fausset and Mkandawire (2007)	Comparison of two sites in a randomised trial	*Health systems barriers*: inadequate counselling space, lack of counsellors
India: Thomas, Ramachandran, Anitha and Swaminathan (2007)	Cross-sectional study of 4 802 newly diagnosed TB patients across six sites	*Individual/patient facilitating factors*: male sex, aged 26-35 years, rural residence, higher education, employed, married *Individual/patient barriers*: low-risk behaviour, old age, perception that testing is unnecessary, prior testing, lack of privacy *Health systems barriers*: unavailability of a testing technician
Kenya: Chakaya, Mansoer, Scano, Wambua, 'Herminez, Odhiambo et al. (2008)	Monitoring and evaluation of HIV care for TB patients using 2005 TB-HIV routine data	*Health systems facilitating factors*: improved recording and reporting system
Democratic Republic of Congo: Corneli, Jarret, Sabue, Duvall, Bahati, Behets et al. (2008)	A qualitative evaluation of three models of routine PICT: 1) off-site referral to a freestanding VCT center, 2) on-site referral to a PHC facility to which the TB clinic belongs 3) HCT by the TB nurse	*Health systems facilitating factor*: offer of HCT by TB nurse

Source	Method	Factors
South Africa: Engelbrecht et al. (2008)	Individual interviews with 66 professional health care providers	*Individual/patient barriers*: stigma, unwillingness to be counselled by lay counsellors, fear of HIV-positive status, still dealing with TB, not knowledgeable about HIV, too ill (with TB), lack of access to testing services (for farm workers), inhibiting traditional beliefs *Health systems barriers*: lack of confidentiality due to having to use same waiting area as other patients, counsellors unavailable (too busy), lack of after-hour HCT services *Health systems facilitating* factors: health education, ART and support availability, advertising VCT, routine offer of HIV testing, providers with good attitude, community outreach
Rwanda: Gasana, Vandebriel, Kabanda, Tsiouris, Justman Sahabo et al. (2008)	Evaluation of collaborative TB-HIV activities at a hospital and a community health centre (CHC)	*Health systems facilitating factor*: implementation of PITC
Cambodia: Kanara, Cain, Laserson, Vannarith, Sameourn, Samnang et al. (2008)	Analysis of routine TB and HIV data, and evaluation of TB-HIV interventions across 17 facilities	*Individual/patient facilitating factors*: age <18 years, sputum-smear negative (ss-) or EPTB, no/low risk perception *Health systems* barrier: absence of VCCT facilities at clinics *Health systems facilitating factor*: monitoring and evaluation of TB-HIV activities
Kenya: Odhiambo, Kizito, Njoroge, Wambua, Nganga, Mburu et al. (2008)	Evaluation of PITC model in eight satellite TB treatment units	*Health systems facilitating factors*: continued community sensitisation, training of staff in PITC, multitasking of clinical responsibilities, access to HIV care
South Africa: Pope, DeLuca, Kali, Hausler, Sheard, Hoosain, et al. (2008)	Cluster randomised trial of PITC at 20 clinics	*Health systems facilitating factor*: offer of PITC

Source	Method	Factors
Democratic Republic of Congo: Van Rie, Sabue, Jarrett, Westreich, Behet, Kokolomani, et al. (2008)	Evaluation of three HIV testing models	*Health systems facilitating factors*: offer of PITC by TB nurse as opposed to on-site referral to a PHC facility to which the TB clinic belongs or off-site referral to a free-standing VCT centre *Health systems facilitating factors*: offer of PITC by TB nurse as opposed to on-site referral to a PHC facility to which the TB clinic belongs or off-site referral to a freestanding VCT center
Singapore: Low and Eng (2009)	Retrospective record review of 496 TB patients (September 2005 and December 2006)	*Individual/patient facilitating factors*: age, male sex *Health systems facilitating factors*: inpatient location at diagnosis and being attended by an infectious disease physician
Cambodia: Kanara, Cain, Chhum, Eng, Kim, Keo, et al. (2009)	Analysis of TB patient clinical data at 11 clinics	*Health systems facilitating factors:* On-site provision of HCT or shorter travelling distance to testing centre
Cambodia: Yi, Poudel, Yasuokaa, Ichikawa, Tan and Jimba (2009)	Face-to-face interviews with 185 TB patients aged 15-49 years at two hospitals in February to April 2006	*Individual/patient facilitating factors*: HIV-risk behaviour (e.g. STI diagnosis, history of genital ulcer) *Individual/patient barriers*: Stigmatising beliefs (e.g. 'PLWHA are dirty')
Thailand: Anuwatnonthakate, Jittimanee, Cain, Nateniyom, Wattanaamornkiat, Komsakorn, et al. (2010)	Analysis of data for 15 903 TB patients registered between October 2004 and September 2007	*Individual/patient facilitating factors*: being mobile *Individual/patient barriers*: age <14 years and > 45 years, female sex, non-Thai nationality, not in migrant/refugee camp, not having cavity on chest radio graph, urban residence *Health systems facilitating factors*: receiving TB treatment at large government/private facility, *Health systems barrier*: failure to perform sputum culture, non-health care worker observed therapy
South Africa: Kigozi, Heunis, Chikobvu, Van den Berg, Van Rensburg and Wouters (2010)	Cross-sectional interviews with 600 TB patients aged 18 years and older	*Individual/patient facilitating factors*: female sex, unmarried status, unemployment, knowledge of TB-HIV relationship, having received information on TB-HIV link from PHC facility, knew/lost someone with HIV/AIDS

Source	Method	Factors
Thailand: Moolphate, Nampaisan, Kulprayong, Kantipong, Nedsuwan, Hansudewachakul, et al. (2010)	Analysis of surveillance data for TB patients aged 15-49 from 1998-2008	*Individual/patient barrier:* female sex *Health system barrier*: being an outpatient
Uganda: Nabbuye-Sekandi, Okot-Chono, Rusen, Dlodlo, Katamba, Tumwesigye, et al. (2010)	A cross-sectional study using interviews with 261 TB patients in five districts	*Individual/patient barriers*: >45 years, dissatisfaction with lack of privacy, having had to spend 30–60 min. at the clinic *Health systems barriers*: not receiving information about TB-HIV link, not being offered HIV testing by HCW
Cameroon: Njozing, Miguel, Tih and Hurtig (2010)	A retrospective cohort study using TB registers in 4 TB/HIV treatment centres for patients (2 270) diagnosed with TB between January 2006 and December 2007	*Health systems facilitating factor*: HIV offered at public health facility as opposed to a faith-based centre
Cameroon: Njozing, Edin and Hurtig (2010)	Qualitative interviews with 21 TB patients in 4 TB/HIV treatment centres	*Individual/patient facilitating factors*: Desire to be healthy and live longer, anticipated support from loved ones, faith in a supreme being, desire to be a positive role model *Individual/patient barriers*: the 'overwhelming' burden of having to face both TB and HIV simultaneously, fear of disclosure of results, harmful gender norms and practices, fear of stigma and discrimination, and misconceptions surrounding HIV/AIDS *Health systems facilitating factor:* influence of and trust in the medical authority
Uganda: Okot-Chono, Mugisha, Adatu, Madraa, Dlodlo and Fujiwara (2009)	Focus-group discussions, key-informant and in-depth interviews in five districts	*Health systems barriers:* poor TB-HIV planning, coordination and leadership; inadequate dissemination of policy; inadequate provider knowledge; limited TB-HIV inter-clinic referral; poor service integration and recording; logistical shortages; high costs of services and provider shortages amidst high patient loads

Source	Method	Factors
Uganda: Sendagire, Schreuder, Mubiru, Schim van der Loeff, Cobelens and Konde-Lule (2010)	Cross-sectional study using interviews with 112 TB patients aged 15 years and older	*Individual/patient facilitating factors*: Older than 25 years, female sex, previous HIV testing *Health systems facilitating factor:* TB diagnosis at hospital
Zambia: Siango'ombwa and Chela (2010)	Interviews with TB and ART health care providers at ten clinics and record reviews	*Health systems facilitating factor:* implementation of diagnostic HCT
South Africa: Wallrauch, Heller, Lessells, Kekana, Bärnighausen and Newell (2010)	Implementation of a TB/HIV integration plan at Hlabisa Hospital	*Health systems facilitating factor*: TB and HIV integration, including close proximity of TB and HIV surveillance teams, introduction of TB clinic, training TB staff on HIV-related topics, integrated TB-HIV database
South Africa: Heunis, Wouters, Norton, Engelbrecht, Kigozi, Sharma et al. (2011)	Interviews with 40 lay counsellors, 57 DOT supporters, and 13 TB and HIV managers across all levels of the health care system	*Individual/patient barriers*: fear of HIV/AIDS, TB-HIV co-infection, death and stigma *Health systems barriers:* lack of confidentiality, staff shortages and high work load, poor infrastructure to encourage, monitor and deliver HCT *Health systems facilitating factors:* encouragement and motivation by health workers, alleviation of health worker shortages, improved HCT training of professional and lay health workers, and community outreach activities

Table 1 provides evidence of a wide range of facilitating factors and of barriers to uptake of HIV testing at both the individual/patient level and the health systems/service-delivery level.

On the individual/patient level, uptake of HIV testing by TB patients was associated with: female/male sex, younger than 45 years of age, ss+/ss- results, black race, foreign heritage, having symptoms/diagnosis with TB, having risk factors for HIV, knowledge of/having lost a person with HIV/AIDS, (un)employment status, higher education, un(married) status, receiving information on the link between TB and HIV, desire to improve health/avoid death, aspiration to be a role model and anticipation of support.

Alternatively, TB patients did not undertake HIV testing for the following individual/patient-related reasons: foreign heritage, fear of death, fear of stigmatisation, need to first consult spouse, prior knowledge of HIV status, indecisiveness, belief that "all" TB patients are co-infected with HIV, belief that TB in PLHWA is incurable, perceptions of non-risky sexual behaviour, knowledge that ARVs do not cure HIV, negative experience during prior HIV counselling, male partner disapproval, unwillingness to be counselled by lay counsellors, desire to first treat TB, ignorance about HIV, being too sick with TB, stigmatising/inhibiting beliefs, female sex, residence outside refugee camps, urban residence, overwhelming burden of TB-HIV co-infection, fear of disclosure, harmful gender norms and practices, discrimination and misconceptions surrounding HIV/AIDS.

As far as health systems factors are concerned, factors deemed to facilitate uptake of HIV testing included: TB patients undergoing hospital (as opposed to ambulatory) care, TB diagnosis done by a specialist health care provider, integration of TB and VCT/HIV services, diagnostic/routine offer of VCT services, adequate privacy in VCT unit, rapid HIV testing, access to CPT, community care and support, access to ART, improved recording and reporting system, monitoring and evaluation of TB-HIV activities, PITC, health education, advertising VCT, providers with good attitude, community outreach, staff trained in PITC, multi tasking of clinical responsibilities, on site HCT service provision, encouragement to test provided by health care workers, alleviation of health care provider shortage, and having an integrated TB-HIV database.

Health systems-related barriers to uptake of HIV testing included: lengthy HCT services, infrastructural limitations leading to lack of confidentiality, failure to perform sputum culture tests, non-health care worker observed therapy, poor TB-HIV planning, coordination and leadership, inadequate dissemination of policy, inadequate provider knowledge, limited TB-HIV inter-referral, poor service integration and recording, logistical shortages (e.g. stock out of testing kits, inadequate counselling space, lack of HCT staff, etc), high patient loads, high cost of HCT services,

From Table 1, the factors influencing uptake/non uptake of HIV testing also seem to differ markedly from context to context, which lends credence to the notion that

it is important to conduct both contextual and population-specific research on the factors that impact on TB patients' uptake of HIV testing (Kigozi et al., 2010).

1.2 Current research

1.2.1 Problem statement

Previous research amongst TB patients in the Free State (Matebesi, 2004) set out to provide a picture of the TB-patient career. Research findings indicated that TB, particularly as a result of HIV co-infection, places a huge burden on the patient and his/her social environment. However, this author's study was unable to determine whether TB patients sought HIV testing as part of their health-seeking behaviour.

Despite national (NDoH, 2007b) and international (WHO/UNAIDS, 2007) policy calls for all TB patients to be offered HIV testing, the Free State performed sub-optimally in this regard, recording an uptake rate of only 43.1% in 2007. Yet, among those who tested, six in every ten TB patients were co-infected with HIV (FSDoH, 2010). There is thus an urgent need for research that will contribute towards reversing the problem of the high non-uptake of HIV testing by TB patients in the province. A further cause for concern is that, despite the evidently high rate of non-uptake, HIV testing – as a key challenge/priority area – is is not considered in the *Free State Department of Health Strategic Plan 2006/2007-2010/2011* (FSDoH, 2006).

Furthermore, as previously mentioned, uptake of HIV-testing by TB patients is influenced variously by both individual/patient-related and health system factors. The dynamics underlying TB patients' decisions to take up or disregard VCT/PITC/HCT clearly vary within various contexts. The present study has sought to identify factors that may facilitate or limit TB patients' uptake of counselling and testing for HIV in the context of four sub-districts in the Free State Province.

1.2.2 Rationale

South Africa bears the greatest burden of the TB-HIV co-epidemic in the world (WHO 2008, 2009, 2010a). The high prevalence of communicable diseases – such as TB and HIV/AIDS – in addition to the obligation of having to meet MDG targets by 2015 necessitates innovative approaches in health service delivery (Coovadia, Jewkes, Barron, Sanders & McIntyre, 2009). As regards TB and HIV/AIDS, TB patients are a readily identifiable cohort for HCT, and TB centres can serve as ideal points of entry for integrated HIV care and support (Perumal et al., 2009). Hence, for effective TB-HIV/AIDS co-management, TB patients should be required to undergo HIV testing as soon as possible in during their TB-treatment period..

Even with interventions including routine HIV testing (NDoH, 2007a), the rate of uptake of HIV testing by TB patients in South Africa remains sub-optimal (Heunis et al., 2009; Perumal et al., 2009), which suggests that there are underlying individual/patient- and/or health systems-related problems. This study contributes

to the understanding of uptake of HIV testing amongst TB patients by highlighting both facilitating factors and barriers associated with uptake of this service as seen from the perspective of TB patients in the Free State.

1.2.3 Research questions

The study sought to answer the following questions:

- What are TB patients' TB-, HIV- and TB-HIV-related knowledge, beliefs, and attitudes regarding HIV testing?
- Is HIV testing associated with TB patients' HIV preventive practices in respect of condom usage?
- How do TB patients experience HCT service provision?
- What are TB patients' reasons for non-uptake of HIV testing? What factors predict uptake of HIV testing amongst TB patients?
- How can the current research contribute to the strengthening of TB-specific health systems?

1.2.4 Aim and objectives

The aim of this research was to identify the facilitating factors and barriers to uptake of HIV testing by TB patients in four sub-districts in two randomly selected districts of the Free State Province.

Specific objectives included:

- Determining TB patients' TB, HIV, and TB-HIV-related knowledge.
- Establishing their beliefs about HIV as well as attitudes in respect of HIV testing.
- Determining factors associated with TB patients' risk-reduction practices in respect of condom usage at most recent sex.
- Exploring TB patients' experiences with HCT service provision.
- Establishing TB patients' reasons/explanations for uptake/non-uptake of HCT.
- Determining predictors of TB patients' uptake/non-uptake of HCT.
- Contributing knowledge towards the strengthening of TB-specific health systems.

1.2.5 Significance of the study

The significance of this study is twofold: firstly, findings from the study have been used to inform the development of a health worker-training and -mentoring intervention to improve the uptake of HIV testing in the Free State in the hope that it will be adopted both locally and farther afield. Secondly, the study adds to the existing bodies of information in the fields of Health Psychology and Health Systems Research. Particularly by identifying gaps and suggesting relevant recommendations, the present findings serve to inform TB-HIV policy makers

regarding best practices for the co-management of TB and HIV/AIDS in patients in the Free State context.

1.2.6 Study methods

The following is a concise description of the general methodology utilised in this study. The respective articles (Chapters 2, 3, 4, 5, and 6) provide fuller details and specifics.

Design and setting

The study followed a cross-sectional design. Figure 4 reflects the geographical setting for the research.

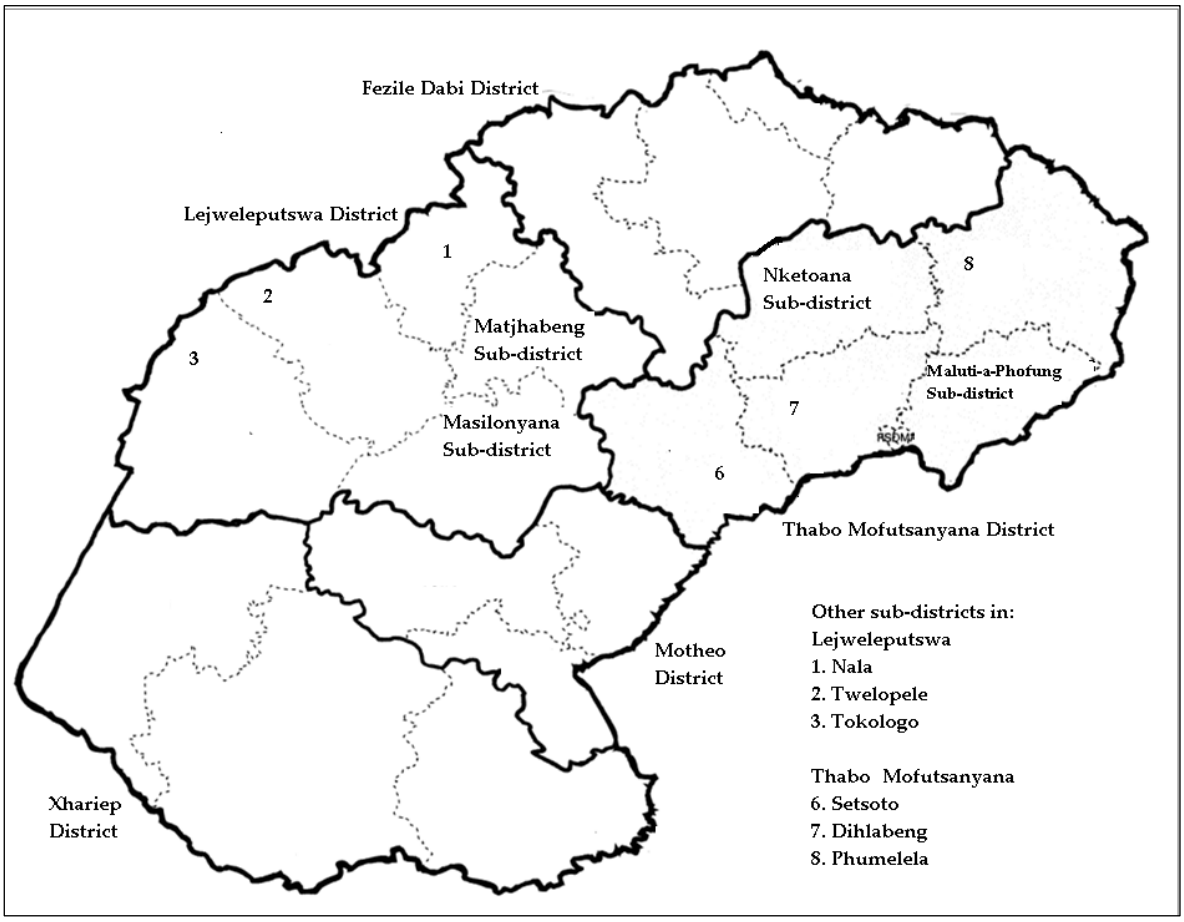


Figure 6: Map of the Free State reflecting the study setting

Source: Adapted from Heunis et al. (2009)

The Free State Province comprises five districts including Motheo, Lejweleputswa, Thabo Mofutsanyana, Fezile Dabi and Xhariep. The current research was part of a larger 'fact-finding' exercise (Heunis et al., 2009) conducted in two randomly selected districts of the Free State, namely Thabo Mofutsanyana and Lejweleputswa. In 2007, the districts had comparable populations of 767 862 and 758 097 respectively (Monticelli, 2007). Heunis et al. (2009) reported that, of the two

districts, Thabo Mofutsanyana had a larger proportion of individuals under the age of 20 years, while Lejweleputswa had more people aged 20-49 years. Also, Thabo Mofutsanyana had a higher nurse clinical work load, clinical supervision rate and PHC utilisation than Lejweleputswa. However per capita expenditure was lower in Thabo Mofutsanyana than in Lejweleputswa. In the same year, at 24.2% and 20.5% respectively, the districts of Thabo Mofutsanyana and Lejweleputswa had comparable HIV prevalence rates. Fewer than four in every ten registered TB patients accepted HIV testing in both districts, i.e. 37.9% in Thabo Mofutsanyana and 32.4% in Lejweleputswa (FSDoH, 2010).

As a result of resource limitations, two sub-districts were purposively selected from each district i.e. Maluti-a-Phofung and Nketoana Sub-districts from Thabo Mofutsanyana, and Matjhabeng and Masilonyana Sub-districts from Lejweleputswa. Maluti-a-Phofung and Matjhabeng Sub-districts are mostly urban/big-town localities, while Nketoana and Masilonyana are predominantly small-town/rural areas..

In order to qualify for inclusion in the study, a PHC facility needed to have provided:

- TB treatment and HIV testing services
- Services to at least ten registered TB patients in 2007

To this end, mobile clinics were excluded because they generally serviced low numbers of patients, while hospitals were excluded because they did not normally offer HIV-testing services to outpatients. TB patients were merely initiated on TB treatment at hospitals before being transferred to PHC facilities for further therapy and related services. In all, 61 out of 97 PHC facilities that fulfilled the aforementioned criteria were included in the study (Appendix 2).

Participants, sample-size estimation and sampling

The target population was defined as registered TB patients, aged 18 years and older, who were utilising services at the selected PHC facilities. Because of a dearth of previous studies regarding uptake of HIV testing in the Free State, the required sample size could not be calculated statistically and was instead estimated using a 'rule of thumb' method (Neuman, 2000). According to Neuman (p. 217), while small populations of less than 1 000 would require large sampling ratios of 30%, large populations of about 10 000 would require sampling ratios of 10% to enable an accurate sample, i.e. "*one with a high probability of yielding the same results as the entire population*", Hence, for the current study, it was assumed that the TB patient population in Thabo-Mofutsanyana and Lejweleputswa was under 10 000 and a

sample of 600[6] patients would be required The sample of 600 patients was obtained across the 61 PHC facilities that fulfilled inclusion criteria. The large difference in numbers of TB patients attending the 61 PHC facilities necessitated the use of probability proportional-to-size sampling to estimate the total number of TB patients who would be recruited from each facility. In 2007, an average of 2 238 TB patients were registered across the 61 facilities. Probability proportional-to-size sampling ensured that TB patients across these facilities stood an equal chance of being represented in the study. An experienced biostatistician assisted the researcher in performing appropriate probability proportional-to-size sampling. The numbers of TB patients recruited per facility visited are presented in Appendix 2. Comparison between the sample and the population of TB patients receiving TB therapy in the four sub-districts yielded no statistically significant difference in respect of key variables, which included age ($p = 0.5$) and sex ($p = 0.7$) (Kigozi et al., 2010).

Instrument development and data collection

A newly developed structured interview schedule (Appendix 3) was used to gather information from the patients. Questions were generated from existing literature

[6] Three hundred TB patients were selected from Thabo Mofutsanyana and Lejweleputswa Districts respectively. However, no comparisons were made across these districts in the present study.

on HCT (e.g. Bond, Lauby & Batson, 2005; Day, Miyamura, Grant, Leeuw, Munsamy, Baggaley et al., 2003; Delva, Mutunga, Quaghebeur & Temmerman, 2006; Gebrekristos, Lurie, Mthethwa & Karim, 2005; Jerene et al., 2007; Kalichman & Simbayi, 2003; etc.), standardised scales, such as the *HIV Knowledge Questionnaire* (Carey & Schroder, 2002; α = 0.75-0.89*),* and the *HIV-Antibody Testing Scale* (Boshamer & Bruce, 1999; α = 0.88), as well as the *Tools for evaluating voluntary counselling and testing (*UNAIDS, 2000).

The interview schedule measured TB patients' demographic information; their knowledge about TB, HIV and the link between the diseases; HIV-risk awareness; sexual and risk-reduction practices; self-reported reasons for non-uptake of HCT; and, experiences of HIV-test service provision. Both closed and open-ended questions were formulated. Additional clinical information (i.e. record review) – including patient category, type of TB, treatment-inception date, and HCT history – where available, was collected from TB registers and from patients' clinic cards at the PHC facilities.

The interview schedule was reviewed by a team of expert consultants from the University of Antwerp (Belgium), the University of the Witwatersrand, the University of Cape Town and the University of the Free State. The interview schedules were formulated in both English and Sesotho. The final instrument was tested for practicality, (i.e. whether it measured what it was intended to measure) at a PHC facility outside the study areas.

Six female and four male fieldworkers were trained in a three-day course on how to conduct the interviews. The fieldworkers were required to conduct exit-interviews with consenting patients in these patients' language of choice. Mostly, the patients were also able to choose whether they would like to be interviewed by a female or a male interviewer. At the end of consultation, professional nurses (PNs) requested TB patients presenting at the said PHC facilities to participate in the interviews voluntarily. The fieldworkers were stationed in private rooms within the facility. The interviews each lasted approximately 45 minutes. Patients were not required to reveal their HIV-status during the interviews. Moreover, interviews were conducted for all patients regardless of the duration of TB therapy.

Data handling and analysis

Data obtained from self reported interviews and review of clinical records were edited both in and out of the field. In-field editing was conducted by the fieldwork manager who checked questionnaires for missing information. Out of the field data editing involved checking the questionnaires for completeness before information was coded, captured and cleaned.. The information was double-captured to ensure accuracy and cleaned to ensure completeness. Responses to open-ended questions were analysed for content and codes were assigned to emerging themes before being captured together with responses to closed-ended questions. Data analysis involved the use of the Statistical Package for the Social Sciences (SPSS) (Version 17) and Stata (Version 10) in univariate, bivariate and multivariate calculations.

Ethical considerations

As the study was conducted amongst TB patients (human subjects), the researcher in the present study was cognisant of the following ethical considerations prescribed by Murray and Hughes (2008):

- **Informing subjects**: All TB patients, before being referred to trained fieldworkers for more detailed information, were first briefly informed about the research during their consultation with the TB nurse. Details of the research were provided by the interviewers.
- **Asking subjects' permission**: Letters seeking consent for interviews were drafted and attached to the interview schedule (Appendix 3). Each participant was also provided with a copy of the letter of consent. The fieldworkers translated the information in the letters to patients whose language of preference was Sesotho. Such letters explained the purpose of the research, the data-gathering procedure, the proposed duration of interviews, the use and the dissemination of findings, and the considerations pertaining to participants' rights. Permission was further sought to access additional clinical data directly from the patients' files. Every participant was required to read and confirm whether he/she understood the contents of the consent letter before signing two copies attesting to informed consent and voluntary participation in the study.
- **Protecting subjects' privacy**: Although it was necessary to record patients' names to facilitate the linking of clinical records and interviews, all data were treated as confidential. The collected data were kept under lock and

key and was only accessed by the data manager, the data-entry staff, and the researcher. Patients' names were not used anywhere in the dissemination of findings. Interviews were moreover conducted in private rooms within the facilities attended by the patients in question.

- **Sharing of recorded data and results of the research**: Findings were disseminated to FSDoH managers, to patients, and also to communities at research feedback workshops in each of the five[7] districts in the province. Findings were further disseminated in journal articles and presentations at national and international conferences.
- **Objectivity**: The fieldworkers were trained to maintain objectivity during data gathering. Data analysis further entailed the use of four researchers in the coding and categorisation of responses to open-ended questions.

Ethical clearance and authorisation of the study

The study received ethical clearance (Appendix 4) from the Ethics Committee of the Faculty of the Humanities, while authorisation for the research was granted by the FSDoH (Appendix 5).

[7] Research feedback workshops in the five districts were held as follows: Thabo Mofutsanyana, 05 September 2008; Xhariep, 18 September 2008; Fezile Dabi, 22 September 2008; Motheo District, 23 September 2008; and Lejweleputswa, 15 October 2008. Presentations in the various districts also served both to validate findings among a wide range of interest groups and to elicit their ideas on appropriate interventions (Heunis et al., 2009).

1.3 Reader's orientation to the five articles

In accordance with the regulations of the University of the Free State, the current research is presented in the form of five articles. Overall, the articles attempt to illuminate facilitating factors and barriers to uptake of HIV testing. Because the methodologies employed in the articles are very similar, this could create a perception of overlap and repetition. However, such is not unusual in the research community, where several articles based on a single study are published independently. It is suggested that each article (here presented as a chapter) should be considered a stand-alone study. While three of the five articles have already been published, two are being peer-reviewed. For this reason, the journal-specific style/requirements for publication/peer review have been maintained.

- The first article (Chapter 2) – '*Tuberculosis patients' knowledge, beliefs and attitudes with respect to tuberculosis and HIV/AIDS: a survey in four sub-districts in the Free State Province, South Africa*' – deals with the unravelling of TB patients' knowledge, beliefs and attitudes regarding TB and HIV/AIDS. The manuscript was submitted to the *Social Aspects of HIV/AIDS Research Alliance Journal.*
- The second article (Chapter 3) – '*Determinants of condom use amongst tuberculosis patients in the Free State Province, South Africa*' – reports TB patients' sexual and risk-reduction practices with the specific aim of establishing whether certain factors – HIV counselling and testing included – are associated with patients' reports of condom use at most recent sexual

activity. This manuscript was submitted to the *International Journal of Tuberculosis and Lung Disease*.

- The third article (Chapter 4) – '*Tuberculosis patients' perspectives on HIV counselling by lay counsellors vis-à-vis that rendered by nurses: an exploratory study in two districts of the Free State Province, South Africa*' – explores TB patients' perspectives on HCT service provision. Specifically, the article seeks to ascertain TB patients' views with regard to the provision of HIV counselling services by lay counsellors vs. professional nurses. This article was published in the *Africa Journal of Nursing and Midwifery*, 13(1), 71-80.
- The fourth article (Chapter 5) – '*Tuberculosis patients' reasons for and suggestions to address non-uptake of HIV testing: a cross-sectional study in the Free State Province, South Africa*' – reports non-HIV tested patients' reasons for refusing HIV testing and all patients' (regardless of whether the patients were tested or not) suggestions to improve uptake. The article is published in the *BMC Health Services Journal*, 11(110).
- In the fifth article (Chapter 6) – '*Predictors of uptake of human immunodeficiency virus testing by tuberculosis patients in the Free State Province, South Africa*', – the attributes of the patients (i.e. individual/patient-related factors) and those of the health system (i.e. service provision) are combined in logistic regression models with the aim of ascertaining the factors that predict uptake of HIV testing by TB patients. The article appears in the *International Journal of Tuberculosis and Lung Disease*, 14(4), 399-405.

Chapter 7 utilises insights gained from the aforementioned articles to suggest potential means of improving uptake of HIV testing, thereby contributing towards the strengthening of the health system.

Other TB-HIV research work to which the candidate contributed as co-author (Appendices 1.1, 1.2, and 1.3), as well as relevant additional materials [i.e. a list of PHC facilities and number of patients recruited at each facility (Appendix 2), the patient- consent letter and the interview schedule (Appendix 3), the letter in respect of ethical clearance (Appendix 4), the letter of authorisation (Appendix 5), and a summary in summary in Afrikaans (Appendix 6)] are presented as appendices.

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CHAPTER 2 – TUBERCULOSIS PATIENTS' KNOWLEDGE, BELIEFS AND ATTITUDES WITH RESPECT TO TUBERCULOSIS AND HIV/AIDS: A SURVEY IN FOUR SUB-DISTRICTS IN THE FREE STATE PROVINCE, SOUTH AFRICA

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Structure

2.1 Abstract

Knowledge, beliefs, and attitudes (KBA) surveys are widely used to inform the development of and assess the effectiveness of health care programmes and interventions. As far as the tuberculosis (TB) and human immunodeficiency virus (HIV) epidemics are concerned, such surveys have been used to identify needs, problems and barriers to service delivery, as well as ways to improve access to and quality of TB/HIV services. The present study was conducted amongst TB patients in the Free State Province with the aim of establishing their TB/HIV-related KBA.

A cross-sectional survey was carried out in four purposively selected sub-districts. Trained fieldworkers administered a structured questionnaire to 600 TB patients in exit interviews. The patients were selected in proportion to the total numbers registered at

each of the 61 primary health care facilities considered. Data gathered on patients' socio-demographic details, TB and HIV knowledge, beliefs about HIV/AIDS and attitudes towards HIV testing was uni- and bi-variately analysed.

Findings showed that more than two-thirds of patients were unaware of asymptomatic TB or HIV. Although respondents did not differ statistically significantly regarding TB knowledge, female respondents, patients younger than 31 years, and those with at least secondary education scored statistically significantly higher than their respective counterparts on HIV knowledge assessment. Moreover, younger and unmarried patients as well as those with at least secondary school education held more "optimistic" beliefs about HIV/AIDS. Thereupon, males and non-HIV tested patients revealed statistically significantly more "negative" attitudes towards HIV testing.

Results highlight gaps and misconceptions regarding TB patients' TB/HIV-related KBA, necessitating informational, educational, and communicational interventions. Such interventions should be especially emphasised amongst male, older and less educated TB patients, as well as those who do not know their HIV status. Implications of the current study include the need to better integrate TB and HIV service provision in PHC facilities in the Free State as well as ensure that all TB patients are offered HIV testing.

Key words: Tuberculosis, HIV/AIDS, knowledge, beliefs, attitudes, Free State

2.2 Introduction

In sub-Saharan Africa, the resurgence of tuberculosis (TB), amidst a spiralling human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) epidemic is attracting renewed public health interest. The synergy between the epidemics is such that, while HIV/AIDS speeds up the progress of disease in people infected with TB, the leading cause of mortality amongst those infected with HIV/AIDS is TB (Coetzee, Hilderbrand, Goemaere, Matthys & Boelaert, 2004; Bond & Nyblade, 2006; Williams, Alarcon, Jittimanee, Walusimbi, Sebek, Berga et al. 2008a; 2008b). From a recent report, the World Health Organization (WHO) established that in 2009, with 490 000 cases, South Africa accounted for nearly 20% of the TB burden in the Africa Region while more than half ofnew TB patients in the country were co-infected with HIV (WHO, 2010).The strong link between TB and HIV/AIDS underscores the necessity for knowledge, beliefs and attitudes (KBA) (Umeh, Chiamaka, Essien, Ezedinachi & Ross, 2008) surveys or variants thereof i.e. knowledge attitudes and behaviour (KAB) (Aberu, 2003) or knowledge, attitudes, beliefs and practices (KABP) (Dana, Simbayi, Rehle, Vass, Skinner, Zuma et al. (2008), or knowledge attitudes and practices (KAP) (WHO, 2008), or knowledge, beliefs and practices (KBP) (Peltzer, Mngqundaniso & Petros, 2006) amongst TB populations. Using such methodology in TB- and HIV-related research facilitates understanding of users' response to the epidemics. For example, using the aforementioned methodologies and models, studies have highlighted knowledge gaps, assessed attitudes and beliefs regarding HIV/AIDS, and evaluated sexual and protective practices among various populations (Bloom, Banda, Songolo,

Mulendema, Cunningham & Boerma, 2000; Simbayi, Strebel, Andipatin, Potgieter, Ratele, Shabalala et al., 2004; Ntata, Muula, Siziya & Kayambazinthu, 2008). Findings from such studies are used to inform the development of appropriate informational, educational, and communicational (IEC) interventions (Okware, Opio, Musinguzi & Waibale, 2001, Kaona, Tuba, Siziya & Sikaona, 2004; Bond & Nyblade, 2006; WHO, 2008). For TB control programmes in South Africa, KBA/KAB/KABP/KAP/KBP research would help identify knowledge gaps and cultural beliefs that may facilitate or hinder TB and TB/HIV control efforts. Thereby, programme managers would be in position to set TB management priorities (WHO, 2008). Unfortunately, KBA/KAB/KABP/KAP/KBP research to guide HIV response efforts amongst TB patients in South Africa is largely lacking.

Research amongst TB populations elsewhere, has unveiled gaps in respect of TB and HIV knowledge (Banerjee, Harries, Nyirenda & Salaniponi, 2000; Nnoaham, Pool & Grant, 2006; Todd, Barbera-Lainez, Doocy, Ahmadzai, Delawar & Burnham, 2007; Sagbakken, Frich & Bjune, 2008; Jittimanee, Nateniyom, Kittikraisak, Burapat, Akksilp, Chumpathat et al., 2009). Poor TB knowledge has been associated with socio-demographic factors such being foreign-born (Nyamathi, Sands, Pattatucci-Aragón & Leake, 2004); and male sex (Kaona et al., 2004). Thereupon, poor HIV knowledge has been linked to poor TB knowledge, female sex, and rural residence (Todd et al., 2007; Jittimanee, et al., 2009).

As far as beliefs about HIV/AIDS are concerned, research has established serious misconceptions which, if left unaddressed, are bound to hamper the management of HIV/AIDS amongst co-infected TB patients (Banerjee et al., 2000; Ngamvithayapong, Winkvist & Diwan, 2000; Nnoaham et al., 2006; Van den Driessche, Sabue, Dufour, Behets & Van Rie, 2009). In two investigations involving TB patients, one in Malawi (Banerjee et al., 2000) and the other in Zambia (Bond & Nyblade, 2006), participants ascribed the transmission of both HIV and TB to "sexual misdemeanour". In another instance amongst Ethiopian TB-HIV co-infected patients,

AIDS was perceived as "the second stage of TB" or "TB that had developed into a new disease" (Sagbakken, Frich & Bjune, 2008). Hence, success of both TB and HIV/AIDS programmes may depend on whether such misconceptions are recognised, understood, and addressed (Bond & Nyblade, 2006).

With respect to attitudes towards HIV testing, research on the non-uptake of HIV testing from studies conducted in the United Kingdom (Nnoaham et al., 2006), Indonesia (Mahendradhata, Ahmad, Lefèvre, Boelaert & Van der Stuyft, 2008) and Cambodia (Yi, Poudel, Yasuoka, Ichikawa, Tan & Jimba, 2009) provide further evidence for the need to conduct KBA research in respect of TB populations. For instance, from their research amongst TB patients in the United Kingdom, Nnoaham et al. (2006) observed a tendency for patients to decline offers of HIV testing citing fear of being stigmatised (even by medical staff) as a consequence of correlating TB and HIV symptoms. However, from Mahendradhata et al.'s (2008) study in Indonesia, TB

patients' "lack of interest to undergo HIV testing" was related to their poor knowledge of HIV/AIDS.

This paper reports findings from a KBA study amongst TB patients in the Free State Province in South Africa. Surveillance of antenatal women in the Free State indicated that in 2009, the province recorded an HIV prevalence of 30.1% (National Department of Health [NDoH], 2010). Concomitantly, by 2009, TB incidence had risen to 913 compared to 497 cases per 100 000 population in 2002 (Day & Gray, 2010). However, even with evident growth in the TB-HIV/AIDS co-epidemic, there is a dearth of KBA research to inform TB and HIV interventions in this province. To address this gap, the current study aimed at exploring TB patients' TB and HIV knowledge, their beliefs about HIV/AIDS, as well as their attitudes towards HIV testing. The study's secondary objective was to determine whether there were any associations between certain socio-demographic and clinical variables, and the patients' KBA. The study was part of a larger project aimed at developing, implementing and evaluating an intervention to improve uptake of HIV testing amongst TB patients in the Free State (Heunis, Engelbrecht, Kigozi, Pienaar & Van Rensburg, 2009).

2.3 Methods

2.3.1 Design and setting

A cross-sectional investigation was conducted in two randomly selected districts of the Free State, *i.e*. Thabo Mofutsanyana and Lejweleputswa. One urban and one rural/small town sub-district were purposively selected from each district. Maluti-a-Phofung (urban) and Nketaona (rural/small town) were selected in Thabo Mofutsanyana District and Matjhabeng (urban) and Masilonyana (rural) in Lejweleputswa District. The purposive selection of an urban and rural sub-district from each district was an attempt to increase the representativeness of the sample of patients amidst logistical restrictions.

Two criteria were considered for inclusion of primary health care (PHC) facilities in the study. The facility should have: 1) been providing concurrent TB and HIV-testing services and, 2) registered at least ten TB patients in 2007. Out of a total of 97 PHC facilities, 61 fulfilled these requirements and were all included in the study.

2.3.2 Sample

The population constituted all registered TB patients aged 18 years and older attending PHC facilities at the time of the study. A sample of 600 patients was selected across the 61 PHC facilities. The number of patients selected at each facility was determined using the probability proportionate-to-size sampling (PPS) technique to ensure that the number of TB patients recruited at each PHC facility was proportional to the total

number registered per facility during 2007 (Neuman, 2006; Babbie, 2010). More patients were recruited from PHC facilities registering large numbers of patients and fewer from those registering small numbers. The PPS technique accorded equal probability of selection of patients at both 'large' and 'small' PHC facilities. An experienced bio-statistician was tasked with the duty of calculating the actual number of patients recruited per PHC facility.

Patients were recruited for interviews as they exited TB consultation rooms. Despite convenience sampling of patients for exit interviews at each facility, comparison between the sample and population showed no significant differences regarding age (p=0.5) and sex (p=0.7) (Kigozi, Heunis, Chikobvu, Van den Berg, Van Rensburg & Wouters, 2010).

2.3.3 Instrument development

Data was collected in February and March 2008. Trained fieldworkers administered a newly developed structured questionnaire to participants. The questionnaire consisted of 26 items, with five measuring socio-biographic details (*i.e*. sex, age, marital status, level of education, and employment status); three assessing clinical aspects (*i.e*. patient category, type of TB and whether the patient had undergone HIV testing); nine examining patients' knowledge about TB and HIV (see Table 2); seven measuring

beliefs about HIV/AIDS (see Table 4); and three assessing their attitudes towards HIV testing (see Table 4).

2.3.4 Measures

TB and HIV knowledge were measured using three and six items respectively (see Table 2). The questions assessed patients' understanding of TB and HIV transmission, symptoms and risk reduction. Respondents were asked to affirm the accuracy of given statements by choosing from 1 ("yes"), 2 ("uncertain"), or 3 ("no") response options.

Beliefs about HIV/AIDS and attitudes towards HIV testing were measured using a five-point Likert scale with seven items investigating "pessimistic" versus "optimistic" beliefs about HIV/AIDS, and three items assessing patients' "negative" versus "positive" attitudes towards HIV testing. On the scale, respondents were required to specify the extent to which they concurred or disagreed with given statements by indicating either 1 ("strongly agree"), 2 ("agree"), 3 ("uncertain"), 4 ("disagree"), or 5 ("strongly disagree").

The items considered for the various scales were adapted from standardised instruments (e.g. *HIV Knowledge Questionnaire* [HIV-KQ-18]; Carey & Schroder, 2002) and relevant literature on TB patients' KBA about TB and HIV (e.g. Kalichman & Simbayi; 2003; Nyamathi et al., 2004). The questions were translated and back-

translated from English to Sesotho with the aim of improving reliability. The final instrument was availed in both English and Sesotho. The questionnaire was also pre-tested for practicality on a sample of ten TB patients at a PHC facility outside the study areas.

2.3.5 Data collection

At the end of each consultation the nurse informed the TB patient about the research. The patient was then referred to a trained male or female (patients could choose) fieldworker located in a private room within the facility. All together, ten interviewers were considered for the study. Potential bias due to the interviewers' gender was reduced by assigning, where possible, a male and female interviewer per PHC facility. The fieldworkers explained the purpose of the research and sought patients' written consent before conducting the interviews. Patients' participation in the study was voluntary and the interviews were confidential. Patients were reassured that information gathered would be treated confidentially and that their names would only be recorded for purposes of correlating questionnaires with their clinical data and would not appear in any further analysis or reporting of the information.

2.3.6 Analysis

Data was analysed using STATA version 10 and SPSS version 17. Composite scores were created to reflect TB knowledge, HIV knowledge, beliefs about HIV/AIDS, and attitudes towards HIV testing with reverse scoring of all negatively keyed items.

With respect to TB knowledge evaluation, scores ranged from 3 to 9. A score of 3 to 5 represented "poor" and 6 to 9 "good" knowledge of TB. For HIV knowledge assessment, scores ranged from 6 to 18, with scores of 6 to 11 indicating "poor", and 12 to 18 "good" knowledge of HIV. Scores regarding beliefs about HIV/AIDS ranged from 7 to 35. Respondents were categorised as harbouring "pessimistic" beliefs about HIV/AIDS if they scored 21 or less while scores higher than 21 denoted "optimistic" beliefs thereof. In the case of patients' attitudes towards HIV testing, scores ranged from 5 to 15. Scores of 9 and less indicated "negative" attitudes while a score of 10 and more represented "positive" attitudes towards HIV testing.

In addition, mean scores were calculated for TB knowledge, HIV knowledge, beliefs about HIV/AIDS, and attitudes towards HIV testing for each of the following independent variables: sex (male/female), age group (18-30 years/31 years and older), marital status (married/unmarried), education level (primary school and lower/secondary school and higher), employment status (employed/unemployed), patient category (new/re-treatment), type of TB (pulmonary/other [*i.e.* extra pulmonary,

multi-drug resistant TB]), and self-reported uptake of HIV testing (yes/no). Differences in mean scores for each strata were examined using t-tests.

2.3.7 Ethical clearance and authorisation

Ethical clearance was obtained from the Faculty of Humanities, University of the Free State. Authorisation to conduct the study was granted by the Free State Department of Health at the provincial, district and sub-district levels.

2.4. Results

Respondent's socio-demographic characteristics are presented in Table 1. All patients approached agreed to partake in the study. A slight majority of the 600 respondents were female (51.7%). Respondents' mean age was 38.4 years (standard deviation [SD] ± 11.1) with a range of 18-73 years. A large proportion (52.4%) of respondents was aged between 18 and 30 years. The majority (73.3%) was unmarried and just over six in every ten patients (63.2%) had attained at least secondary school education. Most (60.9%) of the patients were receiving TB treatment for the first time. A large majority (90.4%) of the patients was undergoing treatment for pulmonary TB. Almost one-third (32.5%) of the respondents had self-reportedly not tested for HIV.

Table 1: Patients' socio demographic characteristics (N = 600)

Variable	n (%)
Sex	
Male	290 (48.3)
Female	310 (51.7)
Age group*	
18-30	310 (52.4)
31 and older	282 (47.6)
Marital status*	
Married	160 (26.7)
Unmarried	439 (73.3)
Education level	
Primary school or lower	221(36.8)
Secondary school and higher	379 (63.2)
Patient category*	
New	362 (60.9)
Re-treatment	232 (39.1)
Type of TB*	
Pulmonary	539 (90.9)
Other (e.g. extra pulmonary, MDR)	54 (9.1)
Tested for HIV (self-reported)?	
Yes	405 (67.5)
No	195 (32.5)

* n is less than 600 due to missing values. †Mean age 38.4 years (standard deviation, SD ± 11.1), range, 18-73 years

2.4.1 TB and HIV knowledge

Table 2 shows patients' responses to specific questions regarding TB and HIV knowledge assessment.

Table 2: Patients' knowledge about TB and HIV (N = 600)

Statement (correct response)	Correct response	
	n	%
TB Knowledge		
Coughing and sneezing spread TB (yes)	540	90.0
You can be infected with TB if you live or work with someone who has TB and is not on treatment (yes)	555	92.5
A person with TB always shows symptoms (no)	94	15.7
HIV knowledge		
Coughing and sneezing spread HIV (no)	375	62.5
A person can be infected with HIV by sharing a glass of water with a person who is HIV-positive (no)	446	74.3
Showering or washing genitals/private parts after sexual intercourse prevents a person from getting HIV (no)	411	68.5
Unprotected sex with more than one partner can decrease a person's chances of being infected with HIV (no)	447	74.5
If you have HIV it is easy to get TB (yes)	517	86.2
A person with HIV always shows symptoms (no)	159	26.5

*Total n<600 due to a missing response

The most correctly (92.5%, n=555) answered question on TB was "you can be infected with TB if you live and work with someone who has TB and is not on treatment." As far as HIV knowledge assessment is concerned, a large majority (86.2%, n=517) of patients correctly affirmed the statement "if you have HIV it is easy to get TB." However, many patients lacked understanding of the asymptomatic nature of both TB and HIV. In the case of TB, 84% (n=494) of respondents incorrectly agreed that "a person with TB always shows symptoms" while nearly three quarters (73.5%, n=441) incorrectly agreed that "a person with HIV always shows symptoms".

Respondents' mean TB knowledge score was quite good, at 7.1 (SD ± 0.9) out of a total of 9 possible correct responses. In Table 3, results indicate no statistically significant differences in mean scores with respect to TB knowledge across all the social-demographic and clinical independent variables. As far HIV knowledge evaluation is concerned, respondents' mean knowledge score was rather poor, at 11.6 (SD ± 2.3) out of 18. Table 3 shows that female respondents, those younger than 31 years and patients with at least secondary education obtained statistically significantly (p=0.000) higher mean scores than their respective counterparts.

Table 3: Mean TB- and HIV-knowledge scores stratified by socio-demographic and clinical variables

Variable	n (%)	TB knowledge score* Mean (SD)	*p*- value	HIV knowledge score** Mean (SD)	*p*- value
Sex					
Male	290 (48.3)	7.0 (0.9)	0.890	11.2 (2.5)	0.000***
Female	310 (51.7)	7.1 (0.9)		12.0 (2.0)	
Age group					
18-30	310 (52.4)	7.1 (1.0)	0.4423	12.0 (2.1)	0.000***
31 and older	282 (47.6)	7.0 (0.8)		11.2 (2.4)	
Marital status*					
Married	160 (26.7)	7.0 (0.8)	0.779	11.6 (2.4)	0.861
Unmarried	439 (73.3)	7.0 (1.0)		11.6 (2.3)	
Education level					
Primary school or lower	221 (36.8)	7.0 (0.8)	0.180	11.0 (2.4)	0.000***
Secondary school and higher	379 (63.2)	7.1 (0.9)		12.0 (2.2)	
Patient category*					
New	362 (60.9)	7.1 (1.0)	0.931	11.6 (2.3)	0.860
Re-treatment	232 (39.1)	7.0 (0.8)		11.6 (2.3)	
Type of TB*					
Pulmonary	539 (90.9)	7.1 (0.9)	0.5775	11.6 (2.3)	0.793
Other (e.g. extra pulmonary, MDR TB)	54 (9.1)	7.0 (1.1)		11.6 (2.1)	
Tested for HIV?					
Yes	405 (67.5)	7.0 (0.9)	0.150	11.7 (2.3)	0.152
No	195 (32.5)	7.1 (0.8)		11.4 (2.3)	

* Out of a possible 9; **out of a possible 15; ***$p < 0.001$

2.4.2 Beliefs about HIV/AIDS and attitudes towards HIV testing

Table 4 represents patients' scores on beliefs about HIV/AIDS, and their attitudes towards HIV testing.

Table 4: TB patients' beliefs about TB and HIV and attitudes towards HIV testing (N = 600)

Statement	Concur		Uncertain		Differ	
	n	%	n	%	n	%
Beliefs about HIV/AIDS						
There is little a person can do to prevent getting HIV	264	44.0	27	4.5	309	51.5
People in my life would leave me if I had HIV*	205	34.2	66	11.0	328	54.7
Only people who suspect that they are infected with HIV should be tested	206	34.3	22	3.7	372	62.0
Health-wise, there is not much one can do once he/she has HIV	182	30.3	25	4.2	393	65.5
HIV and AIDS is God's way of punishing people for their immoral (sinful) behaviour	253	42.2	73	12.2	274	45.7
Getting tested for HIV helps people feel better	525	87.5	17	2.8	58	9.7
Getting tested for HIV helps people not to get HIV	427	71.2	22	3.7	151	25.2
Attitudes towards HIV testing						
People who test HIV-positive should hide their status from their sexual partners	116	19.3	14	2.3	470	78.4
I would rather not know if I have HIV*	113	18.9	7	1.2	479	80.0
I do not really have time to go for an HIV test	71	11.8	5	0.8	524	87.3

*Total n<600 due to a missing response

From Table 4, most patients concurred that 'there is little a person can do to prevent getting HIV/AIDS' (44%). However, the majority (87.3%) disagreed that they did not have time to go for HIV testing.

Patients' mean belief score was 24.9 (SD ± 4.3) out of a total of 35 while their mean attitude score was 11.3 (SD ± 2.5) out of 15. Mean belief and attitude scores for each independent variable are presented in Table 6. With regard to beliefs, Table 5 indicates that younger (p = 0.023) and unmarried (p = 0.016) patients, and those who had attained at least secondary school education (p = 0.000) attained statistically significantly higher mean scores than their counterparts implying that they had more 'optimistic' beliefs about HIV/AIDS compared to their respective counterparts. As far as attitudes towards HIV testing are concerned, males (p = 0.014) and respondents who had self-reportedly not undergone HIV testing (p = 0.000) scored statistically significantly lower mean scores suggesting that they had more 'negative' attitudes towards HIV testing than their respective counterparts.

Mean HIV belief and HIV-testing attitude scores stratified by socio-demographic and clinical variables are presented in Table 5.

Table 5: Mean HIV belief and HIV-testing attitude scores stratified by socio-demographic and clinical variables

Variable	HIV belief score Mean (SD)†	*p*-value	HIV testing attitude score Mean (SD)‡	*p*-value
Sex				
Male	24.8 (4.5)	0.461	11.0 (2.5)	0.014*
Female	25.0 (4.2)		11.5 (2.4)	
Age group				
18-30	25.3 (4.5)	0.023*	11.2 (2.5)	0.626
31 and older	24.5 (4.1)		11.3 (2.4)	
Marital status				
Married	24.2 (4.3)	0.016**	11.2 (2.7)	0.862
Unmarried	25.2 (4.3)		11.3 (2.4)	
Education Level				
Primary school or lower	23.8 (4.2)	0.000**	11.1 (2.5)	0.203
Secondary school and higher	25.6 (4.3)		11.3 (2.5)	
Patient category				
New	24.9 (4.4)	0.651	11.3 (2.5)	1.000
Re-treatment	25.0 (4.3)		11.3 (2.5)	
Type of TB				
Pulmonary	25.0 (4.3)	0.485	11.3 (2.4)	0.504
Other (e.g. extra pulmonary, MDR TB)	24.5 (4.5)		11.5 (2.9)	
Tested for HIV?				
Yes	25.1 (4.2)	0.071	11.5 (2.3)	0.000**
No	24.4 (4.5)		10.7 (2.8)	

† Out of a possible 35; ‡ out of a possible 15; *$p < 0.05$;**$p < 0.001$

2.5 Discussion

This study explored TB patients' knowledge about TB and HIV, beliefs about HIV/AIDS and their attitudes towards HIV testing. As with Kilale, Mushi, Lema, Kunda, Makasi Mwaseba et al. (2008) finding generally good TB knowledge, patients in the current study attained high TB knowledge scores. Alternatively, despite somewhat low mean HIV knowledge scores across all independent variables, statistically significant differences in these scores were established between sex, age and education groups. Females, patients aged between 18 and 30, and those with at least secondary school education obtained higher mean HIV knowledge scores than their respective counterparts.

Moreover, a gap was identified with respect to patients' understanding of asymptomatic TB and HIV, highlighting a need to direct educational interventions in this regard. Such inaccurate knowledge may subsequently influence the patients' health seeking behaviour including their decisions on whether or not to take up HIV testing (Mahendradhata et al., 2008; Peltzer et al., 2009).

In line with studies conducted in other populations (Letamo, 2007; Deribew, Abebe, Apers, Jira, Tesfaye, Shifa et al., 2010; Haasnoot, Boeting, Kuney, & Van Roosmalen, 2010) finding misconceptions amongst certain socio-demographic groups, this study established statistically significant differences in respect of beliefs about HIV/AIDS amongst age, marital and education patient groups. More specifically, older and married patients, as well as patients with primary or less education, scored lower than their respective counterparts, implying that they harboured more "pessimistic"

beliefs about HIV/AIDS. The finding on extant "pessimistic" beliefs about HIV/AIDS amongst patients in the present TB population also suggests a need for (better) and continuous education of TB patients in this regard.

Findings further indicated statistically significant associations between sex and whether patients had self-reportedly undertaken HIV testing, and patients' attitudes towards HIV testing. Males and patients who had not undertaken HIV testing had more "negative" attitudes towards HIV testing than their respective counterparts. Similar findings emerged from studies conducted among other South African populations (Kalichman & Simbayi, 2003; Day, Miyamura, Grant, Leeuw, Munsamy, Baggaley et al., 2003). Since "negative" attitudes towards HIV testing can have adverse implications where uptake of HIV testing is concerned (Kalichman & Simbayi, 2003), concerted efforts need to be directed towards educating patients about the benefits thereof, including access to available life-prolonging anti-retroviral therapy.

Some limitations can be attributed to this study. Firstly, the research was based on a conveniently selected sample and results can only be generalised to TB patients in the four sub-districts considered. However, as already mentioned, comparison of the sample with the larger population of TB patients revealed no significant differences regarding patients' age and sex.

Secondly, behaviour and practices including TB/HIV treatment adherence, and sexual conduct were not considered in this research. Further research is necessary to

investigate the relationship between TB patients' KBA and the aforementioned behaviour and practices.

Thirdly, as this was part of the larger project, few items were used to measure KBA and were therefore not exhaustive of all aspects of TB and HIV. A more complete assessment of KBA in this study would have required more extensive qualitative patient interviews and analysis in addition to the quantitative measurements. Future studies should consider using more inclusive measurements thereof.

Nevertheless, as far as could be established, this is the first ever TB/HIV-related KBA study to be conducted amongst TB patients in the Free State. The study adds to the body of scientific evidence required by the South African government and other stakeholders in monitoring TB patients' understanding and response to HIV/AIDS. Information garnered from this exploratory study will be useful in informing the design of appropriate TB/HIV IEC interventions for TB patients. Insight from this study will be especially benefit nurses in their effort to address patients' IEC needs in the context of the expanding implementation of provider-initiated HIV testing and counselling (NDoH, 2007a; 2007b; WHO/UNAIDS, 2007).

2.6 Conclusion

This study provides evidence on what TB patients in the Free State know about TB and HIV/AIDS, how they perceive HIV/AIDS and their attitudes towards HIV testing. Although the patients were generally knowledgeable about TB, their overall performance on HIV knowledge assessment was somewhat poor. Moreover, a large

proportion of patients lacked insight into the asymptomatic nature of TB and HIV/AIDS while some patients harboured "pessimistic" beliefs about HIV/AIDS, and more "negative" attitudes towards HIV testing, highlighting a need for educational intervention to address these gaps. Health IEC efforts should particularly be emphasised amongst male and older TB patients, those with low formal education as well as those who do not know their HIV status. Implications of the current study are the need to better integrate TB and HIV service provision in PHC facilities in the Free State as well as ensure that all TB patients are offered HIV testing.

2.7 Acknowledgements

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CHAPTER 3 – DETERMINANTS OF CONDOM USE AMONGST TUBERCULOSIS PATIENTS IN THE FREE STATE PROVINCE, SOUTH AFRICA

Submitted to the *International Journal of Tuberculosis and Lung Disease*.

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Structure

References

3.1 Summary

Setting: Four sub-districts in the Free State, South Africa.

Objective: To identify factors influencing condom use during most recent sex amongst TB patients.

Method: A cross-sectional survey amongst 600 TB patients across 61 primary health facilities. Logistic regression analysis was used to establish factors influencing condom use at most recent sex in the entire sample (n = 533) and a sub-sample of patients who reported sexual activity two months prior to the study (n = 235).

Results: In both samples nearly half (full sample: 42.7% and sub-sample: 56.6%) of the patients reported condom use during their most recent sex. Higher education (full sample: OR, 2.13, 95% CI, 1.48-3.07; sub-sample: OR, 1.76, 1.03-3.02), unmarried status (full sample: OR, 1.72, 95% CI, 1.18-2.23; sub-sample: OR, 2.82, CI,1.64-4.84), having received HIV counselling (full sample: OR, 1.83, 95% CI, 1.28-2.61; sub-sample: OR, 2.40, CI, 1.40-4.12) and testing (full sample: OR, 1.54, 95% CI, 1.06-2.21; sub-sample: OR, 2.04, CI, 1.19-3.53) were statistically significantly independently associated with condom use at most recent sex.

Conclusions: Low condom usage in this study suggests a potential risk for onward HIV transmission by these patients. Findings provide further evidence for the influence of certain socio-demographic and clinical factors, and condom usage.

3.2 Introduction

Tuberculosis (TB) and human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) are inextricably linked.[1-6] Reports indicate that the majority of of TB patients in high HIV prevalence settings are HIV-positive at the time of TB notification.[3-6] South Africa experienced a sharp increase in HIV prevalence among newly diagnosed TB patients, from 44% in 2006[4] to 73% in 2008.[5] Sexual transmission accounts for most HIV infections in South Africa.[7-10] Studies have shown that TB patients are prone to risky sexual behaviour including multiple sexual partnerships and unprotected sex.[1,11,12] It is therefore imperative to promote HIV prevention among these patients.

South Africa's HIV/AIDS strategic plan includes condom promotion as a basic HIV prevention strategy.[13] Despite continued attempts to distribute free condoms widely (e.g. 453 million condoms were distributed in 2009[14]), the country performs poorly in relation to national HIV prevention targets.[15]. Moreover, in a high HIV prevalence country such as South Africa, where more than half of TB patients test HIV-positive HIV prevention is identified as a gap in the country's strategic plan to combat TB.[16]

Research on condom use among TB patients is scarce. Available studies from Afghanistan,[17] Malawi,[1] Côte d'Ivoire,[18] and Cambodia[19] associate TB patients' condom use to factors such as age,[17] sex,[17] schooling level,[1] marital status,[1,17] duration of TB symptoms,[1] sexual partner type,[1] access to HIV counselling,[18-19] locality,[1,17] HIV sero-status,[1] and condom knowledge.[12] However, no former South African studies have investigated condom use among TB patients. Such investigations are necessary to inform HIV prevention in high-risk populations.[13] We set out to identify the factors underlying condom use at most recent sex by TB patients in the Free State Province.

3.3 Methods

3.2.1 Design and setting

In 2007, TB incidence in the Free State Province was estimated at 818/100 000 population[20] while HIV prevalence among registered TB patients reached 26.0%.[21] During February-March 2008, a cross-sectional survey was conducted in two randomly selected districts, Thabo Mofutsanyana and Lejweleputswa. Owing to logistical limitations, the study was limited to two purposively selected sub-districts in each district; Nketoana (rural/small town) and Maluti-a-Phofung (urban/big town) in Thabo Mofutsanyana, and Masilonyana (rural/small town) and Matjhabeng (urban/big town) in the Lejweleputswa District. Primary health care (PHC) facilities were included if they provided both TB and HIV testing services and had registered at least ten TB patients during 2007. Sixty-one facilities were included across the four sub-districts.

3.2.2 Subjects

The study population comprised registered TB patients 18 years and older. We recruited a convenience sample of 600 patients from an average of 2 238 patients registered across the 61 PHC facilities in 2007. The number of patients recruited from each facility was in proportion to the number of patients registered during 2007. Patients were recruited as they exited TB consultation rooms. Consulting nurses first provided information about the study to the patients before referring them to the interviewers (privately located). The interviewers informed the participants about the research and obtained written consent for participation. No refusals occurred. Comparisons between the sample and the larger population of TB patients attending PHC services in the four sub-districts yielded no significant differences in respect of age ($p = 0.5$) and sex ($p = 0.7$).[22]

3.2.3 Data collection

Data was collected using a structured questionnaire administered in either English or Sesotho (patient's preference). Information was gathered on socio-demographics, knowledge about the TB-HIV link, and on sexual and HIV risk-reduction practices. Additionally, clinical information was collected, with patients permission, from their medical records the PHC facilities.

3.2.4 Measures

The outcome variable "condom use at most recent sex" was measured using the question "The last time you had sexual intercourse, was a condom used?" Independent

variables included: sex, age (18-30/≥31 years), marital status (married/unmarried), education (primary or lower/secondary or higher), locality (urban/rural), TB treatment duration (≤60 days]/≥61 days), whether patients knew about the TB-HIV link (yes/no), whether they had sex within two months prior to fieldwork (yes/no), number of sexual partners (one/>one), whether they had been HIV counselled (yes/no), whether they had been HIV tested (yes/no), and whether they received cotrimoxazole prophylactic treatment (CPT) (yes/no/not indicated). Information regarding patients' HIV status was not collected. Since CPT is prescribed to all TB-HIV co-infected patients,[16,23-25] receipt thereof was used as a proxy for HIV-positive status.

3.2.5 Analysis

Data was analysed using STATA version 10. Results are presented as frequencies, percentages and odds ratios (OR). Logistic regression analysis was used to establish the association between the independent and outcome variables. The analysis excluded patients who had never been sexually active (n = 13) and those who could not remember if they had used a condom during most recent sex (n = 52). Variables were considered statistically significant ifthe p-value was less than or equal to 0.05 and a confidence interval (CI) of 95%. Variables with a p-value less than 0.1 in the univariate model were included in the adjusted model.

The patients' most recent sexual activity could have been at any time before data collection. This implies that other factors including recall bias might have obscured the observed associations. To mitigate the impact thereof, an assessment was made of

whether there was any difference between predictors of condom use in the total sample of TB patients (n = 533) and a sub-sample of patients known to have engaged in sexual activity in the two months prior to the fieldwork (n = 235). Findings are presented for both these samples.

Results pertaining to the total sample revealed a statistically significant interaction between patients' sex and whether they knew about the TB-HIV link. Results for the association between the latter independent variable and condom use at most recent sex are presented for male and female patients. A correlation between the variables "sexual activity in the past two months" and "number of sexual partners" was established. For this reason, the variable "number of sexual partners" was excluded from the analysis pertaining to the total sample (Table 2) and was only considered in the sub-sample (Table 3).

Considering only the sub-sample of patients known to have had sex in the two months prior to the fieldwork, a statistically significant interaction was established between the independent variables "HIV counselling" and "number of sexual partners." Consequently, findings for the association between HIV counselling and condom use at most recent sex are presented both for patients who reported sexual activity with one sexual partner (OSP) and those with multiple partners (MSP).

3.2.6 Ethical approval and authorisation

The study was ethically approved by the University of the Free State and authorised by the Free State Department of Health at provincial, district and facility levels. Participation in the study took place on the basis of voluntary and informed consent.

3.4 Results

All the patients approached agreed to be interviewed. The total sample (Table 1) had a slight majority (51.7%) of female TB patients. Large majorities of the patients were ≥31 years old (73.5%; mean = 38.5; range: 18-73) and unmarried (73.3%). More than six in every ten patients had attained secondary or higher education (63.2%). More than two-thirds resided in urban areas (71.7%). Almost six in every ten patients had been on TB treatment for more than two months (59.7%). More than one-quarter did not know about the TB-HIV link (28.3%). Four in every ten patients had engaged in sexual activity two months prior to the study (43.1%). Less than half (47.2%) of the total sample of patients stated that they had used a condom during most recent sex, while 52 patients (8.7%) could not remember, and 13 patients (2.1%) stated that they had never been sexually active. About one-third had not undergone HIV counselling (35.7%) and testing (32.5%). As a proxy of HIV-positive status, 42.1% of the patients were receiving CPT.

Table 1: Sample description (N = 600)

Variable	n	%
Sex		
Male	290	48.3
Female	310	51.7
Age (years)*†‡		
18-30	160	27.0
31 and older	432	73.0
Marital status*		
Married	160	26.7
Unmarried	439	73.3
Education		
Primary school or lower	221	36.8
Secondary school	379	63.2
Locality		
Urban	530	88.3
Rural	70	11.7
Treatment duration*		
60 days or less	240	40.3
61 days or more	356	59.7
Knowledge of TB-HIV relationship?*		
Yes	415	71.7
No	164	28.3
Sexually active in last two months*◊		
Yes	236	43.1
No	312	56.9
Number of sex partners (only those reporting sexual activity within two months prior to study)*		
OSP	214	91.0
MSP	20	9.0
Used a condom at most recent sexual encounter?*		
Yes	256	42.7
No	277	46.2
Cannot remember	52	8.7
Never been sexually active	13	2.2
Counselled for HIV?		
Yes	386	64.3
No	214	35.7
Tested for HIV		
Yes	405	67.5
No (ref)	195	32.5

Variable	n	%
Patient on CPT?*‡‡		
Yes	179	42.1
No	71	16.7
Not indicated in medical record	175	41.2

*n less than 600 due to missing values; †mean age = 38.4; ‡range = 18-73; OSP = one sexual partner; MSP = more than one sexual partner; CPT = cotrimoxazole prophylaxis ; ‡‡variable used as proxy for patient's HIV status where patients on cotrimoxazole were assumed to be HIV-positive

Results from univariate analyses of the total sample (Table 2) indicate that patients who were ≤31 years old (OR 2.1, 95% CI 1.40-3.10), with post-primary school education (OR 2.1, 95% CI 1.48-3.07), came from a rural locality (OR 2.1, 95% CI 1.12-3.76), were unmarried (OR 1.7, 95% CI 1.2-2.5), had engaged in sex in the prior two months (1.9, 95% CI 1.31-2.62), and had received HIV counselling (1.9, 95% CI 1.28-2.61) as well as testing (2.1, 95% CI 1.3-3.2) were more likely to report condom use. After adjusting for other factors, condom use was significantly associated with unmarried status (adjusted odds ratio, AOR 2.0, 95% CI 1.27-3.16), secondary or higher education (AOR 1.8, 95% CI 1.19-2.75), >60 days of TB treatment (AOR 1.5, 95% CI 1.03-2.22), sexual activity within the past two months (AOR 2.1, 95% CI 1.40-3.08), having received HIV counselling (AOR 2.0, 95% CI 1.08-3.43) and awareness of the TB-HIV link; i.e. females who knew about the relationship between TB and HIV were statistically significantly ($p < 0.05$) less likely (AOR 0.5, 95% CI 0.27-0.96) to report condom use during most recent sex than female did not know about the TB-HIV link. No such difference was between males who know the link between TB and HIV and those who did not.

Table 2: Factors associated with condom use at most recent sex amongst TB patients

Variable	Condom used during most recent sexual activity (n = 533)		
	Yes (n = 256) n (%)	Crude odds ratio (OR) (95% CI)	Adjusted odds ratio (AOR) (95% CI)
Sex			
Male	129 (49.6)	1.18 (0.84-1.66)	0.75 (0.36-1.56)
Female (ref)	127 (50.4)	1	1
Age (years)*			
18-30	85 (33.7)	1	1
31 and older (ref)	166 (64.8)	2.09 (1.40-3.10)***	1.32 (0.84-2.10)
Marital status			
Married (ref)	59 (23.1)	1	1
Unmarried	197 (76.9)	1.72 (1.18-2.23)**	2.00 (1.27-3.16)**
Education			
Primary school or lower (ref)	69 (27.0)	1	1
Secondary school or higher	187 (73.0)	2.13 (1.48-3.07)***	1.80 (1.19-2.75)**
Locality			
Urban (ref)	224 (87.5)	1	1
Rural	32(12.5)	2.06 (1.12-3.76)*	1.68 (0.88-3.21)
Current TB treatment duration*			
60 days or less (ref)	90 (35.3)	1	1
61 days or more	165 (64.7)	1.37 (0.96-1.94)	1.51 (1.03-2.22)*
Knowledge of TB-HIV relationship?			
Yes	184 (71.9)	1.11 (0.76-1.63)	Male 1.47 (0.82-2.63) Female 0.51 (0.27-0.96)*
No (ref)	67 (28.1)	1	1
Sexual activity in the past two months?			
Yes	133 (52.0)	1.86 (1.31-2.62)***	2.08 (1.40-3.08)***
No (ref)	123 (48.0)	1	1
Counselled for HIV?			
Yes	179 (69.9)	1.83 (1.28-2.61)**	1.92 (1.08-3.43)*
No (ref)	77 (30.1)	1	1
Tested for HIV			
Yes	184 (71.9)	1.54 (1.06-2.21)*	0.94 (0.52-1.70)
No (ref)	72 (28.1)	1	1

	Condom used during most recent sexual activity (n = 533)		
Variable	**Yes (n = 256) n (%)**	**Crude odds ratio (OR) (95% CI)**	**Adjusted odds ratio (AOR) (95% CI)**
Patient on cotrimoxazole prophylaxis?*			
Yes	80 (44.2)	1.16 (0.74-1.80)	-
No	30 (16.6)	0.96 (0.54-1.72)	
Not indicated in medical record (ref)	71 (32.2)	1	

*p < 0.05; **p < 0.01; ***p < 0.001; CI: confidence interval; ref: reference group

Table 3 represents findings involving the sub-sample (n = 235) of patients who reported having had sex in the two months prior to our fieldwork. Of these, 56.6% indicated that a condom was used. As with the total sample (n = 533, see Table 2), results indicate that marital status (OR 2.8, 95% CI 1.64-4.84), education (OR 1.8, 95% CI 1.03-3.02), current TB treatment (OR 1.8, 95% CI 1.03-3.00), HIV counselling (OR 0.4, 95% CI 0.24-0.71) and testing (OR 2.0, 95% CI 1.18-3.53) were all independently significantly associated with condom use. Unlike the total sample, only unmarried patients (AOR 3.3, 95% CI 1.76-6.00) and those who had received HIV counselling (OSP: AOR 2.7, 95% CI 1.49-5.05; MSP: AOR 21.2, 95% CI 2.13-212.18) were significantly more likely to report condom use after adjusting for other factors. The wide CIs may be attributed to small numbers as only 20 patients reported MSP. Further analysis of this sub-sample established that 58.2% of 153 patients had undergone HIV counselling and testing after their most recent TB diagnosis. However, no significant relationship was established between the time of HIV counselling and testing and condom use (p = 0.17).

Table 3: Factors associated with condom use amongst TB patients reporting sexual activity in past two months

Variable	Used condom at most recent sex? (n = 235)		
	Yes (n = 133) n (%)	Crude odds ratio (OR) (95% CI)	Adjusted odds ratio (AOR) (95% CI)
Sex			
Male	63 (47.0)	0.97 (0.58-1.63)	1.29 (0.72-2.29)
Female (ref)	70 (53.0)	1	1
Age (years)†			
18-30 (ref)	40 (30.5)	0.75 (0.74-2.40)	1.37 (0.69-2.75)
31 and older	91 (69.5)	1	1
Marital status			
Married (ref)	39 (29.3)	1	1
Unmarried	94 (70.7)	2.82 (1.64-4.84)***	3.25 (1.76-6.00)***
Education			
Primary school or lower (ref)	40 (30.1)	1	1
Secondary school or higher	93 (69.9)	1.76 (1.03-3.02)*	1.70 (0.92-3.19)
Locality			
Urban (ref)	114 (85.7)	1	-
Rural	19(14.3)	1.95 (0.82-4.67)	
Current TB treatment duration†			
60 days or less (ref)	42 (31.8)	1	1
61 days or more	90 (68.2)	1.76 (1.03-3.00)*	1.55 (0.86-2.79)
Number of sex partners at most recent sex†			
OSP	124 (93.9)	0.48 (0.2-1.2)	0.66 (0.14-3.07)
MSP (ref)	8 (6.1)	1	1
Knowledge of TB-HIV relationship?†			
Yes	89 (69.0)	1.20 (0.68-2.10)	-
No (ref)	40 (31.0)	1	
Counselled for HIV?			
Yes	95 (71.4)	2.40 (1.40-4.12)**	OSP: 2.7 (1.49-5.05)* MSP: 21.2 (2.13-212.18)*
No (ref)	38 (28.6)	1	1
Tested for HIV			
Yes	37 (27.8)	2.04 (1.19-3.53)*	-
No(ref)	96 (72.2)	1	

Variable	Used condom at most recent sex? (n = 235)		
	Yes (n = 133) n (%)	Crude odds ratio (OR) (95% CI)	Adjusted odds ratio (AOR) (95% CI)
Patient on cotrimoxazole prophylaxis?[†]			
Yes	8 (12.1)	1.25 (0.62-2.50)	-
No	15 (22.7)	0.77 (0.33-1.83)	
Not indicated in medical record (ref)	43 (65.2)	1	

[†]n less than 133 due to missing values *p<0.05; **p<0.01; ***p<0001; OSP- one sexual partner; MSP- multiple sexual partners

3.5 Discussion and conclusion

Approximately only half of the TB patients interviewed reported having used a condom at most recent sex. In line with other research,[1,17-19] this study demonstrates the influence of socio-demographic and clinical factors on condom use. Regardless of when the most recent sex took place, unmarried status, post-primary school education, being on TB treatment for >two months, and having received HIV counselling and testing were independently associated with patients' reports of condom use.

A Côte d'Ivoire study established that the accuracy of knowledge about HIV/AIDS does not predict the likelihood of condom use.[26] In the total sample of this study, we found that female TB patients who knew about the TB-HIV relationship were less likely to report condom use at most recent sex. This may be attributed to other 'safer' sex notions such as OSP perceived to render condom use redundant. Alternatively, from available data showing that the male condom predominates as HIV prevention method in South Africa[27] , the finding that female patients knowledgeable about the TB-HIV link were less inclined to report condom use might suggest an underlying inability of even informed females to negotiate male condom use with their sexual partners.[28] Future

research should investigate the association between the type of condom distributed at public health facilities (i.e. male vs. female condoms) and condom use.

TB treatment duration was also statistically significantly associated with condom use in the total sample of TB patients. Patients on >61 days treatment were nearly twice as likely to report condom use. While no previous research on this could be found, it may be that patients treated for less than two months were still dealing with the initial hardship of TB and were not yet ready to face the risk of also being infected with HIV. Future research should investigate the influence of treatment duration on condom usage among TB patients.

Our observation that married patients were less likely to report having used a condom adds to growing evidence of such a trend.[29,30] While reduced condom use is reasonable/expected in mutually-monogamous relationships, it becomes risky when such relationships are in fact not really mutually-monogamous or where partners' HIV status is unknown.[29] Indeed, increased HIV prevalence among married/cohabiting couples has been established in other studies.[7,31]

Our findings corroborate the finding[18] that TB patients not HIV counselled are less likely to report condom use. This holds for patients reporting OSP as well as MSP. Condom promotion efforts among TB patients also then has the potential to succeed in couple counselling situations. For instance, among other issues, couples counselling

fosters discussions about their mutual risk and ways in which they can protect themselves as a couple.[32]

This study is subject to the following limitations: Firstly, when we controlled for recall bias by re-analysing data for only those patients who had been sexually active two months prior to the study, we found that fewer variables were associated with patients' reports of condom use at most recent sex. This could be attributed to reduced sample size resulting in diminished statistical power.[33,34]

Secondly, the use of convenience sampling reduces the extent to which findings can be generalised. While our sample was not statistically significantly different from the population in terms of key demographic variables,[23] larger-scale studies involving random samples are needed for validation.

Thirdly, as with most research conducted into the behaviour of human subjects, results are subject to social desirability bias. Generally, it is expected of sexually active persons to be sexually protective and responsible. It is thus possible that respondents might have felt compelled to represent themselves as sexually responsible. An attempt was made to reduce such bias by assuring patients that all information gathered would be treated confidentially.

Fourthly, we used condom use at most recent sex as a proxy for 'safer' sex practices among TB patients. While measuring "condom use at most recent sex" was advantageous in reducing the effects of recall bias, it is suggested that future

investigations should also consider frequency of condom use, number and type of sexual partners, HIV status, and partners' sexual history.

Fifthly, this study did not attempt to establish the patients' own reasons for non-use of condoms. To this end, it is recommended that a more comprehensive exploration of condom use entailing the use of both quantitative and qualitative research methods be endeavoured.

Theoretically, this study adds to existing knowledge on HIV prevention and condom use in an understudied population of TB patients. Due to the high co-infection rate in South Africa[5,6], TB patients are vulnerable to HIV infection. Consequently, it is disconcerting that patients reported low levels of condom use at most recent sex, implying a significant risk for onwards HIV transmission.

Practically, this study is useful in identifying patients who are likely not to use condoms. These findings can have wider application in informing better promotion of condoms among particular groups of TB patients. The study also highlights the value of HIV counselling in promoting 'safer' sex practices among TB patients. In order to strengthen HIV prevention policies among these patients, implementation efforts need to emphasise both HIV counselling and condom promotion. The expanding implementation of provider-initiated testing and counselling in South Africa[13,16] provides the ideal platform for health care providers to encourage 'safer' sex practices, especially through the encouragement of condom use.

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3.7 Author contributions

NGK – developed the research questionnaire, wrote the initial draft, and incorporated changes to revised versions of the manuscript. JCH contributed to questionnaire development, commented on and edited the manuscript PC analysed the data and commented on the manuscript, EW and HvdB critiqued the paper and contributed towards the write up.

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CHAPTER 4 – TUBERCULOSIS PATIENTS' PERSPECTIVES ON HIV COUNSELLING BY LAY COUNSELLORS VIS-À-VIS THAT RENDERED BY NURSES: AN EXPLORATORY STUDY IN TWO DISTRICTS OF THE FREE STATE PROVINCE, SOUTH AFRICA

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Structure

4.1 Abstract

Background: Due to high HIV/AIDS and TB disease burdens, accompanied by severe shortages of nurses, the role of lay counsellors has become increasingly important in South Africa. This article reports about TB patients' perspectives on the HIV counselling rendered by lay counsellors compared to that provided by nurses.

Method: Structured exit interviews were conducted with a convenience sample of 600 patients across 61 primary health care facilities in the Free State province. Data were subjected to both descriptive and inferential statistical analysis.

Results: Except for coverage of the 'window period' topic, patients' perspectives on HIV counselling by lay counsellors compared with nurses did not significantly differ in respect of duration of counselling, coverage of other HIV counselling topics and

conduct of counsellors. However, 55.0% (n = 126) of patients counselled by a lay counsellor would have preferred a nurse, while 42.9% (n = 48) of those counselled by a nurse would have preferred a lay counsellor.

Conclusion: Results suggest relative satisfaction with the counselling provided by both types of counsellors. Expanded use of lay counsellors in TB/HIV programmes could help mitigate the human resource crisis that has resulted primarily from shortages of nurses. National TB and HIV/AIDS policies need to acknowledge and clarify the role of lay counsellors to facilitate their extended utilisation in TB/HIV services.

Keywords: Free State Province, HIV counselling, HIV testing, lay counsellors, nurses, tuberculosis

4.2 Introduction

Counselling and testing for the human immunodeficiency virus (HIV) remain the mainstays of the prevention, detection and treatment of the disease among high-risk groups such as tuberculosis (TB) patients (Chimzizi, Gausi, Bwanali, Mbalume, Teck Gomani, et al., 2004: 584; Harries, Zacharia & Lawn, 2009: 7-9). According to the South African TB Control Programme Guidelines (NDoH, 2000: 39), 'pre-test counselling is provided to enable the patient to make an informed decision to have the test or not'. The main issues for discussion during such pre-test counselling include the assessment of the patient's likelihood of having acquired HIV infection, knowledge about HIV, and ability to cope with the HIV-test result. Pre-test counselling is followed by post-test counselling during which the HIV-test result is interpreted, more information (for example about how to access antiretroviral therapy) is provided, psychological support is given, and safe sexual behaviours are discussed and encouraged.

Quality service provision in resource-poor settings such as South Africa, might be compromised by a high burden of disease and severe shortages of professional health care workers (WHO, 2006: 2). There are marked shortages of professional nurses to provide HIV counselling (Evans & Ndirangu, 2009: 723). As a result, the role of lay counsellors has become increasingly important in HIV/AIDS programmes in South Africa (Leon, Naidoo, Mathews, Lewin & Lombard, 2010: 9; Schneider, Hlophe & van Rensburg, 2008: 5) and elsewhere in sub-Saharan Africa (Baiden, Akanlu, Hodgson, Akweongo, Debpuur & Binka, 2007: 730).

Simultaneously, concerns have been voiced regarding lay counsellors' capabilities (Ginwalla, grant, Day, Dlova, Macintyre, Baggaley, et al., 2002: 711; Ndabishimye, 2004; Schneider et al., 2008: 5). Findings have documented deficiencies in respect of lay counsellors' skills and their reported inability to address clients' diverse needs (Ginwalla, et al., 2002: 712; Ndabishimye, 2004). There appears to be some reluctance among nurses to delegate HIV counselling to lay counsellors, who might be regarded as being inadequately trained and inexperienced (Schneider et al., 2008: 5).

Despite these concerns, some studies have established that the quality of service provision is independent of whether the counsellor is a lay or a professional (nurse) service provider (Chopra, Jackson, Ashworth & Doherty, 2004: 3; Kamanga & Gumbo, 2006). In some instances, both lay and professional counsellors have been implicated in poor delivery of counselling services (Chopra et al., 2004: 3), while in others, both groups have been evaluated positively (Kamanga & Gumbo, 2006). These evaluations involved either objective observations or assessments of clients' satisfaction levels or both.

As far as clients' preferences are concerned, some research (Baiden et al., 2007: 727) revealed that clients prefer lay counsellors to professional (nurse) counsellors. Studies have further established varied preferences in respect of HIV counsellors' socio-demographic characteristics such as age, sex, language and place of residence (Baiden et al., 2007: 727; Ginwalla et al., 2002: 713).

The *Tuberculosis Strategic Plan for South Africa, 2007-2011* (NDoH, 2007: 24) maintains that all TB patients should be offered HIV testing. Yet, the policy does not explicitly elaborate on the role of lay counsellors. Moreover, international policy increasingly calls for the shifting of counselling tasks from nurses to lay counsellors (WHO, 2007: 3). In South Africa, although HIV counselling may be provided by lay or nurse counsellors (Leon et al., 2010: 4), little is known about the quality of counselling services provided by either lay counsellors or nurses. The present study sought to ascertain TB patients' perspectives on HIV counselling services provided by lay counsellors vis-à-vis those delivered by nurses in four sub-districts in the Free State province. We also investigated patients' actual preferences in respect of the type of counsellor.

4.3 Research method

4.3.1 Study sites

This study formed part of a larger project addressing non-uptake of HIV testing by TB patients in the Free State Province (Heunis et al., 2009). Two districts (Thabo Mofutsanyana and Lejweleputswa) were randomly selected from the five in the province. Two sub-districts - one largely rural and the other largely urban - were purposively selected from each district. In Thabo Mofutsanyana District, Maluti-a-Phofung Sub-district represented the urban and Nketoana Sub-district the rural site. In Lejweleputswa District, Matjhabeng Sub-district represented the urban and Masilonyana Sub-district the rural site. Purposive selection of the sub-districts was done in an attempt to improve sample representativeness within the resource restrictions of the study. Included in the survey were all 61 primary health care (PHC) facilities that

had provided concurrent TB and HIV-testing services to at least ten TB patients during the preceding year.

4.3.2 Sampling of respondents

Probability proportional-to-size sampling was used to determine the numbers of patients to be selected from the individual PHC facilities. After obtaining informed, voluntary consent, trained interviewers conveniently recruited TB patients aged 18 years and older as these patients were exiting TB consultation rooms. A total of 600 TB patients were interviewed during February and March 2008. Out of the 600 interviewed patients, only 65.8% (n = 395) had undergone HIV counselling and thus comprised the sample for this study.

4.3.3 Research instrument

A structured interview schedule, developed from literature on HIV counselling and testing (Ndhlovu, Searle, Miller, Fisher, Snyman & Sloan, 2003; Van Dyk, 2008) was employed to gather information on patients' socio-demographic particulars, self-reported HIV testing, duration and experience of pre- and post-test HIV counselling and preferences for the type of counsellor (lay or nurse). The instrument used for data gathering was pre-tested for practicality at a PHC facility beyond the study areas. Clinical information, including treatment category (new/re-treatment) and type of TB (pulmonary/extra-pulmonary), was obtained from patients' clinic files and TB registers. Where available, clinical records were utilised to verify patients' self-reports on whether or not they had undergone HIV counselling and testing.

The structured interview schedule was available in both English and Sesotho, and was administered in each patient's language of choice. In-field quality control on the data collected was performed by fieldwork managers.

4.3.4 Data analysis

Data were subjected to descriptive and inferential statistical analyses. Frequency counts were conducted for each variable and chi-square tests of independence used to establish differences between, respectively, lay-counselled and nurse-counselled patients in respect of discrete dependent variables (topics covered during pre- and post-test counselling, patients' rating of the quality of counselling, and their preference of a type of HIV counsellor). T-tests of independence were used to detect any differences between TB patients' perspectives on lay counsellors and nurses regarding the one continuous dependent variable, that is to say, time spent on counselling sessions.

4.3.5 Ethical considerations and study approval

The study was cleared by the Ethics Committee of the Faculty of the Humanities, University of the Free State. Permission to conduct fieldwork was granted by Free State Department of Health managers at the provincial, district, sub-district and facility levels.

Participation in the interviews was on an informed and voluntary basis. Written consent was obtained from each participant. Patients were also informed about their rights to decline participation, terminate the interview, or choose not to respond to specific

questions without any repercussions. Patients were also assured about the confidentiality of all information gathered and that privacy would be guaranteed during interviews.

4.4 Research results

The demographic characteristics of the counselled patients are presented in Table 1. Of these patients 55.9% (n = 221) were females and 48.1% (n = 187) were aged 31-45 years. A total of 63.8% (n = 252) had attained secondary school education. Most respondents were unmarried (75.2%; n = 297), unemployed (88.6%; n = 350), and had been diagnosed with pulmonary TB (91.0%; n = 355). Out of all the respondents, 42.9% (n = 168) were undergoing re-treatment for TB. Although patients' HIV status was not established in the present study, repeated episodes of TB could be indicative of HIV-positive status (Panjabi, Comstock & Golub, 2007).

Table 1: Patients' socio-demographic characteristics

Characteristic	n	%
Sex		
Male	174	44.1
Female	221	55.9
Age*†		
18-30	110	28.3
31-45	187	48.1
46 and older	92	23.6
Education		
None	24	6.1
Primary	111	28.1
Secondary	252	63.8
Tertiary	8	2.0
Marital status		
Married	98	24.8
Unmarried	297	75.2
Employment Status		
Employed	45	11.4
Unemployed	350	88.6
Type of TB*		
Pulmonary	355	91.0
Extra pulmonary	30	7.7
Other (e.g. MDR)	5	1.3
Patient category*		
New	224	57.1
Re-treatment	168	42.9

*n < 395 owing to missing values; †mean age 37.7 years, range 18-73 years; MDR = multiple drug resistant TB

4.4.1 Counsellor type and duration of counselling

Of the patients who reported having undergone pre-test counselling (i.e. n = 338), 65.1% (n = 220) received counselling from lay counsellors and 34.9% (n = 118) from nurses. In respect of post-test counselling, 64% (n = 171) and 36% (n = 96) were respectively counselled by lay counsellors and nurses.

Table 2 indicates similarity in the reported duration of both pre- and post-test counselling by both types of counsellors. For both types of consellors, patients reported that slightly more time was spent on pre- than on post-test counselling. The reported duration of HIV counselling by the two types of counsellors did not differ significantly.

Table 2: Patients' accounts of duration of HIV counselling

Type of counselling	Type of counsellor		t-value	Degrees of freedom	p-value
	Lay counsellor	Nurse			
Pre-test counselling					
Mean duration (minutes)	37.70	37.10			
Standard deviation	23.99	33.33	0.17	329	0.87
N	217	114			
Post-test counselling					
Mean duration (minutes)	32.80	29.40			
Standard deviation	26.07	29.70	0.97	263	0.33
N	170	95			

4.4.2 Coverage of standard HIV-counselling topics

Patients' accounts of lay counsellors' and nurses' coverage of standard pre-test counselling topics are reflected in Table 3. Overall, patients gave favourable accounts of HIV counselling delivered by both lay counsellors and nurses. The majority affirmed that their counsellors - whether lay or nurse - had discussed all the standard topics of pre- and post-test counselling. However, among the prescribed topics, the 'window period' was reported to have been significantly ($p < 0.1$) more regularly covered by lay counsellors than by nurses.

Table 3: Patients' accounts of coverage of standard HIV-counselling topics

Topic discussed	% confirmed coverage of topic		p-value
	Lay counsellor (n = 220)	Nurse (n = 118)	
Pre-test counselling			
Sex partners	80.5	80.5	1.00
HIV transmission	95.5	95.8	0.90
Benefit of taking an HIV test	95.5	94.9	0.82
Meaning of HIV-positive/negative test result	96.4	94.1	0.33
How HIV tests are done	95.5	95.8	0.90
'Window period'	76.4	66.9	0.06*
Link between TB and HIV	84.5	86.4	0.64
Post-test counselling			
Implication of test result	86.5	92.7	0.66
Follow-up counselling	91.2	91.7	0.13
Sharing test result with sex partner	88.3	90.6	0.90
CD4 count	87.1	88.4	0.60
Antiretroviral treatment	88.9	89.6	0.76
Need to re-test	86.5	92.7	0.86

*$p < 0.1$

4.4.3 Patients' rating of the quality of counselling

Further analysis established higher positive (very good/good) than negative (poor/very poor) ratings of both lay counsellors and nurses' conduct during pre- and post-test counselling. No statistically significant differences were identified in patients' perspectives of lay counsellors and nurses in terms of basic counselling skills, such as listening, responding, answering of questions, respecting patients' choices and provision of information.

4.4.4 Patients' preferences for a specific type of counsellor

Overall, 229 patients had received either pre-or post-test or both these types of HIV counselling from lay counsellors. Of these, 55.0% (n = 126; $p < 0.001$) would have preferred a nurse. However, 42.9% (n = 48; $p < 0.001$) out of the 112 patients counselled by nurses would have preferred lay counsellors. In respect of other counsellor socio-demographic characteristics, 48.6% (n = 72; $p < 0.001$) of those who had received counselling from younger counsellors would have preferred older counsellors, while 53.7% (n = 101; $p < 0.001$) of those who had been counselled by counsellors of the opposite sex would have preferred counsellors of the same sex. Concerning counsellors' residential areas, 38.3% (n = 46; $p < 0.001$) of patients who received counselling from HIV counsellors residing within their home areas would have preferred counsellors residing beyond their home areas.

This finding aligns with the findings of Baiden et al. (2007: 725-727) who established that clients tend to perceive lesser social distance from the lay counsellor than from the nurse. Patients' confidence in lay counsellors in the present study could serve to substantiate their potentially effective role in TB/HIV programmes. In fact, recent research in the Lusikisiki sub-district in the Eastern Cape Province found the substantial increase in uptake of HIV testing to be attributable to the intensified use of lay counsellors (Bedelu et al., 2007: S466). However, even amidst critical shortages of nurses (Lehmann, 2008: 166), the use of lay counsellors in South Africa has, until recently, been comparatively sparse (Heunis et al., 2009: 23). Similar findings were reported by Baiden et al. (2007: 727) in a study among community members in Ghana, and also by Ginwalla et al. (2002: 713) in a study among mineworkers in South Africa.

4.5 Conclusions

No statistically significant differences regarding patients' accounts of HIV counselling provided by lay counsellors or by nurses could be established. Results also indicate relative satisfaction with the counselling delivered by both groups of counsellors. The present findings accentuate lay counsellors' capability to counsel satisfactorily, thus corroborating research by Kamanga and Gumbo (2006) in Malawi, that the quality of counselling is independent of whether the counsellor is non-clinically (lay counsellor) or clinically (nurse) trained.

Both lay counsellors and nurses reportedly spent more than 30 minutes on pre-test counselling. This is five times the average time reported by a Kenyan study among pregnant women (Delva et al., 2006: 190). Although nurses in the present study spent less time on post-test counselling than lay counsellors, the difference was not statistically significant.

Most patients in the present study reported that standard HIV-counselling topics had been covered by both lay counsellors and by nurses. However, a substantial number of patients maintained that the 'window period' was the topic least discussed during pre-test counselling, but reportedly lay counsellors often held more discussions with TB patients about the 'window period' than nurses.

Some of the patients counselled by nurses would have preferred lay counsellors and vice versa. No clear-cut conclusions could be reached about other demographic aspects of counsellors such as age, gender and place of residence.

4.6 Recommendations

It is anticipated that policy calls for provider-initiated HIV testing for TB patients (NDoH, 2007: 24) and for task shifting to community health care workers (WHO, 2007: 3) could lead to the increased use of lay counsellors in TB/HIV programmes, as more of them will in the future be required to service the growing numbers of TB patients. However, the lack of clear guidelines on the recruitment, selection, training and role of lay counsellors needs to be addressed urgently. The utilisation of more lay health counsellors could help to alleviate the acute shortage of nurses in South Africa, provided these persons are well trained and supervised.

4.7 Limitations of the study

Some clients might have given favourable responses because they did not wish to reflect negatively on the service providers. However, the outcomes do reflect positively on the comprehensiveness of the HIV counselling rendered by both the clinically-trained and the non-clinically trained providers in the Free State Province.

Ethical restrictions prohibited actual observation of counselling sessions. A further limitation of the study is its use of convenience sampling of TB patients.

4.8 Acknowledgements

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CHAPTER 5 – TUBERCULOSIS PATIENTS' REASONS FOR AND SUGGESTIONS TO ADDRESS NON-UPTAKE OF HIV TESTING: A CROSS-SECTIONAL STUDY IN THE FREE STATE PROVINCE, SOUTH AFRICA

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Structure

5.1 Abstract

Background: South Africa endorses the global policy shift from primarily client-initiated voluntary counselling and testing (VCT) to routine or provider-initiated testing and counselling (PITC). The reason for this policy shift has been to facilitate uptake of HIV testing amongst at-risk populations in high-prevalence settings. Despite ostensible implementation of routine/PITC, uptake amongst tuberculosis (TB) patients in this country remains a challenge. This study presents the reasons that non-tested TB

patients offered for their refusal of HIV testing and reflects on all TB patients' suggestions as to how this situation may be alleviated.

Methods: In February-March 2008, a cross-sectional survey was conducted amongst 600 TB patients across 61 primary health care facilities in four sub-districts in the Free State. Patient selection was done proportionally to the numbers registered at each facility in 2007. Data were subjected to bivariate tests and content analysis of open-ended questions.

Results: Almost one-third (32.5%) of the respondents reported that they had not undertaken HIV testing, with the most often offered explanation being that they were '*undecided*' (37.0%). Other self-reported reasons for non-uptake included: fear (e.g. of testing HIV-positive, 19.0%); perception of being at low risk of HIV infection (13.4%); and desire first to deal with TB 'on its own' (12.5%); and because HIV testing had not been offered to them (12.0%). Many patients expressed the need for support and motivation not only from health care workers (33.3%), but also from their significant others (56.6%). Patients further expressed a need for (increased) dissemination of TB-HIV information by health care workers (46.1%).

Conclusion: Patients did not undergo HIV testing for various patient-/individual-related reasons. Non-uptake of HIV testing was also due to health system limitations such as the non-offer of HIV testing. Other measures may be necessary to supplement routine/provider-initiation of HIV testing. From the TB patient's perspective, there is a

need for (improved) dissemination of information on the TB-HIV link. Patients also require (repeated) motivation and support to undergo HIV testing, the onus for which rests not only on the public health authority and health care workers, but also on other people in the patients' social support networks.

5.2 Background

Effective co-management of tuberculosis (TB) and human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) necessitates that TB patients undergo HIV testing as early as possible after TB diagnosis [1-3]. In South Africa, provider-initiation of HIV testing for TB patients came into effect in 2007 with the adoption of the provider-initiated testing and counselling (PITC) strategy in the *Tuberculosis Strategic Plan, 2007-2011* [4]. Findings of a study amongst providers in the Free State Province indicate that almost all nurses (according to their own reports) recommend HIV testing to TB patients, not only at inception of TB treatment (88%), but at every contact (61%) with the patient until acceptance of the test [5]. Despite such commendable efforts, reports indicate that less than half of the registered TB patients accepted HIV testing in 2007 (43.1%) and 2008 (45.9%) [6]. Indeed, at 39%, South Africa achieved a much lower HIV-testing rate amongst TB patients in 2007 than some other sub-Saharan African countries (e.g. Kenya – 79%) also heavily burdened with TB-HIV/AIDS [7].

In April 2010, following the limited success of existing HIV-testing policies, the South African government initiated a mass HIV counselling and testing (HCT) campaign aimed at identifying and treating as many eligible persons as possible – TB patients

included – before June 2011 [8]. This step confirmed the concerns of government and other interest groups that, despite ostensible implementation of routine/provider-initiated HIV testing, too many TB patients are currently not undergoing HIV testing [1; 9]. Research is thus needed to identify obstacles to uptake, and to find ways to improve the rate of HIV testing by TB patients in South Africa. The reported research provides insight from a patient perspective into why routine/provider-initiated HIV testing has been less successful than might have been expected in the case of TB patients. This study follows previous reports on predictors of uptake of HIV testing amongst the same patient population [10; 11].

It is important to establish patients' views so as to gain an understanding of non-utilisation of health services [12], which also includes the non-uptake of HIV testing. Evidence from studies conducted among TB populations elsewhere indicates that non-uptake of HIV testing may be attributed to: (1) *patient-/individual-level factors*, including fear of HIV-related stigma, negative experiences during prior HIV counselling, perceived lack of privacy at HIV-testing facilities, and prior HIV testing [13-15]; (2) *relational factors*, such as having to seek sexual partners' consent before undergoing HIV testing [14]; and (3) *health systems factors,* including lack of routine offering of HIV-testing services to TB patients, shortages of HIV testing kits, limited availability of HIV counsellors, poor inter-TB-HIV clinic referral systems, and inadequate counselling skills among providers [16].

However, no research has as yet been conducted to establish patients' reasons for non-uptake of HIV testing in the Free State. Despite a decrease from 32.9% in 2008 to 30.9%

in 2009, the province has recorded high rates of HIV prevalence amongst antenatal women since 2007 (range: 30.1% to 32.9%) [17]. Moreover, at 818 cases per 100 000 population in 2007, the province had the fourth highest incidence of TB in the country [18], with six in every ten (60.3%) TB patients testing HIV-positive [6]. Our study sought to identify non-tested TB patients and to explore their reasons for not undergoing HIV testing. We also report both tested and non-tested patients' suggestions regarding what can be done to encourage a greater number of TB patients to undergo HIV testing. The survey formed part of a larger 'fact-finding' research project to inform the development of an intervention to improve uptake of HIV testing by TB patients in the Free State [9].

5.3 Methods

5.3.1 Setting

Between February and March 2008, we conducted a cross-sectional survey among TB patients in two randomly selected districts, namely Thabo Mofutsanyana and Lejweleputswa. Logistical limitations permitted the purposive selection of only two sub-districts from each district. These were Maluti-a-Phofung and Nketoana from Thabo Mofutsanyana District, and Matjhabeng and Masilonyana from Lejweleputswa District. Primary health care (PHC) facilities in these sub-districts were considered for inclusion in the study if they had provided (1) simultaneous TB and HIV services and (2) TB services to at least ten patients during 2007. Sixty-one out of a total of 97 PHC facilities met these criteria and were thus included in the study.

5.3.2 Participants

The target population included all registered TB patients aged 18 years or older attending PHC facilities in these specific localities. A sample of 600 patients was considered for the study. The sample size was conservatively estimated from an average of 2 238 patients registered across the 61 PHC facilities during 2007 since no previous studies had been reported on uptake of HIV counselling and testing amongst TB patients in the Free State Province to guide statistical sample size calculations. Based on the average number of TB patients registered at each facility during 2007, the proportional-to-size technique was used to determine the number of patients to be recruited at each PHC facility. Patients were conveniently recruited just as they left TB consultation rooms. Although such convenience sampling limits the representativeness of our findings, comparison revealed that the patient sample did not significantly differ from the larger population of TB patients in the four sub-districts under scrutiny in terms of key biographical variables, including sex and age [10].

5.3.3 Instrument and data collection

A structured interview schedule was developed for data gathering. The schedule, comprising both closed- and open-ended questions, was pre-tested for practicality with ten TB patients at a PHC facility outside the study areas. Information was gathered on *biographical details* (sex, age and education); *clinical aspects* (patient treatment category i.e. whether a patient was undergoing initial [new] or subsequent [re-treatment] TB treatment, treatment duration and HIV testing); *HIV risk-reduction practice* (whether a condom was used during most recent sex); *HIV risk perception* (worry about acquiring HIV, already being infected with HIV or infecting others if already infected with HIV);

and *service delivery* (whether the patient received information on the link between TB and HIV at the PHC facility and whether HIV testing was recommended to them).

The open-ended questions assessed: (1) patients' explanations for non-uptake of HIV testing, i.e. '*Please explain why you have never taken a test for HIV*"; and (2) their suggestions as to what could be done to improve their uptake of such, i.e. '*What can be done by health care workers* (*for example doctors, nurses and community health workers*) *in order to encourage more TB patients to test for HIV?'*; and '*What can be done by other people* (*for example family, friends and community*) *in order to encourage more TB patients to test for HIV?'*

5.3.4 Data analysis

All closed-ended questions were classified as binary variables: *sex* (male/female); *age* (18-30 years/31 years or older); *patient category* (new/re-treatment); *treatment duration* (60 or less days [intensive treatment phase]/61 or more days [follow-up or continued treatment phase]); *whether a condom was used during most recent sex* (yes/no); *worry about acquiring HIV* (worried/not worried); *worry about already being infected with HIV* (worried/not worried); *worry about infecting others if already infected with HIV* (worried/not worried); *whether patients received information on the link between TB and HIV from the PHC facility* (yes/no); and *whether HIV testing was recommended at the PHC facility* (yes/no). Differences between tested and non-tested patients were examined using chi-square tests.

Content analysis [19; 20] was employed in examining responses to the open-ended questions. This approach has been used in research regarding uptake of HIV testing amongst injection drug users [21]. Regarding each open-ended question, four coders used keywords to group similar responses into subcategories for a sample of 25 respondents. After careful consideration and comparison, similar subcategories were combined to form a generic category. The resulting categories were further scrutinised for similarities before compiling a final shortlist of mutually-exclusive categories. One coder then checked all the questionnaires for the frequency of each of the established categories. Categories with very low frequencies were combined to form the category '*other*'. Next, the categories were grouped under the three main themes that emerged from previous studies conducted on uptake of HIV testing amongst TB patients elsewhere [13-15]. These themes related to factors at the: (1) *patient/individual level*, (2) *relational level*, and (3) *health systems/services level*.

5.3.5 Fieldworker training, ethical clearance and study approval

Ten fieldworkers, four male and six female, were trained in a three-day course entailing lectures on the interview process, i.e. introduction of the interview, mode of asking questions, accurate recording of responses, and the use of probes to seek clarity. To improve consistency in the asking of questions and reporting of answers by all interviewers, the fieldworkers were trained to use the exact wording used in the questionnaire and in respect of open-ended questions, to record responses verbatim. The fieldworkers further participated in role plays to facilitate their understanding of the questionnaire. Gender issues between interviewers and interviewees were reduced by assigning, where possible, a male and a female interviewer per PHC facility. In most

cases, the patients could thus choose whether they wanted to be interviewed by a male or a female interviewer [19].

Patients' participation in the study was voluntary and based on informed consent and guarantee of confidentiality. The fieldworkers explained the study to the patients before requesting their written consent to participate. Patients were assured that their names would only be recorded for purposes of correlating questionnaires with their clinical data and would not appear in any further analysis or reporting of the information.

The Committee for Research Ethics of the Faculty of the Humanities, University of the Free State, approved the study protocol. Permission to conduct the research was granted by the Free State Department of Health at the provincial, district and facility levels.

5.4 Results

5.4.1 Sample description

Table 1: **Sample description (N = 600)**

Characteristics	Tested for HIV (n = 405) n (%)	Not tested for HIV (n = 195) n (%)	*P*-value n (%)
Sex (n = 600)			
Male	175 (43.2)	115 (59.0)	0.00
Female	230 (56.8)	80 (41.0)	
Age in years‡(n = 592)			
18-30	218 (54.9)	92 (47.2)	0.07
≥ 31	179 (45.1)	103 (52.8)	
Education level			
Primary and lower	145 (35.8)	76 (39.0)	0.45
Secondary and higher	260 (64.2)	119 (61.0)	
Patient treatment category(n = 594)			
New	227 (56.5)	135 (70.3)	0.00
Re-treatment	175 (43.5)	57 (29.7)	
Current TB treatment duration in days (n = 590)			
≤ 60	160 (40.2)	80 (41.7)	0.73
≥ 61	238 (59.8)	112 (58.3)	
Received TB-HIV information from PHC facility (n = 600)			
No	103 (25.4)	111 (56.9)	0.00
Yes	302 (74.6)	84 (43.1)	
Used condom during most recent sex?*(n = 533)			
No	173 (48.5)	104 (59.1)	0.02
Yes	184 (51.5)	72 (40.9)	
Worry will get HIV? (n = 596)			
Not worried at all	185 (45.8)	73 (38.0)	
Worried	219 (54.2)	119 (62.0)	0.07
Worry already have HIV?(n = 596)			
Not worried at all	217 (53.7)	83 (43.2)	0.01
Worried	187 (46.3)	109 (56.8)	
Worry will infect others if already have HIV? (n = 596)			
Not worried at all	189 (46.8)	95 (49.5)	
Worried	215 (53.2)	97 (50.5)	0.54
Recommended for HIV testing? (n = 600)			
No	106 (26.2)	101 (51.8)	0.00
Yes	299 (73.8)	94 (48.2)	

‡Mean age = 38.4 years, range = 18-73. *Excludes patients who had never been sexually active or who had not been sexual active in the two months prior to data collection

All of the 600 patients who were approached agreed to participate in the study. Patients' characteristics stratified by HIV-test uptake are presented in Table 1. Almost

one-third (32.5%) of the 600 respondents had not undergone HIV testing. Table 1 shows statistically significant ($p < 0.05$) differences between HIV-tested and non-tested respondents in respect of sex, patient treatment category, whether a condom was used at most recent sex, whether TB-HIV information was received from PHC facilities, whether the patients were worried about already being infected with HIV, and whether HIV testing had been recommended to them at the PHC facilities. Of the patients reporting non-uptake of HIV testing, the majority of respondents were male (59.0%), older than 30 years (52.8%), receiving TB treatment for the first time (70.3%), and had been undergoing treatment for more than two months (58.3%). More than half of non-tested patients had not received information on the link between TB and HIV from their PHC facilities (56.9%), had not used a condom during their most recent sexual activity (59.1%), expressed worry about the possibility that they were already HIV-positive (56.8%), and had not been recommended to undergo HIV testing at the PHC facility (51.8%).

5.4.2 Patients' explanations for non-uptake of HIV testing

Figure 1 reflects non-tested patients' explanations for non-uptake of HIV testing.

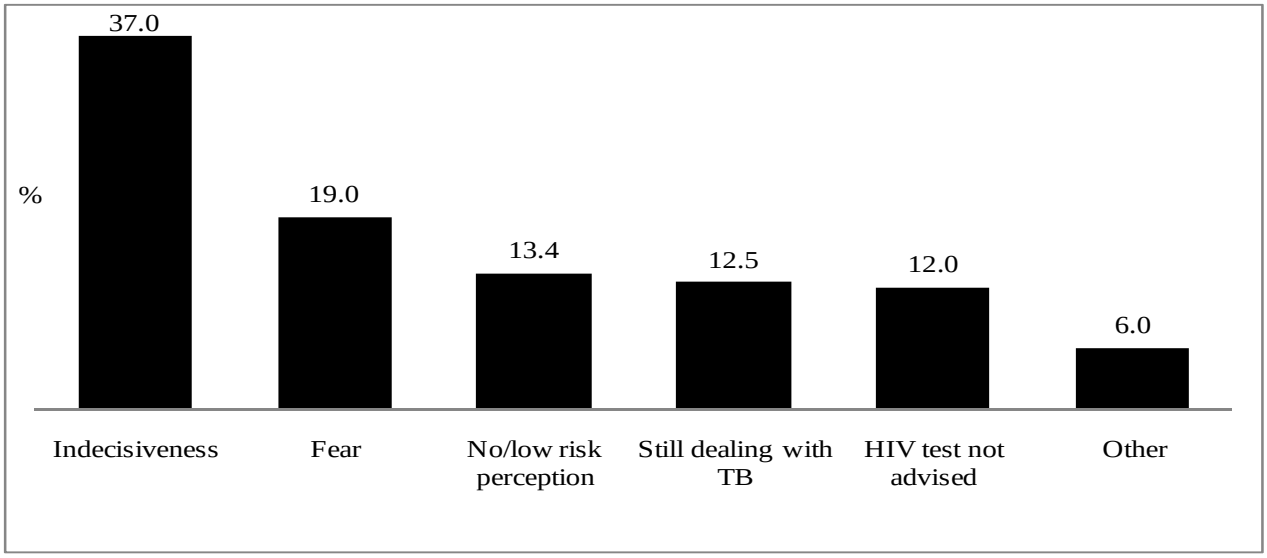

Figure1: Patients' reasons for non-uptake of HIV testing (n = 216 citations)

5.3.2.1 Patient-/individual-level factors

Patient-/individual-level reasons comprised the leading self-reported explanations for patients' non-uptake of HIV testing. Reasons were categorised as *'undecided'* (37.0%) if patients indicated that they were '*still thinking about it*' or '*were not* [yet] *ready*'. All explanations eliciting some form of expressed fear or apprehension were grouped under the category 'fear' (19.0%). These fear-related reasons included fear of HIV testing as such, fear of stigmatisation attached to HIV, and/or fear of the consequences of testing HIV-positive. A further category included patients who reportedly were still grappling with being ill with TB and did not wish to subject themselves to the potential burden of also having to deal with HIV (12.5%), e.g. '*I'm still on TB treatment'* or '*I'm still very sick*'.

5.3.1.2 Relational factors

Patients also advanced reasons for non-uptake of HIV testing that reflected the importance of relational factors. Some patients used their sexual partners' HIV-test results as proxy for knowing their own HIV status, e.g. '*I know I am negative because my girlfriend tested and was negative*'. Others stated that they did not need to test because they were cautious or because they trusted their sexual partners, e.g. '*I am always careful*', '*I do not do* [have sex with] *HIV girls*', and '*I trust my* [partner]'. Since these patients did not perceive themselves as being at risk regarding HIV infection, their responses were grouped under the category '*no/low risk perception*' (13.4%).

5.3.1.3 Health systems-/service-related factors

The most frequent health service-related barrier identified was that some patients had reportedly not (yet) been advised to undergo HIV testing (12.0%), e.g. '*The nurse did not tell me*' and '*No one invited me*'. Others cited service-related explanations (6.0%) like: '*The lay counsellor is always late*', and '*The clinic is always full'*.

5.4.3 Suggestions towards increasing uptake of HIV counselling and testing by TB patients

Both tested and non-tested patients perceived relational and health systems factors as potential facilitators of HIV-test uptake.

5.4.3.1 Relational factors

Figure 2 summarises the TB patients' suggestions as to what other people (e.g. family members, friends and community) can do to make HIV testing more acceptable to them. Most patients' suggestions pointed to a perceived need for motivation or support from others (56.6%), e.g. '*They should stress the importance of HIV testing*', '*...encourage very ill patients to consider HIV testing*', and '*...create support groups*'. The second most frequent category of suggestions implored other people to be more involved in creating awareness around TB and HIV (14.3%), e.g. '*They should read pamphlets to patients*' and '*...involve influential people in TB-HIV education*'. Some suggestions entreated other people to refrain from stigmatising/discriminating against TB patients (8.6%), e.g. '*They should not judge patients*' and '*…should not gossip about patients*'. Suggestions categorised as 'other' included statements such as '*They should help patients without transport to* [reach] *clinics*' and '*...accompany patients to clinics*'

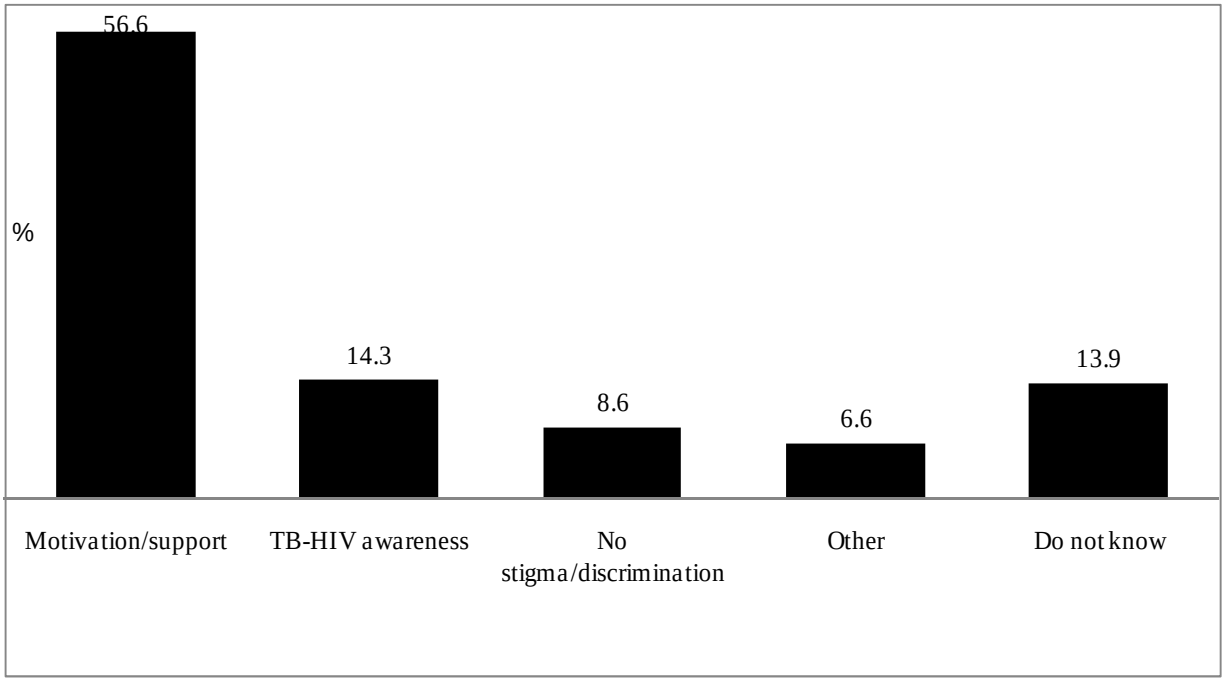

Figure 2: Patients' suggestions on what other people can do to make HIV testing acceptable to TB patients (n = 698 citations)

5.4.3.2 Health systems-/service-related factors

Figure 3 illustrates the TB patients' perceptions of how health care workers (doctors, nurses and community health workers) can facilitate TB patients' uptake of HIV counselling and testing. Overall, the most frequent suggestion was that health care workers should provide patients with (more) information, education and communication (IEC) about (the link between) TB and HIV (46.1%), e.g. '*They should give health talks*', '*...inform us about the TB-HIV relationship*' and '*...show us pictures of people who are sick* [with AIDS]'.

As was the case with their suggestions regarding the role of family, friends and communities in facilitating uptake of HIV testing, patients also requested service

providers to motivate and also to be more supportive of TB patients (33.3%), e.g. '*They should emphasise the importance of testing when patients come for treatment*' and '*...form support groups*'. Less frequent propositions (8.9%) included: '*They should test all patients*', '*...should not give* [TB] *treatment without an HIV-test result*', '*...should provide mobile testing*', and '*…provide incentives to test*'.

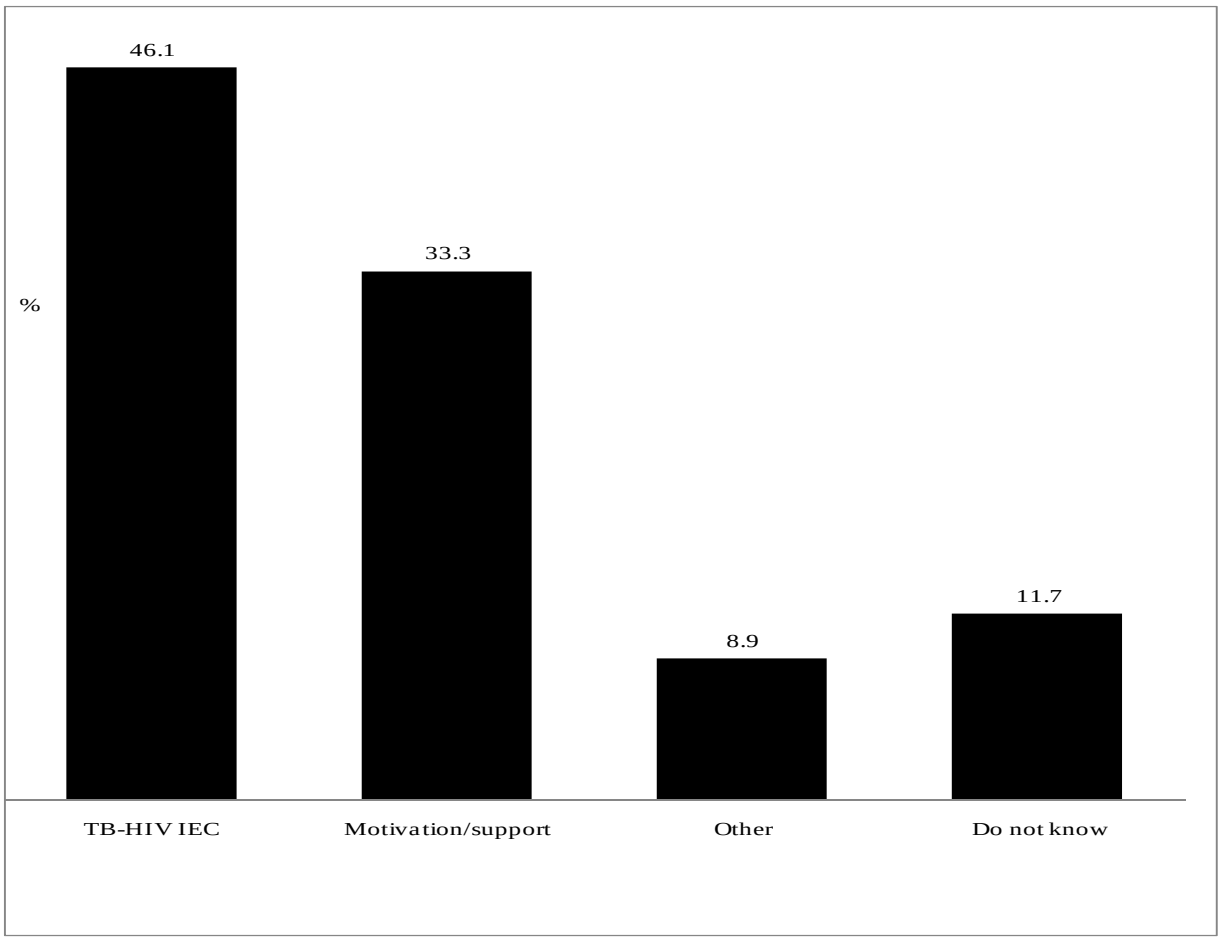

Figure 3: Patients' suggestions on what health care workers can do to make HIV testing acceptable to TB patients (n = 666 citations)

5.5 Discussion

Almost one-third (32.5%) of TB patients participating in our study had, by their own report, not undergone HIV testing. These patients' reasons for non-uptake of HIV testing mostly amounted to patient-/individual-level factors. It had not been foreseen that many of the untested patients would be '*undecided*' about undergoing HIV testing. However, drawing from previous findings amongst pregnant women in the USA [22] and a quantitative analysis related to the current TB patient population [10] on the significant association between definite HIV-related knowledge and uptake of HIV testing, a possible explanation for the patients' '*indecisiveness*' could be that they were not adequately informed about the TB-HIV link. In line with research in Cambodia [23], most of the total group of tested and non-tested patients in our study suggested that intensifying dissemination of TB-HIV information by health care workers would facilitate their uptake of HIV testing.

Alternatively, given that testing for HIV positions people as being 'at risk' [24], it is possible that patients who were categorised as *'undecided*' actually had no intention of undergoing HIV testing – perhaps for fear of being portrayed as 'promiscuous'. Again, the possibility exists that some of these patients might in fact actually already have undergone HIV testing but did not wish to reveal this, or indeed wished to keep their HIV status secret. Our findings showed a substantial proportion of the patient sample to be worried about either contracting or already having contracted and unknowingly been spreading HIV. This seemed to be a reasonable concern since more than half of all patients by their own report had not used condom protection during their most recent

sexual encounter. Hence non-tested patients' supposed '*indecision*' could have been a way to avoid further interrogation from the interviewers.

As with studies amongst TB populations elsewhere [13-15], some patients in our sample had not undergone HIV testing because of fear of HIV testing as such or because of the anticipated consequences of testing HIV-positive, such as being stigmatised. The reality of these patients' fear can be tied to diverse factors, including psychological issues [25], interpersonal relationships [14], and/or socio-structural factors [26]. Following research among TB suspects and patients in Kenya, it was envisaged that the implementation of PITC for TB patients in high HIV-prevalence settings would not only scale up HIV testing, but would also contribute to the mitigation of fears associated with uptake thereof [27]. Yet, as seen in our study, patients' fear of HIV testing persists. By implication, routine/PITC alone may be insufficient towards scaling up HIV testing amongst TB patients. As suggested by patients in our study, there is a need to implement a supplementary broader ethos of motivation and support.

Though research has indicated that TB patients are generally enthusiastic about collaborative TB and HIV activities [28], some patients in our study were nevertheless unwilling to undergo HIV testing, explaining that they still needed to deal with the burden of TB. These patients might have been concerned about the possibility of negative interactions between jointly administered TB and HIV drugs. Indeed, dual administration of TB and HIV treatment may present challenges, such as overlapping and additive toxicities [29; 30]. However, such potential challenges should be outweighed by evidence demonstrating the feasibility, effectiveness and tolerability of

dually-administered TB and HIV therapy [31; 32]. There thus seems to be a need to (better) inform patients regarding the advantages of simultaneous treatment for TB and HIV.

Similar to findings reported in a Cambodian study [33], more than half of non-tested patients in the present study reported that it had not been recommended to them that they undergo HIV testing. The lack of standardisation of clinical records meant that verification of such reports was not possible. However, to the extent that these patient reports are true, such a lack of provider-initiation of HIV testing could have adverse implications for meeting the target of 100% HIV testing by TB patients by 2011 [4]. At the same time, given that it is widely believed and proclaimed that HIV testing should be recommended to all TB patients in high HIV-prevalence settings [2; 3; 34], the non-practice of provider-initiation of HIV testing raises concerns about health workers' professional ethics and/or training, support and supervision in respect of PITC for TB patients. Our exploratory research suggests that it is imperative for TB control programmes to focus more attention on the implementation of the PITC policy directive.

As far as improving uptake of HIV testing is concerned, most patients asserted that it could be increased by motivation and support of TB patients by both health care workers and significant others in their communities. Also, providing (more) TB-HIV information to patients was perceived to be a salient role for health care providers. Our findings align with evidence from research in Kenya, which established that combined

facility and community efforts are feasible and do indeed contribute to the scaling up of HIV testing [27].

Convenience sampling of patients limits the extent to which the findings may be generalised to populations of TB patients beyond the four sub-districts surveyed in the present study. However, as previously mentioned, comparison revealed that the patient sample did not differ significantly from the larger population of TB patients in respect of key biographical variables including sex and age.

Like all research based on self-reports, the current findings are subject to bias. The possibility of interviewer bias such as unintentional errors resulting from interviewers omitting questions or misunderstanding respondents is acknowledged. To reduce such bias we exercised in-field quality control including the immediate editing of questionnaires for completeness and accuracy. Where necessary, patients were traced to provide or clarify missing information. Our study does however offer insight into TB patients' perspectives regarding non-uptake of HIV testing in a specific context.

An important question left unanswered by the current research is that one of the reasons for non-uptake of HIV testing during a current episode of TB might be that patients had been tested for HIV at an earlier stage but due to fear of stigmatisation or other reasons, wished to conceal that and keep their HIV status secret. Our research also did not fully investigate the roles of gender and age. While it was observed that male and older TB patients were less likely to report having been tested for HIV, the reasons

for such tendencies and how they can be addressed need to be understood in order to develop appropriate interventions for groups at high risk not to test for HIV.

5.6 Conclusion

Our study found patient-/individual-related factors or personal reasons to figure prominently in TB patients' explanations for non-uptake of HIV testing. This finding contributes to efforts to understand the limited success, to date, of routine/PITC implementation in South Africa. The only health system-related factor that featured – albeit much less prominently – in the patients' accounts of their non-uptake of HIV testing, was the reported non-offer of HIV testing at PHC facilities.

The study findings suggest that from the TB patients' perspective, initiatives to scale up HIV testing by TB patients in the Free State need to consider additional measures to augment routine/provider-initiation of HIV testing. The surveyed patients expressed a need for (more) motivation by and support from both health care workers and significant others, including family, friends and the community. Health care workers also need to (more) consistently and repeatedly inform and educate patients about the link between TB and HIV.

5.7 List of abbreviations used

AIDS: acquired immunodeficiency syndrome

HCT: HIV counselling and testing

PITC: provider-initiated testing and counselling

HIV: human immunodeficiency virus

TB: tuberculosis

VCT: voluntary counselling and testing

5.8 Competing interests

The authors declare that they have no competing interests.

5.9 Authors' contributions

NGK undertook instrument development, fieldwork management, data analysis, initial drafting and revision of the manuscript. JCH was involved in the study design, instrument development, fieldwork management and revision of the manuscript. EW critiqued and contributed inputs towards improvement of the manuscript. HSvdB contributed towards instrument development and commented on the manuscript. All authors read and approved the final manuscript.

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CHAPTER 6 – PREDICTORS OF UPTAKE OF HUMAN IMMUNODEFICIENCY VIRUS TESTING BY TUBERCULOSIS PATIENTS IN THE FREE STATE PROVINCE, SOUTH AFRICA

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Contributors: J. C. Heunis, P. Chikobvu, H. van den Berg, H. C. J. van Rensburg & E. Wouters.

Structure

6.6 Acknowledgements

References

Résumé (abstract in French)

Resumen (summary in Spanish)

6.1 Summary

Setting: Two districts of the Free State Province in South Africa.

Objective: To determine the predictors of human immunodeficiency virus (HIV) test uptake by tuberculosis (TB) patients.

Design: A cross-sectional survey was conducted among 600 TB patients in 61 primary health care facilities. Probability proportional-to-size sampling was used to determine the number of patients recruited at each facility. Structured exit interviews were conducted with convenience samples of patients at these facilities. Descriptive and logistic regression analyses were performed on the data.

Results: The average age of the recruited TB patients was 38.4 years. The majority were female (n = 310, 51.7%), unmarried (n = 439, 73.3%), unemployed (n =513, 85.5%) and

had undertaken HIV testing (*n* = 405, 67.5%). In multivariate analysis, having received information on the relationship between TB and HIV (OR 5.4, 95% CI 3.1–9.5) was the strongest predictor of HIV test uptake among unmarried patients. Other associated factors included knowing/having lost someone ill with HIV/AIDS (acquired immune-deficiency syndrome; OR 3.6, 95% CI 2.2–5.8), female sex (OR 2.3, 95% CI 1.4–3.7), unemployment (OR 2.2, 95% CI 1.2–4.1) and undergoing retreatment for TB (OR 2.0, 95% CI 1.2–3.2).

Conclusion: HIV test scale-up efforts should aim to increase TB patients' awareness of the relationship between TB and HIV/AIDS and consider the impact of socio-demographic factors.

Key words: tuberculosis; HIV/AIDS; HIV counselling; HIV testing; Free State

South Africa is experiencing an extraordinary tuberculosis (TB) epidemic.[1–3] As with other sub-Saharan countries,[4,5] the escalation of TB in South Africa is thought to be attributable to the human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS).[6–8] In 2007, 73% of all newly diagnosed TB patients in South Africa were estimated to be HIV-positive.[3] Counselling and testing for HIV presents opportunities for prevention, treatment and care for HIV and is also a significant entry point to TB-HIV comanagement.[9] For TB patients found to be HIV-negative, health

workers can provide tools for primary prevention of HIV, while HIV-positive TB patients can be educated on how to access cotrimoxazole prophylaxis, antiretroviral treatment (ART) and welfare support. Despite international and national policy directives for all TB patients to be tested for HIV,[10–12] too few TB patients in South Africa undergo HIV testing.[13] HIV testing of TB patients takes place under confidential, and not anonymous, conditions. In 2006, 63.4% of all registered TB patients were tested for HIV in the Free State Province. By 2008, however, the rate of HIV testing had declined to 46.1%.14 Previous studies in other countries have identified socio-demographic variables, such as sex,[15,16] age,15–18 and employment status[19] as key determinants of TB patients' uptake of HIV testing. Besides socio-demographic factors, research has also recognised that individuals' knowledge/ loss of someone ill with HIV/AIDS,[20] as well as clinical factors, including the type of TB diagnosis,[17,18] are associated with TB patients' uptake of HIV testing. The highly contextualised impact of socio-demographic factors on TB patients' uptake of HIV testing suggests a necessity to conduct setting-specific research. To inform scale-up of provider-initiated HIV testing and counselling of TB patients in the Free State, we investigated the simultaneous influence of variables previously reported to influence TB patients' uptake of HIV testing in other settings. We also set out to determine the impact of disseminating information on the link between TB and HIV infection at health facilities on HIV testing uptake by TB patients. To our knowledge this had not been investigated before.

6.2 Methods

6.2.1 Design and setting

During February–March 2008, a cross-sectional survey was conducted in the Free State, where HIV prevalence among registered TB patients was estimated at 26% in 2007.[14] The survey was conducted in Thabo Mofutsanyana and Lejweleputswa Districts, which were randomly selected from the five districts in the Free State. To increase the generalisability of the research, one predominantly rural and one predominantly urban sub-district were selected from each district, Nketoana (rural) and Maluti-a-Phofung (urban) in Thabo Mofutsanyana, and Masilonyana (rural) and Matjhabeng (urban) in Lejweleputswa. No statistical difference was observed between the urban and rural sub-districts with regard to TB patients' uptake of HIV testing ($P = 0.118$).

6.2.2 Study population

The study population was defined as registered TB patients aged ≥18 years attending primary health care (PHC) facilities providing services to at least 10 TB patients during 2007 and also offering HIV counselling and testing services. Sixty-one PHC facilities in the four sub-districts met these conditions. An average of 2238 TB patients were registered across the 61 facilities in 2007. To ensure sufficient data gathering within the allocated 2-month period, patients were recruited from all these facilities. Using probability proportional-to-size sampling, a convenience sample of 600 TB patients was recruited in proportion to the number registered at each PHC facility. The patients were

recruited as they exited TB consultation rooms. After consultation, the TB nurse at each PHC facility referred patients to a trained interviewer located in a private setting.

6.2.3 Measures

A structured interview was developed from relevant literature on TB, HIV/AIDS and HIV counselling and testing,[1,6,9,15–17,19–23] in consultation with domain experts, and pilot-tested for practicality at a PHC facility outside the study areas. The instrument was administered in the patient's language of choice (English or Sesotho). Information was collected on socio-demographic variables, including sex (male/female), age, marital status (married/unmarried), education (primary or lower/secondary/tertiary), employment (employed/unemployed), knowledge about the relationship between TB and HIV (yes/no), whether patients had received information on the link between TB and HIV at the PHC facility (yes/no), whether they regarded HIV/AIDS to be a problem in their communities (yes/no), whether they knew/had lost someone ill with HIV/AIDS (yes/no), and whether they had been tested for HIV (yes/no). Clinical information, including treatment category (new/retreatment) and type of TB (pulmonary/extra-pulmonary), was obtained from facility-based files and registers. These were also used to validate patients' self-reports on whether or not they had been tested for HIV, where available. However, due to the confidential nature of HIV testing, it was not possible to gather patients' HIV test results.

6.2.4 Analysis

Univariate logistic regression models were developed for each independent variable (sex, age, marital status, education level, employment status, TB treatment category, type of TB, knowing/not knowing about the TB-HIV relationship, whether TB-HIV information was received from the PHC facility, whether HIV/AIDS was perceived as a problem in the community, and knowing/not knowing someone ill with HIV) and the outcome variable—self-reported uptake of HIV testing. An adjusted model controlling for probable confounding variables, including sex, age, marital status, education, employment, patient category, type of TB, knowing/not knowing about the TB-HIV relationship, whether TB-HIV information was received from the PHC facility, whether patients perceived HIV/AIDS to be a problem in their community, and knowing/not knowing someone ill with HIV, was also developed. All variables included in the model had been previously reported to be associated with uptake of HIV testing in other studies,[15–18,24] or had a $P < 0.1$ in the unadjusted model. The independent variables were considered to be significantly related to uptake of HIV testing if $P < 0.05$. Investigation of interactions between independent variables in this model revealed a statistically significant interaction between marital status and having received information on TB-HIV. The effect modifier marital status was therefore kept in the model and the relationship between having received TB-HIV information at the PHC facility and HIV testing uptake was stratified by marital status, with the patients who did not receive TB-HIV information at the facility acting as the reference group for each marital status stratum.

6.2.5 Ethical considerations and authorisation

The study was approved by the Ethics Committee of the Faculty of the Humanities, University of the Free State. The Free State Department of Health authorised the study, and district, sub-district and facility managers also permitted the research. The interviewers explained the objectives and possible benefits of the study before seeking patients' written permission to participate in the interviews and for their clinical

records to be accessed. Respondents were notified of their right to decline participation, terminate the HIV at the PHC facility emerged as the strongest predictor of self-reported HIV testing.

6.3 Results

All invited patients agreed to participate in the study. The sample descriptive information on the respondents is shown in Table 1. The sample did not statistically significantly differ from the larger population of TB patients that attended PHC facilities in 2007 in the four sub-districts with respect to age (P = 0.5) and sex (P = 0.7). Our sample was composed of slightly more females (51.7%) than males (48.3%). The mean age of the respondents was 38.4 years, and the majority were unmarried (73.3%). Most of the patients (61.0%) had completed at least secondary schooling. The majority were newly registered TB cases (60.9%) and had pulmonary TB (90.9%). More than half of the respondents (57.0%) indicated that they did not personally know/had not lost someone ill with HIV/AIDS. Although more than one third (35.7%) had reportedly not

received TB-HIV information at the PHC facility they had visited for TB treatment and care, most (71.7%) were aware of the link between TB and HIV/AIDS. About one third (32.5%) of the patients self-reported that they had not been tested for HIV. Further analysis showed that of the 405 self-reported testers, 81.0% had confirmatory information in their clinical records. The same was true for 75.0% of the non-tested patients (*n* = 195). In the case of 20.0% of respondents, self reported HIV testing was either conflicting with clinical information or such information was missing.

Table 1: Descriptive data for the sample (N = 600)

Variable	% (n)	95% CI
Sex		
Male	48.3 (290)	43.9-52.8
Female	51.7 (310)	47.2-56.1
Age years (n = 592)*		
Mean [Range]	38.4 [18-73]	37.4-39.4
Marital status*		
Married	26.7 (160)	22.7-30.8
Unmarried	73.3 (439)	69.2-77.4
Education		
Primary school or lower	36.8 (221)	33.0-40.7
Secondary school	61.0 (366)	57.3-64.7
Tertiary	2.1 (13)	1.0-3.3
Employment status		
Employed	14.5 (87)	10.5-18.5
Unemployed	85.5 (513)	81.5-89.5
Patient category*		
New	60.9 (362)	56.7-65.2
Retreatment	39.1 (232)	34.8-43.3
Type of TB*		
Pulmonary	90.9 (539)	87.9-93.9
Extra pulmonary	7.8 (46)	4.8-10.7
Other (e.g. MDR TB)	1.4 (8)	0.4-2.3

Variable	% (n)	95% CI
Perceived HIV/AIDS as a problem in community?*		
Yes	88.6 (474)	85.2-92.0
No	11.4 (61)	8.0-14.8
Know/lost someone ill with HIV/AIDS?		
Yes	43.0 (258)	38.4-47.6
No	57.0 (342)	52.4-61.6
Knowledge of TB-HIV relationship?*		
Yes	71.7 (415)	67.6-75.8
No	28.3 (164)	24.2-32.4
Received TB-HIV information at the PHC facility?		
Yes	64.3 (386)	58.2-70.4
No	35.7 (214)	29.6-41.8
Ever tested for HIV?		
Yes	67.5 (405)	61.0-74.0
No	32.5 (195)	26.0-39.0

*n < 600 due to missing data; CI = confidence interval; TB = tuberculosis; MDR-TB = multidrug-resistant TB; HIV = human immunodeficiency virus; AIDS = acquired immune-deficiency syndrome; PHC = primary health care

The univariate logistic regression analysis (Table 2) showed that the following independent variables were all significantly associated with uptake of HIV testing: female sex (odds ratio [OR] 1.9, 95% confidence interval [CI] 1.3–2.7), unmarried status (OR 1.5, 95% CI 1.0–2.2), unemployment (OR 2.6, 95% CI 1.6–4.1), retreatment patient category (OR 1.8, 95% CI 1.3–2.6), knowing about the relationship between TB and HIV (OR 2.3, 95% CI 1.6–3.4), having received TB-HIV information from PHC facilities (OR 3.9, 95% CI 2.7–5.6), and knowing/having lost someone ill with HIV (OR 3.0, 95% CI 2.0–4.3). From the adjusted model (Table 2), having received TB-HIV information from PHC facilities emerged as the leading predictor of uptake of HIV testing among unmarried patients. Unmarried patients who had received TB-HIV information at TB

clinics were more than five times as likely to have tested for HIV than unmarried patients who had not received such information (OR 5.4, 95% CI 3.1–9.5).

Other statistically significant observations from the adjusted model include the following: patients who indicated that they knew/had lost someone ill with HIV/AIDS were almost four times more likely to have undergone HIV testing than those who did not (OR 3.6, 95% CI 2.2–5.8). Female patients were about two and a half times more likely to have undergone an HIV test compared with males (OR 2.3, 95% CI 1.4–3.7). Unemployed patients were just more than twice as likely to have been tested for HIV compared with employed patients (OR 2.2, 95% CI 1.2–4.1). Patients who were being retreated for TB were twice as likely to have been tested for HIV as patients receiving their TB treatment for the first time (OR 2.0, 95% CI 1.2–3.2). After adjustment, knowing about the relationship between TB and HIV was no longer significantly associated with self-reported uptake of HIV testing.

Table 2: Factors associated with uptake of HIV testing among TB patients

	Ever tested for HIV		
Variable	**n (%)**	**Univariate OR (95% CI)**	**Adjusted OR (95% CI)**
Sex			
Male	175 (43.2)	1	1
Female	230 (56.8)	1.9 (1.3-2.7)***	2.3 (1.4-3.7)***
Age [mean] years	397 [37.7]	0.98 (0.97-1.00)	0.99 (0.96-1.01)
Marital status			
Married	307 (75.8)	1	1
Unmarried	98 (24.2)	1.5 (1.0-2.2)*	0.5 (0.2-1.1)
Education			
Primary school or lower	145 (35.8)	1	1
Secondary school	251 (62.0)	1.1 (0.8-1.6)	0.8 (0.5-1.3)
Tertiary	9 (2.2)	1.2 (0.4-4.0)	0.9 (0.2-3.6)
Employment			
Employed	42 (10.4)	1	1
Unemployed	363 (89.6)	2.6 (1.6-4.1)***	2.2 (1.2-4.1)*
Patient category			
New	227 (56.5)	1.8 (1.3-2.6)*	2.0 (1.3-3.2)**
Retreatment	175 (43.5)		
Type of TB			
Pulmonary)	365 (91.0)	1	1
Extra pulmonary	32 (8.0)	1.1 (0.6-2.1)	0.8 (0.4-1.8)
Other (e.g. MDR TB)	4 (1.0)	0.5 (0.1-1.9)	0.6 (0.1-3.0)
Knowledge of TB-HIV relationship?			
Yes	307 (77.3)	2.3 (1.6-3.4)***	1.0 (0.5-1.6)
No	90 (22.7)	1	1
Received TB-HIV information at PHC facility?			
Yes	302 (74.6)	3.9 (2.7-5.6)***	Unmarried 5.4 (3.1-9.5)** Married 1.9 (0.8-4.4)
No	103 (25.4)	1	1
Perceive HIV/AIDS as a problem in community?			
Yes	327 (89.1)	1.2 (0.7-2.1)	1.2 (0.6-2.4)
No	40 (10.9)	1	1

Ever tested for HIV			
Variable	**n (%)**	**Univariate OR (95% CI)**	**Adjusted OR (95% CI)**
Know/lost someone ill with HIV/AIDS?			
Yes	207 (51.1)	3.0 (2.0-4.3)***	3.6 (2.2-5.8)***
No	198 (48.9)	1	1

*p < 0.05; **p < 0.01; ***p < 0.001

The univariate logistic regression analysis (Table 2) showed that the following independent variables were all significantly associated with uptake of HIV testing: female sex (odds ratio [OR] 1.9, 95% confidence interval [CI] 1.3–2.7), unmarried status (OR 1.5, 95% CI 1.0–2.2), unemployment (OR 2.6, 95% CI 1.6–4.1), retreatment patient category (OR 1.8, 95% CI 1.3–2.6), knowing about the relationship between TB and HIV (OR 2.3, 95% CI 1.6–3.4), having received TB-HIV information from PHC facilities (OR 3.9, 95% CI 2.7–5.6), and knowing/having lost someone ill with HIV (OR 3.0, 95% CI 2.0–4.3). From the adjusted model (Table 2), having received TB-HIV information from PHC facilities emerged as the leading predictor of uptake of HIV testing among unmarried patients. Unmarried patients who had received TB-HIV information at TB clinics were more than five times as likely to have tested for HIV than unmarried patients who had not received such information (OR 5.4, 95% CI 3.1–9.5).

Other statistically significant observations from the adjusted model include the following: patients who indicated that they knew/had lost someone ill with HIV/AIDS were almost four times more likely to have undergone HIV testing than those who did not (OR 3.6, 95% CI 2.2–5.8). Female patients were about two and a half times more

likely to have undergone an HIV test compared with males (OR 2.3, 95% CI 1.4–3.7). Unemployed patients were just more than twice as likely to have been tested for HIV compared with employed patients (OR 2.2, 95% CI 1.2–4.1). Patients who were being retreated for TB were twice as likely to have been tested for HIV as patients receiving their TB treatment for the first time (OR 2.0, 95% CI 1.2–3.2). After adjustment, knowing about the relationship between TB and HIV was no longer significantly associated with self-reported uptake of HIV testing.

6.4 Discussion

Even after controlling for confounding factors, having received information on the link between TB and HIV at the PHC facility emerged as the strongest predictor of self-reported HIV testing. Results of the adjusted model indicated that dissemination of information was more successful in this respect among unmarried than married patients. As stated, as far as could be established, the influence of dissemination of information about TB-HIV on TB patients' uptake of HIV testing has not been investigated before. However, the current findings are in line with research conducted among foreign-born pregnant women in the USA,[25] which established that refusal of HIV testing was associated with not having received specific information on HIV and pregnancy. Seemingly, the lack of adequate information limits patients' ability to make positive health-seeking decisions on HIV related issues,[26] including the all-important decision to test for possible, and in the case of TB patients, highly probable, HIV positivity. Although it is standard practice to provide this information when offering

HIV testing to TB patients, the fact that more than one third (35.7%) of the patients indicated that they had not received such information is cause for concern.

Similar to findings among TB patients in Durban, South Africa,[20] and among high-risk individuals in the USA,[24] the current study established that knowing/having lost someone to HIV/AIDS was associated with uptake of HIV testing. In a bid to improve HIV testing uptake at public health facilities, engaging peer counsellors who are HIV-positive and successfully undergoing ART may be helpful in encouraging non-HIV-tested TB patients to reconsider HIV testing. From the Durban study, it seemed that witnessing HIV/AIDS in other people prompted patients to deliberate on HIV/AIDS, which then resulted in their deciding to take up testing. This applied especially when access to ART was available.[20]

In line with previous research, socio-demographic factors, including sex[15–17] and employment,[19] were observed to play a significant role in influencing TB patients' uptake of HIV testing. However, contrary to North American studies,[15–17] female TB patients in the present study were more likely to have tested for HIV than their male counterparts. This finding corresponds to the findings of two other African studies,

one among the general population in Botswana[27] and the other a Ugandan study among pregnant women and their sexual partners.[28] The present study thus adds to a growing body of evidence indicating better health-seeking practices among African females than

males. Our finding that unemployed TB patients are more likely to undergo HIV testing confirms research among TB patients in Ethiopia.[19] This finding suggests that opportunities to diagnose HIV among employed TB patients might be missed. The significantly lower tendency of employed respondents to test for HIV might be explained by the prolonged nature of the process of HIV counselling and testing at PHC facilities. Typically, a TB patient first queues for pre-test counselling by the lay counsellor, then for drawing of blood by the nurse and, finally, for post-test counseling by the lay counsellor. Since the opening hours of PHC facilities coincide with a typical working day, employed patients might find it difficult to spend more time at the PHC facilities. Also, given HIV stigmatisation, [29] employed patients might fear stigmatisation at work and/or potential job loss if their HIV status became known to their fellow employees and/or employers.

A review of 32 studies indicated that TB recurrence was statistically significantly higher among HIV positive than HIV-negative TB patients.[22] Results from the logistic regression analysis differ from those of an Indonesian study finding no such association,[30] as we found that retreatment TB patients were twice as likely to have undergone HIV testing. Better uptake by retreatment patients may have been a consequence of their becoming progressively aware of the possibility of being co-infected with HIV, thereby increasing the chances of poor TB treatment outcomes. Three limitations of the current study should be noted. First, the use of purposive sampling of sub-districts and convenience sampling of TB patients attending the

selected PHC facilities reduces the generalisability of the results. Budgetary and time constraints ruled out the possibility of random sampling and then tracing respondents. However, the study participants' key biographic characteristics were similar to those of the larger TB population in the four sub-districts. Second, given the contextual and diverse influence of factors on TB patients' HIV testing uptake, future studies should consider other relevant factors, such as fear of stigmatisation and awareness and availability of ART, that were not included in the present study. Third, our study utilised patients' self-reports of HIV testing. The incomplete, non-standardised recording of HIV counselling and testing at facilities made it difficult to use clinical records to verify the information provided by the TB patients. Future studies might consider actual testing of patients as an outcome measure.

6.5 Conclusion

This study showed that TB patients who were not tested for HIV infection were typically male, employed and new TB patients. In the Free State public sector context, interventions to increase HIV testing should pay particular heed to these risk factors. Our findings also demonstrate the need for intensified efforts to inform TB patients about the link between TB and HIV/AIDS. More generally, our research highlights the need for context-specific research and interventions to improve uptake of HIV testing by TB patients.

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Résumé **(abstract in French)**

Contexte: Deux districts de la Province de Free State en Afrique du Sud.

Objectif: Déterminer les facteurs prédictifs du recours au test virus de l'immunodéficience humaine (VIH) parles patients tuberculeux.

Schéma: Une enquête transversale a été menée parmi 600 patients tuberculeux dans 61 services de soins de santé primaires. Un échantillonnage de probabilité proportionnelle à la taille a été utilisé pour déterminer le nombre de patients recrutés dans chaque service. Les interviews structurés de sortie ont été conduites sur des échantillons de convenance des patients de ces services. Les analyses de régression descriptive et logistique ont été menées sur les données.

Résultats: L'âge moyen des patients recrutés a été de 38,4 années. La majorité était de sexe féminin (n = 310 ; 51,7%), célibataire (n = 439 ; 73,3%), sans emploi (n = 513 ; 85,5%) et avait recouru à un test VIH (n = 405 ; 67,5%). Dans l'analyse multivariée, le fait d'avoir reçu des informations sur la relation entre tuberculose (TB) et VIH a été le facteur prédictif le plus puissant du recours à un test VIH chez les patients célibataires (OR 5,4 ; IC 95% 3,1–9,5). D'autres facteurs en association ont comporté le fait de connaître ou d'avoir perdu quelqu'un atteint du VIH/SIDA (OR 3,6 ; IC 95% 2,2–5,8), le sexe féminin (OR 2,3 ; IC 95% 1,4–3,7), le fait d'être sans emploi (OR 2,2 ; IC 95% 1,2–4,1) et le fait de subir un retraitement pour TB (OR 2,0 ; IC 95% 1,2–3,2).

Conclusion: Les efforts d'extension des tests VIH devraient viser à augmenter la prise de conscience parles patients des relations entre TB et VIH/SIDA par les patients ainsi qu'à prendre en considération l'impact de facteurs socio-démographiques.

Resumen **(summary in Spanish)**

Marco de referencia: Dos distritos de la provincial de Free State en Sudáfrica.

Objetivo: Determinar los factores de predicción de aceptación de la prueba diagnóstica del virus de la inmunodeficiencia humana (VIH) por los pacientes tuberculosos.

Métodos: Se realizó un estudio transversal de 600 pacientes tuberculosos en 61 centros de atención primaria de salud. Se calculó el tamaño de la muestra de pacientes en cada centro mediante un muestreo de probabilidad proporcional al tamaño. Se realizaron entrevistas estructuradas a los pacientes a la salida del centro, con un muestreo de conveniencia. Los datos se evaluaron mediante análisis descriptivos y regresión logística.

Resultados: La edad promedio de los pacientes con tuberculosis (TB) que participaron fue 38,4 años. La mayoría fueron de sexo femenino (51,7%; n = 310), solteros (n = 439; 73,3%), sin empleo (n = 513; 85,5%) y aceptaron realizar la prueba diagnóstica del VIH (n = 405; 67,5%). En el análisis multifactorial se encontró que el principal factor pronóstico de la aceptación de la prueba del VIH en los pacientes solteros fue el haber recibido información sobre la relación entre la TB y la infección por el VIH (OR 5,4; IC 95% 3,1–9,5). Otros factores asociados fueron conocer o haber perdido una persona cercana con infección por el VIH y SIDA (OR 3,6; IC 95% 2,2–5,8); el sexo femenino (OR 2,3; IC 95% 1,4–3,7); el desempleo (OR 2,2; IC 95% 1,2–4,1); y estar en retratamiento por TB (OR 2,0; IC 95% 1,2–3,2).

Conclusión: Las iniciativas de ampliación del suministro de la prueba del VIH se

deben fijar como objetivo mejorar el conocimiento de los pacientes sobre la relación entre la TB y la infección por el VIH y el SIDA, además de tener en cuenta el efecto de los factores sociodemográficos.

CHAPTER 7 – DISCUSSION, RECOMMENDATIONS, LIMITATIONS AND CONCLUSION

7.1 Discussion and recommendations towards strengthening of TB-specific health systems

The huge and increasing burden of HIV/AIDS amongst TB patients in South Africa has created a need for practical approaches with which to address the epidemic, so as to contribute towards strengthening of the TB health system. Inevitably, TB patients should get to know their HIV status as soon as possible in their treatment careers. However, this is not always the case. Evidence from previous studies (see Chapter 1: Table 1) indicated that uptake of HIV testing is influenced variously at both patient-/individual-level and health system levels, with such factors varying from context to context.

The current study illuminates factors that impact on TB patients' uptake of HIV testing from the TB patients' perspective. Similar to previous studies (see Chapter 1: Table 1), findings from the current study revealed that TB patients are not the only deciding agents in their uptake of HIV testing, but that other factors, particularly at the health-system level, also have a role to play. The ensuing sections highlight various ways in which intensified action and interventions may contribute to the scale-up of HIV testing among TB patients.

7.1.1 TB-, HIV- and TB-HIV-related knowledge

The HBM (Hosenbaum, 1958, in Skinner & Champion, 2008) theorises that an individual's knowledge about a disease will shape his/her perceptions about the seriousness and susceptibility of such a disease. Consequently, such perceptions may either facilitate engagement or dissuade an individual from engaging in preventive behaviour.

Present findings indicate patients' understanding of the asymptomatic nature of TB and HIV to be poor, which highlights a need to strengthen IEC interventions in this regard. The same results further indicate that patients knowledgeable about the link between TB and HIV were more likely to report having been tested for HIV. It is therefore important to establish TB patients' understanding of TB, HIV/AIDS and especially the link between these diseases in that successful implementation of HIV test scale-up interventions such as PITC is partially dependent on patients' understanding of the TB and HIV/AIDS diseases.

7.1.2 Patients' beliefs about HIV and their attitudes in respect of HIV testing

Results on patients' beliefs about HIV showed that both older and married patients and patients with primary or lower education harboured more misconceptions about HIV than did their respective counterparts. However, regarding patients' attitudes towards

HIV testing, males and patients who had not undergone HIV testing had more negative attitudes than did their respective counterparts.

As with knowledge about TB and HIV, IEC efforts also need to be channelled towards rectifying both pessimistic tendencies and negative attitudes with regard to TB, HIV/AIDS and HIV testing.

7.1.3 TB patients' risk-reduction practices and association with HIV counselling and testing

In this study, patients reported low condom use during their most recent sex, which, given the high prevalence of HIV in the Free State, suggests a high risk of onward transmission or acquisition of HIV. Unfortunately, it was not possible to establish why some patients had failed to use condoms at last sex. Nonetheless, such patients can benefit from behavioural interventions aimed at increasing their perceived risk to HIV and also their self-efficacy in respect of condom use (Skinner & Champion, 2008).

In addition, HIV counselling featured prominently amongst the factors influencing condom use at last sex in this sample: i.e. those who had undergone HIV counselling were more likely to have reported condom use at their most recent sex than were their counterparts. This finding highlights the fact that HIV counselling can play a significant role in influencing prevention of HIV amongst TB patients. Hence, policies in the Free

State need to strengthen HIV counselling as a means of effectuating HIV prevention – particularly regarding the promotion of condom use amongst TB patients.

7.1.4 Patients' experiences with HCT service provision

This research recounts possible roles of HIV-test service providers who may contribute towards mitigating human resources challenges associated with HCT service provision. Consequently, this will not only facilitate uptake of HIV testing but could possibly also contribute towards the strengthening of public health systems.

According to TB patients in the present study, lay counsellors were not only as capable of performing HIV counselling tasks effectively as the PNs but were also well appreciated by the patients. Given that few PNs are available to serve increasing numbers of TB patients at PHC facilities, this finding suggests an important solution to the professional HIV-test provider challenges of the public health sector (Evans & Ndirangu, 2009).

Knowing that TB patients trust and appreciate lay counsellors can thus be used to foster the shifting of HIV-counselling tasks from PHWs to lay counsellors. Moreover, with the revision of the *National Health Act, No. 61 of 2003*: *regulations relating to the withdrawal of blood from a living person for testing* (NDoH, 2010a) and the subsequent release of the *National HIV Counselling and Testing (HCT) Policy Guidelines* (NDoH, 2010b), the scope of

practice for lay counsellors is further expected to expand so as to include the taking of blood for HIV testing.

An innovation that has not been investigated in this study, and which may lessen the workload of lay counsellors is the training of an additional cadre – the DOT supporters – to provide HCT to TB patients at their convenience and possibly in the privacy of their homes. Since the NDoH has sanctioned HIV testing (taking of blood) by trained non-PHWs, there is reason to believe that the training of DOT supporters, who have the most contact with patients, to provide home-based HCT will contribute towards the scale-up of HIV testing amongst TB patients. This will also lessen the workload of lay counsellors who are currently expected to attend not only to TB patients but to all patients attending various programmes at the PHC facilities.

7.1.5 Patients' reasons/explanations for non-uptake of HIV testing

Findings established that the reasons why TB patients did not undergo HIV testing related mostly to patient-/individual-level impediments including indecision, fearfulness and a desire first to deal with TB on its own.

The only health system-related factor to feature in the patients' explanations for non-uptake of HIV testing was the alleged non-offer of HIV testing at PHC facilities. While patient-/individual-level barriers are understandable, health-system-related barriers

such as the non-offer of HIV testing highlight sub-standard care on the part of the providers. If left unaddressed, non-offering of HIV testing to TB patients may exacerbate the management of TB, especially in high-prevalence settings like the Free State.

Alternatively, when asked for suggestions on what could be done to encourage more TB patients to undergo HIV testing, patients mostly expressed a need for (more) motivation by and support from both health care workers and significant others, including family, friends and the community. They also felt that health care workers need (more) consistently and repeatedly to inform and educate patients about the link between TB and HIV. Such perspectives highlight the continued relevance of social capital in optimising care for TB patients in the Free State.

From their findings in a study on social capital and community TB care in the Free State, Meulemans, Ouytsel, Rigouts, Mortelmans, Heunis, Matebesi et al., (2005: p. 147) note that "… *those* [patients] *who have social capital have a better opportunity to develop illness behaviour characterised by the perseverance needed to continue their treatment to the very end and by rational handling of the many uncertainties that occur during the recovery period"*. These authors further state that "*TB patients must be able to turn to a readily accessible and integrated network of care in which the various structures … function in complementary synergy to ensure continuous care"* [p. 148]. Thus, as far as improving uptake of HIV testing for TB patients is concerned, strengthening of social capital can be used to supplement

routine/PITC in the Free State. Strengthening of social capital might include, inter alia, intensified DOT support, more regular counselling and establishment of support groups in the community. This is important because on its own, the PITC/routine HIV-testing strategy has thus far yielded unsatisfactory results.

7.1.6 Predictors of TB patients' uptake/non-uptake of HIV testing

This study has shown that uptake of HIV testing by TB patients is influenced by various factors. Patients who undertook HIV testing were most likely to be female, unemployed and on re-treatment for TB. Other factors contributing to the patients' uptake of HIV testing were: being knowledgeable about the link between TB and HIV, having received information regarding the relationship between TB and HIV at the PHC facility, and knowing someone with HIV/AIDS/having lost someone to HIV/AIDS.

Non-testers were less likely to report that they had not been recommended to undergo HIV testing, and to admit that they had not used condoms at their most recent sexual activity. The same patients were likely to express worry about already being infected with HIV. These findings add to the body of existing evidence (see Chapter 1: Table 1) on barriers and facilitating factors in respect of HIV testing amongst TB patients. More importantly, the findings highlight a need for context- and population-specific research and interventions to improve uptake of HIV testing by TB patients. In the Free State

context, interventions to increase HIV testing need to be emphasised especially amongst male, employed and new TB patients.

7.2 Limitations of the study

The present study is subject to several limitations:

- Convenient recruitment of patients attending services at PHC facilities meant that patients on community DOT support were insufficiently represented in the study.
- Convenience sampling implies that findings can only be generalised to TB patients attending services at PHC facilities in the four sub-districts considered in the study. However, it should be noted that comparisons between the patient sample and the population of TB patients in the four sub-districts yielded no significant differences in respect of the key variables of age and sex.
- Because of the lack of previous studies on uptake of HIV testing amongst TB patients in the Free State to guide sample-size calculation, the patient sample was estimated using a rule of thumb. This sample was however large enough to allow for advanced data analysis such as multivariate analysis.
- The study was exploratory and formed part of a larger fact-finding project on HIV testing in the Free State. Constructs from the HBM could thus not explicitly be tested but were merely used to inform the study. Future studies should consider testing the HBM as a predictor of uptake/non-uptake of HIV testing.

- The use of self-reports increased the likelihood of social desirability bias. The effect of social desirability bias was mitigated by assuring the patients that the interviews and the information gathered would be treated confidentially.
- The use of fieldworkers could have resulted in interviewer bias, e.g. unintentional errors as a consequence of interviewers having omitted questions or having misunderstood respondents. Such bias was mitigated through in-field quality control, which included the immediate editing of interview schedules for completeness and accuracy, and, where necessary, patients were traced to provide or clarify missing information.
- The stage of TB treatment (i.e. when they were first put on TB therapy vs. a later stage) at which the interview was conducted could have influenced some of the variables measured in this study, including the patients' uptake of HIV testing and self-reports of condom usage.
- The sensitive nature of the study argued against the collection of data regarding patients' actual HIV status. Instead, patients were only asked to state whether they had undergone HIV testing. Their responses were later correlated with their clinical information. However, given the dictates of policy in this regard, and moreover because it is common practice to provide cotrimoxazole to all TB-HIV co-infected patients, the fact of being on cotrimoxazole prophylaxis was used as a proxy for patients' HIV-positive status (NDoH, 2007; WHO/UNAIDS, 2007).

- The research was but one facet of a larger project on uptake of HIV testing, and aspects including patients' knowledge of TB and HIV, their beliefs about HIV, and their attitudes towards HIV testing, their satisfaction with the actual delivery of HCT services, and their condom-use practices were not exhaustively measured.

7.3 Conclusion

Overall, the present study serves to inform interventions and policy makers about HIV testing from the perspective of TB patients in four sub-districts in the Free State. The study has identified patients' views on facilitating factors and barriers to uptake of HIV testing. Findings have shown that from these patients' perspective, uptake/non-uptake of HIV testing is influenced both directly and indirectly by diverse factors at the patient-/individual and health systems levels. The findings further illuminate varied needs for improved implementation of HCT/PITC/PICT amongst TB patients in the PHC facilities in the four sub-districts studied. Therefore, innovations to overcome barriers associated with these patients' uptake of HIV testing likewise need to be multifaceted.

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APPENDICES

Appendix 1. Supplementary TB-HIV research co-authored by candidate

Supplementary work in which the candidate participated is presented in the form of three articles in this section:

- '*The views of primary health care nurses on HIV counselling and testing for tuberculosis patients in two districts of the Free State Province in South Africa*', authored by M. C. Engelbrecht, J. C. Heunis and N. G. Kigozi. The article was published in the *Africa Journal of Nursing and Midwifery*, 10(2), 70-83.
- '*Accuracy of tuberculosis routine data and nurses' views of the TB-HIV information system in the Free State, South Africa*' authored by C. Heunis, E. Wouters, G. Kigozi, M. Engelbrecht, Y. Tsibolane, S. van der Merwe and S. Motlhanke. The article was published in *Journal of the Association of Nurses in AIDS Care*, 22(1), 67-73.
- '*Patient- and delivery-level factors related to acceptance of HIV counseling and testing and testing services among tuberculosis patients in South Africa: a qualitative study with community health workers and program managers*' authored by J. C. Heunis, E. Wouters, W. E. Norton, M. C. Engelbrecht, N. G. Kigozi, A. Sharma and C. Ragin. The article was published in the *Implementation Science* Journal, 6, 27. http://www.implementationscience.com/content/6/1/27.

Appendix 1.1 The views of primary health care nurses on HIV counselling and testing for tuberculosis patients in two districts of the Free State Province in South Africa.

Published in *Africa Journal of Nursing and Midwifery,* 10(2), 70-83.

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PRIMARY HEALTH CARE NURSES' VIEWS ON HIV COUNSELLING AND TESTING SERVICES FOR TUBERCULOSIS PATIENTS IN TWO DISTRICTS OF THE FREE STATE PROVINCE OF SOUTH AFRICA

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ABSTRACT

International policies recommend that TB patients should routinely undergo HIV counselling and testing (HCT). This directive is echoed in the Tuberculosis Strategic Plan for South Africa, 2007-2011 (NDoH, 2007). An exploratory study was conducted to identify factors facilitating or discouraging TB patients from using HCT services in two districts in the Free State Province of South Africa, as perceived by nurses rendering primary health care (PHC) services.

Health care facilities and respondents were selected through multistage cluster sampling, stratified according to district, local service area, and facility type. A total of 68 respondents – comprising clinic supervisors, hospital nursing services managers, and nurses responsible for the TB, HIV/AIDS, and VCT programmes – participated in structured interviews using a newly developed instrument containing both open- and closed-ended questions.

Approximately two thirds of the nurses' responses illustrated that problems in the health care system and at PHC facilities, as well as a number of staff-related barriers, negatively influenced the utilisation of HCT services. The main barriers suggested by nurses pertained to nurse shortages,

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insufficient training on TB/HIV integration, inadequate space for counselling, and patients who did not trust lay counsellors. On the positive side, nurses' responses also suggested that they themselves played an important role in encouraging TB patients to utilise HCT services.

Abbreviations used in the article

ART – Antiretroviral treatment

DOT – Directly observed treatment

HCT – HIV counselling and testing

PHC - Primary health care

PITC - Provider-initiated HIV testing and counselling

PLWA/H – persons living with AIDS/HIV

TB - Tuberculosis

VCT - Voluntary counselling and testing

Keywords: HIV/AIDS, primary health care nurses, integrated TB/HIV services, tuberculosis, voluntary counselling and testing (VCT), HIV counselling and testing (HCT)

INTRODUCTION AND BACKGROUND INFORMATION

In April 2008, South Africa's National Department of Health reaffirmed its commitment to integrated, comprehensive primary health care (PHC) at the 30th anniversary of the Alma-Ata Declaration. However, as reported in previous research amongst nurses in the Free State Province of South Africa, the integration of a holistic model of patient-centred care into an under-resourced PHC system remains challenging (Stein, Lewin & Fairall, 2006). Nonetheless, new national and international policies continue to call for greater integration at the facility level of TB and HIV/AIDS programmes. HIV testing of TB patients provides an important entry point to providing integrated care and support.

Gaining an increased understanding of the realities faced by nurses in the implementation of policies in under-resourced settings is important because processes of policy development often neglect inputs from front-line nurses (Phaladze, 2003; Edwards & Roelofs, 2007). Findings from a study conducted by Walker and Gilson (2004: 1256) indicated that South African nurses resented the lack of consultation about new policies. These authors report that 38.0% of nurses claimed that they heard about new policies through the media: "*Nurses also felt far removed from health authorities. They pointed to a large gulf between policy makers and front-line providers. This led to a sense of disregard for health policy in general and a narrow focus on their own particular clinic and patients.*"

This exploratory and descriptive study set out to investigate nurses' perceptions of the factors facilitating or discouraging TB patients from undergoing HCT in two districts of the Free State Province. In so doing, the paper contributes to a deeper understanding of front-line providers' perceptions of the feasibility of the provider-initiated or routine counselling and testing policy.

International policies directing that TB patients should undergo routine HCT are relevant to countries with high TB/HIV co-infection rates, according to the World Health Organization (WHO, 2008). Thus countries such as South Africa, should devise activities to ensure TB-HIV/AIDS programme collaboration, include the implementation of routine provider-initiated HIV testing and counselling (PITC) of TB patients in clinical settings, using an "opt-out" approach (WHO 2004; WHO/Joint United Nations Programme on HIV/AIDS 2007; WHO/Joint United Nations Programme/United Nations Children's Emergency Fund 2007). The PITC policy directive has been echoed in the *Tuberculosis Strategic Plan for South Africa, 2007-2011* (NDoH 2007:24). In PITC, the onus is on the nurse to offer HCT to all TB patients. If the patient refuses HCT, the nurse has opportunities during the course of TB care and treatment to determine why patients refused, re-emphasise the importance of, and re-offer counselling and testing while informing the patient about the availability of antiretroviral treatment (ART), and encouraging patients who are HIV-negative to remain uninfected (Fujiwara, Clevenbergh & Dlodlo, 2005:954).

One study investigating nurses' experiences of providing HCT services in the Limpopo Province of South Africa (Mavhandu-Mudzusi, Netshandama & Davhana-Maselesele, 2007:256-257, 260) reported that a lack of counselling rooms, educational materials, rapid HIV-testing kits, consent forms, human resources, and time for counselling impacted negatively on these services. These nurses expressed concerns about patients' stigmatisation. These nurses attempted to avoid stigmatisation by not labelling HIV counselling rooms as such. In a study conducted among nurse counsellors, providing services to mineworkers in the Free State Province, nurses revealed that patients feared HIV-positive test results, and the associated stigma, to the extent that they might lose their jobs. This was the main barrier to the utilisation of available HCT services (Ginwalla, Grant, Day, Dlova, Macintyre, Baggaley & Churchyard, 2002).

DESIGN AND METHODOLOGY

An exploratory, descriptive quantitative survey was conducted in two districts of the Free State Province to identify barriers preventing TB patients' utilisation of HCT services, as perceived by nurses working in PHC facilities.

Instrument

The unavailability of an existing standardised instrument to identify nurses' perceptions of the barriers and facilitators influencing the utilisation of HCT services by TB patients necessitated the development of a new data gathering tool. Thus, a structured interview schedule comprising both open- and closed-ended questions was developed. This was subjected to expert commentary, and pre-tested for validity, clarity and usability.

Sampling of facilities and respondents

The research was undertaken in two districts in the Free State. At 33.6% in Lejweleputswa and 40.4% in Thabo Mofutsanyana, the utilisation rate of HCT amongst TB patients was lower (43.4%) than the average for the province (Free State Department of Health 2008). Facilities were selected through multistage cluster sampling, and stratifying for district, local service area, and facility type. All TB reporting units in all five local service areas of the two participating districts, namely Lejweleputswa (Matjhabeng, Masilonyana, Thokologo, Tswelopele, and Nala) and Thabo Mofutsanyana (Maluti-a-Phofung, Nketoana, Setsoto, Dihlabeng, and Phumelela), were randomly listed and numbered according to type (mobile clinic, fixed clinic, or district hospital). In each local service area where all three types of facilities existed, four fixed clinics, one mobile clinic, and one district hospital were selected using a table of random numbers. In local service areas, without all categories of facilities, it was necessary to adjust the numbers of facilities selected. In total, 26 fixed clinics, 10 mobile clinics, and 6 hospitals located across 26 towns in the 10 sub-districts were included in the sample. All these facilities, except 2 mobile clinics (one each in Lejweleputswa and Thabo Mofutsanyana), provided HCT services.

A total of 66 respondents (35 in Lejweleputswa and 31 in Thabo Mofutsanyana) including clinic supervisors, hospital nursing services managers, nurses responsible for the TB, and HIV/AIDS, and HCT programmes, and mobile clinic nurses participated in the research. These respondents were selected purposively as they were familiar with the intricacies of TB-HIV/AIDS programme integration in the facilities where they worked.

ETHICAL CONSIDERATIONS

Ethical clearance for the study was obtained from the Ethics Committee of the Faculty of Humanities, University of the Free State. The Free State Department of Health provided authorisation for the study.

The data gathering took place during September 2007. Appointments for individual interviews were made at each facility with the prospective respondents. Participation was voluntary. Informed consent was obtained prior to conducting each interview. Respondents were assured of confidentiality and anonymity. They were free to withdraw at any time from the study without fear of penalties. All data were coded and captured by using the Statistical Package for the Social Sciences (SPSS). Frequencies and percentages were calculated, and presented in distribution tables.

RESULTS

Nurses' views on the following issues related to HCT for TB patients were explored: human resource availability and training; space and location; operating hours and waiting

times; provision of information on the TB-HIV/AIDS link and offering of HCT to TB patients; and factors encouraging and discouraging patient uptake of these services.

Human resource availability and training for HCT

In South Africa the advancement of comprehensive PHC is hampered by nurse shortages in the public sector. In 2007, the Health Systems Trust noted that 35.7% of public sector nursing posts in the Free State Province were vacant (Day & Gray, 2007: 310). Using the workload indicators for staff needs tool, Daviaud and Chopra (2008) reported the following about human resources for health requirements in South Africa:

- "There is 94.0% of the required number of professional nurses but with wide variations between districts, with a few districts having excesses while most have shortages."
- "The number of enrolled nurses is 60.0% of what it should be."
- "There are 17.0% too few enrolled nurse assistants."

In the current study it was found that while more than two thirds of the clinic managers (69.2%; n=18) indicated having insufficient nurses to provide HCT for TB patients (10 in Lejweleputswa and 8 in Thabo Mofutsanyana), almost three quarters (73.1%; n=19) stated that there were enough lay counsellors (8 in Lejweleputswa and 11 in Thabo Mofutsanyana) to provide this service. The situation was more serious at hospitals, with no nursing services managers reporting that there were sufficient nurses to provide HCT services to TB patients. With regard to the availability of lay counsellors, four out of the six hospital nursing services managers indicated that they had sufficient numbers of nurses to attend to all patients, including TB patients, wanting to use HCT services.

The majority of nurses responsible for the TB and/or HIV&AIDS programmes were trained in both TB (87.7%; n=50) and HIV (77.2%; n=44). However, training opportunities related to the integration of these two programmes, such as PALSA Plus (43.9%; n=25) and HAST (43.6%; n=25), were attended by fewer than half of the respondents. The attendance of PALSA Plus training was poor in Thabo Mofutsanyana (31.0%; n=9) compared to Lejweleputswa (57.1%; n=16). Slightly more than half of the nurses (54.4%; n=31) were trained to provide VCT, with Lejweleputswa (39.3%; n=11) being worse off in this regard.

Table 1: TB and HIV/AIDS training

	Lejweleputswa (n=28)		Thabo Mofutsanyana (n=29)		Total (n=57)	
	n	%	n	%	n	%
TB	25	89.3	25	86.2	50	87.7
HIV	20	71.4	24	82.8	44	77.2
VCT	11	39.3	20	69.0	31	54.4
PALSA Plus	16	57.1	9	31.0	25	43.9
HAST	8	28.6	17	58.6	25	43.6

Space and location

Almost half of the clinic managers (46.2%; n=12) (7 in Lejweleputswa and 5 in Thabo Mofutsanyana) and HIV nurses (42.3%; n=11) (6 in Lejweleputswa and 5 in Thabo Mofutsanyana) reported insufficient space for the provision of private HCT for TB patients. Nurses reported that the space available for counselling and testing at clinics was inadequate and that privacy was lacking:

- the rooms were too small (1 nurse in Lejweleputswa);
- there were no specific rooms for counselling (3 nurses in Lejweleputswa; 4 nurses in Thabo Mofutsanyana); or
- there was only one room for counselling (2 nurses in Lejweleputswa).

One hospital in Lejweleputswa did not have a dedicated room for HIV counselling, while one hospital in Thabo Mofutsanyana reported that the counselling rooms had such thin walls that this compromised the privacy of counselling sessions.

Clinic hours and waiting times

HCT was available at all fixed clinics from Monday to Friday. At most clinics (73.1%; n=19), this service was available eight hours per day. Similarly, all hospitals offered HCT at least five days a week from Monday to Friday, with two hospitals in Lejweleputswa also offering the service on weekends (24 hours). Mobile clinics offered HCT at every visit, although the turnaround time for these visits required at least a month.

Overall, patients reportedly did not spend much time waiting for HCT. Patients spent less than 30 minutes for pre-test HIV counselling. More patients in Thabo Mofutsanyana (76.9%; n=10) spent no time waiting for HIV pre-test counselling compared to patients in Lejweleputswa (46.2%; n=6). In contrast, more patients in Lejweleputswa (76.9%; n=10) did not wait to be tested for HIV compared to patients in Thabo Mofutsanyana (46.2%; n=6). Across all sites, most patients (88.5%; n=23) received post-test counselling as soon as the test results were available.

The waiting time for HCT at mobile clinics was difficult to determine, as it depended on the length of the queue of patients waiting to see the nurse, as well as the nature of the ailments that the nurse had to treat.

Table 2: Time spent waiting for HCT at clinics

	LEJWELEPUTSWA (n=13)		THABO MOFUTSANYANA (n=13)		TOTAL (n=26)	
	n	%	n	%	n	%
Pre-test counselling:						
No waiting	6	46.2	10	76.9	16	61.5
30 min or less	5	38.5	3	23.1	5	19.2
An hour	1	7.7	0	0	1	3.8
Till afternoon	1	7.7	0	0	1	3.8
Testing:						
No waiting	10	76.9	6	46.2	16	61.5
30 min or less	3	23.1	7	83.8	10	38.5
Post-test counselling:						
As soon as results are available	12	92.3	11	84.6	23	88.5
15 min or less	1	7.7	2	15.4	3	11.5

Provision of information on the TB-HIV link and offering of HCT to TB patients

The majority of TB nurses (95.2%; 40 of 42) indicated that TB patients were always given information about HIV and AIDS and were always advised to undergo HCT. Almost all TB nurses (88.1%; 37 of 42) who advised TB patients to go for HCT did so immediately, when the patient had been diagnosed with TB.

Offering HCT again at every point of contact with the TB patient (60.9%; n=14) was the most frequently mentioned strategy for dealing with patients who refused the TB nurses' initial offer of counselling and testing.

Table 3: Strategies to encourage patients to go for HCT at clinics

	LEJWELEPUTSWA		THABO MOFUTSANYANA		TOTAL	
	n	%	n	%	n	%
Offer VCT again at every opportunity	8	57.1	6	66.7	14	60.9
Continued health education	2	14.3	2	22.2	4	17.4
Refer to DOT supporters	1	7.1	0	0	1	4.3
Compulsory counselling	1	7.1	0	0	1	4.3
Withhold TB treatment	1	7.1	0	0	1	4.3
Refer to sister in charge	0	0	1	11.1	1	4.3
Re-offer at end of TB treatment	1	7.1	0	0	1	4.3
Total	14	100	9	100	23	100

Follow-up procedures for patients who did not go for counselling and testing were in place at 23 fixed clinics (88.5%; 11 in Lejweleputswa; 12 in Thabo Mofutsanyana). Patients who did not go for HCT were followed up by:

- TB nurses checking the patient files and necessary registers (5 nurses in Lejweleputswa; 4 nurses in Thabo Mofutsanyana);
- discussions with patients about HIV counselling (5 nurses in Lejweleputswa; 4 nurses in Thabo Mofutsanyana); and
- directly observed treatment (DOT) supporters and lay counsellors talking with patients and following up whether they had been for counselling and testing (2 nurses in Lejweleputswa; 1 nurse in Thabo Mofutsanyana) (see table 3).

Factors discouraging and encouraging TB patients' utilisation of HCT services

All categories of respondents were asked to indicate factors they perceived to discourage and factors they believed encouraged TB patients to utilise HCT.

Nurses most frequently referred to patient-related issues as the main reason for refusal of HCT by TB patients. Amongst these reasons the stigma surrounding HIV, unwillingness

to be counselled by lay counsellors, denying/fearing that they might be HIV-positive, and preferring to cope first with TB on its own, and then later with HIV if necessary, featured most prominently. Facility-related barriers included the lack of human resource or infrastructure capacities at PHC facilities to provide easily accessible, confidential HCT services.

Table 4: Factors discouraging uptake of HCT

Factors:	Lejweleputswa		Thabo Mofutsanyana		Total	
	n	%	n	%	n	%
Patient-related:						
Stigma related to HIV	6	16.7	5	12.2	11	14.3
Unwilling to be counselled by lay counsellors ("they know them")	5	13.9	4	9.8	9	11.7
Denial/fear of HIV positive status	7	19.4	2	4.9	9	11.7
Want to deal with one disease at a time	1	2.8	6	14.6	7	9.1
Lack of knowledge about HIV	1	2.8	2	4.9	3	3.9
Farm workers unable to visit mobile clinic	1	2.8	2	4.9	3	3.9
Too sick to go for counselling	2	5.6	0	0	2	2.6
Traditional beliefs	2	5.6	0	0	2	2.6
Facility-related:						
Lack of separate waiting areas/rooms for counselling compromise confidentiality	3	8.3	7	17.1	10	13.0
Lack of space/counselling rooms and subsequent lack of privacy	3	8.3	6	14.6	9	11.7
Lay counsellors too busy/ not available	1	2.8	0	0	1	1.3
No after-hours counselling services	0	0	1	2.4	1	1.3
Staff-related:						
Shortage of training/ supervision of lay counsellors and DOT supporters	0	0	2	4.9	2	2.6
Negative nurse attitudes towards patients	0	0	1	2.4	1	1.3
Other:						

Poor weather	1	2.8	0	0	1	1.3
Total	36	100	41	100	77	100

Despite factors discouraging TB patients from going for HCT, there were also positive factors enabling patients to utilise HCT services.

The main factors perceived by the interviewed nurses to encourage TB patients to utilise HCT services, related to the facilities, staff and availability of treatment and support. The provision of health education to patients (29.0%; n=36) was most often mentioned as an encouraging factor, followed by the availability of ART (13.7%; n=17). However, the scale-up of ART services in South Africa is subject to substantial rationing: "*Consequences of rationing manifest in the high number of patients lost to the system and the difficulties faced by the most impoverished clients in gaining access to ART services on an ongoing basis*" (Jacobs, Schneider & Van Rensburg, 2008:19).

Table 5: Factors encouraging uptake of HCT

Factors:	**Lejweleputswa**		**Thabo Mofutsanyana**		**Total**	
	n	**%**	**n**	**%**	**n**	**%**
Facility-related:						
Health education	20	32.8	16	25.4	36	29.0
Sufficient privacy at health facility	2	3.3	6	9.5	8	6.5
VCT advertised and normalised (de-stigmatised)	3	4.9	5	7.9	8	6.5
Easy access	2	3.3	1	1.6	3	2.4
Translator used during counselling	1	1.6	0	0	1	0.8
Staff-related:						
Encouragement of patients	2	3.3	8	12.7	10	8.1
Nurses' and lay counsellors' positive attitudes towards patients	2	3.3	6	9.5	8	6.5
Offering of VCT at every occasion	1	1.6	4	6.3	5	4.0
Use of trustworthy lay counsellors	1	1.6	3	4.8	4	3.2
Nurses who are strict and tell patients they "cannot refuse" to be tested	2	3.3	1	1.6	3	2.4

Amicable relationships with patients	2	3.3	0	0	2	1.6
Matching gender of lay counsellors and patients	0	0	1	1.6	1	0.8
Treatment and support-related:						
Availability of ART	12	19.7	5	7.9	17	13.7
Availability of disability grants	3	4.9	1	1.6	4	3.2
Use of ART patients to demonstrate treatment efficacy	3	4.9	0	0	3	2.4
Support groups for PLWA/H	1	1.6	1	1.6	2	1.6
Outreach-related:						
Community activities (for example door-to-door visits and education campaigns)	2	3.3	3	4.8	5	4.0
Home-visiting of very ill patients and patients refusing testing	1	1.6	0	0	1	0.8
Patient preference-related:						
Able to choose nurse or lay counsellor	1	1.6	2	3.2	3	2.4
Total	61	100	63	100	124	100

DISCUSSION

Approximately one third of the (36.4%; n=28) nurses interviewed in this study revealed that patient-related issues such as fear of stigmatisation, lack of confidentiality, and denial of possible HIV infection, prevented patients from accessing HCT services. The remaining two thirds of the responses illustrated that problems in the health system and at PHC facilities, as well as staff-related issues, impacted negatively on the utilisation of HCT.

The nurses reported that facility-related barriers, discouraging TB patients from utilising HCT services, include:

- Shortages of both nurses and lay counsellors to provide HIV counselling for TB patients.
- Insufficient training emphasising the integration of TB and HIV/AIDS programmes.

- A lack of adequate space for HIV counselling.
- Patients' lack of trust in the lay counsellors.

On the positive side, the responses suggested that PHC facilities and nurses played an important role in encouraging TB patients to access HCT services, including:

- HCT services were available on weekdays at all fixed clinics and hospitals.
- Most TB patients were referred to HCT services, immediately upon diagnosis of TB.
- All TB patients were offered HCT services at each TB clinic visit.
- Procedures were in place to follow-up TB patients who did not go for HIV counselling.
- Health education and counselling.
- Positive attitudes demonstrated by nurses and lay counsellors.
- Availability of ART for HIV-positive patients.

CONCLUSION

The finding that the majority of TB patients were referred to HCT services, is in line with the recommendation of the WHO/Joint United Nations Programme on HIV/AIDS (2007) that PITC should be offered to all TB patients, where an "opt-out" approach is available. Similarly, re-offering TB patients who refused HCT access to this service at subsequent clinics visits, corresponds with Fujiwara et al.'s (2005) suggestion that health workers should utilise frequent contacts with TB patients to emphasise the importance of HCT. Therefore, at least from the nurses' perspective, attempts were made to ensure that all TB patients could access HCT services.

Similar to other studies (Ginwalla et al., 2002; Mavhandu-Mudzusi et al., 2007), this study also highlighted factors that prevent patients from going for HCT, such as the lack of human resources; inadequate space; and fear of the stigmatisation that accompanies an HIV-positive diagnosis. Of particular concern is the view held by nurses that patients often do not trust lay counsellors and prefer to be counselled by a nurse, which, due to staff shortages, is often not feasible.

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Appendix 1.2. Accuracy of tuberculosis routine data and nurses' views of the TB-HIV information system in the Free State, South Africa

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Research Brief

Accuracy of Tuberculosis Routine Data and Nurses' Views of the TB-HIV Information System in the Free State, South Africa

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Reliable data are a prerequisite for evidence-based decision making in health care policy (AbouZahr & Boerma, 2005). Accurate measurement is crucial in evaluating epidemic trends, as well as in planning and monitoring disease-specific service provision. On the basis of a systematic review of descriptive and comparative studies and previous reviews of health information technologies, Chaudhry et al. (2006) demonstrated the efficacy of information gathered using health information technologies, such as electronic health records, to improve both quality and efficiency of health care. Sound data are especially vital for the success of large-scale public sector health programs in developing countries where limited human and financial resources require their optimal use (Fraser et al., 2005).

Lippeveld (in AbouZahr & Boerma, 2005) defined a health information system (HIS) as an "integrated effort to collect, process, report and use health information and knowledge to influence policy-making, programme action and research" (p. 579). HISs are especially important when responses need to be urgent, as in the case of epidemic diseases such as tuberculosis (TB) and HIV infection. The scale-up of both TB and HIV treatment in resource-limited settings—such as South Africa—requires an integrated approach that bundles the respective TB and HIV information systems to combat the co-epidemic.

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Nurse respondents in the current study viewed an integrated approach as one in which, for example, integrated registers and tally sheets, inclusive of both TB and HIV information, are used. The necessity for integration is underscored by Phillips's (2007) observation that 60% of HIV-infected persons in Africa will die as a result of TB (p. 77).

South Africa is experiencing an extraordinary TB epidemic thought to be attributable to the HIV epidemic, as patients are more susceptible to TB when their immune system is weakened by HIV (Singh, Upshur, & Padayatchi, 2007). In fact, among the 22 high-burden TB countries, South Africa displays the highest rate of HIV-incidence TB cases (73%; World Health Organization [WHO], 2009). Within South Africa, the Free State is one of the provinces hardest hit by the co-epidemic. In 2007, it recorded the third highest HIV prevalence (25.3%) and the fourth highest TB incidence (818/100,000) among the country's nine provinces (Day & Gray, 2008). These statistics highlight the need for accurate TB and HIV surveillance.

However, accurate information is a health system resource that is often in short supply (Fraser et al., 2004). The quality of electronic records of patients has been questioned in both developed and developing countries. For example, in Finland, Vainiomäki, Kuusela, Vainiomäki, & Rautava (2008) found that "patient records are inadequate documents of consultations and below the standard of that country's legislation" (p. 117). In the case of developing countries, the supply of accurate information is often not seen to be a priority because of limited human and financial resources.

In particular, the accuracy of recording and reporting systems for TB and TB-HIV programs is often questioned (Fraser et al., 2007; Kim, Langevin, Wylie, & McCarthy, 2008; Scholten, de Vlas, & Zaleskis, 2008; Sprinson, Lawton, Porco, Flood, & Westenhouse, 2006). The high burden of the co-epidemic forces the health personnel to concentrate efforts on patient care rather than data management. The evaluation of collaborative TB-HIV activities is especially challenging because of the lack of investment in monitoring and evaluation and the added complexity of sharing information between two largely vertical programs (Gunneberg, Reid, Williams, Floyd, & Nunn, 2008). The WHO (2008) warned that the integration of recording and reporting for TB into a multidisease information system, unless carefully managed, was likely to result in further deterioration in the quality of routinely collected data. In addition to the burden of integrating TB and HIV care and treatment, the number of people undergoing TB and antiretroviral treatment (ART) in the Free State are increasing, thus further increasing the burden on the public health care system.

Recent years have seen the Free State's Department of Health's ART program invest substantially in information systems for routine data recording and monitoring systems. Investments have included procurement and implementation of computer information technology systems, including the appointment and training of staff to enable and expedite the flow of routine information. However, based on the experience of developing a database and data collation system for monitoring and evaluating ART in the province, it has been found that data quality remained the most challenging aspect (Fairall et al., 2006). In addition, it is important to state that parallel investments in the recording and reporting system for TB program were latent. Therefore, there is a likelihood of similar or more difficult data quality challenges because of fewer financial, staff, and infrastructural investments made in the TB information system.

Few previous South African studies have researched the efficacy of public HISs. Such research is much needed because a paradox emerges: the massive burden of the combined TB and HIV epidemics requires accurate information to enable successful comprehensive policy formulation and implementation, but the burden of the co-epidemic inundates nurses, possibly causing them to consider collecting and entering data a lesser priority.

An effective and efficient information system is now more than ever a research and policy priority. This research set out to establish possible disparity between facility and provincial levels of TB program data, and how users and managers experience and perceive the functionality of the TB-HIV information system. More specifically, the objectives were as follows: (1) to compare information in the facility-based TB patient files with information submitted to and captured at the provincial corporate level,

and (2) to determine whether nurses providing TB care (a) reported using TB-HIV data for planning purposes, (b) experienced problems in the daily operation of the information system, and (c) thought the information system could be improved for the clinical management of TB-HIV co-infected patients.

Design and Methods

The study followed an exploratory and descriptive design. Field work was conducted between November and December, 2007, in all the five districts of the Free State Province—Fezile Dabi, Lejweleputswa, Motheo, Thabo Mofutsanyana, and Xhariep. In each district, one mobile and one fixed clinic, one community health center (or large clinic), and one district hospital were purposively selected. Although budgetary restrictions limited the number of facilities to 20, they covered the whole spectrum of public sector primary-level facility types providing TB and HIV services, including small, medium, and large facilities, as well as those located in rural, peri-urban, and urban areas.

For an objective assessment, data were recorded on a random sample of TB and HIV patients ($n = 20$ per facility, total $n = 400$) selected directly from facility-based records (patient files or electronic registers) by means of a table of random numbers. For comparison between facility and provincial level data, the following seven data items were collected: file number, surname, name, treatment status (whether the patient was a new or a re-treatment case), treatment start date, treatment end date, and patient transfer status. These data were compared with the data recorded for the same patients at the provincial corporate level.

For a subjective assessment, semi-structured interviews were conducted with the nurse mainly responsible for TB program coordination at each facility ($n = 20$). The nurses' participation in the interviews was subject to informed, voluntary, and written consent. Their views were elicited by asking them whether they used TB-HIV data for planning purposes, experienced problems in the daily operation of the information system, and thought the information system could be improved for the clinical management of TB-HIV co-infected patients.

Table 1. Inconsistency Between Facility and Provincial TB Routine Data ($N = 2,800$ Entries)

Item	*N*	%
TB patient file number	16	4
TB patient name	32	8
TB patient surname	36	9
TB patient treatment status	48	12
Date TB treatment started	176	44
Date TB treatment ended	164	41
TB patient transfer status	120	30
Total	592	21

TB patient data from the facility and province were captured in Excel and checked for inconsistencies. Responses to the open-ended questions were coded and captured in SPSS (Version 16) and frequencies were calculated. Data were subjected to descriptive analysis (i.e., calculation of frequencies and means). The study was approved by the Committee for Research Ethics of the Faculty of the Humanities, University of the Free State. All respondents participated on an informed voluntary basis and signed a form to this effect.

Results

Inconsistency Between Facility-Level and Provincial-Level TB Data

For the objective assessment, of a total of 2,800 data entries, 21% ($n = 592$) inconsistency between data in hardcopy TB patient files (or, where available, electronic registers) and the data for the same patient recorded at the provincial level was measured (Table 1). Per data item, the highest discrepancy was observed in the TB treatment start (44%) and end (41%) dates. Inconsistencies regarding whether the patient had been transferred to another facility or not (30%) were also frequently observed, as was inconsistency in treatment status (12%). In contrast, smaller proportions (4%) of the patients' file numbers and names (8%) and surnames (9%) were discrepantly (different names, surnames, and misspellings) recorded.

Per patient, when comparing clinic-based data with provincial level data, one third ($n = 128$, 32%) of the 400 cases showed no inconsistency in any of the seven data items. In four of every 10

(41%) cases, one to two, and in just more than a quarter of the cases (27%), three to five, inconsistencies were observed. In 7% of the cases, four or more of the seven data items were discrepantly recorded.

Nurses' Views of the TB-HIV Information System

For purposes of the subjective assessment, we elicited TB program nurses' opinions on three questions: First, for the question asking nurses whether they used the TB-HIV data for planning purposes, all the respondents answered affirmatively. They indicated that the TB-HIV data were used to monitor and evaluate performance and outcomes of the TB program ($n = 9$); provide feedback to managers, staff, and the community (clinic committees; $n = 6$); and to calculate resource requirements ($n = 5$). In fact, almost all of the respondents ($n = 19$) stated that they indeed found the TB-HIV data useful for planning purposes.

Second, for the question asking TB program nurses whether any problem areas existed in the daily operation of the TB-HIV information system, half of the respondents ($n = 10$) denied that they experienced such problems. The problems most frequently raised by the remaining 10 TB-coordinating nurses related to staff shortages ($n = 4$), lack of training ($n = 4$), too many forms to complete ($n = 4$), and difficulties experienced in keeping track of patients ($n = 3$).

Staff shortages were found to be the most important challenge in the daily operation of the TB-HIV information system: "If we could only have a data capturer it would help us a lot." The nurses who viewed a lack of training as a problem particularly referred to the fact that many nurses had not (yet) undergone training in terms of the Practical Approach to Lung Health and HIV in South Africa (PALSA Plus). PALSA Plus is a multifaceted training program that combines symptom and sign-based guidelines with educational outreach and supervisory support to primary care nurses. Some of the respondents also suggested that PALSA Plus guidelines should be available in all consultation rooms in clinics. The problem of "too many forms" was closely related to the nurses' suggestion that a single, integrated information system should be implemented. The problem of "difficulty in keeping track of patients" related to TB patients reportedly often providing incorrect or untraceable contact particulars.

Third, with regard to the question asking nurses to provide suggestions as to how the information system could be improved for the clinical management of TB and TB-HIV co-infected patients, the largest proportion ($n = 6$) of the nurses suggested that a single, integrated information system for the two programs should be implemented: "All information necessary for reporting should be on one tally sheet"; "All TB and HIV and AIDS information should be recorded in one register"; and "One form that is inclusive of all TB and HIV information is needed."

Some TB nurses felt that their supervisors needed to provide more frequent feedback on the data submitted by facilities ($n = 3$): "Feedback on our TB data is necessary for us to be able to make graphs and for planning. Meetings with the TB coordinators in the district should be held at least quarterly." and "Communication about the information should go from facility to district to province and vice versa." It was also mentioned that all facility staff should undergo training on the operation and intricacies of the TB-HIV information system ($n = 2$): "If I [professional TB nurse] go on leave there is no one trained and able to maintain the TB data." Two nurses were of the opinion that secrecy about TB patients' HIV status should be eliminated ($n = 2$): "The secrecy surrounding HIV makes it difficult to appropriately manage [co-infected] patients." The need for sufficient computers and/or electronic registers was also pointed out ($n = 2$): "We need computers and electronic registers with certain trusted nurses having passwords to access patients' HIV information. The TB patients are hiding their HIV status."

Discussion

The highest levels of discrepancy between the clinic- and provincial-level TB routine information were observed with respect to TB treatment start and end dates, whether the patient was transferred to another facility or not, and treatment status. All of these data items are essential for the calculation of smear conversion and treatment completion and cure rates. Although these could usually be resolved by cross-checking file and electronic data entries, the

comparatively smaller proportions of discrepant patient file numbers, names, and surnames were important for administrative purposes and for tracking of patients, especially if they transferred from the clinic where they were initially registered to another clinic.

It is unfortunate that, as far as could be established, the wider norm for the types and levels of discrepancies in data recorded at different levels of the health system was not known or documented. Generally, research into the quality of TB surveillance is scarce. One of the few available studies that assessed the quality of TB surveillance found poor surveillance in one third of the cities in Brazil (Braga, 2007). The author also noted that other studies on the assessment of TB surveillance in Brazil could not be found, thus ruling out comparison. In a study to validate the surveillance system for TB in Botswana, Alpers et al. (2000) noted that the actual performance of the Botswana National TB Program with respect to sputum microscopy examination was much better than surveillance indicators suggested. An evaluation of the District Health Information System in rural South Africa found that 25% of the data were outside expected ranges, and no explanation was provided (Garrib et al., 2008).

Observed discrepancies between facility- and province-level data in the Free State cannot be assessed other than against the backdrop of severe resource shortages at the time of our cross-sectional survey. These shortages were graphically illustrated by the findings of the *2006 Health Information Report South Africa* (Loveday, Smith, & Monticelli, 2006) with respect to the Free State: only 11% of HIS posts were filled, only 15% of HIS staff spent more than 80% of their work time doing HIS-related work, 24% had no e-mail access from their own computers, and 21% had no intranet access from their own computers.

In the subjective assessment in the current study, the nurses consistently reported using the TB-HIV routine data for planning purposes. The high rate of utilization of the data is positive since, according to Byskov and Ohlson (cited in Garrib et al., 2008), there has been a universal "culture of reporting" instead of a "culture of using" information at the district level (p. 551). In contrast, the fact that the data were in large measure discrepant between the facility and provincial levels probably meant that much incorrect data were factored into the planning process. However, half of the nurse respondents were seemingly not aware of this as they denied that any problems occurred in the daily operation of the information system.

For the question regarding how the TB-HIV information system in the Free State could be improved, the major recorded suggestion of the nurses was that a single integrated system should be implemented. This would clearly require policy change, as well as strong leadership and technical expertise to develop the system. If these could be mobilized, efficiency gains could be anticipated by the use of a common information system and a single set of records.

However, without sufficient staffing and training, any new system is likely to return discrepancies and problems similar to those identified in the current study. This is because 51.6% of professional nursing posts and 50.7% of all health professional posts in the Free State were vacant in 2008 (Day & Gray, 2008, pp. 359-360). Loveday et al. (2006) also reported that, at almost 90%, the Free State had the highest proportion of vacant information officer posts in the country.

Limitations

The limitations of this exploratory study should be noted. Although the research was conducted throughout the Free State, it was only possible to include 20 health facilities (i.e., 5% of all mobile and fixed clinics, community health centers, and district hospitals in the province) because of a limited budget. Hence, the extent to which the findings may be generalized is limited. However, the results raise important questions regarding the accuracy of routinely collected data and the value thereof for planning and policy implementation. A potential path for future research is to investigate not only the accuracy and use of TB-HIV routine information, but also to expand on nurses' ideas on how program data are used to monitor and evaluate performance, what type of feedback is provided to managers, and how this, in turn, is used to plan for and manage TB and HIV services at the sub-district, district, and provincial levels.

It is also necessary to emphasize that data were gathered through a once-off cross-sectional survey

and that the TB management program has since made efforts to improve the TB recording and reporting system. However, these efforts may have been thwarted by a lack of funds and staff shortages—particularly health information officers or data-capturing officials.

In late 2007, the Free State Department of Health implemented an upgraded and more user-friendly version of the "Electronic TB Register" (ETR; i.e., a user-friendly Epi-Info based software program) based on the WHO/International Union of Tuberculosis and Lung Disease format of recording and reporting. The ETR is a powerful tool for surveillance, management, and supervision for countries with well-functioning paper-based recording and reporting systems. Implementation of the ETR might thus have resulted in decreased disparity between facility and provincial level data.

Although implementation of ETR might have resulted in decreased disparity, this is still not the integrated TB-HIV information system that is required to aptly combat the TB-HIV co-epidemic. Again the lack of accompanying infrastructural and human resource improvements may have thwarted efforts to improve data quality. Indeed, a Malawian study found that improved data quality in ART clinics was associated with increased human resources (clerks) for record keeping (Makombe et al., 2008). In the words of Jacucci (2000): "Building local infrastructure and human resources capacity is certainly a key aspect for a sustainable information system" (p. 235), whereas Health Metrics Network (2008) stated that "…improved health outcomes cannot be achieved without strengthening health systems (including HISs) as a whole, rather than focusing on discrete, disease focused components" (p. 7).

Conclusion

Health program information systems should facilitate accountability and evaluation as a means to address public health challenges. At the time of our cross-sectional study in the Free State, it seemed that a large part of the information collected for planning, reporting, and for policy making and resource allocation in the Free State TB management program was in need of attention to rectify discrepancies between the facility and provincial levels. Data such as TB treatment start and end dates are used to calculate TB program outcomes. However, our interviews with front-line nurses serving the TB program showed that only half of them thought that the TB-HIV information system was problematic. Intensified efforts to assess quality and find ways to improve the TB-HIV information system are recommended. In view of the serious nurse shortages in the province, more recruitment, training, and deployment of dedicated data capturers in the TB program will be required. Follow-up research is also recommended to establish the potential effect of recent efforts by the province to improve the TB information system in the context of stringent financial, nurse, information officer, and training shortages. Most importantly, the need for integration of the TB-HIV information systems remains unresolved.

Disclosures

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Appendix 1.3. Patient- and delivery-level factors related to acceptance of HIV counseling and testing and testing services among tuberculosis patients in South Africa: a qualitative study with community health workers and program managers

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Patient- and delivery-level factors related to acceptance of HIV counseling and testing services among tuberculosis patients in South Africa: a qualitative study with community health workers and program managers

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Abstract

Background: South Africa has a high tuberculosis (TB)-human immunodeficiency virus (HIV) coinfection rate of 73%, yet only 46% of TB patients are tested for HIV. To date, relatively little work has focused on understanding why TB patients may not accept effective services or participate in programs that are readily available in healthcare delivery systems. The objective of the study was to explore barriers to and facilitators of participation in HIV counseling and testing (HCT) among TB patients in the Free State Province, from the perspective of community health workers and program managers who offer services to patients on a daily basis. These two provider groups are positioned to alter the delivery of HCT services in order to improve patient participation and, ultimately, health outcomes.

Methods: Group discussions and semistructured interviews were conducted with 40 lay counselors, 57 directly observed therapy (DOT) supporters, and 13 TB and HIV/acquired immune deficiency syndrome (AIDS) program managers in the Free State Province between September 2007 and March 2008. Sessions were audio-recorded, transcribed, and thematically analyzed.

Results: The themes emerging from the focus group discussions and interviews included four main suggested barrier factors: (1) fears of HIV/AIDS, TB-HIV coinfection, death, and stigma; (2) perceived lack of confidentiality of HIV test results; (3) staff shortages and high workload; and (4) poor infrastructure to encourage, monitor, and deliver HCT. The four main facilitating factors emerging from the group and individual interviews were (1) encouragement and motivation by health workers, (2) alleviation of health worker shortages, (3) improved HCT training of professional and lay health workers, and (4) community outreach activities.

Conclusions: Our findings provide insight into the relatively low acceptance rate of HCT services among TB patients from the perspective of two healthcare workforce groups that play an integral role in the delivery of effective health services and programs. Community health workers and program managers emphasized several patient- and delivery-level factors influencing acceptance of HCT services.

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Background

In South Africa, approximately 73% of tuberculosis (TB) patients are coinfected with human immunodeficiency virus (HIV) [1]. Although integrated treatment and care is critical for improving the health of TB-HIV coinfected patients, as well as reducing transmission of both diseases to uninfected others, less than half (46%) of TB patients accept HIV counseling and testing (HCT) in the Free State Province [2].

Despite the clear need for the implementation of HCT in TB care settings, numerous barriers at the patient and provider levels exist that account in part for relatively low receipt of HCT among TB patients. Our previous research [3] in the Free State Province suggests that TB patients are reluctant to request or receive HCT when they had not received information on the relationship between TB and HIV at the health facility and when they are male, married, employed, undergoing first rather than retreatment for TB, and when they do not know someone with or have not lost someone due to HIV/acquired immune deficiency syndrome (AIDS). Internationally, a wide range of patient-level factors have been variably associated with TB patients' nonuptake of HIV testing, including female sex [4-7], age younger than 15 and older than 49 years [7], age younger than 30 and older than 39 years [4,5], age older than 46 years [6], age older than 18 years [8], fear of stigmatization [9-11], and fears of testing HIV-positive and death [11,12].

Previously identified provider-level barriers to implementing HCT with TB patients in sub-Saharan Africa [13] and South Africa [14] include lack of nursing staff, lack of space, increased workload, and work-related stress, including stress experienced by breaking bad news and handling ethical dilemmas. A Ugandan study [15] identified a range of additional health-systems factors affecting the implementation of collaborative TB-HIV services, including poor TB-HIV planning, coordination, and leadership; inadequate dissemination of policy; inadequate provider knowledge; limited TB-HIV interclinic referral; poor service integration and recording; logistical shortages; and high costs of services. Another South African study [16] identifying constraints to integrating TB and HIV care in primary healthcare clinics singled out high service loads at both the TB and HIV entry points, duplication of services and underutilization of staff, and TB and HIV services functioning independently of each other.

However, relatively little research has sought to identify and understand barriers and facilitators to TB patients' participation in HCT from the perspective of community health workers (*i.e.*, lay HIV counselors and directly observed treatment [DOT] supporters) and TB and HIV/AIDS program managers. Such information is especially important in resource-limited settings where both community health workers and program managers are an integral part of the healthcare delivery system. Each of these groups represents different levers for change for potentially increasing TB patients' participation in HCT services by improving or altering the implementation of such services in clinical and community care settings.

Compared to other healthcare providers, community health workers are uniquely positioned to understand and influence patients' behaviors, as well as to improve the delivery of effective health services and programs to enhance patient health. Indeed, experience in Haiti showed that community health workers had an important role in being able to enhance community uptake of services and target vulnerable groups [17]. Given their growing presence, multi-skilling, and importance in public health systems [18-23], community health workers may be uniquely situated to influence patients' behavior-including acceptance of HIV testing. However, despite their unique position to impact patient behavior as well as improve health service delivery, community health workers are rarely consulted for their professional opinion [24]. This is also the case in the Free State Province, South Africa.

While community health workers have an influential role with patients and in the delivery mechanism for providing HCT services, TB and HIV/AIDS program managers are uniquely positioned to affect policy to improve the implementation and delivery of effective healthcare programs and care. Generally speaking, program managers are responsible for developing and maintaining successful TB and HIV/AIDS control programs, in addition to securing financial and organizational support for continuous and uninterrupted supply of treatment. Despite their influential position, program managers' perceptions on HCT for TB patients have also received little attention in the literature to date. In one study, three district disease-control managers in Indonesia were interviewed on barriers to introducing HIV testing among TB patients [25]. Managers perceived poor patient-provider communication as one of the most influential barriers to acceptance of voluntary counseling and testing (VCT) among TB patients.

Based on the lack of qualitative work in this area and within this particular setting, the objective of the present study was to explore community health workers' and TB and HIV/AIDS program managers' perspectives on barriers to and facilitators of acceptance of HCT services among TB patients in Free State Province, South Africa. This article follows on two previous reports in the same setting and time period, one on predictors of TB patients'

acceptance of HCT [3] and one on primary healthcare nurses' [14] perspectives on acceptance of HCT services among TB patients. Importantly, we examined not only community health workers' and program managers' perceptions of patient-level barriers and facilitators to acceptance of HCT services among TB patients, but also their perceptions about how the delivery of HCT services might improve acceptance rates. The research study was approved by the Free State Department of Health and the Committee for Research Ethics, Faculty of the Humanities, University of the Free State.

Methods

Setting

The current study employed qualitative research methods (*i.e.*, focus group discussions and semistructured interviews) to better understand the perspective of community health workers and program managers on factors influencing HCT acceptance among TB patients. A series of group discussions and interviews were conducted with lay counselors, DOT supporters, and program managers between September 2007 and March 2008. Except for the interviews with national and provincial program managers, information was gathered from community health workers and program managers in two districts (*i.e.*, Thabo Mofutsanyana and Lejweleputswa) in Free State Province, South Africa. In an effort to reflect the mix of urban/large town and rural/small town subdistricts in both the Thabo Mofutsanyana and Lejweleputswa districts, participants in each district were recruited from a variety of purposefully selected clinics and district and regional hospitals across the two districts. A total of 19 healthcare delivery facilities were selected for participation in the present study (Table 1). These included 13 primary healthcare clinics, 5 district hospitals, and 1 regional hospital. A heterogeneous mix of facilities was selected to provide a representative set of findings.

Participants

Participation in the study was voluntary, and, all being literate, participants provided written informed consent. Different recruitment strategies were used for the groups of respondents who participated in the study.

Lay counselors

Exploratory group interviews were conducted with 40 lay counselors. All lay counselors at the selected facilities were approached to participate in the study via their supervisors and all agreed to take part.

DOT supporters

Exploratory group interviews were conducted with 57 DOT supporters at the selected facilities. Supervisors informed all DOT supporters about the research and invited them to participate in the study. Again, all agreed to be interviewed.

Program managers

Exploratory individual interviews were conducted with 13 TB and HIV/AIDS program managers. Unlike with the community health workers, it was not feasible to gather program managers for group interviews. Also, because the managers formed part of a hierarchy of positions subordinate to one another, and thus information could be biased by the power exerted by some over others, the group interview was not an appropriate approach for data collection. Hence, the strategy was to conduct individual interviews with the managers. The selected managers (subdistrict, n = 3; district, n = 2; provincial, n = 4; national, n = 4) represented a purposive sample to cover program managers at all levels of the public health system. Due to our undertaking to protect the confidentiality of the respondents, further details on their location and specific portfolios are withheld. Managers were selected as key informants because they are responsible for the overall management of the TB, HIV/AIDS, or (integrated) TB-HIV/AIDS program activities in their areas of jurisdiction.

Group discussions and individual interviews

Open- and closed-ended questions were used both during the group discussions with lay counselors and DOT supporters and the semistructured interviews with program managers. The open-ended question format provides a mechanism through which respondents can use their own words to express their ideas. Such questions are designed to solicit rich, detailed descriptions that are most appropriate for understanding complex issues or

Table 1 Sampled facilities types by category of community health worker

Facility type	Lejweleputswa District		Thabo Mofutsanyana District	
	Lay counselors	DOT supporters	Lay counselors	DOT supporters
PHC facility	8	27	15	30
District hospital	8	0	6	0
Regional hospital	3	0	0	0
Total	19	27	21	30

DOT = directly observed therapy; PHC = primary healthcare.

processes [26]. Closed-ended questions were used to obtain information on both groups of respondents' demographic details, while open-ended questions gathered information on the factors deterring and facilitating TB patients' acceptance of HCT. Two open-ended questions, which were then elaborated on, formed the starting points of the data-gathering processes: 'In your view, what are the major factors deterring TB patients from undergoing [HCT]?' and 'In your view, what are the major factors encouraging TB patients to undergo [HCT]?'

The face validity (*i.e.*, whether the questions make sense as a measure of a construct in the judgment of others) and practicality (*i.e.*, likelihood to be successfully understood) of the two open-ended questions were pretested prior to the fieldwork. Managers, DOT supporters, and lay counselors from a district (*i.e.*, Motheo) outside of the study area participated in this exercise. The questions were found to be meaningful and valuable in answering the research question.

A total of 32 group discussions included 2 to 3 lay counselors (21 discussions) and 5 to 12 DOT supporters (11 discussions) at a time. Each group interview was conducted in the participants' home language (*i.e.*, Sesotho) and lasted approximately one hour.

Respondents were asked for their permission to use an audio recorder. Focus group discussions were moderated by a facilitator, while another research team member took notes to supplement information collected on the audiotapes. Facilitators were trained on how to guide a group discussion and were conversant in the local languages (*i.e.*, Sesotho and isiXhosa). Participants were assured about the confidential nature of the discussions and encouraged to express their opinions openly.

The individual interviews with the program managers were conducted by two researchers in either English or Afrikaans. With the consent of interviewees, audio recorders were used. The discussions were facilitated by one researcher/interviewer while another took notes to supplement information collected on the audiotapes. Discussions were confidential and participants were encouraged to express themselves openly and honestly.

Data analysis

Thematic analysis by means of open-coding has been used in a previous South African study on HIV testing and disclosure among TB patients [27]. In the current study, the information gathered in the group and individual interviews was transcribed verbatim. Data were subjected to recurrent thematic analysis [28]. Two researchers and three research assistants conversant in both Sesotho and English performed thematic analysis by reading and rereading all the transcripts and developing a detailed list of participants' comments in the two areas addressed by the interview questions (*i.e.*, views on the facilitators of and barriers to uptake of HIV testing by TB patients). Researchers compared and cross-referenced every identified response to ensure that all respondents' issues, concerns, and ideas were included and to identify common themes. The team met several times to discuss and reassess the overall themes.

Results

The themes emerging from the focus group discussions and interviews included four main barriers: (1) fears of HIV/AIDS, TB-HIV coinfection, death, and stigma; (2) perceived lack of confidentiality of HIV test results; (3) staff shortages and high workload; and (4) poor infrastructure to encourage, monitor, and deliver HCT. The four main facilitating factors emerging from the group and individual interviews were (1) encouragement and motivation by health workers; (2) alleviation of health worker shortages; (3) improved HCT training of professional and lay health workers; and (4) community outreach activities.

Fears of HIV/AIDS, TB-HIV coinfection, death, and stigma

The community health workers identified fears of HIV/AIDS, TB-HIV coinfection, and/or death as the most important barrier to HCT acceptance among TB patients:

> TB patients only come to the clinic when they are extremely ill and they don't want to be counseled or spoken to about HIV, so they fear having both diseases.
>
> People are afraid to test because it is said that if a person has TB, they automatically have HIV, and they do not want to know.
>
> They are afraid of the fact that HIV is not curable. So when they have TB they are afraid to go and test and hear bad news.

Another prominent barrier to TB patients' acceptance of HCT mentioned by community health workers was fear of experiencing HIV-related stigma and/or discrimination if they tested positive:

> When people are ill they are rejected from the community so people would rather not test.
>
> They are afraid of what people will say about them - the stigma associated with AIDS.
>
> People think that HIV/AIDS is a punishment and a shame, so we try to encourage them otherwise.

Among the barriers identified by program managers, the perceived negative emotional experience of a TB patient testing HIV-positive also featured prominently.

In fact, all the program manager respondents mentioned patients' fear of being the recipient of HIV-related stigma as a barrier to acceptance of HCT:

> They fear stigma in the community.
> They fear stigmatization by other patients.
> They worry about dual-stigmatization of TB and HIV.
> Already the patient is stigmatized, because in our community there are those people who don't accept TB. So patients are already reluctant to have another stigma of HIV, and they just don't go for testing.
> All the other patients know that you are going to be tested. Even though it's not a fact that you are going to be positive, others think that you are.

Perceived lack of confidentiality

Both the community health workers and program managers also perceived that patients were reluctant to accept HCT because they did not trust the healthcare facilities to maintain the confidentiality of their HIV test information:

> Patients still do not trust that their results are strictly confidential.
> They also say that there is no confidentiality when it comes to HIV.
> People say that the nurses and the lay counselors gossip a lot.
> In some clinics you find that patients come from the community around the clinic and the people who are doing the counseling are lay counselors, they are community people, the patients know them... they live with them. The patients will not come to that particular facility or they will not agree to test but would rather go somewhere else to test. So there are issues of trust and confidentiality.
> Confidentiality plays a big role. Clinics are not really TB and HIV friendly. One person handles a patient and a rapport develops. Then the patient is sent to someone else for [HCT]. They don't feel comfortable with that. They don't want to be sent to someone else.

Staff shortages and high workload

The community health workers raised pertinent concerns about staff shortages in health facilities and the negative effect this had on uptake of HIV testing by TB patients:

> There is a great shortage of nurses, so if they could be increased they would be able to help all patients and not have to send some home.

Similar to the views expressed by community health workers, program managers also identified several delivery-level barriers that played a role in relatively low acceptance rates of HCT services among TB patients. Specifically, program managers noted the lack of appropriately trained staff members, high workloads, and time constraints experienced by professional and lay health workers:

> They are suffering in the clinics. There are only a few professional nurses that have to do all the programs. This is a big, big, big concern.

Poor infrastructure to encourage, monitor, and deliver HCT

Both the community health workers and the program managers often referred to infrastructural problems when encouraging and monitoring HCT services. For example, community health workers were concerned about a lack of information, education, and communication materials provided in local languages, as well as concern about limited access to antiretroviral treatment:

> Posters that are in English are not easy to understand as it is not a mother tongue to all.
> Some patients say if they test and find out that they are HIV-positive, they will have to be put on the long waiting list for [antiretrovirals] and they will die before they even get help.

The program managers also pointed to a lack of appropriately trained staff members, as well as poor infrastructure to monitor and deliver HCT, as factors contributing to low acceptance rates among TB patients. For example, many clinics did not have systems in place for record-keeping, referral, and patient follow-up for coinfected patients:

> The recording is a problem. I remember at some stage I had a problem where I wanted to look at their statistics and all that, and I started to talk to them and asked them where the figures are, but... patients are tested and it is not recorded. There is no system in between patients who have been seen in the TB room that have been transferred to the [HCT] room. The counselors are not recording the information.

Encouragement and motivation by health workers

The most common suggestion for increasing acceptance of HCT by community health workers was to encourage and motivate TB patients:

> We [lay counselors] should tell them that if they've got TB it's vital for them to go test because nowadays TB is never the only problem. Most of them do go and test, but some are still not ready and some lie and say they have tested when they didn't.
> We cannot force patients, but we should keep on encouraging them.

Community health workers suggested that both community and professional health workers should engage, or engage more often and more intensely, with patients about their fears of testing HIV-positive, TB-HIV coinfection, and death. The community health workers also suggested that messages to encourage TB patients to accept HCT should be delivered and reinforced by doctors and nurses in order to be optimally effective:

> When patients have been seen by doctors, they go more willingly to the clinic to test.
> More patients cooperate with nurses. Nurses should talk to them and make them realize the importance of testing for HIV. Nurses should do it because patients respect them and listen to them because they are qualified and they know what they are talking about.

Similar to the community health workers' emphasis on encouragement and motivation, the major proposed facilitator of HCT acceptance among TB patients, as perceived by program managers, was that health workers should follow a patient-centered approach. Such an approach should be characterized by strong confidentiality protection, emotional support, and cultural sensitivity, as well as efforts to understand and acknowledge the cultural beliefs of patients from different backgrounds. This, the program managers suggested, was required to build the strong, provider-patient relationships necessary to increase patient acceptance of HCT:

> Patients who did not test the first time they were offered HCT should be continuously advised to do so.

Alleviation of health worker shortages

The second most prominent theme in community health workers' responses to the question about what would facilitate TB patients' acceptance of HCT was related to the delivery of such services. Specifically, community healthcare workers suggested that increasing the number of health service professionals, particularly those conversant in local languages, would help increase TB patients' acceptance of HCT services:

> The doctors here are Nigerian, all three of them. So that also causes a language barrier, because when the patient goes to see the doctor I must go too, and now that makes the patient uncomfortable. If only we could get doctors who know our home language.
> There is only one doctor and he only comes on Thursdays, and is always too busy. If there were more doctors it would make a huge difference.

Likewise, the second most prominent factor suggested by the program managers to influence acceptance of HCT among TB patients concerned the lack of available healthcare delivery personnel and professionals. Suggestions to alleviate this problem included increasing the number of healthcare facility staff, improving training for professional and lay health workers, and integrating TB and HIV/AIDS services:

> There are a high number of programs in relation to the number of nurses.
> The clinics in general are inundated with clients with consequent queuing.
> Counseling should include referral of patients to nurses for further counseling about related diseases.
> They should strengthen the health system so that patients are treated holistically rather than by specialized personnel in specific programs [*e.g.*, nurses trained in the antiretroviral treatment program].
> Integrated service provision facilitates uptake of [HCT].

Improved HCT training of professional and lay health workers

Improved HCT-related training of both nurses and lay counselors, but especially the latter, was the third most prominent theme raised by the program managers in response to the question of how TB patients' uptake of HCT services could be improved:

> Improve the quality of training on TB and HIV that professional nurses receive.
> There should be ongoing training of lay counselors and DOT supporters on TB and HIV.
> Lay counselors should receive comprehensive training.
> We've got to improve the skills of lay counselors.
> The quality of information imparted by lay counselors should really be improved.

Community outreach activities

Another prominent factor mentioned by the community health workers was that acceptance of HCT by TB

patients should be encouraged not only by healthcare professionals in delivery settings but also through outreach and community activities. There was a strong sentiment in the discussions that lay counselors were able and willing to conduct community outreach:

> They should help us do door-to-door [campaigns] and test patients outside of the clinic.
> We should be involved in community activities and go talk at churches.
> We could have meetings with the community every now and then to talk about these issues.
> It would be better if at churches TB and HIV were spoken about.

Discussion

There is an urgent need in South Africa to increase TB patients' acceptance of HCT services in order to improve patient health outcomes [12,16,27,29,30]. The present study sought to understand patient- and delivery-level factors that influence acceptance of HCT services among TB patients in Free State Province, South Africa from the perspective of two important yet relatively neglected healthcare service stakeholder groups: community health workers and TB and HIV program managers.

Findings from our qualitative study revealed several multilevel barriers to TB patients' acceptance of HCT services. Indeed, both groups of respondents identified several patient-level factors that appeared to reduce TB patients' acceptance of HCT services, including fear of HIV diagnosis and fear of experiencing HIV-related stigma. These patient-level factors hindering HCT uptake have also been identified in previous studies in South Africa [27], Nigeria [31], Burkina Faso [10], and the United Kingdom [9].

Fear of stigmatization as a reason for TB patients' nonuptake of HIV testing also featured prominently in the findings of a qualitative study in Durban, South Africa by Daftary *et al.* in 2007 [27]. This study highlighted TB patients' experiences and perceptions of stigma and disclosure and distinguished between felt and enacted stigma. While the latter concerns the actual experience of a prejudicial act, the former relates to the fear of being discriminated against. It was found that for TB patients unaware of their HIV status, "felt stigma of HIV/AIDS was a critical disincentive for VCT-they could suffer a potential double stigma with an HIV-positive result [[27], p. 574]."

In the current study, both groups of respondents also identified several delivery-level factors that appeared to reduce TB patients' acceptance of HCT services, including lack of trust in staff maintaining the confidentiality of their HIV test results, lack of appropriately trained healthcare personnel, limited availability of antiretroviral medications, poor monitoring of patient care, and fragmented delivery of care services.

In 2000, observations were made that the traditional trust of the community in the health professions was declining in South Africa [[32], pp. 107-108], "although this often appears to be based on expectations of what would happen or on the experience of others rather on individuals' own experience." Lack of patient trust in staff to maintain HIV test confidentiality has also been found in a qualitative study in three clinics with relatively well-established VCT programs in Cape Town, South Africa [33]. Lack of trust and lack of confidentiality in VCT/HCT facilities have also been recorded in a recent attitude survey among clients/patients at three facilities in Pretoria, South Africa to determine whether access to counseling could play a role in improving uptake of VCT [34]. The survey found that lay counsellors felt that they were not adequately trained to do HIV counseling, that they were seeing more clients per day, that time constraints did not allow them to spend enough time with patients during counseling, and that they did not have opportunity to attend debriefing sessions or refresher courses.

Lack of appropriately trained healthcare personnel to service primary healthcare clinics in South Africa [35,36] and in countries with a high burden of TB [37] have also been widely recorded. As Daviaud and Chopra [[35], p. 46] noted in a 2008 study of 340 clinics in six of the poorest districts across four of the nine provinces: "The number of doctors was only 7% of that required, and while the total number of professional nurses was 94% of requirement, there was considerable variation across facilities and districts. The adequacy of provision of enrolled nurses and nursing assistants was worse, at 60% and 17%, respectively."

The theme, poor infrastructure to encourage, monitor, and deliver HCT, recurred in both the focus group discussions with community health workers and the interviews with program managers. Already in 2005, Colvin [[38], p336] assessed the impact of AIDS in terms of a healthcare burden in South Africa negatively, stating that it is unlikely that the public health sector will be able to sustain the increasing costs of treating HIV-positive patients, which means that some form of rationing is inevitable.

Despite studies showing that integration of TB and HIV/AIDS programs may have many benefits for the programs, services, and patients, there are several constraints that undermine the integration process [16]. Lack of integration between the TB and HIV/AIDS programs in sub-Saharan Africa [39] and South Africa [40]

continues and TB and HIV/AIDS services essentially remain separate vertical programs.

In addition, community health workers and program managers identified several multilevel facilitators to TB patients' acceptance of HCT services. At the patient level, both groups emphasized taking a patient-centered approach to motivate and encourage acceptance of HCT services. Recommendations were made to healthcare providers to use a "provider-encouragement" approach, whereby health professionals provide continued motivation and support to TB patients to accept HCT services at subsequent visits if they initially declined. At the delivery level, community health workers and program managers suggested providing additional staff resources and personnel (*e.g.*, doctors and nurses conversant in local languages, lay counselors to conduct community outreach) as ways to increase HCT acceptance rates.

Summarily, the main factors thought to hinder TB patients from going for HCT were fear of stigmatization, lack of infrastructure, and the unavailability and high workload of healthcare workers. Most of the patient-related factors that the managers perceived to contribute to low uptake of HCT among TB patients-fear, denial, lack of trust and confidentiality, inadequate knowledge-seem closely connected with fear of stigmatization. The managers' responses that link with these factors made it clear that stigmatization is felt on a number of levels: individual, family, community, programmatic, and societal.

Interestingly, there is a large degree of similarity between the barrier and facilitator factors identified by community health workers and program managers in the current study and factors identified in our previous studies among TB patients (being treated in the same setting) [3] and primary healthcare nurses (practicing in the same setting) [14]. The most important barrier factors mentioned by TB patients also included fear. The patients said they were afraid of the HIV test itself (*i.e.*, getting blood taken), HIV-related stigma, and consequences of testing HIV-positive: "afraid of people gossiping" and "fear of [side effects] of HIV treatment [11]." When TB patients were asked to suggest what healthcare workers could do to facilitate HCT by TB patients, the most frequent suggestions were to provide them with information about the link between TB and HIV and to motivate and support them emotionally.

In our previous work, primary healthcare nurses most frequently referred to patient-related issues as the main reasons for refusal of HCT by TB patients [14]. Amongst these reasons, the stigma surrounding HIV, patients not wanting to be counseled by lay counselors, denying/fearing that they may have HIV, and preferring to first cope with TB and then deal with HIV featured most prominently. Numerous facility-related barriers were also perceived by the nurses, all relating in some way to lack of sufficient human resources or infrastructural capacity at primary healthcare facilities to provide easily accessible, confidential HCT services. However, despite the existence of a variety of factors discouraging TB patients from going for HCT, there were also numerous positive factors that enabled patients to opt for this service. The main factors viewed by the interviewed nurses to encourage TB patients to take up HCT related to the facilities, staff, and availability of treatment and support. The provision of health education to patients was most often mentioned as a facilitating factor. The second most cited factor was the availability of antiretroviral therapy. However, as shown by Jacobs *et al.*, the scale-up of antiretroviral therapy services in South Africa is subject to substantial rationing. These authors observed that the consequences of rationing manifested itself in the high number of patients lost to the system [39].

The present study has several limitations that should be noted. First, results were based solely on respondents' subjective perceptions of barriers and facilitators. One way of counteracting this phenomenon is to involve more than one type of respondent and compare responses across groups, an approach that was applied to data analysis in the present study. A second limitation of this study is that, although the two districts representing the study areas were randomly selected, the inclusion of only four subdistricts limits the generalization of results to the Free State Province. However, the urban-rural mix of selected subdistricts increases the potential generalizability of these findings across both rural and urban settings. Finally, given the exploratory, qualitative nature of the study, causal inferences cannot be inferred. Future empirical research is thus needed to assess the relationship between patient- and delivery-level factors on HCT acceptance rates and to develop multilevel strategies to improve the acceptance of HCT services in care settings.

Conclusions

Findings from the present study provide important implications for improving patient acceptance of HCT services. Our study also expands on current literature by assessing community health workers and program managers' perspectives on patient- and delivery-level factors that facilitate or impede the acceptance of HCT services among TB patients in Free State Province, South Africa. Suggestions for improving HCT acceptance rates include addressing several patient- and delivery-level factors, such as HIV-related stigma and strengthening of human resources aspects of the healthcare system. Findings from this study have implications for future research needed to identify optimal modes of delivery of

health programs and services, with implications not only for patient acceptance and participation rates but also for the adoption, implementation, and ustainability of such programs by healthcare teams, including community health workers and program managers.

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Authors' contributions
JCH conceived the idea for this work, obtained funding to support it, and wrote the initial and final draft. EW, MCE, NGK, AS, and CR contributed to reframing and reanalysis to produce an improved version. WEN contributed more pertinent implementation science foci. JCH, EW, and WEN formulated the final draft that was contributed to and approved by all authors.

Competing interests
The authors declare that they have no competing interests.
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Appendix 2. List of PHC facilities and number of patients recruited at each facility

		All types of TB (2007)						
		Quarter (Q)				Total (2007)/ clinic	Average (2007)	Number recruited per clinic
		Q 1	Q 2	Q 3	Q 4			
	Lejweleputswa District							
	Masilonyana Sub-District							
1.	Ikgomotseng Clinic	17	7	18	25	67	17	4
2.	Kamohelo Clinic	39	28	20	0	87	22	5
3.	Lusaka Clinic	28	24	35	59	146	37	9
4.	Maranantha Clinic	14	8	19	27	68	17	4
5.	Masilo Clinic	35	23	27	50	135	34	8
6.	Vaalrock Clinic	17	10	8	18	53	13	3
7.	Winburg Clinic	19	16	18	22	75	19	5
	Sub-total	**169**	**116**	**145**	**201**	**631**	**158**	**38**
	Matjhabeng Sub-District							
8.	Am Kruger Clinic	15	13	13	26	67	17	4
9.	Boithusong Clinic	44	22	55	77	198	50	12
10.	Bophelong Clinic (Allanridge)	15	29	28	57	129	32	8
11.	Bophelong Clinic (Odendaalsrus)	34	20	29	49	132	33	8
12.	Bophelong Clinic (Welkom)	52	41	66	107	266	67	16
13.	Bronville Clinic	84	37	40	77	238	60	14
14.	Hanipark Clinic	1	2	50	52	105	26	6
15.	Kgotsong Clinic (Welkom	86	63	78	141	368	92	22

		All types of TB (2007)						
		Quarter (Q)				Total (2007)/ clinic	Average (2007)	Number recruited per clinic
		Q 1	Q2	Q3	Q4			
	Lejweleputswa District							
	Matjhabeng Sub-District							
16.	Khotalong Clinic	39	40	54	94	227	57	14
17.	Leratong Clinic	34	13	31	44	122	31	7
18.	Matjhabeng Clinic	78	54	54	108	294	74	18
19.	Meloding Clinic	33	27	17	44	121	30	7
20.	Mmamahabane Clinic	7	11	14	25	57	14	3
21.	OR Tambo Clinic	45	40	44	84	213	53	13
22.	Phedisanang Clinic	47	25	39	64	175	44	11
23.	Phomolong Clinic (Hennenman)	67	55	77	132	331	83	20
24.	Rearabetsoe Clinic (Virginia)	20	13	8	21	62	16	4
25.	Rheederspark Clinic	19	18	22	40	99	25	6
26.	Thabong Clinic Welkom	106	66	83	149	404	101	24
27.	Tshepong Clinic (Welkom)	70	59	67	126	322	81	20
28.	Ventersburg CHC	16	11	14	25	66	17	4
29.	Virginia Clinic	11	11	15	26	63	16	4
30.	Welkom Clinic	53	52	52	104	261	65	16
	Sub-total	976	722	950	1672	4320	**1080**	**262**
	Total						**1238**	**300**

		All types of TB (2007)						
		Quarter (Q)				**Total (2007)/ clinic**	**Average (2007)**	**Number recruited per clinic**
		Q 1	**Q2**	**Q3**	**Q4**			
	Thabo Mofutsanyana District							
	Maluti-a-Phofung Sub-District							
31.	Bluegum Bosch Clinic	47	39	48	87	221	55	17
32.	Boiketlo Clinic	50	35	58	93	236	59	18
33.	Bolata Clinic	18	24	20	44	106	27	8
34.	Harrismith Clinic	20	9	23	32	84	21	6
35.	Kopanong Clinic	10	8	10	18	46	12	3
36.	Lesedi Clinic	40	33	54	87	214	54	16
37.	Ma-Haig Clinic	16	25	61	86	188	47	14
38.	Makeneng Clinic	15	13	25	38	91	23	7
39.	Makhalaneng Clinic	22	10	21	31	84	21	6
40.	Makwane Clinic	56	40	58	98	252	63	19
41.	Malesoana Clinic	14	9	13	22	58	15	4
42.	Marakong Clinic	26	21	29	50	126	32	9
43.	Monontsha Clinic	29	11	42	53	135	34	10
44.	Mphatlalatsane Clinic	21	13	23	36	93	23	7
45.	Namahali Clinic	38	38	52	90	218	55	16
46.	Nthabiseng Clinic	17	20	24	44	105	26	8
47.	Paballong Clinic	13	7	21	28	69	17	5

		All types of TB (2007)						
		Quarter (Q)				Total (2007)/ clinic	Average/ (2007)	Number recruited per clinic
		Q1	Q2	Q3	Q4			
	Thabo-Mofutsanyana District							
	Maluti-a-Phofung Sub-district							
48.	Phuthaditjhaba Clinic	53	38	68	106	265	66	20
49.	Qholaqhwe Clinic	26	24	38	62	150	38	11
50.	Riverside Clinic	47	33	45	78	203	51	15
51.	Sekamothomota Clinic	16	8	11	19	54	14	4
52.	Tebang Clinic	25	39	53	92	209	52	16
53.	Thaba-Bosiu Clinic	12	12	12	24	60	15	5
54.	Tseki Clinic	29	14	25	39	107	27	8
55.	Tshirela Clinic	17	16	11	27	71	18	5
56.	Tshiame B Clinic	25	15	23	38	101	25	8
	Sub-total	702	554	868	1422	3546	887	267
	Nketoana Sub-district							
57.	Leseding Clinic	5	11	6	17	39	10	3
58.	Lindley Clinic	8	8	11	19	46	12	3
59.	Petsana Clinic	36	40	35	75	186	47	14
60.	Rearabetswe Clinic (Petrussteyn)	25	28	24	52	129	32	10
61.	Reitz Clinic	11	4	13	17	45	11	3
	Sub-total	85	91	89	180	445	111	33
	Total						998	**300**
	Grand Total							**600**

Appendix 3. Patient consent letter and interview schedule

Counselling and testing for HIV among TB patients in the Free State:
Pre-intervention survey

Interview schedule for TB patients

Interview completed Y N P

1. INTERVIEW PARTICULARS

1.1 Questionnaire number: _____

1.2 Name of interviewer: _____

1.3 Date of interview:

DD	MM	YYYY

/ / 2008

1.4 District:

Lejweleputswa	Thabo Mofutsanyana
1	2

1.5 Sub district:

Maluti-a-Phofung	Nketoana	Matjhabeng	Masilonyana
1	2	3	4

1.6 Name of facility _____

1.7 Type of facility:

Regional hospital	District hospital	Fixed clinic
1	2	3

1.8 Town/city where facility is located: _____

2. ADMINISTRATIVE INFORMATION

2.1 Editing: _____

2.2 Coding: _____

2.3 Capturing: _____

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Counselling and testing for HIV among TB patients in the Free State
Consent Form: TB patient

Dear Sir/Madam,

You are kindly invited to voluntarily participate in this survey. The survey entails the following:

- The Centre of Health Systems Research & Development (University of the Free State) - in collaboration with the Free State Department of Health - is conducting research to determine the explanations for low uptake and the suggestions on how to increase the uptake of counselling and testing for HIV among TB patients especially because TB and HIV/AIDS are greatly associated.
- The information obtained from the study will enable the researchers to inform policy and the design of a multi-faceted intervention programme to increase the uptake of counselling and testing among TB patients.
- Your permission is requested for access to your TB file for purposes of clinical data collection.
- You will be asked questions by a trained interviewer. The interview will take approximately 30 minutes.
- Your name and answers will remain strictly confidential; persons or parties not involved in this study will not have access to the information. The questionnaires will be kept in a safe place.
- You may refuse to answer any specific question if you feel the information is too sensitive. You are also free to stop the interview at any time.
- Your participation in this study is voluntary, and will be greatly appreciated. Should you agree to participate, you are kindly requested to sign this form.

I, _____ [*full name of patient in block letters*]

- have understood the above information
- was given the opportunity to discuss this information and ask questions
- volunteer to take part in this study
- confirm that I have received a copy of this consent form.

_____ _____
Patient signature **Date**

For additional information about the study feel free to contact **Dr. JC Heunis** at (051) 401 2993 or **The Director** of the Centre for Health Systems Research & Development – contact details above.

3. BIOGRAPHIC INFORMATION

3.1 Le bitso la mokudi:

Name of patient:

_____ <<<<<<<<<<

3.2 Nomoro ya faele ya mokudi

Patient's registration/file number

_____ [ ]

3.3 *Mobotsa di potso: bolela na moaraba dipotso ke botona kapa motshehadi*

Interviewer: note the sex of the respondent.

[ ]

Motona	Male	1
Motshehadi	Female	2

3.4 Ke o fe morafe o tswang ho ona?

Which population group do you consider yourself part of?

[ ]

Motho e motsho	Black (African)	1
Le khalate	Coloured	2
Le India	Indian/Asian	3
Lekgowa	White	4

3.5 Olemo di kae? (Mobotsa di putso: *mokudi a ka ho fa letsatsi la hlaho*)

How old are you? (interviewer: *the patient may give you the date of birth*)

_____ [ ]

3.6 Boemo ba lenyalo?

What is your current marital status?

[ ]

O nyetswe (dula le molekane)	Married (living together with spouse)	1
O nyetswe (ha o duli le molekane)	Married (spouse living elsewhere)	2
Ha wa nyala (dula le molekane)	Unmarried (living together with partner)	3
Ha o na molekane	Single	4
Engwe (hlalosa) _____	Other (specify) _____	

3.7 O qetetse hokae dithutong tsa hao?

What is the highest formal education you have completed?

[ ][ ]

Ha kea kena sekolo	No formal education	1
Grade 1/sub A	Grade 1/sub A	2
Grade 2/sub B	Grade 2/sub B	3
Grade 3/standard 1	Grade 3/standard 1	4
Grade 4/standard 2/ABET L1	Grade 4/standard 2/ABET L1	5
Grade 5/standard 3	Grade 5/standard 3	6
Grade 6/standard 4/ABET L2	Grade 6/standard 4/ABET L2	7
Grade 7/standard 5	Grade 7/standard 5	8
Grade 8/standard 6/ABET L3	Grade 8/standard 6/ABET L3	9
Grade 9/standard 7	Grade 9/standard 7	10
Grade 10/standard 8/ ABET L4	Grade 10/standard 8/ ABET L4	11
Grade 11/standard 9	Grade 11/standard 9	12
Grade 12/standard 10/ABET L5	Grade 12/standard 10/ABET L5	13
Diploma	Diploma	14
Degree	Degree	15
Engwe (hlalosa) _____	Other (specify) _____	

4. SOCIO-ECONOMIC INDICATORS

4.1 Ke mofuta ofe wa ntlo oo o dulang ho ona

What type of dwelling do you currently live in?

Ntlo ya setene e jareteng e lengwe	House or brick structure on a separate stand or yard	1
Thaon haose	Town/cluster/semi-detached house (e.g. simplex)	2
Fleteng	Flat or apartment in a block of flats	3
Ntlo ya batho ba tsofetseng	Unit in a retirement village	4
Hostele ya basebetsi	Workers' hostel	5
Di rumung/flateng tse ka mo morao ha ntlo	House/flat/room in backyard	6
Ntlo ya mobu kapa ya jwang	Traditional dwelling/hut/structure made of traditional materials e.g. mud, grass etc	7
Sebakeng sa mikhukhung	Informal dwelling/shack in informal/squatter settlement	8
Mokhukhung ka mo morao ha ntlo	Informal dwelling/shack in backyard	9
Kharavene kapa tente	Caravan or tent	10
Mokhukhung ka mo lekeisheneng	Informal dwelling/shack in township/suburb	11
Engwe (hlalosa)_____	Other (specify)_____	

4.2 Na ntlo ya hao ena le tse latelang? Eya (E), Tjhe(T)

Does your house have the following? **Yes (Y), No (N)**

		E/Y	T/N
4.2.1 Metsi a pompo	Tap water	1	2
4.2.2 Motlakase	Electricity	1	2
4.2.3 Television	A television	1	2
4.2.4 Mohala wa katlung	A telephone	1	2

4.3 Na o nale mokgolo o fumanang nako yohle?

Do you have a regular source of income?

Eya	Yes	1	→ Go to question 4.3.1
Tjhe	No	2	→ Go to question 4.4

4.3.1 Ke mokgwa ofe o moholo oo o fumanang lekeno la tjhelete ka ona?

What is the main source of your personal income?

Tjhelete ya mmuso – nyehelo	Grant	1
Mokgolo (tjhelete ya ba sebetsi)	Salary (monthly payment for formal employment)	2
Moputso (ho patalwa ka di ora, beke)	Wages (paid hourly, daily, for informal employment)	3
Tjhelete ya baithaopi (moropotso)	Stipend	4
Tjhelete eo o e fumanang ka kgwedi hotswa bathong boo o amonang lebona	Remittance	5
Ke ya e itshebetsa	Self-employment	6
Tjhelete ya ba sa sebetseng	Unemployment fund	7
Engwe (hlalosa)_____	Other (specify)_____	

4.4 Ana oa sebetsa?

Are you currently employed?

Tjhee, hake sebetse	No, unemployed	1	→ Go to question 4.6
Eya, ka botlalo	Yes, full time	2	→ Go to question 4.5
Eya, ka nakwana	Yes, part time	3	→ Go to question 4.5
Eya, ke a itshebetsa	Yes, self-employed	4	→ Go to question 4.5
Engwe (hlalosa)_____	Other (specify)_____		→ Go to question 4.5

4.5 Na mosebetsi wa hao ke eng ha jwale? (hlalosa)

What is your current occupation? (specify)

_____

4.6 Bonyane o fumana bokae ka kgwedi ka mora tse hulwang?

On average how much money do you earn per month after deductions?

R0	R0	1
R1-R1 000	R1-R 1 000	2
R1 001-R2 000	R 1 001-R 2 000	3
R2 001-R3 000	R2 001-R3 000	4
R3 001-R4 000	R3 001-R4 000	5
R4 001-R5 000	R4 001-R5 000	6
R5 001 ho feta moo	R5 001 and more	7

5. KNOWLEDGE ABOUT TB, AND HIV AND AIDS

Ke tla o botsa dipotso ka TB, HIV le AIDS.

I will now ask you questions about TB, and HIV and AIDS.

5.1 Na ho na le kamano pakeng tsa TB le HIV?

Is there a relationship between TB and HIV?

Eya	Yes	1
Tjhe	No	2

5.2 Ka mora hore o tseba hore o na le TB, na ho na le motho mona a kileng a o jwetsa ka kamano ya TB le AIDS?

After you learnt that you had TB (current episode), did anyone at this facility give you information about the relationship between TB and HIV?

Eya	Yes	1
Tjhe	No	2

5.3 Ho ya ka tsebo ya hao ka TB le HIV, le AIDS, bolela hore na dipolelo tse latelang dinepahetsi. (*Mobutsa di potso: Bontsha karabo e nepahetseng hotswa hotse latelang. Eya(E), ha ke na bonnete(H) le Tjhe(T)*)

Based on what you know about TB and HIV and AIDS, state whether the following statements are correct. (*interviewer: Indicate the appropriate response from the following:* ***Yes (Y), Unsure (U)*** *and* ***No (N)***

Taba e bolelwang	Statement	E/Y	H/U	T/N	
5.3.1 Ho hohlola le ho thimula ho hasanya (tshwaetsa) HIV	Coughing and sneezing spread HIV	1	2	3	
5.3.2 Ho hohlola le ho thimula ho hasanya (tshwaetsa) TB	Coughing and sneezing spread TB	1	2	3	
5.3.3 Motho o kgona ho tshwaetswa ka HIV ha a abelana kgalase ya metsi le motho ya HIV	A person can be infected with HIV by sharing a glass of water with a person who is HIV-positive	1	2	3	
5.3.4 O ka tshwaetseha ka TB ha o dula kapa o sebetsa le motho o nalengTB a sa fumaneng meriana	You can be infected with TB if you live or work with someone who has TB and is not on treatment	1	2	3	
5.3.5 Ho hlatswa dikarolo tsa botona kapa botshehadi ka mora thobalano ho tshireletsa motho ho fumaneng HIV	Showering or washing genitals/private parts after sexual intercourse prevents a person from getting HIV	1	2	3	
5.3.6 Thobalano esa bolokehang le batho ba fetang palo ya motho a le mong e thibela tshwaetso ya HIV	Unprotected sex with more than one partner can decrease a person's chances of being infected with HIV	1	2	3	
5.3.7 Ha o na le HIV ho bonolo ho fumana TB	If you have HIV it is easy to get TB	1	2	3	
5.3.8 Motho ya HIV o dula a na le matshwao	A person with HIV always shows symptoms	1	2	3	
5.3.9 Motho ya na le TB o dula a na le matshwao	A person with TB infection always shows symptoms	1	2	3	

6. HIV RISK AWARENESS, PERSONAL RISK PERCEPTION, SEXUAL AND RISK REDUCTION PRACTICES

6.1 AIDS ke bothata sebakeng se o dulang ho sona. O dumellana le polelo ena?

AIDS is a problem in your community. Do you agree with this statement?

Eya	Yes	1
Tjhe	No	2
Ha ke na bonnete	Uncertain	3

6.2 Na o tseba motho ya atametseng ho wena ya kulang ke HIV le AIDS?

Do you know someone close to you who has been ill with HIV and AIDS?

Eya	Yes	1	
Tjhe	No	2	

6.3 Na o kile wa etsa thobalano?

Have you ever had sexual intercourse?

Eya	Yes	1	→ Go to question 6.4
Tjhe	No	2	→ Go to question 6.7

6.4 Na o kile wa etsa thobalano di kgweding tse pedi tse fetileng?

Have you been sexually active in the past two months?

Eya	Yes	1	→ Go to question 6.5
Tjhe	No	2	→ Go to question 6.6

6.5 O bile le batho ba bakae bao o entseng thobalano lebona kweding tse pedi tse fetileng?

How many sexual partners have you had in the past two months?

A le mong	One	1
Ba fetang a le mong	More than one	2

6.6 Ha o qetela ho etsa thobalano, na kgohlopo e sebedisitswe?

The last time you had sexual intercourse was a condom used?

Eya	Yes	1
Tjhe	No	2
Ha ke hopole	Cannot remember	3

6.7 Batho babang bana le ho tshwenyeha ha holo ka ho fumana HIV, ha babang basa tshwenyehe. Na wena o tshwenyehile ha kakang hore wena...

Some people worry a great deal about getting HIV, while others are not worried at all. How worried are you that you...

		Ha kea tshwenyeha	Tshwenyehile ha nyane	Ke tshweny ehile	Tshwenyehile ha holo
		Not at all	A little bit worried	Quite a bit worried	Very worried
6.7.1 **o tla fumana HIV**	will get HIV	1	2	3	4
6.7.2 **o so nale HIV**	already have HIV	1	2	3	4
6.7.3 **o tla tshwaetsa babang ha ose o na le HIV**	will infect others if you already have HIV	1	2	3	4

7. BELIEFS ABOUT HIV AND AIDS, AND ATTITUDES TOWARDS TESTING FOR HIV

Diputso tse latelang di mabapile tumelo ka HIV le AIDS, le maikutlo a di teko tsa HIV. O dumela ha kae kapa ha o dumele ka tse latelang. Dumela ha holo (SA), Dumela (A), Ha kena bonnete (U), Ha ke dumelane (D), kapa ha ke dumelane ho hang (SD)

The following questions concern beliefs about HIV and AIDS and feelings about testing for HIV. How much do you agree or disagree with the following statements? **Strongly agree (SA), agree (A), unsure (U), disagree (D) or strongly disagree (SD)**.

Taba e bolelwang	Statement	SA	A	U	D	SD	
7.1 Ha hona se motho a ka se etsa ho thibela HIV	There is little a person can do to prevent getting HIV	1	2	3	4	5	
7.2 Ke batho ba nahanang ba nang le HIV, ba tlameile ho etsa di teko HIV	Only people who suspect that they are infected with HIV should be tested	1	2	3	4	5	
7.3 Ho tsa bophelo, ha hona se motho a ka se etsa ha a se ana le HIV	Health-wise, there is not much one can do once he/she has HIV	1	2	3	4	5	
7.4 HIV le AIDS ke tsela e Modimo a re oltang ka baka la dibe tsa rona	HIV and AIDS is God's way of punishing people for their immoral (sinful) behaviour	1	2	3	4	5	
7.5 Ho etsa teko ya HIV ho thusa batho ba e kutlwe ba phetse hantle	Getting tested for HIV helps people feel better	1	2	3	4	5	
7.6 Ho etsa diteko tsa HIV ho thusa batho hore baseke ba fumana HIV	Getting tested for HIV helps people not to get HIV	1	2	3	4	5	
7.7 Batho bophelong baka, ba ka ntlohela ha ebe ke na le HIV	People in my life would leave me if I had HIV	1	2	3	4	5	
7.8 Batho ba HIV tlameile ba pate maemo a bona	People who test HIV-positive should hide their status from their sexual partners	1	2	3	4	5	
7.9 Ke ka thabela ho sa tsebe ha ebe ke na le HIV	I would rather not know if I have HIV	1	2	3	4	5	
7.10 Ha ke na nako ya ho etsa teko ya HIV	I do not really have time to go for an HIV test	1	2	3	4	5	

8. INCREASING UPTAKE OF COUNSELLING AND TESTING FOR HIV

Ho a etsahala hore ka nako engwe batho ba hane ho fuwa puisano ya maikutlo le ho etsa di teko tsa HIV.

It sometimes happens that people with TB decline to be counselled and tested for HIV

8.1 Ke eng e ka etswang ke basebeletsi ba bophelo (di ngaka, baoki le ma lay khanselara) ho kgothaletsa bakudi ba TB hore ba etse diteko tsa HIV.

What can be done by **health care workers** (e.g. doctors, nurses, DOT supporters and lay counsellors) in order to encourage more TB patients to test for HIV?

_____

_____

8.2 Ke eng e ka etswang ke batho ba bang (lelapha, metswalle, sechaba) ho kgothaletsa bakudi ba TB hore ba etse diteko tsa HIV.

What can be done by **other people** (e.g. family, friends, community) in order to encourage more TB patients to test for HIV?

_____

_____

8.3 O ka fana ka ntho tse ka etswang ho phahamisa boemo ba puisano tsa maikutlo, mekgwa e ho e tsoang diteko le ditshebeletso.

Can you suggest any improvement(s) to be made to HIV counselling and testing procedures and services?

_____

_____

9. HIV COUNSELLING AND TESTING HISTORY

Ke tlo o botsa dipotso mabapi le dipuisano tsa maikutlo le ho etsa teko ya madi bakeng sa HIV.

I will now ask you questions about counselling and testing for HIV

9.1 O tsebile hore o nale TB, na honale motho a kileng a o eletsa ho ya ditekong tsa HIV?

Since learning that you have TB, has anyone recommended you to undergo HIV testing?

Eya	Yes	1	→ Go to question 9.2
Tjhe	No	2	→ Go to question 9.3

9.2 Ke mang a ileng a o eletsa ho ya ditekong tsa HIV? [se nehele ka mabitso, empa maemo a mosebetsi a motho kapa batho bao]

Who recommended you to undergo HIV testing? [*No names, just the position/relation of the person(s)*]

_____

9.3 O kile wa fumana dipusano tsa maikutlo mabapi le HIV?

Have you ever received counselling on HIV and AIDS?

Eya	Yes	1
Tjhe	No	2

9.4 Na o kile waya ditekong tsa HIV?

Have you ever taken a test for HIV?

Eya	Yes	1	→ Go to question 9.5
Tjhe	No	2	→ Go to question 9.9

9.5 Ke neng ha o tla qetela ho tla ditekong tsa HIV?

When did you undergo your most recent test for HIV?

Pele ho sephetho sa jwale sa TB	Only **before** recent TB diagnosis	1
Kamora sephetho sa jwale sa TB	Only **after** recent TB diagnosis	2
Pele le ka mora sephetho sa jwale sa TB	**Both** before and after the most recent TB diagnosis	3

9.6 Ha ebe o ile ditekong tsa madi tsa HIV pele o tseba boemo ba hao ba TB, kakopo hlalosa ke mang a o kgothaleditseng ho nka madi bakeng sa HIV nakong eo? (Mobotsa dipotso: Botsa potso ena fela ha karabo ya potso 9.5 ele 1 kapa 3)

If you tested for HIV **before** recent TB diagnosis please explain what encouraged you to undergo HIV testing. (*Interviewer: this question is asked only if the response to question 9.5 is either 1 or 3).*

_____

_____

9.7 Haeba o ile ditekong tsa HIV kamora hore o tsebe boemo ba hao ba TB,teko ya HIV e entswe neng kamora hore o tsebe boemo ba hao ba TB? (*Mobotsa dipotso: Botsa potso ena fela ha karabo ya potso 9.5 ele 2 kapa 3*)

If you tested **after** recent TB diagnosis how long after diagnosis was the HIV test done? *Interviewer: this question is asked only if the response to question 9.5 is either 2 or 3*

Pakeng tsa kgwedi kamora hore o tsebe boemo ba hao ba TB	0-1 month after TB diagnosis	1
Ho tloha ho kgwedi e lengwe ho eya ho tse pedi kamora hore o tsebe boemo ba hao ba TB	1-2 months after diagnosis	2
Kamora ho feta kgwedi tse pedi o tseba boemo ba hao ba TB	More than two months after TB diagnosis	3

9.8 Ke kae moo o neng o nka diteko tsa madi bakeng sa HIV kgetlo la ho qetela? Where did you go for your most recent HIV test? _____ _____	
9.9 Kakopo hlalosa hobaneng o soka o ya ditekong tsa HIV. Please explain why you have never been tested for HIV. _____ _____	
Mobotsa dpotso: emisa ka dipotso ha mokudi a arabile potso 9.9 Interviewer: end the interview if the patient responds to question 9.9	

10. QUALITY OF HEALTH

Dipotso tse latelang di mabapi le boemo ba hao ba HIV kgetlong la ho qetela ha o tla ya ditekong tsa HIV. Kakopo bolela dipolelong tsena tse hlalosang boemo ba hao ba bophelo kgetlong la ho qetela ha o tlaya ditekong tsa HIV.

The following questions refer to your state of health the last time you underwent testing for HIV. Please indicate the statements that best describe your own state of health the last time you went for HIV testing.

10.1 Ho tsamaya	Mobility		
Ke ne ke sena bothata ka ho tsamaya	I had no problems walking about	1	
Ke ne kena le bothatanyana ka ho tsamaya	I had some problems walking about	2	
Ke ne kele mokodi ya robetseng betheng	I was confined to bed	3	
10.2 Ho i thlokomela	Self-care		
Ke ne ke sena bothata ka ho ithlatswa kapa ho ikapesa	I had no problems washing or dressing myself	1	
Ke ne kena le bothatanyana ka ho ithlatswa kapa ho ikapesa	I had some problems washing or dressing myself	2	
Ke ne sa kgona ho ithlatswa kapa ho ikapesa	I was unable to wash or dress myself	3	
10.3 Dintho tseo o tlwaetseng ho dietsa	Usual activities		
Ke ne ke sena bothata ba ho etsa dintho tseo ke tlwaetseng ho dietsa (jwaloka; mosebetsi, dithuto, mosebetsi wa ntlo, lelapa kapa nako ya ho ithabisa)	I had no problems performing my usual activities (e.g. work, study, housework, family or leisure activities)	1	
Ke ne ke ena le mathatanyana ka ho etsa dintho tseo ke tlwaetseng ho dietsa	I had some problems with performing my usual activities	2	
Ke ne ke sa kgone ho etsa dintho tseo ke tlwaetseng ho dietsa	I was unable to perform my usual activities	3	
10.4 Mahlaba	Pain/discomfort		
Ke ne ke sena mahlaba	I had no pain or discomfort	1	
Ke ne ke ena le mahlabanyana	I had moderate pain or discomfort	2	
Ke ne ke le mahlabeng haholo	I had extreme pain or discomfort	3	
10. 5 Kgatello ya maikutlo	Anxiety/depression		
Ke ne ke sena kgatello ya maikutlo	I was not anxious or depressed	1	
Ke ne ke hateile maikutlo hantle feela	I was moderately anxious or depressed	2	
Ke ne ke hateile maikutlo haholo feela	I was extremely anxious or depressed	3	

10.6 Ho thusa batho hore ba bue ka maemo a bona a bophelo hore na a matle kapa a mabe, re takile sekala (se kareng themometha) moo e leng hore boemo ba hao bo botle bo ho 100 e be bo bobe bo ho 0. Re ka rata ha oka bontsha sekaleng, ho ya ka wena, maemo a hao a bophelo a ne a le matle kapa a le mabe ha kakang kgetlo la ho qetela ha o tla ya ditekong tsa HIV. Kekopa o bontshe ka ho seya mola o tlohang lebokosong le letsho hofihlela moo sekala se bontshang bobe kapa botle ba maemo a bophelo ba hao moo a neng a le teng kgetlo la ho qetela ha o tla ya ditekong tsa HIV.

To help people say how good or bad their state of health was, we have drawn a scale (rather like a thermometer) on which the best state you can imagine is marked 100 and the worst state you can imagine is marked 0. We would like you to indicate on this scale, in your opinion, how good or bad your own health was the last time you tested for HIV. Please do this by **drawing a line from the black box** to whichever point on the scale that indicates how good or bad your state of health was the last time you tested for HIV.

Maemo a matle
a bophelo

Best imaginable state of health

100
90
80
70
60
50
40
30
20
10
0

Maemo a hao a bophelo kgetlong la ho qetela ha o tlaya ditekong tsa HIV

Your own state of health the last time you tested for HIV

Maemo a mabe a bophelo

Worst imaginable state of health

11. PRE-TEST COUNSELLING

Dipotso tse lateng tsena di mabapi le dipuisano tsa maikutlo pele o ya ditekong tsa madi tsa HIV (dipuisano tsa pele o nkuwa madi) kgetlo la ho qetela ha o etsa teko ya HIV.

The following questions refer to pre-test counselling (the discussion before blood-taking) the last time you tested for HIV.

11.1 Na o fumane puisano ya maikutlo pele ho teko ya madi?

Did you receive pre-test counselling?

Eya	Yes	1	→ Go to question 11.2
Tjhe	No	2	→ Go to question 12

11.2 Ke mang a neng a fana ka puisano ya maikutlo pele ho teko ya madi? [Mobotsa dipotso: seke wa bala dikarabo, etsa sekele karabong e nepahetseng]

Who conducted your pre-test counselling? (Interviewer: do not read out options, circle the appropriate response.)

Lay khanselara	Lay counsellor	1
Mooki	Nurse	2
Mothusi wa mooki	Assistant nurse	3
Ngaka	Doctor	4
Mosebeletsi wa setjhaba	Social worker	5
Engwe (hlalosa)_____	Other (specify)_____	

11.3 Puisano ene e tshwaretswe kae? (Mobotsa dipotso: seke wa bala dikarabo, etsa sekele karabong e nepahetseng)

Where was the session conducted? (*Interviewer: do not read out options, circle the appropriate response*)

Kamore ya lekunutu	Private room	1
Kamore ya dipuisano tsa maikutlo	Counselling room	2
Kamore ya ditherisano	Consultation room	3
Betheng ya sepetlele	Hospital bedside	4
Tleleniki ya koloi	Mobile van	5
Puisano ya maikutlo ya batho ba bangata	Group counselling session	6
Engwe (hlalosa)_____	Other (specify) _____	

11.4 Haebe hoteng, ke eng seo o saseratang ka sebaka seo o fumaneng puisano ya maikutlo pele ho teko ya madi?

What, if anything, did you not like about the place where you had pre-test counselling?

_____

_____

11.5 Kakopo bontsha dikarabo tse nepahetseng dipotsong tsena tse latelang ka ho araba Eya (E) kapa Tjhe (T). Na motho a neng a ofa puisano ya maikutlo pele ho teko ya madi ya ho qetela o.....

Please indicate the appropriate response for the following questions, **Yes (Y) or No (N).**
Did the person who conducted your most recent pre-test counselling…

		E/Y	T/N
11.5.1 o botsitse dipotso tse mabapi le motho kapa batho bao o etsang thobalano le bona?	ask questions about your sexual partner(s)?	1	2
11.5.2 o neile lesedi\tsebo mabapi le fetisetso ya HIV (hore motho a ka tshwaetsa e mong jwang)?	give you information about HIV transmission (i.e. how one person may infect another)?	1	2
11.5.3 o hlaloseditse ka melemo ya ho nka teko ya HIV?	explain the benefits of taking an HIV test?	1	2
11.5.4 o hlaloseditse hore na polelo ya "phosetifi" le "neketifi" diphomong tsa teko ya madi ya HIV dibolela eng?	explain the meaning of a "positive" and a "negative" HIV test result?	1	2
11.5.5 o hlaloseditse hore na teko ya HIV e etsuwa jwang?	explain how the HIV test is done?	1	2
11.5.6 o hlaloseditse polelo ya "window period"?	explain the meaning of the "*window period*"?	1	2
11.5.7 o hlaloseditse ka kamano pakeng tsa TB le HIV (tshwaetsano)?	explain the interaction between TB and HIV (co-infection)?	1	2

11.6 O ne o kgotsofetse ho le hokae ka puisano ya ho qetela ya maikutlo pele ho teko ya madi?

How satisfied were you with your most recent pre-test counselling session?

Kgotsofetse haholo	Very satisfied	1
Kgotsofetse	Satisfied	2
Ke ne ke sa kgotsofala	Dissatisfied	3
Ke ne ke sa kgotsofala hohang feela	Very dissatisfied	4

11.7 Na o fane ka tumelano ya ho nkuwa diteko tsa madi?

Did you give consent to be tested?

Eya, tumelano e ngotsweng	Yes, written consent	1
Eya, tumelano ka molomu	Yes, verbal consent	2
Tjhe	No	3
Ha ke hopole	Cannot remember	4

12. POST-TEST COUNSELLING

Dipotso tse latelang di mabapi le puisano ya maikutlo e tlang morao ha teko ya madi (moqoqo kamora teko ya madi) kgetlong la ho qetela ha o tlaya ditekong tsa HIV.

The following questions refer to post-test counselling (the discussion after blood taking/testing) the last time you tested for HIV.

12.1 Na o fumane puisano ya maikutlo e tlang morao ha teko ya madi?

Did you receive post-test counselling?

Eya	Yes	1	→ Go to question 12.2
Tjhe	No	2	→ Go to question 13.

12.2 Ke mang ya neng a fana ka puisano ya maikutlo e tlang morao ho teko ya madi? (*Mobotsa dipotso: seke wa bala dikarabo, etsa sekele karabong e nepahetseng*)

Who conducted the post-test counselling? (*Interviewer: do not read out options, circle the appropriate response*)

Lay khanselara	Lay counsellor	1
Mooki	Nurse	2
Mothusi wa mooki	Assistant nurse	3
Ngaka	Doctor	4
Mosebeletsi wa setjhaba	Social worker	5
Engwe (hlalosa) _____	Other (specify)_____	

12.3 Ene e tshwaretswe kae puisano ya maikutlo e tlang mora ha teko ya madi? (*Mobotsa dipotso: seke wa bala dikarabo, etsa sekele karabong e nepahetseng*)

Where was the post-test counselling session conducted? (*Interviewer: do not read out options, circle the appropriate response*)

Kamore ya lekunutu	Private room	1
Kamore ya dipuisano tsa maikutlo	Counselling room	2
Kamore ya ditherisano	Consultation room	3
Betheng ya sepetlele	Hospital bedside	4
Tleleniki ya koloi	Mobile van	5
Puisano ya maikutlo ya batho ba bangata	Group counselling session	6
Engwe (hlalosa) _____	Other (specify)_____	

12.4 Haebe hoteng, ke eng seo o saseratang ka sebaka seo o fumaneng puisano ya maikutlo e tlang morao ha teko ya madi?

What, if anything, did you not like about the place where post-test counselling was conducted?

_____

_____

12.5 Kakopo bontsha dikarabo tse nepahetseng dipotsong tsena tse latelang ka ho araba Eya (E) kapa Tjhe (T). Na motho eo o bileng le puisano ya maikutlo e tlang morao ha teko ya madi le yena o.....

Please indicate the appropriate response for the following questions, **Yes (Y) or No (N).**
Did the person who conducted your post–test counselling…

		E/Y	T/N
12.5.1 o hlaloseditse ka ditlamorao tsa teko ya HIV?	explain the implication of your HIV test result?	1	2
12.5.2 ile a o memela ho tla puisanong e latelang ya maikutlo?	invite you for follow-up counselling?	1	2
12.5.3 ile a o hlalosetsa hore o itshireletsa jwang wena le babang kgahlanong le HIV?	explain how to protect yourself and others against HIV?	1	2
12.5.4 ile a o hlalosetsa tsela eo o ka abelanang ka sephetho sa hao sa diteko tsa HIV le motho eo o etsang thobalano le yena.	explain how to go about sharing your HIV test result with your sexual partner?	1	2
12.5.5 ile a o hlalosetsa ka masole a hao a mmele (CD4 count)?	explain CD4 counts?	1	2
12.5.6 ile a o hlalosetsa ka di ARV?	explain ARVs?	1	2
12.5.7 ile a o hlalosetsa ka thlokeho ya hotla ditekong tsa HIV hape?	explain the need to re-test for HIV?	1	2

12.6 O ne o kgotsofetse ho le ho kae ka puisano ya maikutlo e tlang morao ha teko ya madi eo o e fumaneng kgetlong la ho qetela ha o tla nka teko ya HIV?

How satisfied were you with the post-test counselling session you received the last time you tested for HIV?

Kgotsofetse haholo	Very satisfied	1
Kgotsofetse	Satisfied	2
Ha ke a kgotsofala	Dissatisfied	3
Ha ke a kgotsofala hohang feela	Very dissatisfied	4

13. QUALITY OF COUNSELLING

Ke tlo o botsa dipotso tse mmalwa mabapi le puisano ya maikutlo eo o bileng le yona kgetlong la ho qetela ha o tla ya ditekong tsa HIV. O ka re tsela eo a neng a?

I am going to ask you a few questions about the counselling you had the last time you tested for HIV. How would you rate the following experiences?

		E lokile haholo /Very good	**E lokile** /Good	**Hantle feela** /Fair	**Haeya loka** /Bad	**Haeya loka haholo** /Very bad
13.1 o mametse	listening to you	1	2	3	4	5
13.2 bua le wena	talking to you	1	2	3	4	5
13.3 fumantshwa nako (monyetla) wa ho botsa dipotso	giving you time (opportunity) to ask questions	1	2	3	4	5
13.4 araba dipotso tsa hao	answering your questions	1	2	3	4	5
13.5 netefaletsa ka lekunutu la moqoqo	re-assuring you about confidentiality of the discussion	1	2	3	4	5
13.6 o file kgetho ya ho ya ditekong	giving you an option to be tested	1	2	3	4	5
13.7 ho hlonepha dikgopolo le dithloko tsa hao	respecting your opinion and needs	1	2	3	4	5
13.8 fumantswa lesedi le keletso	giving you information and advice	1	2	3	4	5

13.9 Na o ka kgothaletsa motswalle kapa wa lelapa la heno ho ya tliniking eo o fumaneng puisano ya maikutlo le teko ya madi teng?

Would you recommend a friend or family member of yours to go to the same facility where you received counselling and/or testing?

Eya	Yes	1
Tjhe	No	2
Ha kena bonnete	Uncertain	3

13.10 Kakopo hlalosa karabo ya hao.

Please explain your answer.

_____

_____

14. HIV COUNSELLOR CHARACTERISTICS

Kgetlong la ho qetela ha o tla ya tekong ya HIV, na o ne o ka rata ho buisana le motho ka puisano tsa maikutlo ya fapaneng le eo o neng o buisana le yena? Kakopo bolela sebopeho sa mokhanselara wa hao le eo o neng o ka rata hore e be mokhanselara wa hao wa HIV.

The last time you tested for HIV, would you have preferred a different person counselling you? Please indicate the characteristics of your previous counsellor and also your preference for an HIV counsellor. (*Interviewer: A respondent can only give ONE response in section A and multiple responses in section B for questions 14.3-14.6).*

		A Motho eo o ne a/e....		**B O ne o ka rata ha motho eo a kabe a/e....**	
		A The person was actually:		B You would have preferred the person to be:	
		Eya/Yes	**Tjhe/No**	**Eya/Yes**	**Tjhe/No**
14.1 Le moholo ho wena	older than you	1	2	1	2
14.2 Le bong bo fapaneng le ba hao	different sex from you	1	2	1	2
14.3 Le lay khanselara	lay counsellor	1	2	1	2
14.4 Le mooki	nurse	1	2	1	2
14.5 Le ngaka	doctor	1	2	1	2
14.6 Le mosebeletsi wa setjhaba	social worker	1	2	1	2
14.7 Bua puo e tshwanang le ya hao	speaking your home language	1	2	1	2
14.8 Dula kantle ho sebaka seo o dulang ho sona	living outside your community/home area	1	2	1	2

Only one response can be yes / *Multiple responses possible*

15. ACCESS, WAITING TIME AND COST INDICATORS

Dipotso tse latelang di mabapi le nako ya ho leta le ka tjhelete ya ditshebeletso tsa puisano ya maikutlo le ho ya ditekong tsa HIV kgetlong la ho qetela ha o tla ya tekong ya HIV. O nahana hore o nkile nako e kae o etsa dintho tse latelang?

The following questions relate to the waiting (queuing) time and cost of counselling and testing services the last time you tested for HIV. Approximately how much time did you spend doing the following?

		Metsotso	Dihora	Letsatsi	M	H	D
		Min	Hour	Day			
15.1 o tla tleleniking	travelling to the facility						
15.2 o eme moleng pele o ya puisanong ya pele ya maikutlo	queuing before the pre-test counselling session						
15.3 o ya puisanong ya pele ya maikutlo, ha ebe e ne le teng	undergoing the pre-test counselling session, if any						
15.4 o letetse ho fumana sephetho sa diteko tsa hao tsa HIV	waiting for the HIV test result						
15.5 o ya puisanong ya morao ya maikutlo, ha ebe e ne le teng	undergoing the post-counselling session, if any						

15.6 Letsatsi la ho qetela ha o ya ditekong tsa HIV, na o lahlehetswe ke tjhelete kapa mokgolo ka lebaka la hoba o saya mosebetsing?

Did you lose money/pay from not being at work in order to be at the facility the last day you tested for HIV?

Eya	Yes	1	→ Go to question 15.7
Tjhe	No	2	→ Go to question 15.8

15.7 O lahlehetswe ke tjhelete kapa mokgolo o mokae?

How much money/pay did you lose?

R _____

15.8 O fihlile jwang waba wa kgutla jwang tleleniking kgetlo la ho qetela ha o ya ditekong tsa HIV?

How did you get to the facility and back the last time you tested for HIV?

Ke tsamaile ka maoto	Walked	1	
Ka tekesi	Taxi	2	→ Go to question 15.9
Ka koloi yaka	Own transport	3	→ Go to question 15.9
Ke fumane lifiti ya mahala	Got a free lift	4	
Ke patetse motho hore a ntlise	Paid someone to bring me	5	→ Go to question 15.9
Engwe _____	Other _____		

15.9 O patetse bokae ho tla tleleniking le ho kgutla?

How much did travelling/transportation to the facility and back cost you?

R _____

KE LEBOHELA NAKO YA HAO!

THANK YOU FOR TAKING TIME TO COMPLETE THIS INTERVIEW!

Clinical information

The following information can be obtained from any/all of following sources: Patient (blue)card, TB register, HIV/AIDS Free State Department of Health Tuberculosis control: information for Tuberculosis patients form (2005)

1. Patient's name and surname _____ <<<<<<<<<<<<

2. Patient's registration/file number _____ [ ]

3. Indicate the patient's registration status

Newly registered (N)	1
Moved in from a facility in this district (M)	2
Transferred in from a facility in another district (T)	3
Not indicated	4

[ ]

4. Indicate the patient's category

New	1
Relapse	2
Re-treatment after failure (RF)	3
Re-treatment after default (RD)	4
Re-treatment after previous cure (RC)	5
Re-treatment after previous completion (RAC)	6
Not indicated	7

[ ]

5. Indicate the type of TB

Pulmonary (PTB) smear positive	1
Pulmonary (PTB) smear negative	2
Pulmonary(PTB) no smear	3
Extra-Pulmonary	4
Both Pulmonary and Extra-pulmonary TB	5
Other (specify) _____	6

[ ][ ]

6. Indicate the notification date for current TB infection

DD	MM	YYYY
Not indicated		

/ / 200

7. Is the patient currently on TB treatment?

Yes	1
No	2
Not indicated	3

[ ]

8. If yes, when did the patient start current TB treatment?

DD	MM	YYYY
Not indicated		

/ /200

9. Was the patient referred for counselling and testing for HIV?

Yes	1
No	2
Not indicated	3

10. Was the patient tested for HIV?

Yes	1
No	2
Not indicated	3

11. Indicate the date of the most recent test for HIV

DD	MM	YYYY
Not indicated		

... / ... / 200

12. Is the patient currently on cotrimoxazole prophylaxis

Yes	1
No	2
Not indicated	3

Thank you for taking time to complete this form

Appendix 4. Letter of ethical clearance

UNIVERSITEIT VAN DIE VRYSTAAT
UNIVERSITY OF THE FREE STATE
YUNIVESITHI YA FREISTATA

Kantoor van die Dekaan / Fakulteit Geesteswetenskappe
Office of the Dean / Faculty of the Humanities
Ofisi ya Dine / Fakhalthi ya tsa Botho

12.02.2007

ETHICAL CLEARANCE RE PROJECT: NON-UPTAKE OF COUNSELLING AND TESTING FOR HIV AMONG TB PATIENTS IN THE FREE STATE: RESEARCH TO INFORM INTERVENTION

The Ethics Committee: Faculty of the Humanities (University of the Free State) carefully considered the above-mentioned R&D project proposal. The evaluation of the project is based on ethical guidelines that could be summarised in the following three questions:

- Is the research really necessary?
- Is the research scientifically and economically properly planned?
- Is there a balance between the potential risks and potential value of this research?

Is the research really necessary?

The obvious reality of TB-HIV co-infected patients substantiates research of the nature stipulated in this proposal. As stated in the proposal, uptake of counselling and testing among TB patients in the Free State remains low, which emphasises the pronounced necessity for recommendations and guidelines as how to improve professional and lay health workers' counselling skills and ultimately to increase TB patients' uptake of counselling and testing.

The necessity of this study is further supported by the nine objectives listed under the main aim of the study. Two of which are: developing and implementing an intervention strategy to improve uptake of counselling and testing among TB patients, and making recommendations to the Free State Health Department in this regard.

Further justification is finally supported by the comprehensiveness in scope of the research as outlined in the proposal.

Is the research scientifically and economically properly planned?

The detailed proposal is a good indication that this is not merely a case of research for the sake of research. The proposed project is well elucidated with particular attention to both scientific and economic justification.

Regarding scientific planning it is evident that the proposed research project is thoroughly considered and outlined in terms of general purpose and aims, specific objectives, research strategy and methodology, as well as project management.

The scientific approach of this research project, which is of utmost importance, is underlined by a continuous systematic procedure. Structures are in place to administer the research.

Concerning the economic aspect of this proposed research project it is evident that planning was not only performed in a detailed fashion, but realistically as well. This is illustrated by the detailed budget given in the proposal.

Is there a balance between the potential risks and potential value?

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It is evident that the researchers are conscious of the sensitive nature of this research, as well as the potential ethical dilemmas involved. They have, therefore, identified certain ethical considerations that need to be taken into consideration, and have stated that all participation in the research will be on a voluntary, informed and confidential basis.

The fear of testing positive for HIV and the potential danger of stigmatisation should be dealt with in a way that is characterised by a respect for human dignity (of all people involved) and a sensitivity for cultural differences (especially with regard to health care).

Research of this nature is more often than not characterised by an ethical dilemma or dilemmas of some sort, which are not always predictable, but the advantages of this proposed research project outweighs the possible risks by far. Based on the proposed research project submitted no obvious ethical dilemmas present, provided that basic ethical guidelines are followed throughout the research in order to secure that the research is conducted in an ethically responsible way.

It is, thus, the conclusion of the Ethical Committee: Faculty of the Humanities that this proposed research project is well motivated, and from an ethical point of view there seems to be no obvious reason why this project should not be recommended to proceed.

Best wishes for this research project.

MR JC VAN DER MERWE
MEMBER: ETHICS COMMITTEE, FACULTY OF THE HUMANITIES

PROF PJ VISAGIE
CHAIRPERSON: ETHICS COMMITTEE, FACULTY OF THE HUMANITIES

PROF L CILLIERS
CHAIRPERSON: RESEARCH COMMITTEE, FACULTY OF THE HUMANITIES

PROF GW DE KLERK
DEAN: FACULTY OF THE HUMANITIES

Appendix 5. Letter of authorisation

FREE STATE PROVINCE

Prof. HCJ Van Rensburg
Centre for Health Systems Research & Development
Faculty of Humanities
University of the Free State
Bloemfontein
9300

Dear Prof. Van Rensburg

RE: RESEARCH PROJECT: NON-UPTAKE OF VCT FOR HIV BY TB PATIENTS IN FREE STATE-2007-2010

We acknowledge receipt of your letters dated 16 July 2007 and 23 July 2007 in connection with the above mentioned request.

The list of facilities to be visited during the period 2007-2010 for the above mentioned project has been received by this office. Your research as mentioned in your request would specifically target the Districts of Lejweleputswa and Thabo Mofutsanyana.

The Free State Department of Health hereby supports and gives permission for this four year project (2007-2010) to be conducted by the Centre for Health Systems Research and Development University of the Free State at various Public Health Facilities in the concerned local municipal areas.

For any support and enquiries kindly contact Me. Y Tsibolane (Manger: TB Programs), Tel: 051-408 1429, e-mail:TsibolaY@fshealth.gov.za.

Ms. SRO Khokho.

Ms. SRO Khokho
Acting Executive Manager
Strategic Health Programs & Medical Support

Date: 26/07/2007

S.R.O Khokho, Acting Executive Manager – Strategic Health Programs & Medical Support, • PO Box 227, Tel: 051-408 1784/5
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Appendix 6. ***Opsomming***

Berading en toetsing is ‘n integrerende deel van die voorkoming, sorg en behandeling van menslike immuniteitsgebreksvirus/verworwe immuniteits-gebreksindroom (MIV/VIGS). Vir tuberkulose (TB) pasiënte , is MIV berading en toetsing (MBT) ‘n toegangspunt tot dienste insluitende toegang tot inligting oor die primêre voorkoming van MIV onder MIV-negatiewe TB pasiënte, en cotrimoxazole profilaktiese behandeling (CPB), antiretrovirale behandeling (ARB), en maatskaplike steun vir dié wat MIV-positief toets.

Ondanks die hoë TB-MIV/VIGS ko-infeksiekoers in Suid-Afrika, weet min TB-pasiënte wat hul MIV-status is. Dit is ook ontstellend dat ofskoon MBT-dienste by primêre gesondheidsorg (PGS)-klinieke algemeen beskikbaar en gratis is, min TB-pasiënte in baie dele van die land daarvan gebruik maak. Hierdie studie poog om hierdie leemte aan te spreek deur ondersoek in te stel na die fasiliterende faktore en hindernisse by die opneem van MBT onder TB-pasiënte in die Vrystaatprovinsie.

Hierdie studie maak deel uit van ‘n groter “feitevinding”-projek gemik op die ontwerp, implementering en evaluering van ‘n intervensie om die opneem van MBT by TB-pasiënte in die Vrystaat te verbeter. Die navorsing is verkennend en het ‘n dwarssnit-opname behels wat in die distrikte van Thabo Mofutsanyana en Lejweleputswa uitgevoer is. Hierdie twee distrikte is ewekansig geselekteer vanuit ‘n totaal van vyf in

die provinsie. In elk van die distrikte is twee sub-distrikte, een oorwegend stad/groot dorp en die ander oorwegend landelik/klein dorp, geselekteer. Maluti-a-Phofung (stad/groot dorp) en Nketoana (landelik/klein dorp) sub-distrikte is in Thabo Mofutsanyana geselekteer, terwyl Matjhabeng (stad/groot dorp) and Masilonyana (landelik/klein dorp) in Lejweleputswa gekies is.

Data is in Februarie-Maart 2008 ingesamel. Persoonlike onderhoude is volgens 'n gestruktureerde onderhoudskedule met 'n gerieflikheidsteekproef van 600 TB-pasiënte gevoer. Die pasiënte is geselekteer in verhouding tot die gemiddelde aantal geregisteerde TB-pasiënte by elk van die 61 PGS-klinieke wat by die studie ingesluit is. Data analise het van beide kwantitatiewe en kwalitatiewe benaderings gebruik gemaak, insluitende maatstawwe van sentrale neiging (bv. gemiddelde), maatstawwe van verspreiding (bv. omvang), assosiasietoetse (bv. chi-kwadraat-toetse, t-toetse, logistiese regressie analise), asook inhoudsanalise van oop-vrae.

In die geheel dui die resultate daarop dat pasiënt/individuele en gesondheidsisteem-faktore in wisselwerking TB-pasiënte se opneem van MBT fasiliteer of verhinder. Meer spesifieke bevindinge word in die vorm van vyf tydskrifartikels aangebied, in ooreenstemming met die regulasies van die Universiteit van die Vrystaat. Uit hierdie studie blyk dit dat daar nie 'n enkelvoudige oplossing vir die probleem van nie-opneem van MBT onder TB-pasiënte is nie. In plaas daarvan, is 'n veelfasettige ingreep nodig

om op beide die vlakke van die pasiënt/individu en die gesondheidsisteem fasiliteerders daar te stel en hindernisse te oorkom.