

**Factors Affecting Use of Community Based
Tuberculosis Care in Kampala District
Uganda**

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**A Dissertation Submitted in Partial
Fulfillment of a Master of Public Health of
Makerere University**

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DECLARATION

I declare to the best of my knowledge that the work here in is original; it has never been presented anywhere either partially or in total for any award unless otherwise stated.

I would therefore like to present it for the award of the degree of a Masters in Public Health of Makerere University Kampala Uganda.

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DEDICATION

I dedicate this dissertation to my father Dr. Peter Elweru Oregede (RIP) and my mother Mrs. Sarah Oregede for all the hard work they did to see me through to this level.

I also dedicate it to my husband Mr. David Egou for all the endurance and support provided while I pursued this course. Not to forget my children Precious (RIP) and Isaac Egou.

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May the Almighty God Bless You all

Thank you

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LIST OF ACRONYMS AND ABBREVIATIONS

AIDS:	Acquired Immune Deficiency Syndrome
CBDOTS:	Community-Based TB Care Directly Observed Therapy Short course
CBTBC:	Community Based Tuberculosis Care
CHW:	Community Health Worker
DOT:	Directly Observed Therapy
GTP	Global Tuberculosis Program
HIV:	Human Immuno Deficiency Virus
IEC:	Information Education and Communication
MOH:	Ministry of Health
MUSPH:	Makerere University School of Public Health
NIAID:	National Institute of Allergy and Infectious Diseases
NTLP:	National Tuberculosis and Leprosy Program
NTP:	National Tuberculosis Program
PHC:	Primary Health Care
TB:	Tuberculosis
UNAIDS:	Joint United Nations Program on HIV /AIDS
UNICEF:	United Nations Children’s Education Fund
WHO:	World Health Organization

OPERATIONAL DEFINITIONS

Caretaker: Family member or community worker providing care to a TB patient

Community Health Workers: Members of the communities where they work are selected by communities, and answerable to the communities. They should be supported by the health system, and have shorter training than professional workers

Community: A group of people who have some thing in common and will act together in their common interest.

Confidentiality: The obligation not to reveal client information without his or her consent

DOTS: Is a procedure where a health worker or other trained person watches a TB patient swallow every doss of anti tuberculosis medicine.

Informed Consent: An agreement that the client makes with a service provider or researcher after being given adequate information and understanding the purpose of the procedure or exchange of information

Salary or Wage earner: A person who receives regular payment for work done either monthly or weekly

ABSTRACT

Tuberculosis (TB) is among the leading causes of mortality and affects nearly one third of the population in the developing countries. Community Based Tuberculosis short course therapy (CBDOTS) is the most effective strategy available for controlling TB. CBDOTS was operationalized in Kampala District in 1999 but until recently only 8% of TB patients chose to use it.

Objectives of Study

The objective of the study was to identify factors affecting use of CBDOTS in order to provide the District Health Team (DHT) and Ministry of Health (MOH) with information for scaling up use of CBDOTS in Kampala District.

Methods

The study was a facility based matched case control study. A sample size of 346 was calculated according to Schlesselman (1982) formula for case control studies. A case was defined as any person diagnosed with TB within six months prior to the study and using CBDOTS. A control had the same definition but used the facility or self-administered approach. Bivariate and multivariate analysis using Epi-info version 3.2.2 and SPSS version 11.5 was done for quantitative data while qualitative data was analysed using the master sheet technique. Outcome measures of interest for quantitative data included odds ratios and 95% confidence interval. Data was presented as texts, tables, bar charts and quotations from qualitative data were used to supplement quantitative data.

Results

At bivariate analysis significant findings included; cases were more likely than controls to be less than 24 years (OR= 1.95, 95%CI: 1.22-3.12), have heard about CBDOTS from health workers (OR= 5.42, 95%CI: 3.42-8.59), live within a 5 kilometre radius of a health facility offering CBDOTS (OR= 2.99, 95% CI: 1.90-4.70), use herbs for treating TB disease (OR=5.52, 95%CI: 1.85-16.52), cite lack of incentive pay (OR= 4.13, 95%CI: 1.98-8.65) and lack of awareness (OR=3.28, 95%CI: 2.10-5.11), as factors affecting use of CBDOTS in Kampala District.

At multivariate analysis; the influence on use of CBDOTS was reduced and significant factors included; Cases were more likely than controls to live within a five kilometre radius of a health facility offering CBDOTS (OR= 1.181, 95% CI: 1.055-1.321), to have heard about CBDOTS from health workers (OR= 3.300, 95%CI: 1.908-5.707) and use herbs for treating TB disease (OR=4.807, 95%CI: 1.329-17.381). No association was found between socio demographic characteristics such as; sex, occupation, marital status, level of education and use of CBDOTS at bivariate and multivariate analysis.

Conclusion/ Recommendations

Results were in agreement with findings from previous studies but also revealed that use of herbs influenced use of CBDOTS. In order to scale up use of CBDOTS, it is recommended that the DHT and MOH embark on raising awareness about availability of CBDOTS, bring CBDOTS services closure to the community and motivate health workers to effectively deliver and monitor use of CBDOTS.

INTRODUCTION AND BACKGROUND

1.1 Introduction

Tuberculosis (TB) remains one of the leading infectious killers of adults globally. Each year, 54 million people are infected with the tubercle bacillus (*Mycobacterium tuberculosis*); 6.8 million develop clinical disease and 2.4 million people die. Tuberculosis is responsible for 5% of all deaths worldwide and 9.6% of adult deaths in the 15-59 age groups. The case fatality rate of tuberculosis is high; approximately 50% of untreated cases die of the disease (NIAID, 1999)

Around 95% of patients with active TB live in the developing world in Southeast Asia and Sub-Saharan Africa, where 99% of all deaths occur (MSF, 2004)

Uganda ranks fifteenth among the world's 22 countries with a high TB burden. In 2004, Uganda had nearly 112,000 new TB cases, with an estimated incidence rate of 402 per 100,000 people. The detection and treatment success rates (43 and 68 percent, respectively) for new sputum smear-positive (SS+) cases were still below WHO global standards of 70 and 85 percent, respectively (USAID, 2006). The low rates are mainly due to inadequate recording and reporting; non-adherence to Directly Observed Therapy, Short-Course (DOTS); poor access to health care services and insufficient numbers of skilled staff and diagnostic facilities (WHO, 2006).

The strong association between TB and Human Immuno Deficiency Virus/Acquired Immuno Deficiency Syndrome (HIV/AIDS) has exacerbated Uganda's TB problem with an annual case increase of 8% (MOH, 2003). The current HIV prevalence rate in Uganda stands at 6.4% among the 15-49 year olds with Kampala District coming first in prevalence by region with 8.5% (JDHS, 2006).

Despite the high TB burden, Uganda's total case detection rate for all cases is 39% with 44% DOTS detection of new sputum smear positive cases (WHO, 2005). Only 60% of new smear positive patients were successfully treated in the 2002 cohort (WHO, 2005). This is far below the WHO global TB control target of 70% case detection and 85% successful treatment (Okello et al, 2003). If left untreated, one person with infectious TB will infect an average of 12 – 20 people of whom; 2- 4 will develop infectious TB (WHO, 2003).

In 1993 the overwhelming TB burden prompted World Health Organisation (WHO) Global TB Program to declare TB a global emergency. WHO began promoting Styblo's strategy in a technical and management package known by the brand name DOTS (WHO, 1999). DOTS is the most effective strategy available for controlling the TB epidemic today and has been a central part of TB treatment for at least 30 years. Many DOTS programs are based on collaboration between the community and Ministry of Health (WHO, 2002).

In 1990, Uganda instituted a combined National Tuberculosis and Leprosy Program (NTLP) and achieved 100 percent DOTS population coverage by 2002. In spite of full coverage by the population, performance indicators remained inadequate with poor access to services identified as the main constraint. Due to the poor performance in 1995, WHO coordinated an assessment of TB care in several countries that included; Uganda, Malawi, Zambia, and South Africa and found the need to strengthen links between the National Tuberculosis Program (NTP), Primary Health Care (PHC) and the community to ensure full implementation of the recommended TB control strategy (WHO, 2000). This resulted in the first piloting of Community Based DOTS (CBDOTS) in Uganda in Kiboga District in 1998. CBDOTS model was associated with a number of benefits to the health system, patient/family as well as the community. According to WHO (2003), treatment outcomes for patients on CBDOTS, often

reached the global target of 85% unlike the hospital based DOT, similarly costs associated with CBDOTS were 40 –50% lower than health facility based care. As a result of shorter hospitalization time it decongested wards freeing space and staff for other duties. The default rate in Kiboga fell from 19% the previous year to 2% during the intervention year 1998 and both the service users and service providers were satisfied. Lastly, involvement of communities in the planning and delivery of TB services imparted a sense of ownership thereby promoting sustainability of services (WHO, 2004). In 2000, Uganda formally adopted the CBDOTS model as the best strategy to control TB in the country (WHO, 2005).

1.2 Background

Kampala District is the capital City of Uganda. It is characterized by a high prevalence of HIV and TB infection. According to Guwatudde, et al (2003), in Kawempe Division of Kampala, the prevalence of all forms of TB was 14.0 cases per 1000 people, and for smear-positive pulmonary TB was 4.4 cases per 1000 people. A small disease prevalence survey carried out in Kampala in 2001– 2002 found a prevalence of smear positive TB of 440 cases per 100 000 population in the peri-urban community sampled (WHO, 2005). Results of the MOH Cohort analysis of 2002 reported that Kampala District alone contributed 23% of the country's new smear positive cases with a treatment success rate of 44% and default rate of 19.5% compared to Kiboga District also located in central Uganda which had a treatment success rate of 30% and a default of only 1.3%. TB managers and control authorities in Kampala District believe that the prevalence of TB is much higher than revealed by notification figures because of underreporting, poor access to health care and low case detection.

Before the introduction of CBDOTS, treatment of TB in Kampala District was based on the conventional health facility DOTS model involving two months hospitalisation and six months treatment at home. Patients had to report to the health facility regularly for each drug intake thus incurring travel and accommodation expenses and were absent from their families (MOH, 2002). Although effective TB drugs have been available for over 40 years, an estimated 20 to 50% of patients did not complete the relatively long treatment regimen. This resulted in prolonged infectiousness, the development of resistance to TB drugs and an increased risk of disability and death (Woldenbanna, 2002).

In view of the problems faced with the conventional health facility DOTS and in order to meet the global TB control target, the DHT in Kampala opted for CBDOTS in 1999 (WHO, 2001). In applying the CBDOTS strategy in Kampala, more emphasis was put on Family based DOTS where drug intake is supervised by a trained family member other than Community Health Worker (CHW). Despite the effectiveness of CBDOTS in controlling the TB epidemic in other parts of the country and in other countries, performance indicators in Kampala District remained low. According to WHO (2002) and NTP (2004), the National Tuberculosis Program has faced specific challenges in implementing effective TB control in Kampala in comparison to the rural areas. This study is intended to identify factors affecting use of CBDOTS in Kampala District.

2.0 LITERATURE REVIEW

DOTS is a procedure where a health worker or other trained person watches a TB patient swallow every dose of anti tuberculosis medicine. DOTS has five components: Political commitment, good quality diagnosis and access to quality drugs, systematic monitoring and accountability, short course chemotherapy with supervision (WHO,1999). The national TB control guidelines list three options of DOTS: daily DOT at a health center; daily DOT by village health volunteers and daily DOT by family members (Ngamuvithayapong et al, 2001). Medicus Mundi (2001) looks at four ways of supervision of DOT:

- *DOT 1 - Health facility-based DOT:* The patient comes to the health facility for each drug intake and takes the drugs in the presence of a health worker.
- *DOT 2 - Community-based DOT:* A CHW or person in the community trained and supervised by the health system observes drug intake of the patient. The CHW goes to the patient's house or the patient goes to the CHW's house.
- *DOT 3 - Family DOT:* The patient takes the drugs at home and is supervised by a family member who has officially been tasked to observe the patient's drug intake.
- *DOT 4 - Self-administered treatment with once-a-week DOT in the health facility:* the patient goes to the health facility for DOT once a week only and takes the drugs at home on the other days

CB-DOTS differs from the traditional TB care model in several ways. Patients are hospitalized for two weeks instead of 2 months in the traditional model. Patients' only need to visit facilities on 3 occasions for follow-up sputum test (at 2, 5 and 8 months) and not 6 times for monthly drug supply as before (WHO,2004). In CBDOTS communities are involved in selecting and overseeing community volunteers who observe and record each

day's ingestion of medication. A public health worker sensitizes the community on how to select a volunteer, trains the volunteer and replenishes the community volunteer's drug supplies every two weeks and uses the same opportunity to update TB data (WHO, 2004).

Family members are the main and immediate care givers. Trained community volunteers or care givers participate in the daily care of patients especially in basic nursing care, counseling and provision of medical advice to patients (Nsutebu and Walley, 2001). A randomized controlled trial of CHW versus family DOTS found no significant difference in cure and completion rate (Wright et al, 2004).

DOTS supports the patient throughout treatment until cure, patient, family and community education, case detection and referral of patients with chronic cough, advocacy for political commitment to TB control and increased accountability of local communities. The rationale for CBDOTS include: concentration of health facilities around urban settings and poor accessibility for rural based populations, hospitalisation of patients is often unnecessary and costly for health services and imposes further direct and indirect costs on patients and their families (WHO, 2005). The objectives of CBDOTS is to improve ease of access to treatment for patients, increase TB control effectiveness, increase efficient use of limited health sector resources, relieve overcrowded hospitals and enhance the community's active role in DOTS and public health (MOH, 2003). Enhancing prevention and control efforts and eliminating TB requires strategic partnerships with the community to effectively reach persons at risk of infection and to broaden the base of support for its elimination.

CBDOTS the WHO recommended strategy has proved to be very cost effective and acceptable to patients in many countries. In spite of its benefits, the use of CBDOTS has remained low in some areas, 17% in Machakos Kenya and 8% in Kampala Uganda (WHO,

2001), compared to Kiboga District in Uganda where use of CBDOTS was 81% (Okello et al, 2003). Studies done elsewhere have identified a number of factors that affect use of CBDOTS. These are discussed in the next section.

2.1 Patient Related Factors

Patient factors such as age, sex, education, occupation, marital status, degree of illness, can significantly influence the choice and use of CBDOTS. Patients who are more informed about CBDOTS are more likely to use CBDOTS than their counterparts. Selection of volunteers without consulting the patient will affect the caregiver patient relationship and affect use of CBDOTS (WHO, 2003). A study in Thailand found that implementing DOTS in an authoritarian style resulted in low adherence to DOTS and hence low cure rates (Ngamuvithayapong et al, 2001). Studies also show that a good relationship between health providers and clients promotes adherence to DOTS (Ngamuvithayapong et al, 2001).

Willingness of the patients to take CBDOTS will affect its use. In Kampala District acceptance of the community option for DOTS supervision was lower than expected due to unwillingness of TB patients to accept DOTS from community volunteers (WHO, 2003).

There are several inconveniences faced with the health facility DOTS which influence its use. In India, 2% of the patients studied were unable to accept DOTS owing to inconvenience due to loss of hours of work (65%), study (30%), household work (8%), holding therapy-institution particularly in young unmarried females and disability making regular center-visits difficult (Arora, et al, 2003).

The degree or severity of illness can also influence uptake of CBDOTS. According to Khan, et al (2002), TB patients are typically very ill, poor with a low education level. It is difficult for them to negotiate the form of treatment supervision convenient for them or refuse what the

doctor or nurse tells them, instead they often say yes, because while feeling ill they'll say yes to almost anything to get treatment, however they often default when they start to feel better.

2.2 Caregiver Factors

Motivation is very crucial and the lack of it can affect delivery of services by CHWs. An evaluation of NGO contribution to decentralized TB care in an urban setting revealed that poor motivation was the problem with community volunteers (WHO 2003). In South Africa, in order to sustain treatment supporter's contribution to TB care, CHWs were provided with a cash incentive, transport and training (WHO, 2003). A documentary review of 347 lay volunteers in the Lower Orange region of Northern Cape Province revealed that 22% of volunteers dropped out of the TB program within one year of joining, 75% of which lost interest while others got better jobs or relocated to other places in search of paid work. The fact that volunteers were not paid appeared to be a crucial factor determining people's decision to volunteer (Kironde, 2002).

The level of education of CHWs will affect the use of CBDOTS. A study by the DANIDA-assisted TB project (DANTB) in India revealed that about 40% of the health workers thought that the CHWs were not competent to render the TB services since they did not possess the minimum education and skills for record keeping and observation of side effects (WHO, 2002). In Thailand, patients also complained of poor education of CHWs about DOTS saying that they had more confidence in doctors than in community volunteers and received poor information from CHWs about DOTS (WHO, 2000). In Kawempe Division of Kampala, the lack of knowledge and skills among health staff affected the TB recording and reporting system (WHO, 2003).

CHW's lack of accountability to patients as they are often friends or colleagues or not paid any incentive affects the use of CBDOTS. In India, not all patients were adhering to TB treatment for reasons that CHWs and patients were from the same village and many times related. CHWs allowed many concessions by the patients including not strictly adhering to DOTS (WHO, 2002). According to medical officers, patients would hesitate to complain against the CHWs who fail to provide services as the community members felt that the CHWs had no obligation to render TB services. Patients thought they had an obligation to protect the interests of the CHWs who were after all their own community members (WHO, 2002).

2.3 Health Facility Factors

Understaffing of health workers limits supervision of CHWs and provision of personal care to patients. Directly Observed Treatment supervised by a CHW is likely to be more convenient and personal than the health facility based DOT (Khan, et al, 2002). In Kilombero, although the project confirmed the effectiveness of CBDOTS, the intension to scale up CBDOTS throughout the district posed a management challenge of ensuring supervision of the health facilities and a district network of community volunteers (WHO, 2000). The rising number of TB cases and critical shortage of skilled staff put a considerable strain on the public health system. According to WHO (2000), Health workers complained of being understaffed and the occupational risk of acquiring TB.

Health workers' perception that DOTS is impractical can also affect utilization and implementation of CBDOTS at community level. Results of a feasibility study of DOTS in Thailand found that majority of health staff said that home-based DOT was impractical and unnecessary without additional assistant staff, additional allowances, petrol supplies and especially financial incentives (Ngamuvithayapong et al, 2001). Although involvement of

community-based workers is necessary particularly for the old and the very poor who cannot visit the health facility on alternate days for their DOTS, the provision of TB services through the community-based workers was not totally acceptable to health workers for the reason that it is difficult to guarantee accountability in their case (WHO, 2002). Health workers thought use of CHWs would require “intensive supervision” and increase workload. Ensuring attendance of community workers in meetings would not work, while some community-based providers could not retrieve defaulters since they lacked the necessary skills and medical knowledge to convince patients (WHO, 2002).

Health workers inadequate knowledge about TB and DOTS influenced use of CBDOTS. An analysis of the constraints to CBDOTS highlighted the fact that health workers often lack knowledge and understanding of TB. In Kenya, nurses who provide at least 50% of TB care did not receive any training on TB (WHO, 2003). Similar findings were reported in Kawempe Division of Kampala that lack of knowledge and skills among the health staff affected the TB recording and reporting system (WHO, 2003). Meanwhile in Thailand staff expressed the need for more training in TB and DOTS (Ngamuvithayapong et al, 2001).

The use of CBDOTS is also affected by erratic supply of drugs by the national TB program. A study by Nakanwagi (2004) on the willingness and capacity of private health practitioners to provide DOTS in Kampala, Uganda found that only 15% of the health facilities stocked at least one anti TB drug. But sufficient supply of drugs and other supplies are required to build an effective CBDOTS program

Lack of TB treatment guidelines affects the provision of standard treatment to TB patients by both health workers and CHWs hence affecting the quality of DOTS. Evidence suggests that

only 21% of private health facilities in Kampala Uganda possessed guidelines for management of TB (Nakanwagi, 2004).

In order to start treatment, suspected TB patients are required to test to determine whether they are smear positive or not. However, lack of sufficient TB diagnostic capacity is an obstacle to the expansion of CBDOTS (MOH, 2005). In Kampala District, studies show that only 69% of the private health facilities had a laboratory with functioning microscope and only 65% were doing sputum microscopy (Nakanwagi, 2004). Microscopists need to be integrated into CBDOTS management, supervision, and community efforts, using existing infrastructure in order to increase the use of CBDOTS.

Accessibility of health facilities influences choice and use of CBDOTS. According to WHO (2002), accessibility (distance, travel time and transportation facility) was an important but not a determining factor for TB patients' choice of a particular provider for DOTS. Data shows that between January to December 1999, 53% of patients treated under DOTS chose DOTS at the microscopy centers compared to 47% who preferred CBDOTS (WHO, 2002). Patients who chose to go to the public hospital for DOTS covered a distance of about 4 km to reach the facility even though they had the option to choose one of the seven community DOT providers available in their area (WHO, 2002). According to Walley, et al, (2002), attending DOT at the health facility is inconvenient, but the degree of inconvenience will depend on how far the patient is expected to walk or how expensive the bus fare might be and how long they have to wait at the health center.

2.4 Ministry Of Health Factors

Lack of public private partnership is associated with use of CBDOTS. An assessment of health systems constraints to DOTS expansion in Kenya and Uganda, found the need for TB

programs to consider linking up with the private sector as public services are not acceptable to all patients (WHO, 2003). However, the increasing involvement of the private sector with no control is problematic and public–private partnerships should be established (WHO, 2003). Nakanwagi (2004) found that only 18% of the private practitioners in Kampala District were providing DOTS to their TB patients and 94% were willing to provide DOTS to public patients, 27% were willing to do so with an extra allowance or drugs from government. Involvement of limited number of private practitioners reflects the limited support to the community program by the private providers (WHO, 2002).

Lack of political commitment greatly affects the use of CBDOTS. This is supported by conclusions made at a workshop to identify outstanding obstacles to the uptake of CBDOTS in Rakai and Kiboga Districts in Uganda that found varying political and community commitment to the strategy a constraint (MOH, 2003). Similarly, studies to identify obstacles to DOTS and why only slightly more than 10% of TB patients were receiving DOTS in developing countries found the need for mobilizing commitment to DOTS among decision-makers and health professionals (WHO, 2000).

2.5 Socio Cultural Factors

The lack of permanent addresses or wrong addresses interferes with supervision or follow up of patients. In a study that compared the results of making available CBDOTS conducted in Ndola Zambia, a city similar to Kampala in development, found that patients move without informing staff and provide wrong addresses so that tracing defaulters is difficult (WHO, 2001).

Non-homogenous communities in cities or urban areas affect use of CBDOTS. According to WHO (2001), in Kampala District, the NTP faced challenges in implementing CBDOTS on account of greater complexity of health service provision and less cohesive nature of urban communities in comparison with rural areas. In order to increase the use of CBDOTS, ensuring that CHWs are drawn from the community is a standard approach to the problem of providing services that are culturally acceptable and appropriate (WHO, 1999). However, in reality societies are rarely culturally homogenous and the DOTS program has been accused of denying patients rights, when health workers treat patients with disrespect or implement DOTS without taking patients needs in to account (WHO, 1999).

Stigma and discrimination from the CHWs influence a patient's decision to use CBDOTS. Patients complained of stigma associated with TB/HIV (WHO, 2000). Also, studies by Ngamuvithayapong et al (2001) found that HIV-positive TB patients suffered stigma associated with TB and AIDS. Data shows that between January to December 1999, 53% of patients treated under DOTS chose DOTS at the microscopy centers compared to 47% who preferred CBDOTS because of the desire to maintain secrecy about the disease (WHO, 2002). Majority of those receiving drugs from a community member preferred a CHW or other paid worker of the local community closest to their residence. Patients who chose to go to the civil hospital for DOTS covered a distance of about 4 km to reach the facility even though they had the option to choose one of the seven community DOT providers available in their area. DOT should be implemented carefully in order to protect patient confidentiality and minimize stigma.

The use of CBDOTS is associated with religious and cultural taboos. This is in agreement with a study in India which revealed that the younger Shasthya Shebikas, faced resistance from the elderly religious leaders and men in view of the religious sanctions for Muslim

women to go out to public places and interact with “other” men (WHO, 2002). Some workers stated that religious leaders followed them wherever they went and constantly watched their character while others revealed that they had been warned that after their death their dead bodies would only be covered with a black cloth (WHO, 2002).

Availability of family and social support can greatly influence a patient’s decision to use CBDOTS. According to Medicus Mundi (2001), patients living in broken families may find it difficult to take up family DOT.

Literature suggests that a lot has been established about health facility factors affecting uptake of CBDOTS. Limited information has been sighted on socio cultural factors, patient and caregiver factors that affect use of CBDOTS particularly in urban settings. An analysis of these factors is important in identifying factors that significantly affect use CBDOTS in an urban setting like Kampala District.

3.0 PROBLEM STATEMENT AND JUSTIFICATION

3.1 Problem statement

TB is a significant public health problem in Kampala District. According to the TB focal person for the district (2005), an estimated 2000 – 2500 TB cases are reported in the district quarterly. The MOH Cohort analysis of 2002 reported that Kampala District contributed 23% of the country's new smear positive cases with a treatment success rate of only 44% and default rate of 19.5%. If left untreated, one person with infectious TB will infect an average of 12 – 20 people of whom; 2- 4 will develop infectious TB (WHO, 2003).

DOTS is the most effective strategy available for controlling the TB epidemic today (WHO, 1999). Studies have shown that CBDOTS is cost effective, affordable and acceptable to patients (Chilunga, 2002). An economic evaluation of DOTS in Kiboga, Uganda, found that over 50% of the patients on CBDOTS completed treatment compared to 39% in the hospital based DOTS and costs and duration of hospitalisation were higher in the conventional hospital approach at 80% compared with 48% for CBDOTS (Okello, et al, 2003). Similar findings were reported in Kilombero Tanzania (WHO, 2000). In spite of its effectiveness in other countries and other districts within Uganda, the use of CBDOTS in Kampala District has remained low. In Kawempe Division of Kampala, after the introduction of the option of CBDOTS, acceptance of the community option for DOTS was found to be 8% (WHO, 2001).

The apparent low up take of CBDOTS in Kampala District has raised great concern in the MOH and the DHT. There is fear of poor treatment success and continued transmission of TB from sputum smear positive patients to the rest of the community, out break of multi drug resistant TB and death. According to other studies, the low uptake of CBDOTS in Kampala

District could be attributed to; fear of stigma and discrimination, low motivation of CHWs, lack of awareness about CBDOTS, lack of trust of caretakers knowledge or cultural and language differences in the district.

In order to increase use of CBDOTS in Kampala District, the DHT has continued to mobilize and sensitize communities, trained health workers, developed separate budgets for CBDOTS and introduced the option of family TB care, but use of CBDOTS in the district has remained far below the 2005 national target of 100% (MOH, 2004). This study will attempt to identify significant factors influencing use of CBDOTS in Kampala District.

3.2 Justification for the study

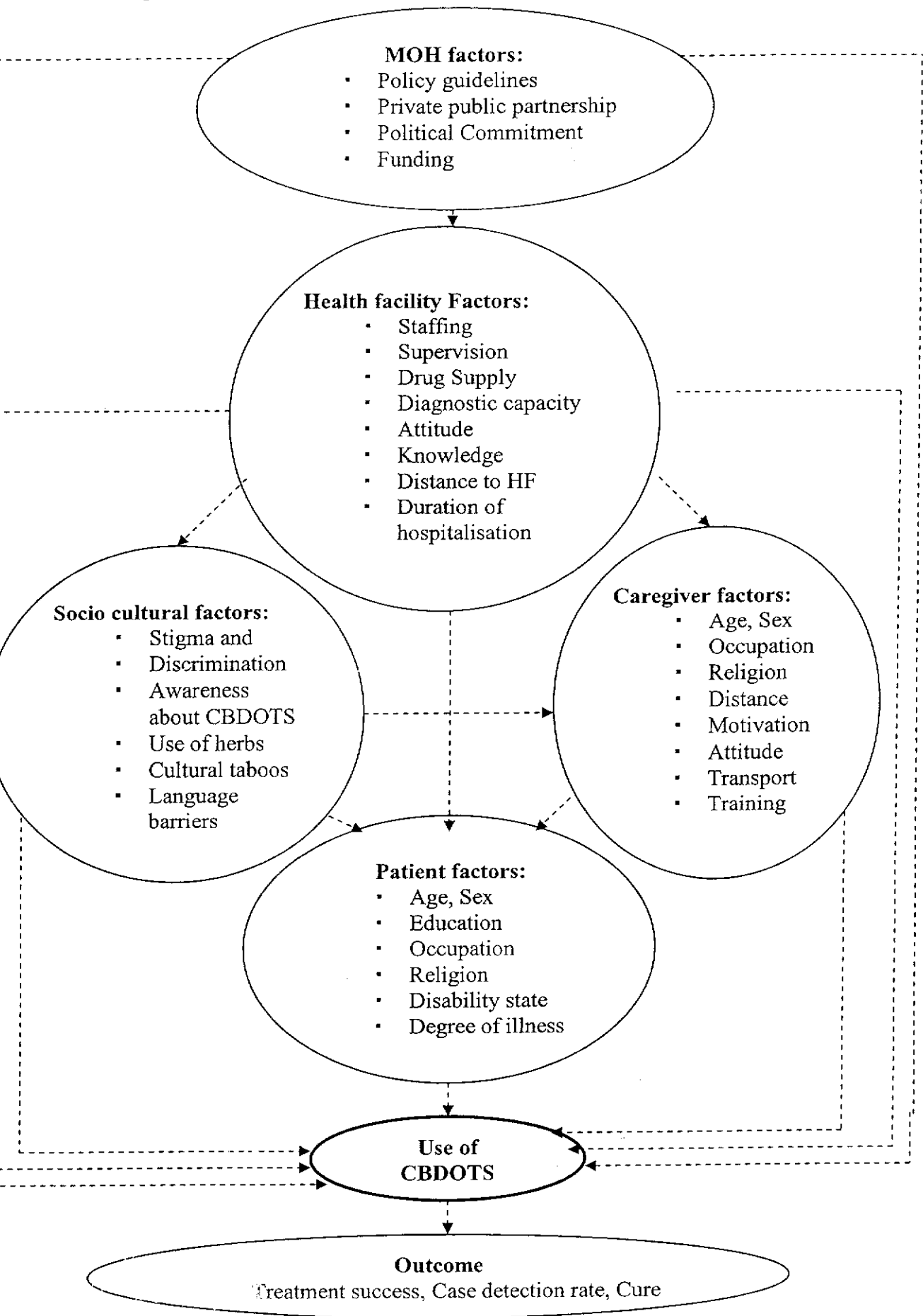
Reasons for low use of CBDOTS in Kampala were not clear. Yet with proper supervision and training, CBDOTS has proved to be a very effective strategy for controlling TB elsewhere (WHO, 2000). It is against this background that a study was deemed necessary to identify patient, socio cultural, service delivery and caregiver factors affecting use of CBDOTS, the attainment of the district target of 100% DOTS coverage (MOH, 2004) and ultimately the Millennium Development Goal of combating HIV/AIDS malaria and other diseases.

Evidence based information generated would inform the MOH, DHT and other stakeholders in planning interventions for scaling up use of CBDOTS in Kampala District.

Research Questions

1. Which patient factors affect utilisation of CBDOTS in Kampala District?
2. Which caregiver factors affect utilisation of CBDOTS in Kampala District?
3. Which socio cultural factors affect utilisation of CBDOTS in Kampala District?
4. Which health facility factors affect utilisation of CBDOTS in Kampala District?

3.3. Conceptual Framework for Factors Affecting Use of CBDOTS



Outcome of CBDOTS depends on the interaction of different factors at national (MOH), district, health facility and community levels.

At national level, lack of political commitment, policy guidelines, public and private sector partnership and funding contribute to low use of CBDOTS. These influence factors at district level.

At district level, health system factors such as: staffing, supervision, drug supply, diagnostic capacity, distance to the nearest health facility and training on CBDOTS are the underlying reasons for low use of CBDOTS. Health facility factors in turn influence the socio cultural, caregiver and patient factors

At household level, the use of CBDOTS can be influenced by socio cultural factors, caregiver factors and patient factors in a more complex manner. Patient factors such as; age, sex, religion, disability, illness, occupation, level of education, awareness about CBDOTS are the immediate factors influencing a patient's choice of CBDOTS.

4.0 OBJECTIVES OF THE STUDY

4.1 General objective of the study

To identify factors affecting use of Community Based DOTS in order to provide the DHT with information to develop interventions for scaling up use of CBDOTS in Kampala District.

4.2 Specific Objectives of the study

- To identify patient factors affecting use of Community Based DOTS in Kampala District
- To establish care giver factors affecting use of Community Based DOTS in Kampala District
- To identify socio cultural factors influencing use of community Based DOTS in Kampala District
- To assess health facility factors affecting use of Community Based DOTS in Kampala District

5.0 METHODS

5.1 Study Area

The study was conducted in Kampala District the capital city of Uganda. Kampala is situated in the central region and surrounded by Wakiso District, bordered by Mukono District to the east and touches Lake Victoria to the south. It covers a land area of 179 Km² and is divided into five administrative divisions namely: Nakawa, Central, Rubaga, Makindye and Kawempe.

According to the Population and Housing Census (2002), Kampala's resident population is 1,208,544 (588,433 males and 620,111 females) with a population growth rate of 4.1% compared to the national rate of 3.4%. The daily influx of people into the city for socio-economic reasons increases the population beyond 2 million during the day. The estimated number of households is 309,093 with an average household size of 3.8. The main socio economic activities in the area include manufacturing, industrial services, trade and urban agriculture that take 51% of the city land. Over 70% of the populations are low-income earners, majority lack shelter. More than fifty percent live in single-roomed houses found in slums commonly known as "Mizigos" (PHC survey, 1991).

5.2 Study Population

The study population consisted of smear positive TB patients aged 15 – 69 years, resident in Kampala District. These make up the bulk of the urban poor population usually characterized by low income and poor housing and living conditions. Majority of the study population were men who are exposed through smoking and doing risky jobs.

5.3 Study Design

A matched case control study complemented by qualitative methods of data collection.

5.3.1 Inclusion criteria

Cases

The cases included in this study met the following criteria:

- Smear- positive pulmonary TB patients
- Aged 15 – 69 years
- Diagnosed with TB within six months, before the conduct of the study
- Using CBDOTS
- Residents of Kampala District

Controls

The controls for this study included:

- Smear- positive pulmonary TB patients
- Aged 15 – 69 years
- Diagnosed with TB within six months before the conduct of the study
- Using the conventional hospital based approach with no intention to take CBDOTS at the time of the study.
- Resident in Kampala District

5.3.2 Exclusion criteria

The study excluded sputum smear positive TB patients who were too sick to be interviewed and not resident in Kampala District.

5.4 Sample Size Determination

The sample size was calculated according to Schlesselman (1982) formula for case control studies as given below; the number of subjects to be selected in a case control study depends on the specification of four values:

- Relative frequency of exposure among controls in the target population P_0
- The hypothesized relative risk associated with exposure that would have sufficient public health importance to warrant its detection, R
- The desired level of significance α
- The desired power of study $1 - \beta$

$$n = \frac{2pq(Z\alpha + Z\beta)^2}{(P_1 - P_0)^2}$$

$$P_1 = P_0 R / [1 + P_0(R - 1)]$$

$$P = \frac{1}{2} (P_1 + P_0)$$

$$Q = 1 - P$$

• n = Sample size

• Z_α = Standard normal value corresponding to the required level of significance = 1.96

• Z_β = Standard normal value corresponding to the required power of study 80% = 0.84

• P_0 = Estimated exposure rate (proportion exposed) among controls. According to, Okello et al, (2003), in Kiboga District of Uganda, average cost and duration of stay in hospital for TB patients on CBDOTS is 48% while for patients on the conventional approach (controls) is 86%. Duration of stay in hospital can be associated with use of CBDOTS. $P_0 = 0.86$

R = the hypothesised relative risk (estimated by the OR) associated with exposure that would have sufficient public health importance to warrant detection and intervention $R=3$.

$$P_1 = 0.86 \times 3 / [1 + 0.86 (3 - 1)]$$

$$1.58 / 2.72$$

$$P_i = 0.948529411$$

$$P = \frac{1}{2} (0.948529411 + 0.86)$$

$$P = 0.904264705$$

$$Q = 1 - 0.904264705$$

$$Q = 0.095735294$$

$$N = \frac{2 \times 0.904264705 \times 0.095735294 (1.96 + 0.84)^2}{(0.948529411 - 0.86)^2}$$

$$N = 173$$

The number of study units required for this study were 173 cases and 173 controls, giving a total sample size of 346 study units.

5.5 Sampling Procedures

Cases

Using multistage sampling technique, health facilities providing TB treatment from level II to IV were selected from the five health sub districts. Proportionate sampling was used to identify the number of TB patients to be enrolled in the study for each health facility. At the health facility cases were identified randomly as they came for drug refills.

Controls

Random sampling from the list of TB patients using the conventional hospital approach identified the controls.

One hundred caregivers were interviewed randomly to identify caregiver factors affecting use of CBDOTS in the district.

Key informants and participants in FGDs were selected purposively depending on their consent to participate.

5.6 Study Variables

5.6.1 Dependent variables

Dependent variables refer to the outcome variables; in this study the outcome variable was use or non use of CBDOTS which influenced treatment success, case detection rate and cure of TB patients.

5.6.2 Independent variables

Independent variables refer to factors that determine the outcome or measure the factors that are assumed to cause or at least influence the use or non use of CBDOTS as described in the paragraphs that now follow:

Patient factors: age, sex, level of education, occupation, marital status, and religion, awareness about CBDOTS, disability state (can walk / can not walk)

Caregiver factors

Age, sex, religion, level of education, training on CBDOTS, occupation, received incentive, availability of transport, distance to the patients' home, relationship between caregiver and patient (relative, friend, and neighbor).

Socio cultural factors

Transfer of patient or caretaker, stigma and discrimination (treated undesirably or denied access to any service due to illness, peoples reaction in patients presence) awareness about availability of about CBDOTS (heard about CBDOTS and know where to access CBDOTS), use of herbs, language and cultural barriers, religious sanctions and perceptions about CBDOTS (favourable or not favourable).

Health facility factors

Staffing (availability of more than one staff), availability of anti TB drugs, motivation (staff receive payment for contributing to TB care), availability of transport, supervision and frequency of supervision (weekly, monthly, quarterly), availability of policies and guidelines , diagnostic capacity (availability of staff, equipment and supplies) distance to health facility and to patients home(0-5 kilometer radius), duration of hospitalisation (19 days or more), attitude of health workers (favourable or not favourable), training.

5.7 Data Collection And Quality Control

5.7.1 Data Collection Tools

Quantitative and qualitative methods were used to collect data. Quantitative data was obtained using a semi-structured questionnaire. For qualitative data a key informant interview guide was used to collect information from 5 key informants including; the district TB focal person, 1 clinical Officer, 2 TB focal persons at health centre level and 1 health centre in charge. Qualitative data was also obtained using an observational checklist and focus group discussion guide. Six focus group discussions were held with CHWs, family supporters and patients. Each FGD had 8–10 participants. Information from questionnaires was used to inform and review the questions for FGDs.

5.7.2 Quality Control

In order to ensure quality of the data collected, the following measures were taken; Research assistant had a 2-days training on objectives of the study, techniques of data collection, and ethical considerations during data collection. Questions were designed in a logical way and translated into the local language.

A tape recorder was used to record qualitative data from key informants and focus group discussions. The Principal investigator and two note takers were present during focus group discussions to supplement the recorded information. Source triangulation was done to control for qualitative data while quality of quantitative was controlled using computer check code and double entry. The principal researcher closely supervised the research assistants on a daily basis; research assistants were consulted in cases of errors or missing data. Meetings were held on a daily basis with the research assistants to review the day's activities.

5.7.3 Pre-test

A pre-test was done before conducting the main study to test robustness of the methodology and find out whether data collection tools will be able to collect the desired data. Pre-testing also aimed at ensuring that the methods used for data collection were suitable and acceptable to the respondents and less time consuming. Outcome from the pre-test were used to revise the wording and sequencing of the questionnaires, ensure that translations were correct and less time consuming for to the respondents.

The principle investigator and the Research Assistants pre-tested the questionnaires and the methods on TB patients sampled from Naguru Health centre a health facility not included in this study in order to limit bias.

5.8 Data Management And Analysis

The data was managed using Epi info 2002 computer soft ware. Quantitative data was cleaned and coded before analysis. Quantitative data was then analysed using univariate, bivariate and logistic regression at multivariate analysis. P. values, odds ratios and 95% confidence interval were used to test significance and association between variables. Data was presented as frequencies, odds ratios and 95% confidence intervals in form of text, tables, bar and charts. Qualitative data was analysed using a master sheet analysis tool and presented as quotations from focus group discussions and key informant interviews was used to identify and supplement quantitative data.

5.0: RESULTS

5.1 Socio-Demographic Characteristics Of Respondents

There were 346 respondents (173 cases and 173 controls) enrolled in this study. The mean age of the cases was 30 years (SD=11.3) with a minimum of 15 years and a median of 28, while that for the controls was 33 years (SD= 9.9) with a minimum of 16 years and a median of 31 years. The sex ratio for cases and controls was nearly the same with 57.2% of the cases being males and 42.8% females while 59.0% of the controls were males and 41.0% were females. Almost half of the respondents were currently married (49.1 % cases, 43.9% controls). The most dominant religion was Catholic (37.0 cases, 32.9 controls) followed by Protestants (26.6 cases, 33.5 controls) and Muslims (30.8% cases, 23.1% controls). Only 5 (2.9%) of the cases and 8 (4.6%) of the controls were disabled. The number of respondents who attained secondary education was similar among cases and controls (45.7%). A quarter (26.0%) of the cases were salary or wage earners compared to 21.4% of the controls.

In contrast, qualitative results from 3 key informants revealed that socio economic status affected the use of CBDOTS in Kampala District

“Most patients are poor and come from slum areas, for some one to take drugs they have to eat well, patients don’t have the money to buy good food, they are poor because they are sick, the little money they get is spent on transport” KI Interview TB Focal person Kawempe Health centre.

This was confirmed in all FGDs when respondents said:

“These drugs are so big and too many, you need to eat well to stay strong. In Kampala, it is difficult to get food, unlike in the village” FGD participant with TB patients

Table 1 **Socio-Demographic Characteristics Of Respondents**

Characteristic	Cases		Controls	
	n	(%)	n	(%)
Respondent's age (Years)				
15	3	1.7	0	0.0
16 - 24	69	39.9	45	26.0
25 - 34	52	30.1	69	39.9
35 - 44	31	17.9	41	23.7
45 - 54	13	7.5	13	7.5
55 - 74	5	2.9	5	2.9
Respondent's sex				
Male	99	57.2	102	59.0
Female	74	42.8	71	41.0
Respondent's marital status				
Married	85	49.1	76	43.9
Single	68	39.3	63	36.4
Divorced/separated	25	8.7	22	12.7
Widowed	5	2.9	12	6.9
Respondent's religion				
Catholic	64	37.0	57	32.9
Muslim	36	30.8	40	23.1
Born again	22	12.7	14	8.1
Protestant	46	26.6	58	33.5
Other	5	2.9	4	2.3
Level of education				
Nil	4	2.3	5	2.9
P1-P4	15	8.7	24	13.9
P5-P7	60	34.7	52	30.1
Secondary	79	45.7	79	45.7
Tertiary	15	8.7	13	7.5
Respondent's Occupation				
Farmer	15	8.7	25	14.5
Salary/Wage earner	45	26.0	37	21.4
Tractor	28	16.2	29	16.8
Housewife	13	7.5	10	5.8
Unemployed	47	27.2	54	31.2
Student	25	14.5	18	10.4
Total		100		100

Further analysis of socio demographic factors revealed that the rate of unemployment was lower among the cases (27.2%) than controls (31.2%).

6.2 Socio Demographic Characteristics Of Caregivers

Majority of the caregivers were aged between 27 –36 years (39%) followed by 37-46 (25%) years. The mean age of caregivers was 35 years with (SD= 10.74). There were more female caregivers (66%) than males (34%). More than half of the caregivers had attained secondary education (58%) and 13% had reached tertiary level.

Table 2 Socio Demographic Characteristics Of Caregivers

Characteristic	Frequency N=100	Percent
Age		
<=16	3	3.0
17-26	18	18.0
27-36	39	39.0
37-46	25	25.0
47-76	15	15.0
Sex		
Male	34	34.0
Female	66	66.0
Religion		
Catholic	32	32.0
Muslim	18	18.0
Born again	17	17.0
Protestant	33	33.0
Level of Education		
P1-P4	10	10.0
P5-P7	19	19.0
Secondary	58	58.0
Tertiary	13	13.0

6.3 Health Facility Factors Affecting Use of CBDOTS in Kampala District

Mean duration of hospitalization was significantly shorter among cases at 2.6 days (SD=10.340) compared to 13 days (SD=22.093) for controls, while the mean duration of illness was almost similar for the cases (4.8 months, SD=1.364) and controls (4.6 months, SD=1.617). Over half of the respondents used x-ray (cases 79.8%, controls 83.2%) and laboratory (cases 87.9%, controls 70.5%) for TB diagnosis.

Table 3 Health Facility Factors Affecting Use of CBDOTS

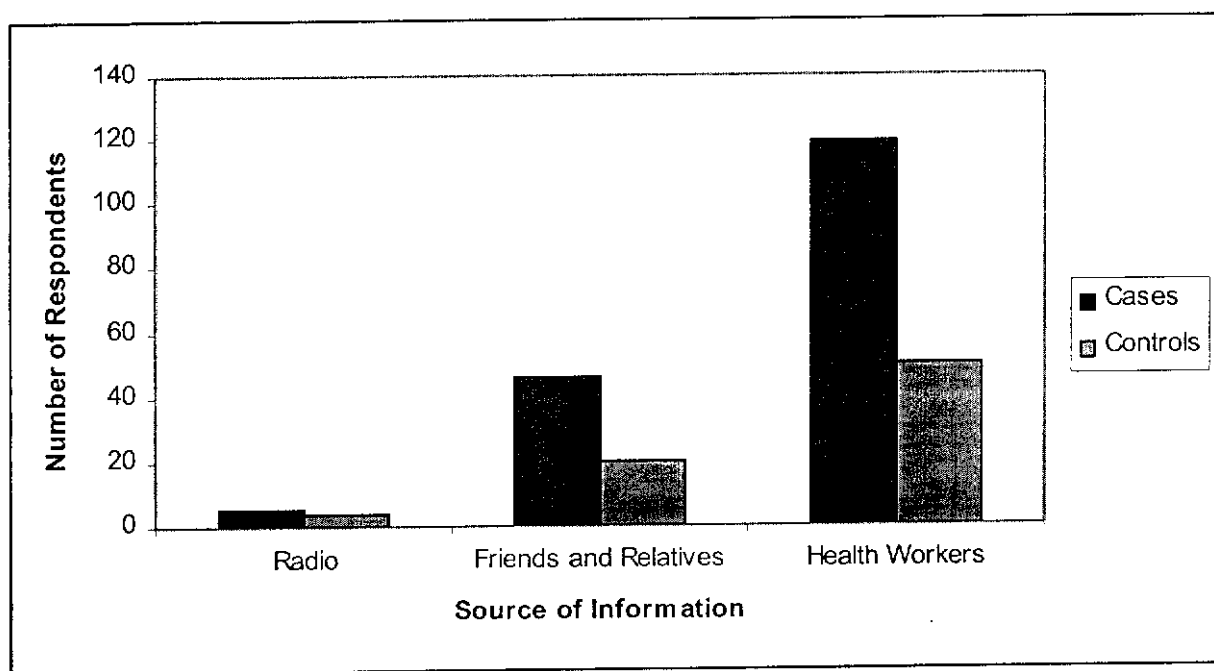
Characteristic	Cases		Controls	
	n	(%)	n	(%)
Method of TB Diagnosis				
X-ray	138	79.8	144	83.2
Yes	35	20.2	29	16.8
No				
Laboratory	152	87.9	122	70.5
Yes	21	12.1	51	29.5
No				
Medical History	31	17.9	48	27.7
Yes	142	82.1	125	72.3
No				
Duration of hospitalization				
0-19 days	167	96.5	127	73.4
20-90 days		6		3.5
Total		100		100

6.4 Relationship Between Socio-Demographic Characteristics of Respondents and Use of CBDOTS

In order to determine the degree of association between socio-demographic characteristics and use of CBDOTS, multilevel categorical variables were dichotomized to allow for bivariate analysis. Age was categorized based on the Adolescent Reproductive Health policy; sex, marital status, level of education, occupation; religion and disability were categorized according to the 2000 UDHS. Duration of hospitalization was categorized according to previous studies by Okello et al (2003).

Cases were more likely than controls to be less than 24 years (OR=1.9523, 95% CI: 1.2211-3.1213). Although it is not certain whether and how often the radio was used for disseminating information on CBDOTS, this study revealed that the radio was less utilised as a source of information on CBDOTS. Cases were more likely than controls to have heard about CBDOTS from health workers and friends and relatives (OR= 5.4211, 95%CI: 3.4227-8.5864) and (OR=2.7709, 95% CI: 1.5587-4.9256) respectively.

Figure 2: Sources Of Information About CBDOTS For Cases And Controls



Other socio demographic characteristics like sex, education, marital status, religion, occupation and disability state were found not to have any statistically significant association with use of CBDOTS.

Table 4 Results Of Bivariate Analysis Of Socio-Demographic Characteristics

Characteristics	Cases (n = 173)		Controls (n=173)		Odds Ratio	95% CI
	n	%	n	%		
Age of respondent (years)						
15-24	64	37.0	40	23.1	1.9523	1.2211-3.1213*
25-69	109	63.0	133	76.9		
Sex						
Male	99	57.2	102	59.0	0.9312	0.6075-1.4275
Female	74	42.8	71	41.0		
Level of Education						
≤Primary seven	79	45.7	81	46.8	0.9546	0.6255-1.4567
Post Primary	94	54.3	92	53.2		
Current Marital status						
Married	85	49.1	76	43.9	1.2328	0.8075-1.8821
Not Married	88	50.9	97	56.1		
Religion						
Christian	137	79.2	133	76.9	1.1445	0.6876-1.9052
Non Christian	36	20.8	40	23.1		
Occupation						
Employed	43	33.6	54	39.7	0.7682	0.4648-1.2697
Unemployed	85	66.4	82	60.3		
Disabled						
Yes	5	2.9	8	4.6	0.6138	0.1967-1.9152
No	168	97.1	165	95.4		
Heard about CBDOTS						
Yes	132	76.3	68	39.3	4.9713	3.1238-7.9115*
No	41	23.7	105	60.7		
Source of information						
Health workers						
Yes	119	68.8	50	28.9	5.4211	3.4227-8.5864*
No	54	31.2	123	71.1		
Friends and relatives						
Yes	46	26.6	20	11.6	2.7709	1.5587-4.9256 *
No	127	73.4	153	88.4		
Total		100		100		

* Statistically significant at 95% Confidence Interval

6.5 Caregivers Factors Affecting Use Of CBDOTS In Kampala District

In order to identify caregiver factors affecting the use of CBDOTS in Kampala District, one hundred caregivers were interviewed and data analyzed using univariate analysis.

Twenty two percent of the caregivers had had training in CBDOTS within the last 2 years. Ninety six percent had family relations with the patients. Over 94% of the caregivers understood their role as ensuring that the patient takes their medication and collecting drugs from the health facility. Others viewed their role as providing information (17%) keeping patient's records (46%) encouraging patients to take medication (17%) and follow-up on defaulting patients (3.0%).

One hundred percent of the care givers said they did not receive any incentives for contributing to TB care. This was confirmed in 6 FGDs with a general consensus that lack of incentives was responsible for the low participation of caregivers and therefore use of CBDOTS in Kampala District

“After the training we were promised bicycles and incentives but nothing has been given, not even refresher trainings” FGD participant CHW Kawempe Health Centre.

The caregivers were also asked what challenges they faced in contributing to TB care; 50% mentioned transport costs, 34% money to buy drugs for their patients, 33% said they often missed work and 26% could not afford good food for patients to whom most were also related. Other problems mentioned were; fear of infection (18%), failure of patient to follow the doctor's instructions (12%) and long distance to the health facility (9%) among others. The mean distance to the nearest health facility offering TB care was 0.4 kilometers (SD: 1.3933). Seventy eight percent (78%) of the caregivers said that they did not need any

transport to visit the patient while 17 % said they moved on foot to visit their patients on a daily basis. Others used a bicycle (1.0%) or a motorbike (4.0%).

Table 5 Univariate Analysis Of Caregiver Factors Affecting The Use Of CBDOTS

Characteristic	Frequency N=100	Percent
Role of caretaker		
Ensure patient takes drugs	94	94.0
Collect drugs	94	94.0
Record keeping	46	46.0
Provide information	17	17.0
Encourage patient	17	17.0
Follow up defaulters	3	3.0
Challenges of CBDOTS		
Transport costs	50	50.0
Money to buy drugs	34	34.0
Miss work	33	33.0
Lack food	26	26
Fear of infection	18	18.0
Patient does not follow instructions	12	12.0
Patient does not eat	9	9.0
Distance to the health facility	9	9.0
Ever had training in CBDOTS		
Yes	22	22.0
No	78	78.0
Relationship with Patient		
Family member	96	96.0
Not family member	4	4.0

6.6 Socio-Cultural Factors Affecting The Use Of CBDOTS

Socio-cultural factors influence the use of CBDOTS. According to this study, 166 cases (96.0%) compared to 155(78.0%) controls pointed out that family and community perception about CBDOTS was favourable 133 (76.9%). Although a generally positive perception about CBDOTS was reported in all FGDS, some participants strongly disagreed with the use of CBDOTS, they preferred health facility DOTS to CBDOTS

“For me I prefer to come to the health facility, it is like school, seeing other patients swallow their drugs daily has encouraged me to take mine too” FGD participant, TB patients Mulago Hospital

Results from this study also showed that cases were more likely than controls to use herbs for treating TB disease, (OR=5.5229, 95%CI: 1.8465-16.5186).

Thirty-five (20.2%) of the cases compared to ten (5.8%) of the controls stated that lack of incentives for caregivers was responsible for the low use of CBDOTS in Kampala District. Cases were more likely than the controls to cite lack of incentive pay as a factor affecting use of CBDOTS (OR=4.1341, 95%CI: 1.9755-8.6514). This was confirmed in 3 FGDS

“CHWs can easily give up their work since it is voluntary; they get fed up and stop performing” FGD participant Mulago Hospital

This study revealed that more cases than controls were likely to mention transfer of the care taker as being associated with low use of CBDOTS in Kampala (OR= 3.3188, 95% CI: 2.0851-5.2824). Similar findings were revealed in 4 FGDS

“In Kampala District, people move a lot from one area to another, if a patient or caretaker shifts to a new location this may affect CBDOTS leading to defaulting”
FGD participant- Kawempe Health centre.

Two key informants confirmed this in an interview when they said:

“The dynamics of the urban population can not allow the use of CBDOTS. For CBDOTS to succeed, the patient, health worker or caretaker have to be in one place for some time which can't be achieved in an urban setting, it is rare to have all these three in one place, at least one will go away” KI, Interview District TB Focal Person.

Less than a quarter of the cases 22 (12.7%) compared to only 9 (5.2%) of the controls revealed lack of trust for caretaker's knowledge on CBDOTS as the reason for it's low use. More cases were likely to mention this than the controls (OR=2.6549, 95%CI: 1.1853-5.9467). Likewise, more cases 70 (40.5%) compared to controls 50 (28.2%) associated low use of CBDOTS with caretakers being busy (OR=1.6718, 95%CI: 1.0687-2.6154).

Use of alternative treatment, unavailability of CHWs, language barriers, fear of stigma and discrimination and religious laws were found not to have any statistically significant association with the use of CBDOTS at bivariate analysis. Details on socio-cultural factors can be seen in Table 6.

Table 6 Bivariate Analyses Of Socio-Cultural Factors Affecting Use Of CBDOTS

Characteristics	Cases		Controls		OR	95% CI
	(n = 173)		(n=173)			
	n	%	n	%		
Perception of the community and family						
Favourable	166	96.0	135	78.0	6.6751	2.8888-15.4242*
Unfavourable	7	4.0	38	22.0		
Used alternative treatment						
Yes	25	14.5	23	13.3	1.1016	0.5985-2.0278
No	148	85.5	150	86.7		
Unavailability of CHW						
Yes	63	36.4	50	28.9	1.4089	0.8969-2.2132
No	110	63.6	123	71.1		
Stigma and discrimination						
Yes	110	63.6	96	55.5	1.4005	0.9101-2.1551
No	63	36.4	77	44.5		
Use of herbs						
Yes	20	11.6	4	2.3	5.5229	1.8465-16.5186*
No	153	88.4	169	97.7		
Lack of awareness about CBDOTS						
Yes	122	70.5	73	42.2	3.2769	2.1003-5.1126*
No	51	29.5	100	57.8		
Lack of incentive pay						
Yes	35	20.2	10	5.8	4.1341	1.9755-8.6514*
No	138	79.8	163	94.2		
Transfer of caretaker						
Yes	85	49.1	39	22.5	3.3188	2.0851-5.2824*
No	88	50.9	134	77.5		
Don't trust caretaker's knowledge						
Yes	22	12.7	9	5.2	2.6549	1.1853-5.9467*
No	151	87.3	164	94.8		
Caretaker is busy						
Yes	70	40.5	50	28.2	1.6718	1.0687-2.6154*
No	103	59.5	123	71.1		
Total		100		100		

* Statistically significant at 95% Confidence interval

6.7 Health Facility Factors Affecting Use Of CBDOTS In Kampala District

Social and patient factors may favor the use CBDOTS, while factors in the health system such as availability of drugs, staffing, availability of laboratory equipment, motivation, supervision and attitude of staff may not be favourable. In order to identify health facility factors that affect the use of CBDOTS, bivariate and univariate analysis was done.

Results from bivariate analysis revealed that distance to the health facility, availability of drugs and duration of hospitalization had a statistically significant association with the use of CBDOTS. More cases (73.4%) than controls (48.0%) were within a five kilometre radius to the nearest health facility offering TB services and therefore likely to use CBDOTS than those who lived further than five kilometres (OR=2.9937, 95%CI: 1.9084-4.6963).

In all FGDs it was reported that transport costs to the health facility affected use of CBDOTS

“TB weakens a lot and one may not be able to walk to the health facility every other week to collect drugs, secondly, it is expensive in terms of transport, some of us don’t work any more, so one may fail to go for drugs due to lack of transport” FGD participant Kiswa Health centre

The proportion of cases and controls told to buy drugs at one point in time during their medication was almost the same. However, cases (53.2%) were more likely than controls (42.2%) to be told to buy TB drugs when they were lacking at the health facility (OR=1.5559, 95%CI: 1.0177-2.3788). Cases (96.5%) were also more likely than controls (73.4%) to stay a shorter duration (0-19 days) in hospital, (OR=10.0814, 95%CI: 4.1753-24.3415).

Table 7 Health Facility Factors Affecting Use Of CBDOTS.

Characteristics	Cases (n = 173)		Controls (n=173)		OR	95% CI
	n	%	n	%		
Distance						
0-5	161	93.1	121	69.9	5.7658	2.9488-11.2739*
6-80	12	6.9	52	30.1		
Ever told to buy drugs						
Yes	92	53.2	73	42.2	1.5559	1.0177-2.3788*
No	81	46.8	100	57.8		
Duration of hospitalization						
0-19 days	167	96.5	127	73.4	10.0814	4.1753-24.3415*
20-90 days	6	3.5	46	26.6		

* Statistically significant at 95% Confidence Interval

Univariate analysis of health facility factors from observational checklist revealed that: 3/5 (60%) of the health facilities had at least more than one staff specifically for TB care, 4/5(80%) had a laboratory with functioning microscopy. One hundred percent of the health facilities with functioning microscopy did not experience stock outs of reagents. One hundred percent of the health facilities visited had TB treatment and management guidelines and 4/5 (80%) of the health facilities had a separate/private place for attending to TB patients.

With regard to drug supply, only 1/5 (20%) of the health facilities visited had rifampicin, isoniazid, ethambutol, and pyrazinamide while 3/5(60%) had streptomycin. All health facilities visited did not experience drug stock outs until between January and February 2006 when the Global fund was reduced to follow-up on some financial irregularities at the time.

Transport for supervision and monitoring of CBDOTS was only available in 1/5(20%) of the health facilities visited. This was reechoed by 2 key informants

“All health units had taken up DOTS but drug stock outs and lack of facilitation affected its success.” “we get very little support from WHO compared to the number of

patients from within and from other districts, we don't get any support from the district" KI District TB Focal Person KI Interview District TB Focal person.

Supervision of caregivers was done weekly in 1/5 (20%) of the health facilities, monthly in 2/5 (40%) of the health facilities and not at all in 2/5 (40%) of the health facilities visited.

In 3 FGDs there was a general consensus that apart from the lack of drugs that was a problem at the time of the study, participants mentioned low staffing as a health facility factor affecting the use of CBDOTS,

"The health centers are understaffed; only one person gives the drugs and provides health talks. What happens when that person goes for a seminar?" FGD participant

Kawempe Health centre

A review of the records showed that all facilities kept records on CBDOTS but they were incomplete with some information missing.

Unlike in the quantitative results, qualitative results from one FGD revealed that poor staff attitude discouraged TB patients from using CBDOTS

"Some CHWs may be impatient with you, to the extent that they start saying; are we the ones who made you sick, wait for us we are coming" FGD participant Mulago Hospital.

6.8 Multivariate analysis

Significant variables on bivariate analysis including potential confounders were put into the logistic regression model. Backward stepwise conditional logistic regression was done to control for confounding as shown below:

Logit P (Y) = α + β_1 (Lack of awareness about CBDOTS)

β_2 (Lack of incentive pay / motivation)

β_3 (Don't trust caretaker's knowledge about CBDOTS)

β_4 (CHWs are busy)

β_5 (Duration of hospitalization 0-19 day or > 19 days)

β_6 (Health workers as source of information about CBDOTS)

β_7 (Friends and relatives as a source of information about CBDOTS)

β_8 (Perception of the community/family about CBDOTS)

β_9 (Ever told to buy drugs)

β_{10} (Use of herbs)

β_{11} (Distance to health facility within a 5 kilometer radius or more)

β_{12} (Transfer of patient or caregiver)

β_{13} (Age)

β_{14} (Marital status of patient)

β_{15} (Occupation of patient)

β_{16} (Level of Education of patient)

β_{17} (Sex)

Where: P(Y) is the probability of being a TB patient using CBDOTS

α is the Y intercept,

β is the coefficient estimate of the exposure or potential confounder variables.

This model explains 53 % (Nagelkerke R Square Value) of the variation in the outcome variable: Use of CBDOTS yes or no. Table 8 shows the final regression model

Table 8 B-Coefficients And Odds Ratios on Factors Affecting Use of CBDOTS Obtained From The Best Fit Model

Variable	β -coefficient	Adjusted OR	95%CI	P.Value
Awareness about CBDOTS (1=Yes, 0 = No)	1.115	3.051	1.0749-5.321	0.000*
Incentive pay (I=Yes,0 = No)	1.386	3.997	1.610-9.923	0.003*
Duration of hospitalization (1=0-19 days 0 = > 19 days)	0.024	1.024	1.004-1.045	0.019*
Community perception (1=Favourable,0=not favourable)	-1.557	0.211	0.081-0.551	0.001*
Use of herbs (1= Yes, 0 = Not)	1.570	4.807	1.329-17.381	0.017*
Distance to the health facility(1=0-5 Km , > 5 Km)	0.166	1.181	1.055-1.321	0.004*
Source of Information:				
Health workers (1 = Yes , 0 = No)	1.194	3.300	1.908-5.707	0.000*
Friends & relatives (1= Yes, 0 = No)	0.907	2.476	1.194-5.138	0.015*

*Statistically significant at 95% Confidence Interval

There was a statistically significant association revealed by results from backward stepwise conditional regression analysis and bivariate analysis as follows; cases were more likely than controls to cite lack of awareness about CBDOTS (OR= 3.051, 95%CI: 1.0749-5.321) and lack of incentive pay or motivation (R= 3.997,95%CI: 1.610-9.923) as factors affecting the use of CBDOTS. With regard to hospitalization, cases were more likely than controls to be hospitalized for few days (0-19 days) (OR=1.024, 95%CI: 1.004-1.045) and to be within a five kilometre radius of a health facility offering CBDOTS (OR= 1.181, 95% CI: 1.055-1.321). Also cases were more likely than controls to have heard about CBDOTS from health workers (OR= 3.300, 95%CI: 1.908-5.707) and friends and relatives (OR=2.476, 95% CI: 1.194-5.138).

Lastly, more cases than controls were likely to use herbs for treating TB disease (OR= 4.807, 95%CI: 1.329-17.381). Although community perception was positively associated with use of CBDOTS at bivariate analysis (OR=6.6751, 95%CI: 2.8888-15.4242), this association turned out to be negative at multivariate analysis (OR= 0.211, 95% CI: 0.081-0.551).

Variables that were significant on bivariate analysis but eliminated from the best model include; don't trust caretaker's knowledge, CHWs are busy, ever bought drugs, age and transfer of care taker or patient. The association between these variables and use of CBDOTS at bivariate analysis could have been due to confounding. No significant association was found to exist between potential confounders such as sex, occupation, and marital status, level of education and use of CBDOTS at bivariate and multivariate analysis.

Table 9 Comparison Of Crude Odds Ratios And Adjusted Odds Ratios

Variable	Unadjusted		Adjusted	
	OR	95% CI	OR	95%CI
Awareness about CBDOTS (1=Yes, 0 = No)	3.2769	2.1003-5.1126*	3.051	1.0749-5.321 *
Incentive pay (1=Yes,0 = No)	4.1341	1.9755-8.6514*	3.997	1.610-9.923*
Duration of hospitalization(1=0-19,0 = >19days)	10.08	4.175-24.342*	1.024	1.004-1.045 *
Community perception (1=Favourable,0=No)	6.675	2.8888-15.4242*	0.211	0.081-0.551*
Use of herbs (1= Yes, 0 = Not)	6.084	1.596-23.183 *	4.807	1.329-17.381*
Distance to health facility (1=0-5Km ,>5 Km)	5.766	2.9488-11.2739*	1.181	1.055-1.321*
Source of Information:				
Health workers (1 = Yes , 0 = No)	5.421	3.4227-8.5864*	3.300	1.908-5.707 *
Friends & relatives (1= Yes, 0 = No)	2.771	1.5587-4.9256*	2.476	1.194-5.138 *

A comparison of unadjusted and adjusted odds ratios shows that there was a statistically significant association between most variables and use of CBDOTS. Although community perception was statistically significant at bivariate analysis, it turned out to have a negative association with use of CBDOTS on application of the best-fit model.

7.0 DISCUSSION OF THE RESULTS

7.1 Patient Factors Affecting The Use Of Community Based DOTS

This study found that people less than 24 years were more likely to use CBDOTS. It was also evident that people who had heard about CBDOTS more so from health workers and relatives or friends were more likely to use CBDOTS. Similar findings were reported by WHO, (2003) that patients who are more informed about CBDOTS are more likely to use it than their counterparts. There was no significant association between disability and use of CBDOTS as reported by Arora et al, (2003).

Although a study in Thailand found that implementing DOTS in an authoritarian style resulted in low adherence to DOTS and hence low cure rates, (Ngamuvithayapong et al, 2001), this study did not find out whether patients were forced or decided for themselves to use CBDOTS. Similarly, this study did not investigate the relationship between degree of illness of respondent and use of CBDOTS as reported by Khan, et al, (2002).

This study revealed that 96% of caregivers for patients on CBDOTS had family relations with the patients. This confirmed the findings of WHO (2003) that in Kampala District acceptance of community option for DOTS supervision was lower than expected due to unwillingness of TB patients to accept DOTS from CHWs.

Contrary to Khan et al'(2002) study that reported that TB patients had low levels of education, findings of this study suggest that over 50 % of the TB patients had attained secondary and tertiary education.

7.2 Caregiver Factors Affecting Use Of Community Based DOTS

WHO (2002) in a study by the DANIDA-assisted TB project (DANTB) in India revealed that about 40% of the health workers thought that the CHWs were not competent to render TB services since they did not possess the minimum education and skills for record keeping and observation of side effects. In Thailand patients also complained of poor education of CHWs about DOTS, saying that they had more confidence in doctors than in community volunteers and received poor information from CHWs about DOTS (WHO, 2000). This was contrary to this study which found out that more than half of the caregivers had attained secondary education (58%) and tertiary (13%) education. Twenty two percent had had at least one training in CBDOTS within the last 2 years. Contrary to studies in India where health workers thought CHWs were incompetent to render TB services, in Kawempe division of Kampala, the lack of knowledge and skills among health staff affected the TB recording and reporting system and use of CBDOTS (WHO, 2003). This study found that CHWs were not necessarily incompetent as earlier reported by other studies.

According to this study one hundred percent of the care givers said they did not receive any incentives for contributing to TB care. Similarly, WHO (2000 and 2003) reported that motivation was very crucial and the lack of it could affect delivery of services by CHWs. Also in South Africa, in order to sustain treatment supporter's contribution to TB care, CHWs were provided with a cash incentive, transport and training (WHO, 2003) which was not the case among caregivers interviewed in this study. Findings from this study may be a confirmation of a statement by Kironde, (2002) that the fact that volunteers were not paid for their work appeared to be a crucial factor determining people's decision to volunteer.

In India, not all patients were adhering to TB treatment for reasons that CHWs and patients were from the same village and many times related, CHWs allowed many concessions by the patients including not strictly adhering to DOTS (WHO, 2002). Nearly similar findings were revealed by this study in which 96% of the caregivers were related to the patient and therefore could have allowed concessions by the patients. This could have affected the effective use of CBDOTS.

In one FGD in this study, poor staff attitude was cited as a factor discouraging TB patients from using CBDOTS. Similar findings were reported by Ngamuvithayapong et al (2001), when they reported that many studies show that a good relationship between health providers and clients promoted adherence to DOTS and that Health workers perception that DOTS is impractical can also affect utilization and implementation of CBDOTS at community level (WHO, 2002).

The difference between this study and others studies was that caregivers were also asked what challenges they faced in contributing to TB care; 50% mentioned transport costs, 33% said they often missed work and most of the caregivers who were related to the patients said that they could not provide the nutritious food to the patients. Other problems associated with contributing to TB care mentioned were; fear of infection (18%), failure of patient to follow the doctor's instructions (12%) and distance to the health facility (9%).

7.3 Socio Cultural Factors Affecting Use Of Community Based DOTS

Contrary to other studies, this study investigated and found that the use of herbs was associated with CBDOTS; patients on CBDOTS were more likely to use herbs. This is because being in the community exposed them to alternative treatments like herbs.

Frequent transfer or shift to new locations by either the patient or caregiver affected the use of CBDOTS in Kampala. This is typical of an urban setting like Kampala where the study was conducted. This compares to findings by WHO (2001), who reported that in Ndola Zambia, a town similar to Kampala, TB patients moved without informing staff and provided wrong addresses so that tracing defaulters was difficult. Similarly earlier studies by WHO (2001), in Kampala District, found that the NTP faced challenges in implementing CBDOTS on account of greater complexity of health service provision and less cohesive nature of urban communities in comparison with rural areas.

Lack of trust in caretaker's knowledge was cited as a reason for low use of CBDOTS in this study. This confirms findings from Thailand where patients complained of poor education of CHWs about DOTS saying that, they had more confidence in doctors than in community volunteers and received poor information from CHWs about DOTS (WHO, 2000).

Qualitative results of this study revealed that stigma and discrimination were associated with use of CBDOTS when participants in FGDs and key informant interviews reported that TB was associated with having HIV/AIDS. Similar findings were reported by WHO (2000) and Ngamuvithayapong et al (2001).

Unavailability of CHWs, interference, and religious sanctions were found not to have any statistically significant association with the use of CBDOTS in Kampala District as reported by WHO (2002) but were mentioned in FGDs.

Availability of family and social support influences a patient's decision to use CBDOTS according to Medicus Mundi (2001), although this study attempted to investigate this, it was found to have no significant association with use of CBDOTS in Kampala District instead, low use of CBDOTS was found to be associated with caretakers being busy.

7.4 Health Facility Factors Affecting Use Of Community Based DOTS

Accessibility of health facilities influences choice and use of CBDOTS. The longer the distance to the health facility, the less likely one will use CBDOTS. This is in agreement with a report by WHO (2002) that accessibility was an important but not a determining factor for TB patients' choice of a particular provider for DOTS. Similarly, Walley, et al, (2002) reported that consuming DOTS at the health facility was inconvenient, but the degree of inconvenience depended on how far the patient was expected to walk or how expensive the bus fare would be.

This study revealed that duration of hospitalization influenced the use of CBDOTS in Kampala District. TB patients (cases) were likely to be hospitalized for a relatively shorter time compared to the controls. This was in agreement with findings by Okello et al (2003) in Kiboga District of Uganda that the average duration of hospital stay for TB patients on the conventional hospital approach was 60 days while for patients on CBDOTS 19 days. This could have had influence on the choice of the mode of DOTS by the patients.

Understaffing of health workers limits supervision of CHWs and provision of personal care to patients according to (Khan, et al, 2002). This was in agreement with findings from FGD which reported that in some health facilities; only one person was responsible for giving drugs and at the same time provides health talks. This study also revealed that only sixty percent of the health facilities had at least more than one staff providing TB care.

Health workers lack of knowledge of TB and DOTS was associated with use of CBDOTS. In Kenya, nurses, who provide at least 50% of TB care, did not receive any training on TB, similarly in Kawempe division of Kampala, lack of knowledge and skills among the health staff affected the TB recording and reporting system and data on treatment outcomes for most patients were unavailable (WHO, 2003). Meanwhile in Thailand, staff expressed the need for more training in TB and DOTS (Ngamuvithayapong et al, 2001). This was in agreement with this study which revealed that only twenty two percent of the caregivers had had training in CBDOTS within the last 2 years. This clearly indicates that the health staff did not have sufficient knowledge to pass on to the CHWs hence affecting use of CBDOTS.

According to this study, only 20% of the health facilities visited had rifamcin, isomazid, ethambutol, and pyzinamide while 3/5 (60%) had streptomycin. Findings in a study by Nakanwagi (2004), in Kampala (Uganda) indicated that only 15% of the health facilities stocked at least one anti TB drug. It's worthy to note that this study was conducted between January and February 2006 when there was a general lack of TB drugs in all health facilities as the global fund had reduced funding for TB, Malaria and HIV/AIDS care to investigate some irregularities in the management of the funds. This could have affected the validity of our study findings.

Lack of TB treatment guidelines affects the provision of standard treatment to TB patients by both health workers and CHWs. Evidence suggests that only 21% of private health facilities in Kampala Uganda had guidelines for management of TB (Nakanwagi, 2004). This was contrary to this study which found that 100% of the health facilities had guidelines for TB management. This could be attributed to increased need to control the spread of TB in the district.

According to this study, it was reported in one FGD that, health workers came late and closed late, affecting patient's ability to maintain their work schedule. Nearly similar findings were reported in India, patients were unable to accept DOTS owing to the inconvenience due to unsuitable center-timings (Arora, et al, 2003

Lack of sufficient TB diagnostic capacity can be an obstacle to the expansion of CBDOTS, (MOH, 2005). In Kampala District, studies show that only 69% of the private health facilities had a laboratory with functioning microscope and 65% were doing sputum microscopy, (Nakanwagi, 2004). Although these studies did not have the same study population, in contrast, this study revealed that 80% of the health facilities studied had a laboratory with functioning microscopy.

Contrary to other studies which did not investigate these factors, this study found that 80% of the health facilities had a separate/private place for attending to TB patients, and that transport for supervision and monitoring of CBDOTS was only available in 20% of the health facilities visited, supervision of caregivers was done weekly in 20% of the health facilities. All facilities kept records on CBDOTS but they were incomplete with some of information missing.

Unlike previous studies cited, this study did not investigate the role of public private partnership in use of CBDOTS as reported by, WHO (2003) and Nakanwagi (2004). Similarly the degree of political commitment and its influence on use of CBDOTS was not established in this study unlike studies by MOH (2003) in Rakai and Kiboga Districts in Uganda which found that varying political and community commitment to CBDOTS as a constraint.

8.0 LIMITATIONS OF THE STUDY

The study was conducted at a time when there was a general lack of drugs in all health facilities due to the global fund saga; this could have biased the responses thus affecting the results. In order to minimize this, respondents were asked to mention other factors other than lack of drugs that affected the use of CBDOTS.

Only active care takers were interviewed. Interviewers were un able to reach in active caretakers due to long distances to their homes and work places this may have introduced a selection bias hence limiting generalisability of results to all caretakers.

9.0 CONCLUSIONS

Individual factors such as age influenced use CBDOTS. Younger TB patients (less than 24 years) were more likely to opt for CBDOTS.

Awareness about availability of CBDOTS promoted its use, particularly where health workers and friends and relatives were the main source of information.

Most care takers were aged between 27 – 36 years and were mainly females. This conforms to the socially constructed belief in Africa that women are socially responsible for taking care of the sick in the family.

Lack of motivation/incentive pay of health workers and care takers might have affected use of CBDOTS since one hundred percent of the care takers had never received any motivation for contributing to TB care.

Patient's ability to work was a motivator to utilise CBDOTS, while transport and dependency were major challenges faced by patients on CBDOTS.

Use of herbs promoted the use of CBDOTS. Patients on CBDOTS were more likely than their counterparts to use herbs for treating TB disease.

Patients on CBDOTS were more likely to default or miss their medication compared to those on the health facility or self DOTS

Distance and duration of hospitalization affected the use of CBDOTS, the longer the distance, the less likely one would use CBDOTS and the shorter, and the more likely that one would use CBDOTS. Patients on CBDOTS stayed for a shorter duration at the health facility compared to those who were on the conventional health facility based DOTS.

10.0 RECOMMENDATIONS

The District should allocate some fund from PHC to TB care to facilitate supervision, motivation of care takers/health workers and follow up of TB patients on CBDOTS, supply equipment necessary for the monitoring of CBDOTS including provision of mobile phones, airtime, drugs and motorcycles

Training is very fundamental in ensuring quality service delivery. The DHT should consider continuously building the capacity of all health workers in this strategy called CBDOTS to cater for new staff as well as transfers from one sector to another. Trainings should be organized for family caretakers as often as possible to update their skills.

The TB/HIV collaboration should be strengthened by investigating all patients who are HIV positive for TB to increase case detection rate and reduce transmission.

A vigorous community education is essential in promoting the use of CBDOTS. Emphasis should be put on increasing awareness about CBDOTS and mobilizing communities against stigma associated with TB and HIV/AIDS through the local media like radio, and newspapers that were less sighted as sources of information about CBDOTS in this study

The DHT should also consider increasing the number of health workers to cope with the increasing number of TB patients flowing into the district. This will in particular reduce the waiting hours and encourage more caretakers to come for their patient's drugs and trainings whenever organized. More staff will also make it possible to conduct regular outreaches for CBDOTS in order to improve physical access to drugs and other TB care.

Increasing access to TB care by bringing services closer to people will step up the use of CBDOTS in Kampala District as this will reduce costs in terms of time and money for transport to and from the health facility. The DHT should therefore consider putting CBDOTS services at least within a five kilometer radius of a health facility. This can be done by strengthening partnership with the private sector.

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ANNEXES

Annex 1: Informed Consent Form

My name is (name of interviewer) -----; I am from the office of the District Director of Health Services, Kampala. I am conducting a study on factors affecting uptake of community based TB care in Kampala District. The purpose of the study is to provide information for the DHT to develop interventions to increase uptake of Community Based TB care in Kampala District.

I am requesting you to provide information about this subject. The information you give will be treated with utmost confidentiality. Your participation in this study is voluntary; you are free to withdraw from the study if you wish, this will not affect you or your family member in any way. Please seek clarification on what you do not understand.

Thank you for your valuable time

Signature / thumb print of respondent: -----

Witness: -----

Date: -----

Annex II Questionnaire: Factors Affecting Use Of CBDOTS In Kampala District

Patient Number: ----- **Date:** -----

1. Name of Health facility: -----

Patient factors:

2. Age: ----- 3. Sex: Male Female 4. Marital status: Married Single

Divorced Widowed

5. Religion: Catholic Muslim Born again Protestant Other (Specify)-

6. Are you disabled (unable to walk along distance)? Yes No

7. Highest level of education attained; Nil P1 - P4 P5 - P7 Secondary
Tertiary

8. What is your occupation: Farmer Salary/ wage earner Trader Housewife
Unemployed others -----

9. For how long (in months) have you been ill with TB?-----

10. How did you know you had TB? Medical history X-ray Laboratory tests Other
(specify) -----

11. For how long were you hospitalised as a result of TB illness?-----

12. Have you heard of Community Based Directly Observed Treatment? Yes No

13. From where did you get information about Community Based Directly Observed
Treatment? Radio Health workers Friends/ Relatives Other (Specify) -----

14. Who usually observes you as you take your drugs daily? Family member Community
Health worker Health worker at the health unit Self

15. How far in kilometres is the health facility where you receive treatment from your home?

16. What do you think are the benefits of being observed or supported daily by a family member or CHW during medication and not by a health worker at the facility? Don't have to travel to the health facility every day [] Less cost of transport [] Able to work [] Don't have to leave the family [] Other specify -----

17. What do you think are the problems faced by TB patients who are observed /supported by a family member or CHW in the community a, -----

b, -----

c, -----

18. What in your view are the factors at the health facility that affect the use of Family/CHW/DOT? Lack drugs [] Inadequate Staffing [] Poor staff attitude [] Lack of supervision [] Lack of motivation [] Other-----

19. Have you ever at any time missed taking your medication for TB since you started treatment? Yes [] No []

If yes what were the reasons for not taking the medication a, -----

Socio Cultural Factors:

20. What is the perception of family and friends about observing or supporting a TB patient as they take their drugs from home? Favourable [] Not favourable []

21. Why do you say so?-----

22. What problems have you faced as a result of being ill with TB? Loss of productivity [] stigma and discrimination [] Cost of treatment [] Rejection [] Other specify -----

23. In your opinion do you think all TB patients should be observed by a CHW or family member during TB treatment? Yes [] No []. Why do you say so?-----

24. Have you ever sought alternative treatment (Not given at health facility) for TB in the community? Yes [] No []

If yes, what form of treatment was it?-----

25. What do you think are the reasons/ issues in the community that are making it difficult for TB patients on treatment to be observed or supported by a CHW or a family member especially here in Kampala District? (Multiple choice) fear of stigma / discrimination [] lack of knowledge about CHW,/Family DOTS [] language barriers [] Unavailability of CHWs [] Religious laws [] Transfer of patient or supporter [] use herbs [] CHW/ supporters not motivated [] CHW/family member is busy [] Don't trust caretakers knowledge about TB [] Others (Specify) -----

26. Have you ever been told to buy drugs from else where because they were lacking at the health facility? Yes / No

27. What interventions do you think can be put in place to increase the use of Community Based DOTS in Kampala?

- a-----
- b-----
- c-----

Thank you, for your participation

Annex III Questionnaire: Caregiver Factors Affecting Utilization Of Community Dots

In Kampala District:

Care giver Name: ----- Date-----

1. What is your age? ----- 2. What is your sex? Male Female

3. What is your religion? Catholic Muslim Born again Protestant

Other (Specify)-----

4. What is your highest level of education? Nil P1 - P4 P5 - P7
Secondary Tertiary

5. Have you ever received any training on CBDOTS? Yes No

6. If yes, when was the training conducted? < 6 month ago 1 year ago

2 years ago Other (specify)-----

7. What is your relationship with the TB patient you support or observe during treatment?

Family member Neighbour Friend Community resident Other-----

8. Do you receive any payment or benefits for contributing to TB care? Yes No If no

Benefits go to no.10)

9. If yes, what kind of benefits do you receive?-----

10. What kind of transport do you use to visit/supervise your TB patient? Foot Bicycle

] Motobike Other -----

11. How far in kilometres is the residence of the TB patient you support from your home? ----

12. What do you think is the role of the treatment supporter / caregiver in TB treatment?

(Multiple choice) Ensure that the TB patient takes the prescribes drugs Collect drugs

from the health facility Provide information or education about TB Follow up

defaulters [] Keep up to date records on treatment [] Identify and refer new patients to the health facility [] Others (specify)-----

13. What are some of the challenges you face in contributing to Community Based DOT

- a, -----
- b, -----
- c, -----

14. In Kampala District, it has been observed that more TB patients want to be observed / supervised by a family member other than a Community Health worker, what do you think are the reasons for this?

- a, -----
- b, -----
- c, -----

15. Have you ever failed to get TB drugs for your patient because they were out of stock from health unit? Yes [] No []

16. What factors in the health facility do you think affect use of Family/CHWDOTS? -----

17. What do you think can be done to increase use of CHW/Family DOTS in Kampala District?

- a, -----
- b, -----
- c, -----

Thank you for your Participation

Annex IV: Key Informant Interview Guide

1. What is the current situation of Tuberculosis in the district? When was CBDOTS introduced in Kampala District?
2. What is the current coverage of CBDOTS in the district? Probe for percentage of TB patients on CBDOTS and percentage of health facilities providing CBDOTS
3. What is the attitude of the health workers towards CBDOTS in Kampala district?
4. Are health workers and care takers adequately trained on CBDOTS? What kind of training do they receive?
5. For how long on average are TB patients hospitalized in this facility?
6. What challenges has the district faced in implementing CBDOTS in the district
7. What support towards CBDOTS does the district receive and from whom?
8. Which is the most preferred model of DOTS in Kampala District? What factors do you think influence the choice above?
9. CBDOTS is the most effective strategy recommended by WHO for controlling TB today, but in Kampala district, use of CBDOTS is low, in your opinion, what factors are responsible for low utilization of CBDOTS in Kampala District? Probe for health facility factors – staffing, supervision, drug supply, and diagnostic capacity, and motivation, transport. Socio cultural factors, care giver and patient factors
10. What do you think can be done to increase use of CBDOTS in Kampala District?

Thank you for your valuable time

Annex V: Focus Group Discussion Guide

Background information

Date: -----FGD composition: Male [] Female []

Moderator: -----Note taker: -----

Venue of discussion: -----Age range of discussants: -----

Time start: -----Time end: -----

Introduction:

Good morning/afternoon/evening participants

You are welcome to this discussion. We are a team from the office of the Director of District Health Services Kampala. We would like to discuss with you issues about Tuberculosis and Community DOTS. The purpose of the discussion is to help us understand patient, socio cultural, caregiver and health facility factors that affect use of Community DOTS and identify factors that influence the uptake of family based DOTS in Kampala District. Feel free to discuss any questions asked, you do not have to reveal any personal information if you do not want to. All information given will be kept confidential and used for developing interventions for increasing use of Community DOTS. We will use a tape recorder and note taker to record the ideas. We request you to speak loudly and clearly and one at a time, so that all your views are understood and recorded. Let us begin by introducing each other. We request you to sign on this form as a sign that you have accepted to participate in the study.

Name

Signature: / thumb print

1. -----

2. -----

3. -----

4. -----

5.-----

6.-----

7.-----

8.-----

Questions

1. Have you heard about TB, what in your opinion is TB?
2. Have you heard about Community TB care / community TB DOTS? What is it, How did you get information about Community TB care?
3. What is the perception of the community about CBDOTS? Why do you say so?
4. What are the benefits of community DOTS?
5. What problems do you think are faced by TB patients on community DOTS?
6. What factors do you think affect use of community DOTS in Kampala District? Probe for Socio cultural, care giver patient, and health facility factors)
7. In your opinion, what factors are driving TB patients more in to family other than health worker DOTS in Kampala District?
8. What do you think can be done to increase use of community DOTS (Community Health worker and family DOT) in Kampala District?

Thank you, for your active participation.

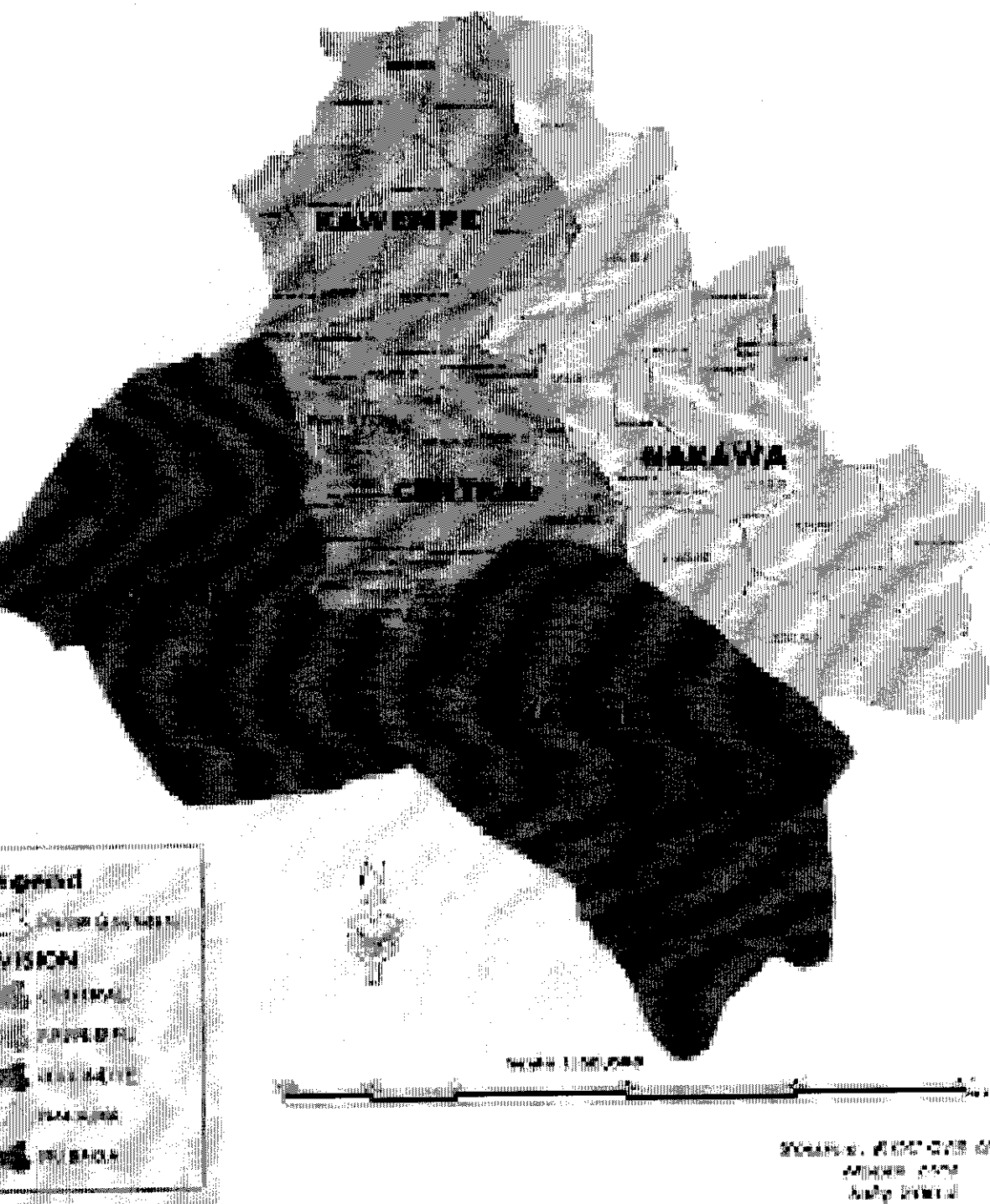
Annex VI: Observational Checklist for Factors Affecting use of CBDOTS in Kampala

District _____

Name of Health Facility _____ Division _____

1. Does the health facility have enough staff Yes [] No []
2. Does the health facility have a laboratory with functioning microscopy? Yes [] No []
3. Do you experience stock outs of reagents? Yes [] No []
4. If yes how often? _____
5. Does the health facility have TB treatment and management guidelines? Yes [] No []
6. Does the Health facility have a private place for TB patients? Yes [] No []
7. Does the health facility have these drugs in supply of TB drugs?
 - Rifamcin Yes [] No []
 - Isomazid Yes [] No []
 - Esthambutol Yes [] No []
 - Pyzinamide Yes [] No []
 - Streptomycin Yes [] No []
6. How often do you experience TB drug stock outs? Monthly [] Quarterly []
Biannually [] Annually []
7. Does the health facility have adequate transport for monitoring and supervision of TB activities and patients? Yes [] No []
8. How often is supervision of caregivers done? Weekly [] Monthly [] Other specify -----
9. Does the health facility keep up to date records of TB patients and CBDOTS?
Yes [] No []

Annex VII Map Of Kampala District Showing Divisions



Annex VIII Additional Findings From The Study

Table 1 Results Of Bivariate Analysis Perceived Benefits Of CBDOTS

Characteristics	Cases (n = 173)		Controls (n=173)		Matched OR	95% CI
	n	%	n	%		
Don't travel daily						
Yes	78	45.1	75	43.4	1.0728	0.7018-1.6400
No	95	54.9	98	56.6		
Less costly (Transport)						
Yes	85	49.1	94	54.3	0.8118	0.5321-1.2383
No	88	50.9	79	45.7		
Able to work						
Yes	101	58.4	73	42.2	1.9216	1.2536-2.9455*
No	72	41.6	100	57.8		
Family ties						
Yes	90	52.0	39	22.5	3.7257	2.3404-5.9308*
No	83	48.0	134	77.5		
Remind you to take drugs						
Yes	41	23.7	22	12.7	2.1319	1.2078-3.7630*
No	132	76.3	151	87.3		
Other (limited re-infection)						
Yes	11	6.4	3	1.7	3.8477	1.0543-14.0430*
No	162	93.6	170	98.3		
Total		100		100		

* Statistically significant at 95% Confidence Interval

Table 2 Bivariate Analysis Of Problems Faced By Patients On CBDOTS

Characteristics	Cases (n = 173)		Controls (n=173)		Matched OR	95% CI
	n	%	n	%		
People get fed up of you						
Yes	11	6.4	11	6.4	1.000	0.4216-2.3718
No	162	93.6	162	93.6		
Interference						
Yes	6	3.5	10	5.8	0.5856	0.2081-1.6484
No	167	96.5	163	94.2		
Transport						
Yes	51	29.5	19	11.0	3.3883	1.9011-6.0388 *
No	122	70.5	154	89.0		
Late medication						
Yes	45	26.0	32	18.5	1.5491	0.9279-2.5862
No	128	74.0	141	81.5		
Dependency						
Yes	30	17.3	16	9.2	2.0586	1.0772-3.9341*
No	143	82.7	157	90.8		
Stigma and discrimination						
Yes	28	16.2	32	18.5	0.8509	0.4872-1.4861
No	145	83.8	141	81.5		
Total		100		100		

* Statistically significant at 95% Confidence Interval

Table 3 Bivariate Analysis Of Problems Due To TB Disease

Characteristics	Cases (n = 173)		Controls (n=173)		Matched OR	95% CI
	n	%	n	%		
Lack of productivity						
Yes	73	42.2	114	65.9	0.3778	0.2444-0.5841*
No.	100	57.8	59	34.1		
Rejection						
Yes	8	4.6	23	13.3	0.3162	0.1373-0.7281*
No	165	95.4	150	86.7		
Stigma and discrimination						
Yes	27	15.6	34	19.7	0.7560	0.4336-1.3184
No	146	84.4	139	80.3		
Cost of treatment						
Yes	75	43.4	56	32.4	1.5989	1.0318-2.4778*
No	98	56.6	117	67.6		
Other						
Yes	80	46.2	52	30.1	2.0017	1.2872-3.1128*
No	93	53.8	121	69.9		

* Statistically significant at 95% Confidence Interval