UNIVERSITY OF GHANA

COLLEGE OF HEALTH SCIENCES

SCHOOL OF PUBLIC HEALTH

ASSESSMENT OF IMPLEMENTATION OF RECOMMENDED TB AND HIV COLLABORATIVE ACTIVITIES IN SELECTED HEALTH FACILITIES IN THE SEKONDI/TAKORADI METROPOLITAN ASSEMBLY, WESTERN REGION OF GHANA

BY

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DECLARATION

This dissertation submitted for the award of degree of Masters in Public Health at the University of Ghana, legon is my own work, with the exception of the references used which has been duly acknowledged. This study has not been submitted to any other institution either in part or whole for any degree.

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DEDICATION

I dedicate this work to my two lovely children, husband and my entire family.

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ABSTRACT

Introduction: Globally, Tuberculosis and Human immunodeficiency virus co-infection is a threat to the control of the Tuberculosis and Human immunodeficiency virus epidemics if measures are not put in place to manage the dual infection. In Ghana, the Health service in collaboration with the National Tuberculosis Control Program and the National AIDS Control Program in June 2007 adopted the World Health Organization policy for the clinical management of Tuberculosis and Human immunodeficiency virus. However data on the implementation of the collaborative Tuberculosis and Human immunodeficiency virus activities were not consistent between the two programs. This study was therefore designed to assess the level of implementation of the recommended activities in the Sekondi/Takoradi district of the Western Region.

Methods: A cross sectional study and data review was conducted in Sekondi/Takoradi metropolis from 7th May 2015 to 6th July 2015. Data abstraction form, checklist and a questionnaire were used to collect information on characteristics of Tuberculosis and Human immunodeficiency virus patients registered in the district in 2013 and assess the level of implementation in the various facilities. Data was analyzed descriptively in frequencies and proportions. Chi-square was used to determine associations between variables at a significance level of 0.05 p-value.

Results: The level of implementation of collaborative Tuberculosis and Human immunodeficiency virus activities assessed at the district was medium with a score of 27(61%).Variables were found not to be associated with the outcome of interest. Performance of the district on Tuberculosis and Human immunodeficiency virus activities was good within a 60% and 90% range as set at the national level.

Conclusion: The level of implementation of recommended Tuberculosis and Human immunodeficiency virus collaborative activities in the Sekondi/Takoradi metropolis was medium whilst performance was good. Institutional coordinators of Tuberculosis and Human immunodeficiency virus control were educated on the importance of accuracy in data entry.

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LIST OF ABBREVIATIONS

ART	Antiretroviral therapy/ treatment
ARV	Antiretroviral
CD4	Subgroup of T-lymphocytes carrying CD4 antigens
CPT	Co-trimoxazole prophylaxis
DOTS	Directly observed treatment, short course
G.H.S	Ghana Health service
HAART	Highly active antiretroviral therapy
HIV	Human Immune Deficiency virus
IPT	Isoniazid Preventive Therapy
MDG	Millennium Development Goal
MDR	Multidrug resistant Tuberculosis
NACP	National Aids control program
NTM	Non tuberculous mycobacterium
NTP	National Tuberculosis control program
PLWHIV	Person living with HIV
STMA	Sekondi/Takoradi Metropolitan Assembly

TB	Tuberculosis
TB/HIV	The intersecting epidemics of TB and HIV
UNAIDS	Joint United Nations Program on HIV/AIDS
W.H.O	World Health Organization

CHAPTER ONE - INTRODUCTION

1.1 Background

Tuberculosis (TB) is an infectious bacterial disease caused by mycobacterium tuberculosis transmitted through droplet infection. According to the World Health Organization (WHO) 2014 Global health statistics, an estimated 8.6 million people developed TB in 2012 though the rate of new infections have been falling worldwide, achieving the Millennium Development Goal (MDG) target 6.C (seeks to reduce the spread of TB by 2015).Treatment of TB has been successful between 1995 and 2012 with an estimated 56 million people treated and 22 million lives saved. Tuberculosis mortality has also fallen by 45% since 1990 and the 50% reduction target by 2015 is within reach, however the mortality rate among TB is still unacceptable given that it is preventable.

Human immunodeficiency virus (HIV) infection is the strongest risk factor for developing active tuberculosis. The last two decades have seen a major upsurge of the HIV epidemic among TB cases and TB mortality in many countries. Globally, the HIV-associated TB cases is high, a total of 35.3million people are living with HIV and out of this one-third are infected with latent TB. Persons who have both infections are 29.6 times more likely to develop active TB disease than those without HIV infection. An estimated 1.1million HIV positive new TB cases was reported in 2012 and around 75% of these people live in sub-Saharan Africa (Global TB Report 2013).

The percentage of notification of TB and HIV have been increasing steadily from 40% in 2011 to 46% in 2012 as well as the mortality associated with TB and HIV co-infection but there is still an estimated 320,000 deaths worldwide which the UNAIDS and the stop TB partnership has set a target to halve by 2015. (Global TB Report 3013). Progress has been made by many countries in

addressing the TB and HIV co-epidemic, however in 2012, less than half of notified cases of TB had a documented HIV test result with only 57% of those tested positive being on antiretroviral treatment(ART).(WHO, 2014)

According to the 2013 National Tuberculosis Control Program (NTP) report, TB prevalence among adults in Ghana is 300 per 100,000 population and the burden of HIV in Ghana is described by the WHO as a generalized epidemic with a rate of 1.3%. This situation in no doubt will affect the dual burden of the two diseases in the country. The 2013 TB country profile for Ghana showed the TB and HIV burden to be a total of 2,737 HIV-positive TB patients and of this 1,780 received co-trimoxazole prophylaxis (CPT) and 1,009 are on antiretroviral therapy, interestingly there was no data recorded on HIV-positive people screened for TB and those provided with Isoniazid preventive therapy (IPT) as well, indicating collaboration inadequacies. (WHO, 2014)

In 2012, WHO developed a policy on collaborative TB and HIV activities which was an update on an earlier document published in 2004; Interim *Policy on Collaborative TB/HIV Activities.* This was in response to demand from countries for immediate guidance on actions to decrease the dual burden of TB and HIV. The main goal was to reduce the burden of TB and HIV in people at risk of, or affected by both diseases.

The objectives of the policy are to;

1. To establish and strengthen the mechanisms of collaboration and joint management between HIV programs and TB-control programs for delivering integrated TB and HIV services preferably at the same time and location.

2. To reduce the burden of TB in people living with HIV, their families and communities by ensuring the delivery of the three I's(Intensified TB case finding, Infection Control and Isoniazid Preventive Therapy) and early initiation of ART in line with WHO guidelines.
3. To reduce the burden of HIV in patients with presumptive and diagnosed TB, their families and communities by providing HIV prevention, diagnosis and treatment.

Reports from 2005 to 2011 has shown that collaborative TB and HIV activities saved an estimated 1.3 million lives, 46% of TB patients (2.8 million) were tested for HIV in 2012 and there was an increase in screening of people living with HIV for TB. This increased from 3.5 million in 2011 to 4.1 million in 2012.

The use of CPT in HIV co-infected TB cases and IPT among people living with HIV has also recorded an increase, however universal access to this activities and TB infection control measures is yet to be achieved in many HIV service settings.(Global Tuberculosis Report 2013)

The collaborative TB and HIV activities was implemented in Ghana after a 2007 drafted Policy and Technical Guidelines which established the fact that the influence of HIV on TB was increasing.

The main goal was in alignment with that of the WHO and the rationale for the policy on collaborative TB and HIV activities is the recognition that this two serious diseases amplify one another's impact. The NTP also has 100% directly observed therapy, short course (DOTs) coverage and so has the strengths to jointly help with the national scale up of the HAART program.(Technical Policy,2007).

The TB and HIV collaborative activities are to be implemented as follows;

1. Separate TB and HIV service provision; Patients receive TB and HIV service at different centers by different service providers.

2. Partial TB and HIV service provision; Patients receives care at the same facility but in different units.

3. Full service provision; this is a "One Stop Shop" where patients receive both services at the same center by one set of service providers.

1.2 Problem Statement

Ghana Health Service (GHS) developed the policy for TB and HIV collaborative activities which was implemented in 2007, however there is little evidence to show the extent of collaboration between the two programs. According to (Amo-Adjei, Kumi-Kyereme, Amo, & Awusabo-Asare, 2014), there is an unsatisfactory coordination between TB and HIV control programs in Ghana, this was evident in responses that was recorded in an interview of key stakeholders in both control programs.

Reports of TB and HIV collaborative activities implementation across the country between 2005 and 2009 showed inconsistencies in implementation of all 12 collaborative activities.

A five year trend in the notified TB and HIV co-infected persons in the Western Region showed the level of reporting of cases reducing as follows; a total of 223 cases in 2009 but only 133 in 2012 and 193 in 2013. (Western Regional TB Report, 2013).

In the western region all three approaches to control TB and HIV have been adopted in various facilities but there are still problems with implementation. The problems include no data recorded on total number of HIV patients screened for TB, not all TB patients are screened for HIV, no feedback on the number screened and referred for HIV care, IPT and CPT services not consistent and finally number of TB patients diagnosed with HIV do not all receive HIV drugs.

Factors contributing to the above problems include low levels of dissemination of policy on collaborative TB and HIV activities, health worker knowledge of collaborative TB and HIV activities, lack of adequate staff involved in care, drug supply protocols and drug shortages and the patients' inadequate knowledge of the care to receive.

The above listed problems and others not identified if not addressed will influence performance and contribute to high prevalence of TB and HIV, development of drug resistant TB and high mortality among TB and HIV co-infected patients.

This study seeks to assess the extent to which the Western Regional Health directorate have been able to integrate TB and HIV prevention, care and support services and to assess factors influencing implementation of the TB and HIV collaborative activities.

1.3 Conceptual framework

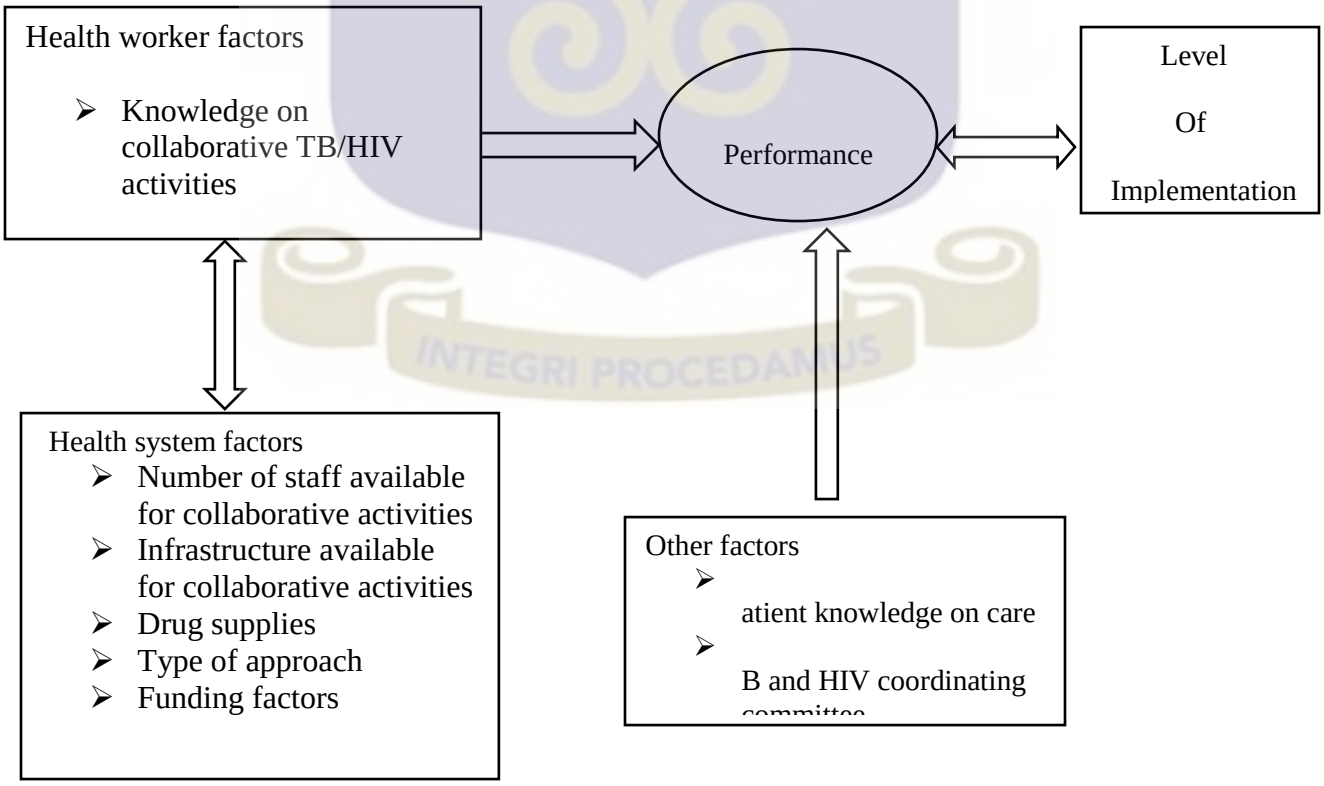


Figure 1: Conceptual Framework of Outcome Variable and Other Variables

The conceptual framework for this study shows that there is a close relationship between the outcome variable and the independent variables. Primarily, the implementation of the stated TB and HIV collaborative activities are directly affected by the health worker and system factors, and the patient issues.

The performance of collaborative TB and HIV activities will either result in treatment successes (Cured or Treatment completion) or unsuccessful with adverse outcomes (Died, treatment failure, Loss to follow-up and Development of resistant TB).The low or high level of implementation will also directly affect outcomes.

TB treatment outcome is an indicator of performance and successful rates indicate good performance and the inverse indicates poor performance.

1.4 Justification

Policy implementation is a process of carrying out and accomplishing the goals stipulated in a policy however the assessment of policy and program implementation often emphasizes on outcomes while neglecting the process which sheds more light on barriers or facilitators of more effective implementation.

This study assesses the extent of implementation of the collaborative activities, looking at the mechanism of implementation, resources availability and the relationship that exist between the policy and stipulated program actions.

This will help to provide information on TB and HIV collaboration in the Sekondi/Takoradi metropolis (STMA) of the western region which will be used to inform policy.

It will also help to introduce new strategies specific to TB and HIV control in the region and to improve performance resulting in the strengthening of the implementation of the TB and HIV collaborative activities

1.5 Research Objective

1.5.1 General objective

To assess the level of implementation of recommended TB and HIV collaborative activities in the Sekondi/Takoradi Metropolis of the Western Region

1.5.2 Specific objectives

- To determine level of implementation of recommended TB and HIV collaborative activities in the District
- To assess factors that influence this implementation in the district
- To assess performance of collaborative TB and HIV service activities in 2013.

CHAPTER TWO - LITERATURE REVIEW

2.1 Trends and Distribution of TB and HIV

From the WHO website on TB/HIV 2014, people living with HIV are at a 12-20 times more risk of developing TB than those without HIV infection. Deaths recorded from TB accounted for 25% of all avoidable deaths in developing countries and an estimated 95% of TB cases and 98% of TB deaths also occur in developing countries. Of these cases in the developing country, 75% are in the economically productive age group (NTP Training Manual, 2012)

The leading cause of death among people living with HIV is TB and it accounts for one in five HIV-related deaths, this is evident in an estimated 320,000 people dying from HIV-associated TB. These deaths are estimated to be higher among African women than men who are mainly the bread winners of their families.(World Health Organisation, 2013)

Brazil which is among the 22 high TB disease burden countries has experienced TB incidence and mortality decline, however this trend was not observed in HIV co-infected TB patients.(Do Prado, Miranda, Mattos de Sousa, dos Santos Dias,Sousa, Arakaki-Sanchez,& Sanchez,2014).

Angola and Ethiopia has a prevalence of TB and HIV co-infection of 9% as against that in Swaziland of 77% confirming the existence of the highest disease burden in Africa. The true burden of HIV and TB in any region in Nigeria is estimated around 12.3% with female having the highest percentage of 15.5% than males with 9.5 %.(Odaibo, Okonkwo, Lawal, & Olaleye, 2013).

Cameroon which was among the 63 TB and HIV priority countries in 2006 who were expected to commence the implementation of all recommended TB/HIV activities had a 40% prevalence of HIV among TB patients in 2008.(Yumo, Kuaban, & Neuhann, 2011).

The burden of TB disease among people living with HIV which was assessed in a pilot study in South Africa showed that majority (67%) of individuals with HIV either had a recent history of receiving TB treatment or presented with TB, 15% of patients were on TB treatment at time of referral and an additional 10% were diagnosed with TB during the ART screening.(Wood, 2006.)

The 2011 global TB report estimated the national picture of TB in Ghana as 86 smear positive pulmonary cases per 100,000 population and 106 of all types of TB cases per 100,000 population. Accordingly USAID,TB CARE 1 reported that the number of notified TB cases increased from 7,425 in 1996 to 15,286 in 2009 and the national control program achieved 100% DOTS coverage.

A good progress has however been made in the TB treatment success rate, it increased from 54% in 1995 to 86% in 2008. Though the HIV sero prevalence in the general population is relatively low (2.9%-NACP 2010), TB mortality remains high at 8% (WHO Global TB Report 2010). Ghana's HIV prevalence is described as a generalized epidemic based on WHO'S definition for generalized epidemic as having a 1% prevalence or greater in the general population.

In assessing HIV prevalence and control in the country, sero prevalence has steadily increased from 2.3 in 2000 to 3.6 in 2003 but declined to 2.2 in 2008 and increased again to 2.9 in 2009. A total of 793 sites offer HIV testing and counseling services and only 155 sites offer antiretroviral (NACP 2011).

2.2 Collaborative TB and HIV activities

From the WHO 2013 TB/HIV fact sheets, the TB and HIV collaborative activities have saved an estimated 1.3million lives but to achieve universal access to these life saving measures and eliminate HIV-associated TB deaths, more needs to be done.

According to Morris A.,& Crothers K., (2010.), HIV infected patients without access to ART still suffer from opportunistic pulmonary infections such as in countries where TB is endemic. In a study done in Europe to assess possible changes in mortality and morbidity rates among HIV infected cases across Europe in 2003, it was concluded that, ART improves survival in HIV-infected persons.(Mocroft et al., 2003).Though HIV-infected persons in Thailand have widespread access to ART, physicians often do not prescribe it to HIV-infected TB patients because of concerns of drug-drug interactions, overlapping toxicities, immune reconstitution syndrome and pill burden.

A prospective study using a population-based surveillance system was done in 2003 to estimate the benefit of ART on reducing mortality during TB treatment in HIV-infected persons with a total follow up period of 12 months. It was concluded that ART is associated with a substantial reduction in deaths during TB treatment for HIV-infected TB patients. This findings are presented as follows; out of a total of 2,342 registered TB patients, 329 (14%) were diagnosed with HIV. Of patients with known outcomes, deaths during TB treatment occurred in 5(7%) of 71 who received ART and 94 (43%) of 219 who did not.(Akksilp et al., 2007)

A study done in Alberta, Canada among marginalized populations underscored the need for a universal concurrent testing as well as greater integration between the TB and HIV program.

This was based on the similarities identified among TB patients in aboriginal/ sub-Saharan African and Canadian-born non-aboriginal TB patients.(Boffa, 2010.)

This was further emphasized by Wood, 2012 in a study to integrate TB and HIV testing services in South Africa which concluded that program changes should be considered. Suggested changes include the early identification of HIV- infected individuals before they develop the symptoms associated with advanced immune suppression. There should also be access to monitoring of HIV progression and active TB case finding.

A review of the status of implementation of interventions to control HIV related TB among 25 top HIV prevalence countries by Maher, Borgdorff,& Boerma,(2005) found out that the performance of the national TB and HIV programs in making this intervention available is generally low, with many countries reporting low or no access.

In a review of the public health challenges and implementation issues with IPT for PLHIV, implementation of IPT was supported on condition that it is done in a safe and structured way. This is necessary because there is a definite risk that 'sloppy' IPT will be inefficient and worse, and could lead to the development of multi-drug resistant (MDR) TB.(Aït-Khaled et al., 2009)

The prevalence of HIV infection among TB suspects seen at the Korle-Bu Teaching hospital in Accra, was high with a seroprevalence rate of 46. 2%, significantly there was no difference in those who had Pulmonary Tuberculosis and those who did not. The study concluded that nearly half of all cases of TB were found to be HIV positive and so implied that all suspects for TB must be counselled and tested for HIV.(Adjei A, Adiku T.,& Kumi-Ayeh P., 2006)

2.3. Factors affecting TB and HIV collaboration

There is no significant difference in the treatment of TB in HIV- infected patients and that of HIV-uninfected patients but appropriate management of HIV-associated TB is complicated by certain factors. These factors include health system issues, diagnostic difficulties, adherence

concerns, overlapping adverse-effect profiles and drug interactions and the occurrence of paradoxical reactions after initiation of effective ART. (Onyebujoh P.,& R.I,2007.)

The ability of health facilities to provide comprehensive care to people with TB and HIV co-morbidities is vital to the reduction of morbidity and mortality among TB-co-infected HIV cases. Viet Nam prioritized TB and HIV interventions and the impact was evident in the outcomes recorded in ART services which raised from 2,670 to 82,687 between 6 years, likewise the use of IPT in HIV patients. This impact if it can be achieved must involve an active coordination body at the central level and good linkage between TB settings and HIV and AIDS settings.(Long, 2014)

Challenges to the success of HIV and TB care and treatment in the public health sector in south Africa was listed as the strict application of the ART program guidelines, requirement of a treatment "buddy" to accompany the patient to a Doctor's appointment and communication barriers among providers and between providers and patients. (Dong K.,Thabethe Z.,Hurtado R.,Sibaya T.,Dlwati H., 2007.)

There are factors that complicates the appropriate treatment of TB-in HIV-infected person, these include diagnostic difficulties, adherence concerns, overlapping adverse effect profiles and drug interactions as well as the occurrence of paradoxical reactions after the initiation of effective antiretroviral therapy.(Mardani, 2007)

The factors which affects the TB and HIV collaboration is demonstrated in Malawi's control program where the Ministry of health and the National TB control program developed a 3-year TB and HIV plan due to high TB disease burden due to HIV epidemic, they employed the referral site approach and deferred the initiation of ART until the continuation phase of TB treatment due to concerns about drug-drug interactions. The following problems were identified;

Patients referred to continue with TB treatment in the nearest health center did not return to the hospital to start ART; Patients had to join long queues at both TB and HIV clinics for refill of drugs prolonging hospital visits; Management of TB was done by health assistants with no or little clinical training.

The Ministry concluded that the only way to improve access for ART was to develop initiation and follow-up of ART in the health centers.(Friedland, Harries, & Coetzee, 2007)

Implementation issues ranged from programmatic, medical, staffing, resource and scale-up challenges and this according to Friedland et al., (2007) must be addressed appropriately at all levels of implementation.

Programmatically, a study of the Adansi district in the Eastern Region of Ghana by Hanson-Nortey (2006), concluded that TB and HIV has not been disseminated at each level of implementation right from the National level through the Regional to the District levels.

Health care providers in the two programs did not have standardized knowledge and ability and skills to manage the dual disease though there were the physical and non-physical infrastructure to facilitate implementation.

The above findings with program management was listed by Amo-Adjei et al.,(2014), in *The Politics of TB and HIV Service Integration in Ghana,* as two sided and it is as follows, support for implementation and opposition for implementation. He also found inadequate "political will" from the top management of both programs.

In assessing the implementation of these activities in Manya krobo, same programmatic issues were identified as limited infrastructure, human resource capacities, lack of necessary tools and systems for capturing data, weak monitoring and supervision and most importantly poor coordination of activities due to lack of TB and HIV focal person.(Adu,A.2008)

An assessment of the impact of TB and HIV services integration on TB treatment outcome in Ghana by Ansa G., Walley D.,(2012.), revealed that TB treatment success rate increased generally by 19% after integration of collaborative TB and HIV activities. Specifically, there was a 10% increase at the one stop shop sites, a 9% increase at the partially integrated site and a 32% increase at the referral sites.

CHAPTER THREE - METHODS

3.1 Study Design

A cross-sectional study was used for the study. Data was abstracted from the TB registers and the ART monthly return forms to assess the performance of collaborative TB and HIV activities. A checklist with the stipulated collaborative activities required to be carried out was used to assess the level of implementation of TB and HIV collaboration. Health service providers and patients were interviewed with a questionnaire to determine the factors which influence the implementation of TB and HIV collaborative activities. Data was then analyzed with SPSS 20 and presented in tables and figures.

3.2 Study Area

The study was conducted in the Sekondi/Takoradi Metropolis (STMA).The STMA is the administrative and political capital of the Western Region. Sekondi/Takoradi is a harbor city and the third largest in Ghana and popularly known as the twin city but now popularly known as the oil city of Ghana. It has a population of 559,548 distributed by age and sex and is displayed in the table below.

Table 1: STMA Population Distribution by Age Groups and Sex, 2010

District	All ages	0-14 years	15-64 years	65+
Sekondi/Takoradi				
Male	273,436	91,060	172,401	9,975
Female	286,112	91,614	181,261	13,237

Total	559,548	182,674	353,662	23,212

The district is bounded on the east and north by the Mpohor Wassa East District, the western and southern boundaries by Ahanta West District.

Figure 1: Map of the Western Region of Ghana Showing the STMA

There is a high ethnic mix of Fantes, Ahantas, Ewes and Ga to name a few, Socio-economically, the people in the district are mostly into trading and industrial activities. There is a high number of migrants found in the region because of mining activities, the activities at the Harbor and oil exploration in the Region.

The health status of the district is challenged by many factors including malaria and high burden of TB and an HIV prevalence of 2.4 making the incidence of TB and HIV co-infection an enormous threat.

There are 4 Government health facilities and 1 Quasi hospital and Private health facilities in the district that provide general medical and surgical services .Three (3) government facilities and 1Quasi hospital provide both DOTS and ART services. The facilities include the Effia Nkwanta Regional Hospital (E.N.R.H), Ghana Ports and Harbors Hospital, (G.H.P.A), Takoradi Government Hospital (TH) and Kwesimintsim Government Hospital (KH). These facilities are also accessible to patients and they also serve both the rural and urban communities around the district.

3.3 Variables

3.3.1 Outcome variable*:*

i. Level of implementation of TB and HIV collaborative activities

ii. Performance of TB and HIV collaborative activities

3.3.2 Independent variables:

A. Health worker and system factors

i. Health worker knowledge on collaborative TB/HIV activities

ii. Number of staff available for collaborative activities

iii. Infrastructure available for collaborative activities

iv. Drug supplies

v. Type of approach adopted, “One Stop Shop”, “Partial”, or “Referral”

vi. Funding

B. Other factors

i. Patient knowledge on care

ii. TB and HIV coordinating committee

3.4 Study Population

The study population was made up of;

All registered TB patients for 2013 in STMA.

All registered clients receiving HIV clinical care in the STMA for the year 2013.

Health service providers and mangers in TB and HIV care in the 4 facilities including the regional and district health managers.

TB and HIV co-infected patients registered from October 2014 and were still on treatment at time of the study.

3.5 Sampling

3.5.1 Sample Size and Sampling Methods

TB patients registered in 2013 were recruited from TB registers from the 4 facilities within the district (E.N.R.H, GHPA, TH, and KH). HIV clients registered for the year 2013 were also recruited from the ART monthly return forms in the 4 facilities.

Health service providers and managers responsible for TB and HIV care provision were recruited and interviewed, detailed is in the table below.

Health Service Providers in TB/HIV care interviewed in the Sekondi/Takoradi Metropolis in June 2015

Category/Position of Health Service Provider	Number
Deputy Director, Clinical Care	1
Deputy Director, Public health	1
Regional Hospital Director	1
TB&HIV Coordinators	
Regional	1
District	2
Facilities	4
Medical Doctor	2
Nurses	4
Pharmacist	4
Laboratory Technicians	2
Total	**22**

TB/HIV co-infected patients who attended clinic from October 2014 and were still on both treatment in the facilities were recruited for the study.

3.6 Data collection Techniques and Tools

The Regional Health Administration and the various facilities were notified of the study with their appropriate dates and purpose in an introductory letter from the school. A day's training was organized for two (2) research assistants on data collection techniques.

The facilities were visited on the scheduled days and the data from the registers and the ART monthly return forms were collected with the data abstraction form and all the data from all the facilities was compiled.

The TB and HIV coordinators were contacted for the assessment of the facilities. Questions regarding the existence of the various activities were asked and reports, registers and protocols were reviewed to ascertain the facts of the implementation.

Health care manager and service providers were visited with the questionnaires and interviewed for their responses, some of the health care providers were given the questionnaires and a date for collection was taken and the questionnaire was collected on those days. Others also responded to the questionnaires on the appointment days and where necessary clarifications were sorted from the research assistants.

Patients who concerted were interviewed in turns according to their attendance to clinic for reviews. Patients co-infected with TB and HIV and had started both regimens for TB and HIV were interviewed as well as others co-infected but are receiving only one regimen, either TB or HIV were also interviewed. A facilitator interpreted the questionnaire to patients who needed interpretation of a question and the response provided by the patient was then recorded on the questionnaire.

Tools used included the following; Data abstraction form was used to collect information from the TB registers and the ART monthly return forms on patient characteristics and the kind of service that a client has received since diagnosis.

A checklist with all required activity for implementing the collaborative activities was used to assess the level of implementation in the various facilities. Activities required for implementing the TB and HIV collaboration were checked and the corresponding value recorded on the checklist.

A structured questionnaire developed to identify the factors affecting implementation of collaborative TB and HIV activities was used to collect data from health care providers and patients.

3.8 Quality control

This was checked by pre-testing of structured questionnaire and the results was used to update the questionnaire. Questionnaires was structured in order to help interviewers to collect data and ensure consistency of responses. Questions was translated into Fante depending on the patient's preference to ensure collection of appropriate data. Research assistants were trained to prevent bias during interview on the part of the interviewers.

The source data was used as much as possible to prevent incomplete reporting except where not possible.

3.9 Data Processing and Analysis

The data was cleaned by checking for incomplete questionnaires and analysis was done to bring out findings on the following issues, level of policy implementation in the district and highlight the major factors that facilitates the implementation of the TB and HIV collaborative activities.
It also brought out the performance of the collaborative TB and HIV activities in the district.
Descriptive statistical analysis was used to change raw scores into frequencies and percentages. Some variables were cross tabulated to highlight their relationship.
Responses on the checklist were scored on a scale of 1 to 4 on all 12 activities and the average and percentage score calculated as the total score of a facility over the total score expected from implementing all set of activities and is presented below.

Grading of Level of Implementation

Level of Implementation	Proportion(No. of Activities effectively Implemented / Total No. of Recommended Activities
HIGH	0.75 – 1.0
MEDIUM	0.4 – 0.6
LOW	0.3 – 0.08

Based on the 2014 WHO Guide to monitoring and evaluation for collaborative TB and HIV collaborative activities, that suggests that a high value indicates good performance whilst a low value suggests problems with implementation, a medium level of implementation was considered as good performance.

The data from the Likert scale was reduced to the nominal level by combining all agree into one category and all disagree into another category and maintained the neutral as the third category and a Chi-square test was done to identify the relationship between the level of implementation and the variables measured. It was further reduced into a dichotomous level by combining all agree into one category and all disagree and neutral into another category and a chi-square test done. This was presented in a 2*2 table. Charts were drawn with Microsoft Excel 2013. Data was analysed using Statistical Package for Social Sciences (SPSS) software programme version 20.

3.10 Ethical considerations

Ethical clearance was sought from the Ethical Review Committee of Ghana Health Service Research Division, Accra. Approval to conduct research in the facilities was sought from the Regional Director of Health Services and the Heads of the four facilities.

Participants were informed on the purpose of the study and the contribution that the study seeks to add to the control of TB and HIV. Informed consent was obtained from participants and participation was voluntary by signing or thumb printing. A participant was allowed to withdraw whenever they expressed the wish.

Confidentiality/protection of participants was ensured through provision of privacy during data collection and processing. Names or identities of participants were not revealed in any form or used in the report. The questionnaires were stored in locked files and only the researcher, the supervisor and head of department can have access to them.

The information from this study was used strictly for the purposes listed in the study.

CHAPTER FOUR- RESULTS

4.1 Demographic characteristics

TB Case notification data in 2013 with their treatment outcomes involving 274 patients (195 (71.2%) males and 79(28.8%) females) is presented in Table 2.The E.N.R.H had majority of cases of 137(50.0%) registered whilst the GHPA which is a quasi-facility registered the least cases of 13(4.7%).The patients presented with different types of TB as follows; pulmonary TB 257(93.8%) and extra-pulmonary TB 16(5.8%),with 179(69.6%) cases out of the pulmonary TB cases testing positive on sputum microscopy,65(25.3%) testing negative and the rest having no sputum microscopy result.

A total of 207(75.5%) out of all the cases were screened for HIV of which 54(26.1%) tested positive and the rest, 67(24.5%) were not tested for HIV. From the 54 who tested positive 30 (55.6%) were placed on CPT and 20(37.0%) were started on ART.

Out of the total registered cases, 90(32.8%) were cured on treatment and 27(9.9%) died with the others resulting in other treatment outcomes. Details is shown in table 2A&B.

Table 2A: Characteristics of Patients (n=274) notified in the four (4) facilities in 2013

Variables	Takoradi Hospital n (%)	GPHA Hospital n (%)	Kwesimintsim Hospital n (%)	Effia Nkwanta n (%)	Total n (%)
Sex					
Male	40(20.5)	9(4.6)	51(26.2)	95(48.7)	195(71.2)
Female	8(10.1)	4(5.1)	25(31.6)	42(53.2)	79(28.8)
Type of TB					
P/Pos	25(14.0)	6(3.4)	59(33.0)	89(49.7)	179(65.3)
P/Neg	21(26.9)	7(9.0)	16(20.5)	34(43.6)	78(28.5)
EPTB	1(6.2)	0(0.0)	1(6.2)	14(87.5)	16(5.8)
Patient type					
New	41(17.3)	13(5.5)	70(29.5)	113(47.7)	237(86.5)
Default	4(66.7)	0(0.0)	2(33.3)	0(0.0)	6(2.2)
Relapse	2(16.7)	0(0.0)	3(25.0)	7(58.3)	12(4.4)
Failure	1(10.0)	0(0.0)	0(0.0)	9(90.0)	10(3.6)
Transfer in	0(0.0)	0(0.0)	1(100.0)	0(0.0)	1(0.4)
Other previously treated	0(0.0)	0(0.0)	0(0.0)	8(100.0)	8(2.9)
Initial Sputum result*					
Positive	25(14.0)	6(3.4)	58(32.4)	90(50.3)	179(65.3)
Negative	21(32.3)	5(7.7)	11(16.9)	28(43.1)	65(23.7)
Not done	1(3.7)	2(7.4)	7(25.9)	17(63.0)	27(9.9)

HIV status					
Positive	8(14.8)	5(9.3)	9(16.7)	32(59.3)	54(19.7)
Negative	10(6.5)	7(4.6)	45(29.4)	91(59.5)	153(55.8)
Not done	30(44.8)	1(1.5)	22(32.8)	14(20.9)	67(24.5)
CPT					
Yes	1(12.5)	4(80.0)	0(0.0)	25(78.1)	30(55.6)
Not done	7(87.5)	1(20.0)	9(100.0)	7(21.9)	24(44.4)

Table 2B: Characteristics of Patients (n=274) notified in the four (4) facilities in 2013

Variables	**Takoradi Hospital n (%)**	**GPHA Hospital n (%)**	**Kwesimintsim Hospital n (%)**	**Effia Nkwanta n (%)**	**Total n (%)**
ART					
Yes	1(12.5)	4(80.0)	0(0.0)	15(46.9)	20(44.4)
Not done	7(87.5)	1(20.0)	9(100.0)	17(53.1)	34(55.6)
Sputum at end of treatment					
Positive	0(0.0)	0(0.0)	1(8.3)	11(91.7)	12(4.4)
Negative	9(8.7)	1(1.0)	31(29.8)	63(60.6)	104(38.0)
Not done	39(24.7)	12(7.60	44(27.8)	63(39.9)	158(57.6)
Treatment outcome*					
Cured	6(6.7)	1(1.1)	26(28.9)	57(63.3)	90(32.8)
Complete	21(19.3)	6(5.5)	33(30.3)	49(45.0)	109(39.8)
Died	5(18.5)	2(7.4)	11(40.7)	9(33.3)	27(9.9)
Default	15(71.4)	1(4.8)	1(4.8)	4(19.0)	21(7.6)
Transfer out	1(12.5)	1(12.5)	4(50.0)	2(25.0)	8(2.9)
Failure	0(0.0)	1(6.7)	1(6.7)	13(86.7)	15(5.5)
MDR	0(0.0)	0(0.0)	0(0.0)	1(100.0)	1(0.4)

NTM	0(0.0)	0(0.0)	0(0.0)	2(100.0)	2(0.7)

*1(0.4) Patient's treatment outcome not declared, and 3(1.1%) Patients with no Sputum Result indicated

A total of 22 healthcare providers interviewed from 4 facilities in the Sekondi-Takoradi metropolis, 11(50.0%) were females and majority of the healthcare providers had been working in their respective facility for more than 6 years. (Table 3).

Table 3: Characteristics of Healthcare providers (n =22) in TB and HIV care

Variable	Number	(%)
Sex		
Female	11	50.0
Male	11	50.0
Age in years*		
21-30	7	35.0
31-40	9	45.0
41-50	2	10.0
>50	2	10.0
Length of time at institution in years*		
<3	7	35.0
4-6	5	25.0
>6	8	40.0

*Information not provided for missing numbers

Reports collated from the ART monthly and quarterly report form on the 2013 HIV clinical activities of the Effia Nkwanta Regional Hospital, Takoradi, GPHA, & Kwesimintsim Hospitals had a total of 771(100%) new clients, (Males-224 (29.1%), and females- 547 (70.9%)). Table 4 has the details.

Table 4: Characteristics of new clients (n =771) receiving HIV clinical care in the 4 facilities in the STMA in 2013

Variables	Takoradi Hospital n (%)	GPHA Hospital n (%)	Kwesimintsim Hospital n (%)	Effia Nkwanta n (%)	Total n (%)
Sex					
Female	31(4.0)	0(0.0)	10(1.3)	506(65.6)	547(70.9)
Male	17(2.2)	2(0.3)	3(0.4)	202(26.2)	224(29.1)
Number screened for TB	48(6.2)	2(0.3)	13(1.7)	708(91.8)	771(100)
Number of PLHIV with TB on ART	8(19.0)	2(4.8)	9(21.4)	23(54.8)	42(100)
Number of new clients started on ART	8(1.7)	2(0.4)	2(0.4)	449(97.4)	461(100)
Number on CPT	48(7.6)	2(0.3)	13(2.1)	570(90.0)	633(100)

A total of 6 TB and HIV co-infected clients were interviewed comprising of 4 females and 2 males and is presented in Table 5.

Table 5: Characteristics of TB and HIV Patients (n=6) interviewed in the district

Variables	Takoradi Hospital n (%)	GPHA Hospital n (%)	Effia Nkwanta Hospital n (%)	Total n (%)
Sex				
Male	0(0.0)	1(16.7)	2(33.3)	3(50.0)
Female	1(16.7)	0(0.0)	2(33.3)	3(50.0)
Age				

31-40	0(0.00	0(0.0)	1(16.7)	1(16.7)
41-50	0(0.0)	1(16.7)	1(16.7)	2(33.3)
51-60	1(16.7)	0(0.0)	1(16.7)	2(33.3)
61-70	0(0.0)	0(0.0)	1(16.7)	1(16.7)

4.2 Level of implementation of recommended TB and HIV collaborative activities in the District

The level of implementation of collaborative TB and HIV activities assessed at the district was medium with a score of 27(61%). The GHPA hospital attained a high level of implementation with an average score of 41(93%) with a total of 13 patients as against the E.N.R.H which had a medium level of implementation with an average score of 29(66%). (Table 6)

Table 6: Level of Implementation of collaborative TB and HIV activities in the 4 facilities in the STMA.

Health Facility	Score %	Rating
TH	25	Low
KH	59	Medium
GPHA	93	High
E.N.R.H	66	Medium
STMA	**61**	**Medium**

4.3 Factors influencing the implementation of collaborative TB and HIV activities

The factors measured showed that they influence the level of implementation in the various facilities though statistically all factors measured were not significant.

Association between level of implementation and health worker knowledge level on policy (2 (11.1%) participants in low level, 10(55.6%) participants in medium level and 6(33.3%) participants in the high level of implementation was not statistically significant (p=0.433).

Adequate number of staff and drug shortage were all not statistically significant (p=0.136, 0.083) however responses from participants showed that adequate number of staff as well as drug shortages were important factors in the implementation of the collaborative activities.

Type of service, one stop shop (p=0.573), referral (p=0.046) and separate centers (p=0.336) did all not show any statistical significance as well as mechanism for funding (p=0.709).Details are presented in tables 7A and 7B.

Table 7A: 2*2 Table showing the level of implementation and health system factors in the 4 facilities in 2015

Variable	Level of implementation			Fisher's exact
	Low n (%)	Medium n (%)	High n (%)	
Health worker knowledge on collaborative activities				
Goals and objectives				
Agree	2(11.1)	10(55.6)	6(33.3)	0.433
Neutral	1(50.0)	1(50.0)	0(0.0)	
Disagree	0(0.0)	2(100.0)	0(0.0)	
Policy dissemination				
Agree	2(13.3)	8(53.3)	5(33.3)	0.784
Neutral	1(25.0)	2(50.0)	1(25.0)	
Disagree	0(0.0)	3(100.0)	0(0.0)	
Guidelines for clinical management of TB and HIV co-infection manual				
Agree	2(13.3)	8(53.8)	5(33.3)	0.892
Neutral	1(16.7)	4(66.7)	1(25.0)	
Disagree	0(0.0)	1(100.0)	0(0.0)	
Health system factors				
Adequate number of staff				
Important	2(9.5)	13(61.9)	6(28.6)	0.136
Not important	1(16.7)	0(0.0)	0(0.0)	
Involvement of a specialist in TB and HIV care				
Important	2(10.5)	11(57.9)	6(31.6)	1.00
Neutral	0(0.0)	1(100.0)	0(0.0)	
Not important	0(0.0)	1(100.0)	0(0.0)	
Drug shortage				
Important	1(5.6)	11(61.1)	6(3.3)	0.083
Not important	2(50.0)	2(50.0)	0(0.0)	
Well refurbished centers for TB and HIV				
Important	1(5.9)	11(64.7)	5(29.4)	0.463
Neutral	1(50.0)	1(50.0)	0(0.0)	
Not important	0(0.0)	1(50.0)	1(50.0)	

Table 7B: 2*2 Table showing the level of implementation and health system factors in the 4 facilities in 2015

Variable	Level of implementation			Fisher's exact
	Low n (%)	Medium n (%)	High n (%)	
Type of service				
Separate centers				
Good	1(11.1)	4(44.4)	4(44.4)	0.336
Satisfactory	1(16.7)	4(66.7)	1(16.7)	
Referral				
Good	1(11.1)	3(33.3)	5(55.6)	0.046
Satisfactory	0(0.0)	3(100.0)	0(0.0)	
Poor	1(12.5)	7(87.5)	0(0.0)	
One stop shop				
Good	1(10.0)	6(60.0)	3(30.0)	0.573
Satisfactory	1(14.3)	3(42.9)	3(42.9)	
Poor	1(20.0)	4(80.0)	0(0.0)	
Mechanism for funding of policy				
Agree	2(16.7)	6(50.0)	4(33.3)	0.709
Neutral	0(0.0)	3(60.0)	2(40.0)	
Disagree	1(25.0)	3(75.0)	0(0.0)	
Adequate funding				
Agree	1(1.9)	6(54.5)	4(36.4)	0.944
Neutral	0(0.0)	3(75.0)	1(25.0)	
Disagree	1(16.7)	4(66.7)	1(16.7)	
TB and HIV coordinating committee				
Agree	2(13.3)	7(46.7)	6(40.0)	0.322
Neutral	1(25.0)	3(75.0)	0(0.0)	
Disagree	0(0.0)	3(100.0)	0(0.0)	

4.4 Performance of collaborative activities

4.4.1 Performance indicators of WHO collaborative TB and HIV activities

Proportion of TB patients tested for HIV was 207(75.5%) and 20(37.0%) were placed on CPT while 35.1% were placed on ART. Hundred (100%) of all clients receiving HIV clinical care were screened for TB, however initiation of HIV clients on IPT for latent TB was non-existent. Details is presented in Table 8.

Table 8: Performance indicators of WHO collaborative TB and HIV activities in the STMA based on TB and HIV case notification in 2013

Core indicators	Performance of implemented TB and HIV activities			Global Targets for Performance* (%)
	Numerator	Denominator	Proportion (%)	
Activities to reduce the burden of HIV in people infected with TB				
Proportion of TB patients tested for HIV	207	274	75.7	100
Proportion of HIV +TB patients treated with CPT	20	54	37.0	100
Proportion of HIV +TB patients treated with ART	30	54	55.6	100
Availability and distribution of free condoms at the TB unit	Not done			
Activities to reduce the burden of TB among people living with HIV				
Proportion of PLHIV attending HIV care services who were screened for TB at their last visit¶	771	771	100	100
Proportion of PLHIV attending HIV care services who were enrolled on IPT, among those eligible	Not done			
Practice of TB control measures in the district¡	Data not available			

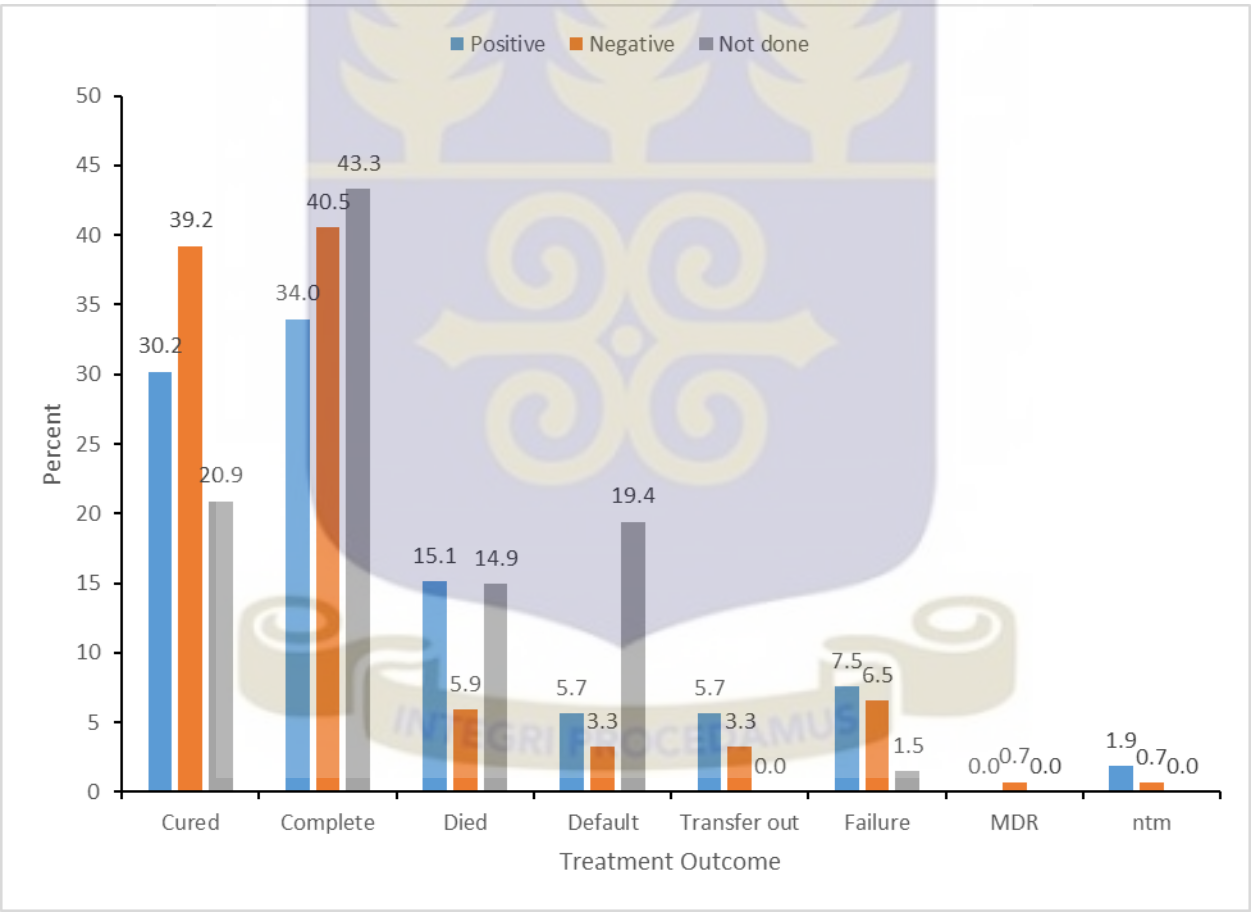
¶Data from monthly report, source data recorded separately with inconsistent patient characteristics

!some institutions carry out triaging of patients with cough

*(World Health Organization & Stop TB Partnership, 2010).

4.4.2 TB Treatment outcome per HIV status

A total of 34(64.2%) of the HIV positive TB patients had a successful treatment outcome. Other details on treatment outcome is presented in Figure 3



*MDR-Multi drug resistant TB, NTM-Non-tuberculous mycobacterium

Figure 3: TB Treatment outcome according to Patient's HIV status for 2013 notified cases

4.4.3 Performance of TB and HIV implementation on TB treatment outcomes

Treatment outcomes for 274 patients registered for TB care in the districts is described in Table 9.Treatment success rate (cured and completed) is 80.3% with the other outcomes as follows; 32 (9.6%) died and 24(7.2%) defaulted as well as 8 (2.4%) being transferred out to different facilities with no feedback. Seventeen (17) representing 5.1% of patients failed treatment and 1(0.3%) developed multi-drug resistant (MDR) TB and 2 (0.6%) were with non-tuberculous mycobacteria (NTM).

Table 9: Treatment outcomes for TB Patients registered in 2013 in the 4 facilities

Variables	Takoradi Hospital n (%)	GPHA Hospital n (%)	Kwesimintsim Hospital n (%)	Effia Nkwanta n (%)	Total n(%)
Treatment outcome					
Cured	6(6.7)	1(1.1)	26(28.9)	57(63.3)	90(32.8)
Complete	21(19.3)	6(5.5)	33(30.3)	49(45.0)	109(39.8)
Died	5(18.5)	2(7.4)	11(40.7)	9(33.3)	27(9.9)
Default	15(71.4)	1(4.8)	1(4.8)	4(19.0)	21(7.6)
Transfer out	1(12.5)	1(12.5)	4(50.0)	2(25.0)	8(2.9)
Failure	0(0.0)	1(6.7)	1(6.7)	13(86.7)	15(5.5)
MDR	0(0.0)	0(0.0)	0(0.0)	1(100.0)	1(0.4)
NTM	0(0.0)	0(0.0)	0(0.0)	2(100.0)	2(0.7)

The enrolment of TB and HIV co-infected patients placed on CPT and ART in the 4 facilities in 2013, showed that E.N.R.H had 32(59.3%) of patients testing positive of which 26(83.3%) were placed on CPT and 24(75.0%) being started on ART.

Kwesimintsim hospital had 9(16.7%) patients testing positive and none was placed on CPT or ART whilst 1(12.5%) patient in Takoradi hospital was placed on both CPT and ART out of a total of 8(14.8%) patients who tested positive for HIV. Shown in Figure 4.

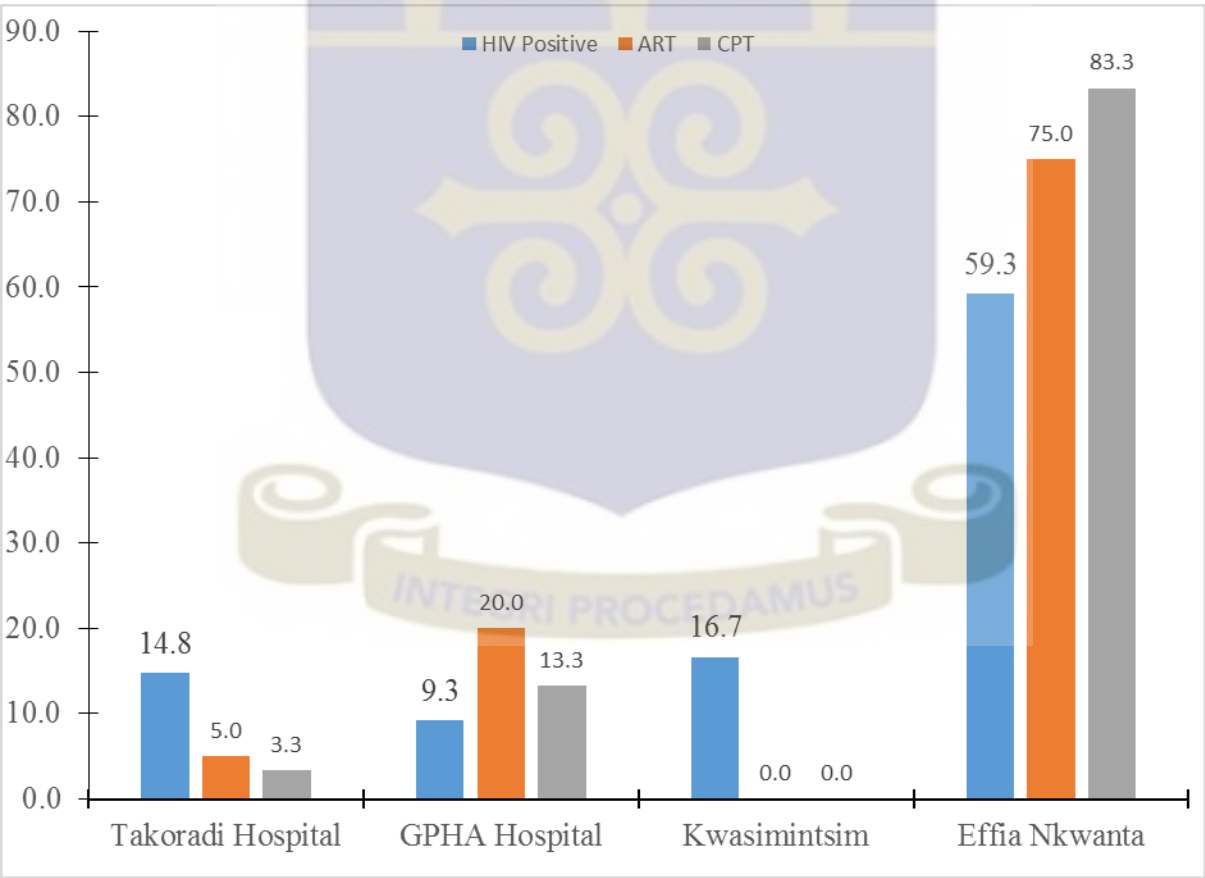


Figure 4: TB and HIV co-infected patients enrolled on CPT and ART in the 4 facilities for the year 2013

CHAPTER FIVE-DISCUSSIONS

This cross-sectional descriptive study demonstrated that the level of implementation of the TB and HIV collaborative activities in the district was medium with the level in the individual facilities ranging from high, medium to low. These findings are similar to the level of implementation of collaborative TB and HIV activities in Batibo health district in Cameroon which also had a moderate level of implementation with an implementation score of 50%.(Yumo et al., 2011).

This result could be attributed to collaborative activities that each facility had been able to implement successfully and those activities that they have not been successful in implementing. The evaluation showed facilities scoring high on having instituted a joint TB and HIV coordinating committee and the same high score for the non-effectiveness of these committees. Activities pertaining to the reduction of HIV in people infected with TB were being carried out at all health facilities with some performing poor. For instance in the Kwesimintsim hospital, testing of TB patients for HIV was done for only 54(71.1%) out of a total of 76(100%) patients registered in the year and none of the 8 patients who tested positive were started on CPT or ART. Takoradi hospital also registered 48 patients and tested only 18(37%) for HIV and 1(12.5%) of the 8 patients that tested positive was started on CPT and ART.

Provision of condoms for all TB patients and their relatives was not carried out and there was no evidence of documentation or protocol to help in the implementation of the activity. However free condom provision to the populace and TB and HIV infected clients is not a policy in the

district and Ghana as a whole. The Ministry of Health provides subsidised condoms for the family planning activities and these are accessible to everyone in the country.

The initiation of TB prevention among PLHIV and provision of early ART was another activity carried out with screening of all cases with HIV for TB but the initiation of IPT was non-existent in all 4 facilities. IPT though a recommendation in the TB and HIV control programs in Ghana, is not an adopted national policy as in other countries.(Aït-Khaled et al., 2009).

In general the implementation of recommended TB and HIV collaboration activities in all 4 facilities were above 50% except in Takoradi hospital showing that access was not an identified problem to the TB and HIV patient. This is in contrast to findings by Maher et al.,(2005), who reviewed the status of implementation of interventions to control HIV related TB among 25 top HIV prevalence countries. They concluded that the performance of the national TB and HIV programs in making this intervention available is generally low, with many countries reporting low or no access.

Though the level of implementation is 61% in the district, changes have to be done in the program to ensure the facilities with low levels of implementation improve upon their performance as Wood, (2012.), suggested in a study to integrate TB and HIV testing services in South Africa. The study suggested that there should be the early identification of HIV- infected individuals before they develop the symptoms associated with advanced immune suppression. There should also be access to monitoring of HIV progression and active TB case finding. This changes which are in place, when further intensified in the district's TB and HIV collaboration activities will result in an improved integration of both programs.

The level of implementation of collaborative TB and HIV activities is affected by program factors, medical, staffing and resource challenges. (Getahun, Gunneberg, Granich, & Nunn,

2010).These factors measured showed that they influence the level of implementation in the various facilities though statistically all factors measured were not significant.

Knowledge level of health workers on the policy for the collaborative activities was high with 18(81.1%) of the respondents agreeing that the goals and objectives of the policy are achievable and that it also addresses the needs of the TB and HIV clients.

The level of dissemination of the policy among the health workers was good with 68.2% of the respondents agreeing to know about the policy. This is in contrast to the level of dissemination in the Adansi district in the Eastern region of Ghana. (Hanson-Nortey, 2006)

Adu, 2008, listed problems in infrastructure, staffing and lack of data capturing tools and monitoring as the main factors influencing the implementation of the recommended activities in the Manya krobo district in Ghana. Currently in the STMA these factors are not problematic though ensuring the constant presence of adequate staff, upgrading health staff in the care of TB and HIV, ensuring constant drug supply are major factors that will ensure the effective running of the collaborative TB and HIV activities.

The WHO recommended the use of 3 different service provision style for the implementation of the collaborative TB and HIV activities and the adoption of a particular service is dependent on resource availability. The STMA had adopted all 3 service styles in the various facilities, the E.N.R.H employs the separate center care provision, and the GPHA employs the one stop shop service provision while the KH and TH hospitals employ both the separate centers and the referral service style. It is evident that these services will improve the integration of the TB and HIV services in the district based on an assessment of the impact of the integration of TB and HIV services in Ghana done by (Ansa G., et al, 2012.).

In Guatemala funding for the implementation was found to be insufficient, (Quinto et al., 2009) but respondents in the STMA though were aware of the existence of a funding policy did not have enough facts on the Funding activities. For instance the policy stipulated a joint development of funding proposals at the national and all levels of implementation but this was not carried out in the district.(Technical Policy, 2007). Funding is handled separately by each program and the funds needed to carry out specific activities pertaining to the TB or the HIV program is provided by the individual program.

The overall goals of the implementation of the TB and HIV collaborative activities is to strengthen the health system, reduce the burden of HIV in people infected with TB and also to reduce the burden of TB in PLHIV. The policy on collaborative activities had a national target of 90% screening of all detected TB cases for HIV by the year 2010.(Technical Policy, 2007), this was not achieved in 2013 in the STMA with the proportion of TB patients screened for HIV being 75.5%.

The E.N.R.H screened 89.8% of all registered cases, GHPA screened 92.3% of all cases registered and the KH and TH's screened 71.1% and 37% respectively. This indicates that the individual facilities have different performance which is equal to the level of implementation attained by them.

Fifty-five point six percent (55.6%) of TB and HIV co-infected patients registered in 2013 were started on CPT but documentation on its continuity was non-existent though CPT is to be provided for all TB and HIV patients unless contraindicated for 6 months during TB treatment at the DOTs center and continued at the HAART center till CD4 is >500/mm3 or for life and maintained for 6 months while on ART(Technical Policy, 2007).Thirty-seven percent (37%) of the co-infected patients were placed on ART based on patients CD4 count but now all TB and

HIV co-infected patients are to be started on ART. The above finding on CPT initiation is below that which was reported in the WHO 2013 TB country profile for Ghana where 65% of HIV-positive TB patients were placed on CPT and but initiation of ART was almost the same at 36.9%.(WHO 2014).

Treatment success rate has been increasing during the years in the district and 80.3% rate for all registered TB cases in 2013 though achieving the national target, more needs to be done in all areas of implementation.

The 2014 WHO Guide to monitoring and evaluation for collaborative TB and HIV activities suggests that a high value for the indicator suggests that the TB and HIV collaboration is working well and a low value suggests problems with the activity pertaining to the implementation. The Ghana National Tuberculosis Control Program has also set a 90% target for the achievement of the activities and a performance from 60% upwards is an indication of a good performance which needs further improvement.

5.2 Limitations

Source data was used as much as possible to prevent inaccuracies and incorrect reporting but the HIV clinical data could not be obtained from the source. This was as a result of a lack of a standardized register for all facilities visited. Data on the various activities are recorded separately and at the end of the month the health information officer compiles them as needed. This situation may affect the accuracy of the HIV clinical data obtained for the study.

Another limitation was the refusal of TB and HIV co-infected patients to take part in the study due to issues of stigma resulting in a limited number of patients' participation.

The use of the Likert scale type questionnaire has the limitation of possible distortions, where respondents may avoid using extreme response categories; agree with statements as presented or try to portray themselves or their facilities in a more favorable light.

The study design used in determining factors was also a limitation.

CHAPTER SIX-CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

The level of implementation of the WHO recommended TB and HIV activities in the STMA was medium.

Health worker and health system factors which have been documented in literature to influence the implementation of the recommended TB and HIV activities was also a factor in the level of implementation in the district though no statistical significance was attained.

The proportion of TB patients screened for HIV and that of PLHIV been screened for TB is also medium in accordance to the level of implementation of collaborative activities in the district.

6.2 Recommendations

From the findings of the study, I recommend the following;

1. The National Tuberculosis Control Program must strengthen the capacity of the facilities especially Takoradi Hospital in providing care for TB cases as well as the PLHIV infected with TB and also in caring for the TB and HIV co-infected patients. The Takoradi hospital provide DOTs and ART services at the dispensary concurrently with other pharmacy services.

2. The National Aids Control Program should implement the policy on IPT provision for HIV positive clients.

3. The National Aids Control Program must adopt the modified registers designed for the TB program. The TB register contains detailed columns for collecting data from the TB program but that of the HIV program does not have.

4. The two programs must ensure the establishment of the Joint TB and HIV coordinating committee in all regional and district heads.

5. The Metro Health directorate must ensure monitoring of the collaborative activities as it was evident in the findings that, some facilities are performing well while others are not. The district must build capacity to continue with the further implementation.

6. The Metro Health directorate should ensure the practice of infection control measures in the facilities.

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APPENDICES

Appendix A- Recommended Collaborative TB and HIV Activities

A.ESTABLISH AND STRENGTHEN THE MECHANISMS FOR DELIVERING INTEGRATED TB AND HIV SERVICES
A.1.Set up and strengthen a coordinating body for collaborative TB/HIV activities functional at all levels
A.2.Determine HIV prevalence among TB patients and TB prevalence among people living with HIV
A.3.Carry out joint TB/HIV planning to integrate the delivery of TB and HIV services
A.4.Monitor and evaluate collaborative TB/HIV activities
B. REDUCE THE BURDEN OF TB IN PEOPLE LIVING WITH HIV AND INITIATE EARLY ANTIRETROVIRAL THERAPY(THE THREE I'S FOR HIV/TB)
B.1.Intensify TB case finding and ensure high quality anti-tuberculosis treatment
B.2.initiate TB prevention with isoniazid preventive therapy and early antiretroviral therapy
B.3.Ensure control of TB in health-care facilities and congregate settings
C. REDUCE THE BURDEN OF HIV IN PATIENTS WTH PRESUMPTIVE AND DIAGNOSED TB
C.1.Provide HIV testing and counselling to patients with presumptive and diagnosed TB
C.2. Provide HIV prevention interventions for patients with presumptive and diagnosed TB
C.3. Provide co-trimoxazole preventive therapy for TB patients living with HIV

C.4. Ensure HIV prevention interventions, treatment and care for TB patients living with HIV
C.5. Provide antiretroviral therapy for TB patients with HIV

Appendix B– Consent Form

Dear Participant,

ASSESSING THE LEVEL OF IMPLEMENTATION OF TB/HIV COLLABORATIVE ACTIVITES IN SELECTED FACILITIES IN THE WESTERN REGION

You are invited to be part of this study which is being conducted by a Master of Public Health student of the School of Public Health of the College of Health Sciences of the University of Ghana. The aim of this study is to assess the level of implementation of the TB/HIV collaborative activities.

TB and HIV have a synergic effect which is affecting the health status of the population, the TB/HIV collaborative activities was introduced in 2007 to reduce the burden of HIV in TB patients and vice versa. This study will seek to identify the level of implementation and the factors associated with it in order to make appropriate recommendations to improve upon it.

If you accept to be part of the study you will be expected to answer questionnaires truthfully and as candid as possible. However if at any point in the study you choose to opt out, you are free to withdraw without any liability and obligation to the Principal Investigator or to the Research Assistants who are administering the questionnaire. You are assured of full confidentiality throughout the study and at no point during the study shall your name be associated with any question or opinion provided in the study.

Therefore I …… declare that the rationale of this study has been fully explained to me and my consent sought to answer questions, some of which may make me feel uncomfortable.

I have been assured that I am free to withdraw from the study at any point that am unwilling to continue and I shall not be liable to anyone or for anything

I have also been assured of confidentiality throughout the study, I have given my consent to participate in the study.

Signature of Respondent……

Date ……

Witness Signature……..

Name of Witness……

Date……

Appendix C: DATA REVIEW ABSTRACTION FORM

Name of Facility…… Date……

id	Age	Sex	Type of TB	Type of patient	Initial sputum result	HIV status	CPT	ART	Sputum At end of Treatment	Treatment outcome	Remarks

Appendix D: CHECKLIST FOR ASSESSING IMPLEMENTATION OF TB/HIV

COLLABORATIVE ACTIVITIES

Name of Facility…… Date……..

<table>
<tr><td colspan="4">Activity
A.1.Set up and strengthen a coordinating body for collaborative TB/HIV activities functional at all levels
1.Joint TB/HIV coordinating committee in the district or facility with the following representation</td></tr>
<tr><td>Good ⬡

TB & HIV coordinators
Civil society member
Patient
Community member
Records/reports of committee's activities</td><td>Satisfactory ⬡

TB & HIV coordinators
Any key person
Records/reports of committee's activities</td><td>less satisfactory ⬡

TB&HIV coordinators
Records/reports of committee's activities</td><td>Poor ⬡

Presence of a committee with no activity
OR
No committee/no report</td></tr>
<tr><td colspan="4">A.2.Determine HIV prevalence among TB patients and TB prevalence among people living with HIV</td></tr>
<tr><td>Good ⬡

Prevalence rate of HIV among TB patients (in the past 3yrs)

Prevalence rate of TB among HIV patients (in the past 3 yrs.)

TB & HIV surveillance Report (in the past 3 yrs.)</td><td>Satisfactory ⬡

Prevalence rate of HIV among TB patients (in past 2 yrs.)

Prevalence rate of TB among HIV patients (in the past 2 yrs.)

TB&HIV surveillance Report (past 2 yrs.)</td><td>Less satisfactory ⬡

Prevalence rate of HIV among TB (past year)

Prevalence rate of TB among HIV patients (in the past year.)

TB&HIV surveillance Report (past year)</td><td>Poor ⬡

Lack of/ Inconsistent report</td></tr>
<tr><td colspan="4">A.3.Carry out joint TB/HIV planning to integrate the delivery of TB and HIV services</td></tr>
<tr><td>Good ⬡</td><td>Satisfactory ⬡</td><td>Less satisfactory ⬡</td><td>Poor ⬡</td></tr>
</table>

Joint plans / protocols for the district; Human resources management plan Training plan Protocols for control of TB/HIV	Joint plans / protocols for the district; Training plan Protocols for control of TB/HIV	Joint plans / protocols for the district; Protocols for control of TB/HIV	No protocol/plans
A.4.Monitor and evaluate collaborative TB/HIV activities			
Good ⬡ Standardized Reporting and Recording Templates to collect data during monitoring and evaluation Schedule for monitoring in place Reports/ Records of monitoring in the past 3 yrs.	satisfactory ⬡ Standardized Reporting and Recording Templates to collect data during monitoring and evaluation Schedule for monitoring in place Reports/ Records of monitoring in the past 2 yrs.	Less satisfactory ⬡ Standardized Reporting and Recording Templates to collect data during monitoring and evaluation Reports/ Records on monitoring at least a year	Poor ⬡ No reports/records & schedule
B.1.Intensify TB case finding and ensure high quality anti-tuberculosis treatment			
Good ⬡ Algorithm for screening for TB among PLHIV; Adults Children Protocol for administration of Rifampicin	Satisfactory ⬡ Algorithm for screening for TB among PLHIV; Adults OR Children Protocol for administration of Rifampicin	Less satisfactory ⬡ Algorithm for screening for TB among PLHIV; Adults Children	Poor ⬡ No algorithm
B.2.Initiate TB prevention with isoniazid preventive therapy and early antiretroviral therapy			
Good ⬡ Protocol for management of TB/HIV and control available/displayed IPT protocol	Satisfactory ⬡ Protocol for management of TB/HIV and control available not displayed IPT protocol	Less satisfactory ⬡ Protocol for management of TB/HIV and control available and displayed	Poor ⬡ No protocol
B.3.Ensure control of TB in health-care facilities and congregate settings			
Good ⬡ TB infection control	satisfactory ⬡ TB infection control	Less satisfactory ⬡ TB infection control	Poor

plan/protocol Protocol for management of health providers living with HIV Protocol for health worker screening for TB	plan/protocol Protocol for management of health providers living with HIV OR Protocol for health worker screening for TB	plan/protocol	No protocol
C.1.Provide HIV testing and counselling to patients with presumptive and diagnosed TB			
Good Number of TB patients tested, counselled for HIV in 2012- 2014 Number of partners of with TB offered voluntary testing and counselling % patients screened	Satisfactory Number of TB patients tested, counselled for HIV in 2013- 2014 Number of partners of with TB offered voluntary testing and counselling % patients screened	Less satisfactory Number of TB patients tested, counselled for HIV in 2014 % patients screened	Poor Some records on patient screening
C.2. Provide HIV prevention interventions for patients with presumptive and diagnosed TB			
Good Strategies for comprehensive HIV prevention for TB patients and their partners Protocol for referral linkage for the two programs Protocol for voluntary, acceptable and confidential HIV testing and counselling for healthcare providers Risk assessment protocols	Satisfactory Strategies for comprehensive HIV prevention for TB patients and their partners Protocol for referral linkage for the two programs Protocol for voluntary, acceptable and confidential HIV testing and counselling for healthcare providers Risk assessment protocols	Less satisfactory Strategies for comprehensive HIV prevention for TB patients and their partners Risk assessment protocols	Poor Strategies for comprehensive HIV prevention for TB patients and their partners
C.3. Provide CPT for TB patients living with HIV			
Good Protocol for routine CPT Stock of CPT in facility Number of patients put on CPT for the period 2012-2014	Satisfactory Protocol for routine CPT Stock of CPT in facility Number of patients put on CPT for the period 2013-2014	Less satisfactory Protocol for routine CPT Stock out of CPT in facility Number of patients put on CPT for the period 2014	Poor No protocol OR Number of patients put on CPT within the last 6 months
C.4. Ensure HIV prevention interventions, treatment and care for TB patients living with HIV			
Good Integrated service for TB	Satisfactory Integrated service for TB	Less satisfactory Integrated service for	Poor Integrated

and HIV management Provision of condoms for TB patients Presence of educational charts on HIV at DOT centers	and HIV management Provision of condoms for TB patients OR Presence of educational charts on HIV at DOT centers	TB and HIV management Presence of educational charts on HIV at DOT centers	service for TB and HIV management

Appendix E: QUESTIONNAIRE FOR HEALTHCARE PROVIDERS

CONSENT FORM

Dear Participant,

TO ASSESS THE LEVEL OF IMPLEMENTATION OF TB/HIV COLLABORATIVE ACTIVITES IN SELECTED FACILITIES IN THE WESTERN REGION

You are invited to be part of this study which is being conducted by a Master of Public Health student of the School of Public Health of the College of Health Sciences of the University of Ghana. The aim of this study is to assess the level of implementation of the TB/HIV collaborative activities.

TB and HIV have a synergic effect which is affecting the health status of the population, the TB/HIV collaborative activities was introduced in 2007 to reduce the burden of HIV in TB patients and vice versa. This study will seek to identify the level of implementation and the factors associated with it in order to make appropriate recommendations to improve upon it.

If you accept to be part of the study you will be expected to answer questionnaires truthfully and as candid as possible. However if at any point in the study you choose to opt out, you are free to withdraw without any liability and obligation to the Principal Investigator or to the Research Assistants who are administering the questionnaire. You are assured of full confidentiality throughout the study and at no point during the study shall your name be associated with any question or opinion provided in the study.

Therefore I …… declare that the rationale of this study has been fully explained to me and my consent sought to answer questions, some of which may make me feel uncomfortable.

I have been assured that I am free to withdraw from the study at any point that am unwilling to continue and I shall not be liable to anyone or for anything

I have also been assured of confidentiality throughout the study, I have given my consent to participate in the study.

Signature of Respondent……

Date …….

Interviewer Signature……..

Name of interviewer……

Date……

BASIC INFORMATION

Official Title of Respondent …….
Sex: F: _____ M: _____

Age …….

Institution/ Address: _____

Length of Time at Institution: _____

Email and contact numbers: _____

Date(s) of interview: _____

Name of Interviewer: _____

Name of the Policy: **Technical Policy and Guidelines for TB/HIV Collaboration in Ghana**
Issuing Body/Institution: MOH/GHS (NTP/NACP)

Date officially Approved: August 2007
Policy Goal: Over all goals are in three fold;
To strengthen the health system to respond to the TB/HIV dual epidemic
To decrease the burden of TB in people living with TB/HIV
To decrease the burden of HIV in TB patients
Policy Objectives
1. The NTP and NACP will integrate TB and HIV prevention, care, and support activities in 60 districts by 2008, and in all districts (138) by 2015
2. To the extent possible, TB and HIV services will share the same facilities and personnel
3. Collaborative activities will result in reduced morbidity and mortality from TB/HIV co-infection, earlier and increased TB and HIV detection, enhanced TB cure rates, improved case management, reduced duplication of effort, and other improved efficiencies.
4. Active involvement of the community, including treatment supporter, will enhance treatment adherence, improve TB and HIV case detection, and assist in reducing the social stigma of the two diseases.

FACTORS INFLUENCING IMPLEMENTATION OF TB/HIV COLLABORATIVE ACTIVITIES

Policy factors

The Technical Policy and Guidelines for TB/HIV Collaboration in Ghana is a policy being implemented since 2007, on a scale of 1 to 5 how do you agree to factors below in facilitating the implementation?
1 – Strongly Disagree; 2 – Disagree 3 – Neutral; 4 – Agree; 5 – Strongly Agree

Scale items	1	2	3	4	5
A1. The goals and objectives as stated in the policy and noted in page 2 addresses the key issues in the district/ facility as a whole?					
A2. The policy addresses the needs of the TB/HIV co-infected and their health status?					
A3. In your opinion, the goals and objectives set in the policy are achievable?					
A4. In your opinion, the policy have been well disseminated to various implementing agencies?					
A5.In your opinion, the policy have been disseminated to the public, including beneficiaries?					
A6. There is the need for further dissemination of the policy					
A7. The *Guidelines for the clinical management of TB and HIV Co-infection in Ghana* manual is a helpful tool in implementing the policy?					
A8. The Guidelines include effective strategies/activities to address the needs of TB and HIV patients and their health status?					
A9. There is effective coordination between NTP and NACP in implementing strategies designed to achieve the policy's goals?					

Health system factors

From your perspective, how does the following factors influence your institution's ability to implement this policy effectively?

B. On a scale of 1 to 5 How important are the factors below in facilitating the implementation.					
Health system factor	Not very important 1	2	3	4	very important 5
B1. Adequate number of staffing					
B2. Involvement of a specialist in TB/HIV care					
B3. Any health service provider in care					
B4. Drug supply chains or protocols					
B5. Drug shortage					
B6. Well refurbished centers for TB/HIV care					
On a scale of 1 to 5 which of these service styles is the best suited for your institution/facility					
Type of service	Poor 1	Less than satisfactory 2	satisfactory 3	Good 4	very Good 5
B7. Separate centers for TB/HIV care provision					
B8. Referral from on center to another for TB/HIV care					
B9. One shop stop service provision for TB/HIV care					

B10. Depending on the style chosen from above (Very Good) how effectively have you been running this type of service in your facility			
Very effective	Effective with challenges	Not effective	Poor

Funding factors

On a scale of 1 to 5 how do you agree to factors below in facilitating the implementation?
1 – Strongly disagree; 2 – Disagree 3 – Neutral; 4 – Agree; 5 – Strongly agree

Scale items	1	2	3	4	5
C1. There is a mechanism in place to ensure funding for implementing this policy?					
C2. In your opinion, the financial resources that are being allocated for implementation of this policy is sufficient					

On a scale of 1 to 5 how has funding factors affected the implementation of the policy in your facility?

Funding factors	Not Applicable 1	Poor 2	Not effective 3	Effective 4	very effective 5
C3. Adequate funding					
C4. Lack of Funds					
C5. Funding from internally generated funds					
C6. Separate program funding					
C7.Joint funding from NTP&NACP					

Other factors

On a scale of 1 to 5 how do you agree to factors below in facilitating the implementation?

1 – Strongly disagree; 2 – Disagree 3 – Neutral; 4 – Agree; 5 – Strongly agree

Scale items	1	2	3	4	5
D1.Currently, there is a TB/HIV coordinating committee for implementing this policy in the Region/district/facility?					
D2. This committee's leadership in implementing the policy have been effective					
D3. There are positive changes in providing services under the policy					
D4. We/I have been receiving feedback on how this policy is being implemented overall?					
D5. This feedback has been helpful to me in mine position?					
D6. Overall, the policy is being implemented well?					
D7.Would additional policy action—such as issuance of a law or operational guidelines—further facilitate the implementation of this policy?					

D8. How helpful is this feedback to you in your position? Explain

D9. What indicators are used to monitor the implementation of the policy?

List

D10. Are you aware of any barriers to providing services under the policy?

If yes what barriers

Appendix F: RESULTS OF THE CHECKLIST ON COLLABORATIVE TB AND HIV ACTIVITIES IN THE DISTRICT

	Good	Satisfactory	Less satisfactory	Poor
Joint TB/HIV coordinating committee in the district or facility	50.0	0.0	16.7	33.3
Determine HIV prevalence among TB patients and TB prevalence among people living with HIV	42.9	14.3	42.9	0.0
Joint TB/HIV planning to integrate the delivery of TB and HIV services	28.6	14.3	14.3	42.9
Monitor and evaluate collaborative TB/HIV activities	28.6	14.3	28.6	28.6
Intensify TB case finding and ensure high quality anti-tuberculosis treatment	28.6	14.3	42.9	14.3
Initiate TB prevention with isoniazid preventive therapy and early antiretroviral therapy	14.3	0.0	42.9	42.9
Ensure control of TB in healthcare facilities and congregate settings	28.6	14.3	28.6	28.6
Provide HIV testing and counselling to patients with presumptive and diagnosed TB	42.9	28.6	28.6	0.0
Provide HIV prevention interventions for patients with presumptive and diagnosed TB	16.7	16.7	16.7	50.0
Provide CPT for TB patients living with HIV	66.7	33.3	0.0	0.0
Ensure HIV prevention interventions, treatment and care for TB patients living with HIV	14.3	42.9	28.6	14.3