SCHOOL OF PUBLIC HEALTH

COLLEGE OF HEALTH SCIENCES

UNIVERSITY OF GHANA

Treatment Completion Rates of Tuberculosis Infection at the Chest Clinic, Korle-Bu Teaching Hospital, Ghana from 2018-2020

BY

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THIS DISSERTATION IS SUBMITTED TO THE SCHOOL OF PUBLIC HEALTH, UNIVERSITY OF GHANA IN PARTIAL FULFILLMENT FOR THE AWARD OF THE MASTER OF PUBLIC HEALTH (MPH) DEGREE

SEPTEMBE 2022

DECLARATION

I, Divine Lardey Agyemang, hereby declare that except for the other people's investigations which have been duly acknowledged, this work is the result of my original research and that this dissertation, either in whole or in part has not been presented elsewhere for another degree.

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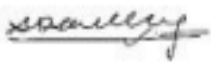

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Dr. Samuel Sackey **Date: 14/09/2022**

(Supervisor)

DEDICATION

This work is dedicated to my wife, Mabel Enyonam Agyemang-Lardey, my son, Nathan Kabutey Agyemang-Lardey and to my daughter, Victoria Kakie Agyemang-Lardey. I also dedicate it to the best father in the world, Mr. Agyemang Nathan for all his struggle and toil in bringing me to this level. Finally, to my Mum, Mrs. Victoria Agyemang for her prayers, support, and encouragement in my academic pursuit.

ACKNOWLEDGEMENT

May, I first and foremost thank our Creator for seeing me through the study and making it a reality. My deepest appreciations go to my supervisor, Dr. Samuel Sackey for his dedication, invaluable time, professionalism, thoroughness, patience, follow through, understanding, intellect, energy, encouragement, passion, determination, reliability, open mindedness, skills in resolving challenges, his invaluable research wisdom which he willingly shared, plus more, all of which have been very instrumental and critical in bringing to a close, a very long and difficult journey. He went above and beyond in sacrificing his invaluable time and busy schedules. I am grateful. I also thank my wife, Mabel Enyonam Lolo and my friend, Bempong Gabriel Opoku for their support and words of encouragement in difficult times. Last but not least, to my family, who courageously endured during my times away, as I pursued the end of this degree program. I am very grateful to the working staff of the Chest Clinic, Korle-Bu Teaching Hospital, particularly, Mr. Fiifi without whom this study would not have been possible.

ABSTRACT

Background: Tuberculosis (TB) remains a major public health challenge in countries of sub-Saharan Africa, and it is one of the top 10 causes of death worldwide. The burden of TB is further compounded by interruption in treatment. An estimated 13,978 cases of TB have been reported in Ghana annually. Yet only 32% were detected and notified, with 21% cases co-infected. Low completion treatment rates indicate high rates of adverse treatment outcomes. If this situation is left unresolved, there will be increased multidrug-resistant, increased morbidity and mortality rates and prolonged treatment periods. **Aims:** The study sought to determine the burden of TB co-infection and treatment completion rate. **Methods:** A retrospective records review was conducted at the Korle-Bu Teaching Hospital using TB registers between January 2018 and December 2020. Data extraction guide was developed in Microsoft excel and pre-tested. Simple descriptive statistics such as means, proportions and standard deviation were used to summarized both categorical and continues variables. A chi-square test was conducted to determine association between treatment factors and socio-demographic characteristics, co-infection (HIV) and treatment completion rates. Logistic regression analysis was used to determine the strength of associations between treatment factors, co-infection and independent variables (such as socio-demographic characteristics). **Results:** In general, more males (56%) than females (44%) seek treatment for TB at the Korle-Bu Teaching Hospital. Out of the 350 TB patients, prevalence of TB/HIV co-infection was 34.3%-profound in males (55.8%), those residing in urban settings (87.5%) and in year 2020 (50%). Overall treatment completion rate was 71.7% - significantly higher among males (51.8%), participants residing in urban settings (81.3%) and those who tested negative for HIV (67.3%). Yet, treatment completion rate had reduced in 2020 (72.2%) compared to 2019 (79.2%). Independent predictors of treatment

completion were found to be: being male [AOR=0.34 (95% CI: 0.19-0.62); p<0.001] and complains of drug side effects [AOR=0.13 (95% CI: 0.07-0.24); p<0.001]. **Conclusion:** Majority of TB patients for the years under review were males and resides in urban communities. About one-third were diagnosed of extra-pulmonary. Prevalence of TB-HIV co-infection was quite high, more prevalent in urban districts, and remained steady for two years and significantly increased in 2020. The findings in this research implies that patients who must undergo treatment for TB must be educated on possible side effects of medications. This will result in an increased rates of treatment completion and overall help in the fight against TB in Ghana.

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LIST OF ABBREVIATIONS

TB - Tuberculosis

GDHS - Ghana Demographic and Health Survey

GHS - Ghana Health Service

HIV - Human Immunodeficiency Virus

NTP - National TB Control Program

NACP - National AIDS Control Program

KBTH-IRB - Korle Bu Teaching Hospital Institutional Review Board

LMIC - Low- and Middle-Income Countries

MoH - Ministry of Health, Ghana

KBTH - Korle Bu Teaching Hospital

WHO - World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Context of Study

Tuberculosis (TB) remains a major public health challenge to man (WHO, 2013). It is among the list of top 10 causes of death globally and source of ill-health in masses of people every year (WHO, 2015). The World Health Organization report in 2015 estimated that, about 10.4 million persons internationally were infested with tuberculosis, with about 1.4 million resulting in deaths (WHO, 2015).

Tuberculosis is caused by the bacillus *Mycobacterium tuberculosis* (WHO, 2013). Tuberculosis usually distresses the lungs (pulmonic TB) but can also touch other parts of humans, such as the bones and intersections (extra-pulmonary TB). Individuals sick with vigorous pulmonary TB expel infectious aerosol droplets when they cough, sneeze, speak, spit or speak. When an uninfected person inhales these infectious aerosols, the person can become infected. Tuberculosis continues to be on the rise due to the spread of human immune-deficiency virus (HIV) disease, the advent of multidrug-resistant TB, and the breakdown in health services (Lawn, Wood, & Wilkinson, 2011). Several factors account for the susceptibility of people to TB. Smoking cigarettes, excessive alcohol consumption, chronic lung disease, diabetics, and people with HIV have an increased risk of contracting tuberculosis (Harries, Lawn, Getahun, Zachariah, & Havlir, 2012; van Zyl Smit et al., 2010). HIV is a significant risk problem of TB (García-Basteiro et al., 2015).

Baussano et al. (2010) revealed that TB is linked to malnutrition and overcrowding, making people in confined areas such as prisoners or students in hostels high-endemic populations. Other endemic groups comprise healthcare staffs attending to infected patients, children in close contacts with infected people, and people living in resource-limited settings like slums

(Kompala, Shenoi, & Friedland, 2013; Ogbudebe et al., 2015). TB infects more males than females and infects several persons in the working age bracket (15-59 years) (WHO, 2017).

A 6-month chemotherapy routine involving a blend of rifampicin, isoniazid, ethambutol, and pyrazinamide for two months, accompanied by rifampicin and isoniazid for four calendar months is a standard treatment regimen suggested by the World Health Organization (World Health Organization, 2010). The infection is still considered a risk to community well-being as a result of the high default rate of treatment which results in multiple drug resistance and an increase in the morbidity and mortality rates (Boateng, Kodama, Tachibana, & Hyoi, 2010a).

At the moment there is no documented scientific study on the completion rates of the treatment regimens at the Korle-Bu Teaching Hospital. A study at Korle-Bu Teaching Hospital will serve as a guide for other tertiary hospitals in Ghana and findings will help increase treatment completion among the population hence, there is a need to conduct studies in this area due to the paucity of information on the completion rates and treatment factors of TB at the KTH, so as to reduce the morbidity and mortality rates drastically.

1.2 Problem Statement

Tuberculosis ranks tenth amongst all cases of deaths globally and it is the solitary most prevalent cause of death since 2007 from a solitary transmittable carrier (Osei, Oppong, & Der, 2020). Deaths resulting from TB was about 85% in the WHO South-Easterly and African provinces (Osei et al., 2020). The World Health Organization reported that, in the WHO-African Province, there were 37 HIV-negative TB deaths and 20 HIV- positive TB deaths for every 100,000 populace whereas on the global scale, there occurred 15 HIV-negative TB deaths and 3.3 HIV-positive TB deaths for every 100,000 people (WHO, 2019). Since 2000, the death rate of TB keeps dropping worldwide (Osei et al., 2020). Despite this progress, the world was not able to attain the 35% decrease in the overall sum of mortalities towards the end of 2020

after the 2015 benchmark as aimed by the "End TB policy". The World Health Organization stipulated in 2019 that achieving this feat would necessitate a quicker rate of decline and fatality case rate up to 10% (WHO, 2019).

Since when the DOTS approach was adopted in Ghana in the 1990s, the fight against TB has seen an increased rate of treatment and treatment completion among the population. However, TB still ruins as a big communal health challenge with a larger impact on the wellbeing and economy of individuals and the health system as a whole (Amo-Adjei & Awusabo-Asare, 2013). In the year 2018, there were records of about 13,978 cases of TB in Ghana, notwithstanding, only 32% were detected and notified to the World Health Organization, with 21% of the cases being HIV-positive (WHO, 2019). The current challenges of TB in the country is due to the interruption of treatment by infected patients (Osei et al., 2020).

Low completion rates of TB treatment regimens showed heightened proportions of antagonistic healing results among patients on medication. The TB control programmes as a result of low completion rates is threatened with adversities including development of multiple drug resistance which further breeds an increased potency of spread of the bacteria (*Mycobacterium tuberculosis*), high prevalence of illness and death and prolonged treatment periods (Boateng, Kodama, Tachibana, & Hyoi, 2010b). If this situation is left unresolved, there will be increased multidrug-resistant, increased morbidity and mortality rates and prolonged treatment periods and hence the need for this study to be conducted.

1.3 Study Aims

1.3.1 General Aim

The thesis aims to determine the treatment completion rate of tuberculosis infection at the Korle-Bu Teaching Hospital.

1.3.2 Explicit Aims

1. To describe the demographic characteristics of tuberculosis cases.
2. To assess the proportion of tuberculosis cases with co-infections at the Korle Bu Teaching hospital.
3. To establish the treatment completion rate of people who were detected with tuberculosis and started management at the Korle Bu Teaching Hospital.

1.4 Study Inquiries

The research questions guiding the study were as follows:

1. What are the demographic characteristics of tuberculosis cases at the Korle-Bu Teaching Hospital?
2. What is the proportion of tuberculosis cases with co-infections at the Korle-Bu Teaching Hospital?
3. What is the treatment completion rate of people who were detected with tuberculosis and started management at the Korle-Bu Teaching Hospital?

1.5 Justification

Although Ghana is not one of the high-burden TB nations in Africa, the ailment has been considered as an imperative health task. According to the Ghana Health Service, tuberculosis and HIV accounted for about 7% of all mortalities, and is rated next to malaria (Amo-Adjei & Awusabo-Asare, 2013). It is projected that less than half of TB cases in the country are

reported. For instance, in 2010, only 15,145 of the 47,632 expected fatalities were detected (Amo-Adjei & Awusabo-Asare, 2013).

Moreover, the treatment regimen or treatment type and duration of the treatment could affect patients' compliance. A low rate of completion of treatment regimens brings about multiple-drug immunity and hence encumbers the control of TB and thus intensifies the illness and mortality rates of the disease (Boateng et al., 2010a).

The study therefore sought to determine the treatment completion rates among tuberculosis patients at the Korle-Bu teaching Hospital.

1.6 Narrative of Framework

The conceptual framework highlights the socio-demographic characteristics of the participants, the treatment factors, and co-infection which interacts independently and collectively to affect the treatment completion rate of tuberculosis.

The socio-demographic features of partakers such as gender and age could affect the treatment completion rates of tuberculosis. It is assumed that treatment factors such as treatment regimens and treatment duration could affect tuberculosis and have some adverse effects on patients. The type and duration of treatment could affect patients' compliance and hence affect the completion rate of the infection.

The conceptual framework further shows how the co-infection of tuberculosis with HIV can affect the treatment completion rates of tuberculosis. HIV is the most important risk factor of tuberculosis (García-Basteiro et al., 2015). HIV-related factors involve testing for HIV and knowing the status of the patients. Due to strong immune systems, several persons infested with TB do not suffer the ailment (resulting in latent tuberculosis infection) but the probability of developing the disease is higher among HIV infected patients as HIV disease and tuberculosis are communal and every so often are co-occurring ailments thereby making a fatal

blend, each speeds up the other's development (Frimpong-Mansoh, Calys-Tagoe, Therson-Coffie, & Antwi-Agyei, 2018). Further co-infection such as diabetes mellitus may perhaps also distress tuberculosis treatment completion rates (Pablo-Villamor, Benedicto, Benedicto, & Perez, 2014).

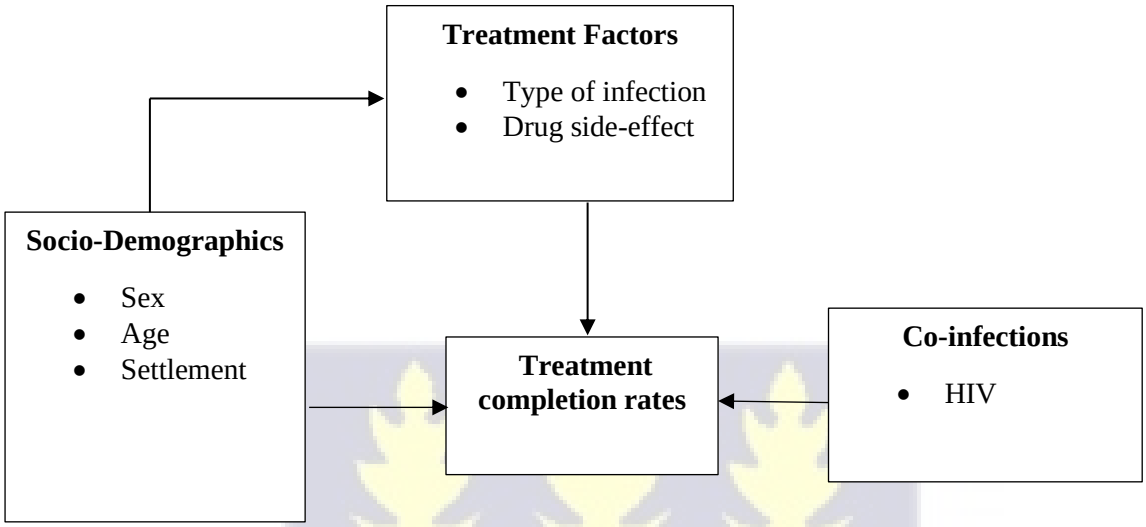

Fig 1.1 Conceptual background of issues linked to Treatment Completion rates of Tuberculosis Infection.

CHAPTER TWO

LITERATURE REVIEW

2.1 Cause and Types of Tuberculosis

The bacterium that causes tuberculosis is the *Mycobacterium tuberculosis*. People infected with the disease are either discovered to have dormant tuberculosis infection (LTBI); an asymptomatic medical condition that is not contagious, or vigorous tuberculosis; featured by the occurrence of medical indicators arising from infection that can happen in various body parts (Kiazyk & Ball, 2017). What characterizes latent tuberculosis is the existence of insusceptible reactions to *Mycobacterium tuberculosis* disease without scientific indication of active tuberculosis (Mack et al., 2009). About one-third of the world's populace is projected to be infested with *Mycobacterium tuberculosis* (Getahun, Matteelli, Chaisson, & Raviglione, 2015). The greater proportion of people infected with LTBI have no features and indicators of the TB ailment and are not communicable, but they are at a danger for developing active TB sickness and becoming contagious (Getahun et al., 2015).

One of the most deadly human pathogens is *Mycobacterium tuberculosis* (Russell et al., 2010). Active form of tuberculosis occurs any time the immune system is interrupted or fails to fight the infection (Christopher & Bosede, 2010). According to Harries et al. (2012), factors that account for the susceptibility of people to TB include alcohol consumption, chronic lung disease, cigarette smoking, diabetes, and HIV. Some of the indicators of active tuberculosis comprise coughing, forfeiture of taste, chest pains, increased night sweats, and productive purulent sputum.

The infection continues to be on the rise due to the failure in health amenities, the blowout of human immunodeficiency virus (HIV) disease, and the rise of multidrug-resilient TB (Lawn et al., 2011).

2.2 The Global Burden of Tuberculosis

At present, the topmost infectious cause of death internationally is Tuberculosis (Jagger, Reiter-Karam, Hamada, and Getahun, 2018). The aim of the (WHO) "End Tuberculosis policy" is to greatly cut tuberculosis prevalence by 90% and death by 95% compared with the 2015 statistics of 142 incidents for every 100,000 people and 5.3 to 19 illnesses per 100,000 population (based on HIV status), separately (WHO, 2016; WHO's Global, Uplekar, Weil, & Lonnroth, 2015).

A projected 10.0 million persons globally contracted TB in 2019 and there were about 1.2 million TB deaths among HIV-free people and an additional 208,000 mortalities among persons who contracted HIV (World Health Organization, 2020). According to Chakaya et al. (2021), among the people infected with TB infection, children aged below 15 years and adults accounted for 12% and 88% respectively for the infection. Majority of persons who developed TB in 2019 lived in the WHO provinces of South-East Asia (44%), Africa (25%), and the Western Pacific (18%), with smaller proportions in the Eastern Mediterranean (8.2%), the Americas (2.9%) and Europe (n2.5%) (Chakaya et al., 2021). Two-thirds of the total universal TB cases are recorded in eight nations: such as India (26%), Indonesia (8.5%), China (8.4%), the Philippines (6.0%), Pakistan, Nigeria (4.4%), and Bangladesh (3.6%) (Fukunaga et al., 2021). Since 2015, the WHO European and African provinces have witnessed the major drops in cases (19% and 16%, respectively) and death (31% and 19%, correspondingly) (Fukunaga et al., 2021).

The prevalence of tuberculosis in Ghana for every 100,000 persons stood at 148 in 2018, with an equivalent death proportion of 36 (World Health Organization, 2018). Nevertheless, below one-third of the expected sum of detected cases are reported annually and the manner of under-reporting of identified cases in high TB prevalence areas remains mostly hidden (Mettle, Osei Affi, & Twumasi, 2020).

2.3 Treatment Regimens of Tuberculosis Infection

The globally accepted standard treatment for patients with active tuberculosis, a 6-month chemotherapy regimen using a combination of 4 drugs (rifampicin, isoniazid, ethambutol, and pyrazinamide for 2 months, followed by rifampicin and isoniazid for 4 months) with acute proportions of roughly 90% in HIV-free patients (World Health Organization, 2010). However, issues of low patient acquiescence, low quality drugs, and ridiculous prescription activities intensifies the peril of choosing drug-resistant (DR) stresses of *Mycobacterium tuberculosis*, which is very tough and more expensive to manage (Lienhardt et al., 2012).

The typical treatment schedule for medicine-susceptible tuberculosis comprises an initiation stage involving Rifampin, isoniazid, and pyrazinamide, to which ethambutol is supplemented as fortification against unnoticed resistance to one of the three core drugs (Horsburgh Jr, Barry III, & Lange, 2015). As exposure to isoniazid, Rifampin and pyrazinamide has been established, ethambutol can be stopped. All the guiding principles acclaim the application of similar regimen for the managing of drug-prone tuberculosis, but with some disparity in time.

The Indian procedures, for instance, acclaim administration of ethambutol for the complete 6-month sequence (Sreenivas, Sachdeva, & Ghedia, 2014). Even though complete management for 6 months is normal and the WHO does not prescribe postponement of treatment for any patient, extension is suggested in countless situations by a multitude of the guiding principles (World Health Organization, 2010). For instance, U.S guidelines propose that patients having a hole on the baseline chest lining and a positive mucus history of 2 months should be given an extra 3 months of merging therapy (Centers for Disease Control, 2003). Rifampin susceptibility is sporadic in the absence of isoniazid, but a 9-month routine of isoniazid, pyrazinamide, and streptomycin have proven to be effective

When choosing a regimen, there are special considerations such as age, hepatic disease, HIV infection, pregnancy, and the potential to interact with other medications (Tang & Johnston, 2017). Patients often prefer the shorter duration regimens and hence results in greater compliance rates (Comstock, 1999).

2.5 Tuberculosis Co-Infections

A syndemic is described as the co-occurrence of double infections intermingling synergistically leading to undue drain in the community. A perfect example of a syndemic is the co-infection of *Mycobacterium TB* and HIV/AIDS. Individuals infected with HIV/AIDS are vulnerable to tuberculosis infection. Co-infection is fuelled by the ongoing exposure of HIV/AIDS patients to active TB cases and incessant recrudescence of dormant TB fatalities (Lee, Meintjes, Kamarulzaman, & Leung, 2013). According to Bares and Swindells (2020), HIV patients are 15-22 times more probable to contract active TB than persons without HIV. The risk of TB infection annually as a result of recurrence of dormant virus for individuals with HIV is nearly 3-16% per annum, approximately a generational risk of TB (5-10%) amongst individuals who are HIV-free (Selwyn et al., 1989).

As stated by the World Health Organization, around 10.4 million cases of tuberculosis are recorded globally, of which around 10% were co-infected with HIV and near 1.4 million life losses, where, 400,000 deaths were among persons co-infected with HIV (WHO, 2013). The influence of the generalized HIV and tuberculosis waves have worried the health systems and devasted people in many sub-Saharan African countries. In the sub-Saharan African region, about 32 percent of TB incidences were projected to be co-infested with HIV and this figure stands 74% of TB diseases amongst people living with HIV globally (WHO, 2013).

As in the case in many other sub-Saharan African countries, the bearing of HIV on TB, and the consequences for TB and HIV management have been recognized as a national test in Ghana. Ghana is classified as having a larger rate of TB/HIV co-infection (Osei, Der, Owusu, Kofie,

& Axame, 2017). Based on WHO (2013) report, there were approximately 9900 cases of TB amid HIV-positive cases which represents 36 per 100,000 of the Ghanaian people in the year 2015. Studies have established that the incidence of HIV in TB patients in Ghana is roughly 25-30% and that as numerous as 50% of victims with a enduring cough could be HIV positive in spite of the confirmed efficacy of TB/HIV management and preclusion (Avoka & Osei, 2020).

Globally, diabetes epidemic is increasing steadily and the adverse effect of diabetes on TB incidence portends advances in TB control (Jeon, Murray, & Baker, 2012; Odone, Houben, White, & Lönnroth, 2014). Eventhough the lifelong risk of recrudescence of LTBI to TB ailment only happens in around 10% of diseased people, the peril of advancement in TB is sophisticated in persons with comorbidities such as HIV and diabetes mellitus (Corbett et al., 2003; Hensel et al., 2016; Kapur & Harries, 2013). In low-slung TB prevalent areas, individuals with diabetes have almost two-times the risk of dynamic TB as likened to the universal populace and about 15% of all TB illnesses are accredited to diabetes (Restrepo & Schlesinger, 2013; Ronacher et al., 2015).

2.6 Treatment completion rate

Periodic monitoring of TB programes, interventions and programme indicators can serve to offer consistent information for through measurment of TB prevalence and deaths. A retrospective study conducted in the Volta Region of Ghana between 2013-2017 found treatment success rate to decreased from 83.1% in 2013 to 80.2% in 2017 (Osei et al., 2019). Further, failed management, demise and loss of tracking frequencies were 0.8%, 13.5% and 3.1% respectively. Sucessful treament outcome found in that study was however lower than the national average of 85% and those reported in Iran (83.1%) (Khazaei et al., 2016) and a pooled analysis in Ethiopia (Eshetie et al., 2018). In another retrospective analysis conducted in Uganda, about 81.1% had successful treatment. Approximately 42.5% were cured, 28%

completed treatment, 1.5% failed treatment, 7.2% died, 7.9% were lost to follow-up and 12.1% were not evaluated (Izudi et. Al., 2020). This is similar to what was previously reported in a cross-sectional study condcuted in Ethiopia. In that study, overall treamtent success rate was 80.8%. Further, 32% were cured, 48.8% have finished management, 1.4% were failed treatments, 12.8% were mislaid to follow-up and 5% perished (Tesema et al., 2020). In another cross sectional study conducted in South Africa, 82.2% treatment success was obsevered of which, 10.5% died, and 7% defaulted (Jacobson et al., 2015). Similar pattern of treatment success was again observed in previous studies in Ethiopia (Getahun et al., 2013) with healing rates of 80.2% in Jimma (Abebe et al., 2019), 81.5% in Sodo town (Tafesse et a., 2018), 79.6% in Addis Ababa and 82.9% in Assela (Yakob et al., 2018).

CHAPTER THREE

3.0 METHODOLOGY

3.1 Study design

An analytic cross-sectional survey was undertaken at the Korle-Bu Teaching Hospital. It engaged a reflective assessment of the TB treatment records of patients who started tuberculosis treatment at the Chest Unit of the hospital. The management records of all patients who started treatment between January 2018 to December 2020 were recovered and statistics on the socio-demographic characteristics, co-infections, treatment regimens, and treatment completion rates were obtained.

3.2 Study area

The study was conducted at the Korle Bu Teaching Hospital. It is located in the Accra Metropolis District in the Greater Accra Region. The hospital was built on 9TH October, 1923. The facility was constructed by the Sir Frederick Gordon Guggisberg's government, then, the Governor of the Gold Coast, as an All-purpose Hospital to address all health requirements of the people. Currently, the Korle Bu Teaching Hospital, which is the 3rd largest referral centre in Africa has over 2,000 beds, 21 medical and diagnostic departments and three Centers of Excellence. It also has an usual casualty turnout of 1,500 with approximately 250 inpatient admissions.

The experimental and diagnostic departments include Internal Treatment and Therapeutics, Child Health, Surgery, Obstetrics and Gynaecology, Anaesthesia, Family Medicine/ Polyclinic, Accident & Emergency, Psychiatry, Reconstructive Plastic Surgery and Burns Centre and Accident & Orthopaedics. Others are Pharmacy, Pathology, Laboratory and Radiology. The hospital receives a large sum of patrons within the nation and from neighbouring states such as Burkina Faso, Nigeria, Togo and Benin amongst others. The Chest Unit of the Hospital which falls under the Medical Sub-BMC (Behavioural Medicine Centre) Department, caters for

patients with ailments caused by *Mycobacterium tuberculosis*. The unit is also well-known for the handling of tuberculosis (TB) cases, chest disease and HIV cases which is generally connected with TB cases.

3.3 Study populace

The study populace comprised of all complete records of patients detected with tuberculosis infection, listed and started treatment at the Chest Department of the Korle Bu Teaching Hospital between the period of January 2018 to December 2020.

3.3 Addition and exclusion conditions

3.3.1 Inclusion Criteria

All available TB records with complete data between the period of January 2018 to December 2020 were encompassed in the survey.

3.3.2 Exclusion Criteria

All TB records with incomplete data were excluded from the survey.

3.4 Sample

3.4.1 Sample Statistic

A total of 620 patients started treatment for the years under review at the Chest Clinic. 350 out of 620 clients with comprehensive folder histories were involved in this research.

3.4.2 Sampling technique

All clients who started management for tuberculosis infection between the passé of January 2018 to December 2020 and had the needed information as required on the questionnaire were included in the survey.

3.5 Project variables

3.5.1 Dependent variables

The dependent variable of the study was the treatment completion rates of tuberculosis infection.

3.5.2 Independent variables

The independent variables were the socio-dempgraphic characteristics (the indicators were age, gender), co-infections (such as TB and HIV/AIDS), and treatment factors (the indicators were type of infection, drug side-effect, loss to follow-up).

3.6 Hypothesis

H_0: There is no association between socio-demogrpahic status (age and sex), treatment factors(type of infection, drug side effect) and TB treatment completion rate.

H_a: There is an association between socio-demogrpahic status (age and sex), treatment factors(type of infection, drug side effect)and TB treatment completion rate.

3.7 Data gathering procedures and tools

The data used for the project was gotten from the homoeopathic records on patients who started treatment for tuberculosis infection at the Chest Clinic, Korle-Bu from January 2018 to December 2020. TB management records of clients who underwent treatment between 2018 to 2020 were selected. Statistics containing all the study variables were recovered from the TB recordcards and keyed into a data abstraction pane designed expressly for this thesis. The construct form encompassed all the appropriate variables required to answer the research objectives. The data mined was cross-evaluated using the TB catalogue from the Chest Unit of the hospital.

3.8 Quality control

As part of ensuring that quality data was collected for the analysis of this study, two study aides were engaged and trained to help in the gathering of data. The principal investigator supervised the data collection process and similarly examined critically the data collected at the end of each day for uniformity and inclusiveness by authenticating from the source of the archives (TB cards). Research aides also double checked the data collected by the main investigator with the goal to accomplish precision.

3.9 Data processing and analysis

Descriptive statistics was used to express the frequencies and ratios of the socio-demographic features (gender and age), HIV status, treatment factors (Nature of infection and drug side-effect) and completion rates. Collected data were keyed into Excel then ported into STATA (v.16) for coding and analysis. After entering the data, the data was cleaned. Firstly, the data was cleaned automatically by using features of STATA such as identifying outliers. Afterward, the data was cleaned manually by going through the entry one by one to make sure the right data was put into STATA.

A chi-square relationship test was run between the treatment factors and the the demographic characteristics of the participants and also between other statistics such as co-infections (TB/HIV) and treatment completion rates.

A logistic regression with generalized equation estimation (GEE) of the factors associated with treatment incompleteness or relapse was employed to establish the forte of connection between the treatment completion rate and independent variables. Also, normal logistic investigation for basic probabilities ratio was used to estimate for the different independent variables. A multivariate examination for adjusted probability ratios was done with 95% assurance level. A p-value of 0.05 was accepted as statistically substantial.

3.10 Ethical consideration

Ethical approval was obtained from Korle Bu Teaching Hospital's organizational Review Board (KBTH-IRB). Authorization was sought from the management of the Chest Unit of the hospital. The TB archives from which the facts were collected were reserved under latch where access will be limited to the principal investigator, study aides and supervisor of the study for purposes of privacy and confidentiality. The names of patients were not captured from the records and used for the study. Unique participant identifiers were assigned to each TB treatment card that was used for the study.

CHAPTER FOUR

4.0 RESULTS

4.1 Characteristics of patients

For the period under review (2018-2020), 350 patients sought treatment at the Korlebu Teaching hospital for tuberculosis. Of the 350 patients, 284/350 (81%) sought treatment in 2018, whereas 48/350 (13.7%) and 18/350 (5.3%) seek treatment in 2019 and 2020 respectively. In general, more males 196/350 (56%) than females 154/350 (44%) seek treatment. However, in 2019 25/48 (52.1%) and 2020 12/18 (66.7%), most participants seeking tuberculosis treatment were females. Further, majority of patients seeking treatment were from urban settlements 282/350 (80.6%) and 341/350 (97.4%) were new patients for all the years under review. The hospital has not received a relapse patient for the years under review except in 2018, 9/284 (3.2%). Also, most 244/350 (69.7%) of the patients were diagnosed of pulmonary tuberculosis; 203/284 (71.5%) in 2018, 29/48 (60.4%) in 2019 and 12/18 (66.7%) in 2020. Overall, only 93/350 (26.6%) of the patients were lost to follow-up for the years under review; 27.1% in 2018, 22.9% in 2019 and 27.8% in 2020. Also, less than half 139/350 (39.7%) complained of drug side effect (see table 4.1)

Table 4.1 Background features of patients

	2018 n = [284]	2019 n = [48]	2020 n [18]	Total N = [350]	p-value
Sex					
Female	117 (41.2)	25 (52.1)	12 (66.7)	154 (44.0)	
Male	167 (58.8)	23 (47.9)	6 (33.3)	196 (56.0)	0.052
Age group (In years)					
<20	13 (4.6)	4 (8.3)	0 (0.0)	17 (4.9)	
20-29	74 (26.1)	11 (22.9)	4 (22.2)	89 (25.4)	
30-39	69 (24.3)	13 (27.1)	5 (27.8)	87 (24.9)	
40-49	68 (23.9)	10 (20.8)	5 (27.8)	83 (23.7)	
50-59	28 (9.9)	6 (12.5)	1 (5.6)	35 (10.0)	
60+	32 (11.3)	4 (8.3)	3 (16.7)	39 (11.1)	0.931
Location					
Rural	54 (19.0)	9 (18.8)	5 (27.8)	68 (19.4)	
Urban	230 (81.0)	39 (81.2)	13 (72.2)	282 (80.6)	0.655
Type of patient					
New	275 (96.8)	48 (100.0)	18 (100.0)	341 (97.4)	
Relapse	9 (3.2)	0 (0.0)	0 (0.0)	9 (2.6)	0.342
Disease classification					
Extra-Pulmonary	81 (28.5)	19 (39.6)	6 (33.3)	106 (30.3)	
Pulmonary	203 (71.5)	29 (60.4)	12 (66.7)	244 (69.7)	0.292
Loss to follow-up					
No	207 (72.9)	37 (77.1)	13 (72.2)	257 (73.4)	
Yes	77 (27.1)	11 (22.9)	5 (27.8)	93 (26.6)	0.825
Complaints of drug side effect					
No	175 (61.6)	27 (56.3)	9 (50.0)	211 (60.3)	
Yes	109 (38.4)	21 (43.7)	9 (50.0)	139 (39.7)	0.514

4.2 TB/HIV co-infection

Out of the 350 tuberculosis patients, 120/350 (34.3%) were coinfected with HIV. More males 67/120 (55.8%) were coinfected with HIV compared to females 53/120 (44.2%). Also, coinfection was significantly (p=0.018) high 105/120 (87.5%) in urban settlements compared to rural settlements 15/120 (12.5%). Majority, 90/120 (75%) of those with HIV coinfection had pulmonary tuberculosis. Only 35/120 (29.2%) of patients' loss to follow-up had HIV coinfection and less than half 56/210 (46.7%) of patients who complained of drug side effects had HIV coinfection (Figure 1).

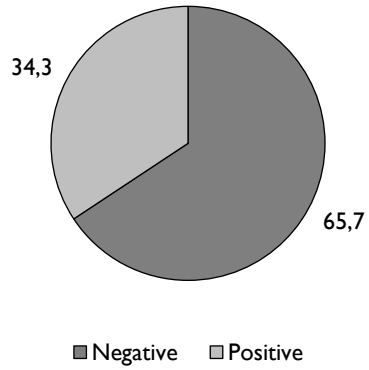

Figure 2: Tuberculosis and HIV co-infection

Table 4.2 Prevalence of HIV co-infection

Characteristics	Negative N = [230]	Positive N = [120]	p-value
Sex			
Female	101 (43.9)	53 (44.2)	
Male	129 (56.1)	67 (55.8)	0.964
Age cluster (in years)			
<20	14 (6.1)	3 (3.5)	
20-29	65 (28.3)	24 (20.0)	
30-39	50 (21.7)	37 (30.8)	
40-49	54 (23.5)	29 (24.2)	
50-59	22 (9.6)	13 (10.8)	
60+	25 (10.9)	14 (11.7)	0.219
Location			
Rural	53 (23.0)	15 (12.5)	
Urban	177 (77.0)	105 (87.5)	0.018
Type of client			
New	224 (97.4)	117 (97.5)	
Relapse	6 (2.6)	3 (2.5)	0.951
Ailment sorting			
Extra-Pulmonary	76 (33.0)	30 (25.0)	
Pulmonary	154 (67.0)	90 (75.0)	0.120
Loss to follow-up			
No	172 (74.8)	85 (70.8)	
Yes	58 (25.2)	35 (29.2)	0.427
Complaints of drug side effect			
No	147 (63.9)	64 (53.3)	
Yes	83 (36.1)	56 (46.7)	0.055

4.3 HIV co-infection by year

Figure 2 depicts prevalence of HIV coinfection from 2018-2020. Incidence of HIV co-infection in 2018 was 33.4%, and there was a slight decrease to 33.3% in 2019. However, there was an increased prevalence from 33.3% in 2019 to a prevalence of 50% in 2020 (Figure 2).

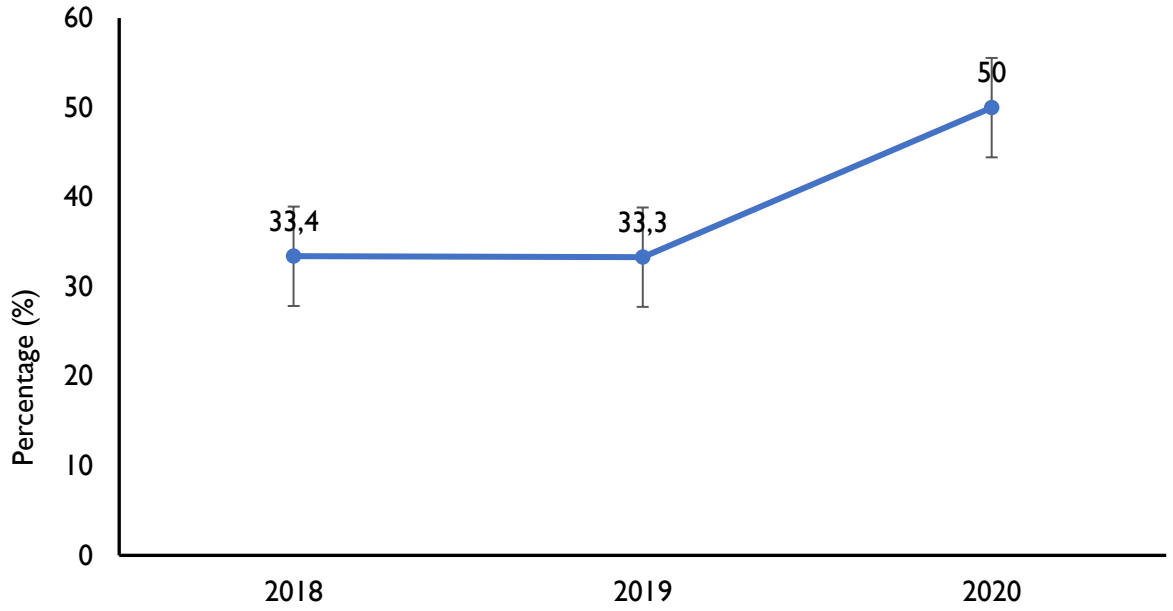

Figure 3: Trend of HIV co-infection (2018-2020)

4.4 Tuberculosis treatment completion rate

Overall, for the years under review, 251/350 (71.7%) of patients completed treatment. Only 99/350 (28.3%) did not complete treatment (Figure 3). In 2018, treatment completion was 70.4% which increased to 79.2% in 2019. However, there was a decrease to 72.2 in 2020 (Figure 4).

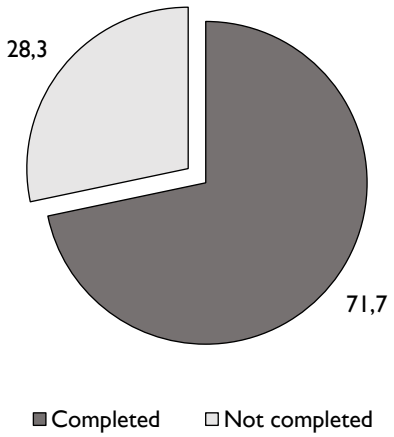

Figure 4: Tuberculosis treatment completion

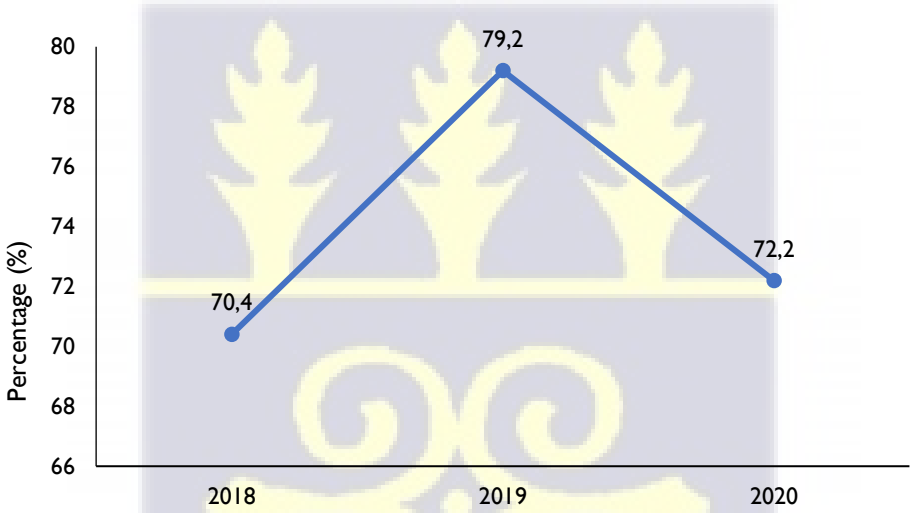

Figure 5: Treatment completion (2018-2020)

4.5 Prevalence of Tuberculosis treatment completion

More than half 130/251 (51.8%) of patients completing treatment were males. Further, majority of treatment completion were from urban settlements 204/251 (81.3%) and most 171/251 (68.1%) patients had pulmonary tuberculosis. Majority 179/251 (71.3%) of patients who did not complain of drug side effects completed treatment and most 169/251 (67.3%) tested negative for HIV (Table 4.3).

Table 4.3 Tuberculosis treatment completion by background characteristics

	Not complete N = [99]	Complete N = [251]	p-value
Sex			
Female	33 (33.3)	121 (48.2)	
Male	66 (66.7)	130 (51.8)	0.012
Age group (In years)			
<20	2 (2.0)	15 (6.0)	
20-29	19 (19.2)	70 (27.9)	
30-39	35 (35.4)	52 (20.7)	
40-49	26 (26.3)	57 (22.7)	
50-59	8 (8.1)	27 (10.8)	
60+	9 (9.1)	30 (12.0)	0.036
Location			
Rural	21 (21.2)	47 (18.7)	
Urban	78 (78.8)	204 (81.3)	0.596
Type of patient			
New	92 (92.9)	249 (99.2)	
Relapse	7 (7.1)	2 (0.8)	0.001
Disease classification			
Extra-Pulmonary	26 (26.3)	80 (31.9)	
Pulmonary	73 (73.7)	171 (68.1)	0.304
Loss to follow-up			
No	8 (8.1)	249 (99.2)	
Yes	91 (91.9)	2 (0.8)	<0.001
Complaints of drug side effect			
No	32 (32.3)	179 (71.3)	
Yes	67 (67.8)	72 (28.7)	<0.001
HIV positive			
Negative	61 (61.6)	169 (67.3)	
Positive	38 (38.4)	82 (32.7)	0.310

4.6 Binary logistic regression of factors associated with treatment completion

Table 4.4 summarizes results of univariate and multivariate logistic regression models. In the univariate model, sex, age, type of patient and complaints of drug side effects independently predicted treatment competition. Male patients were 46% less likely to complete treatment as compared to female clients [OR=0.54 (95% CI: 0.33-0.87); p=0.012]. Also, patients aged 30-39 were 81% less likely to finish treatment when juxtaposed to those aged <20 [OR=0.19 (95% CI: 0.04-0.92); p=0.039]. Further, patients who complained of side effects of drugs were 81% unlikely to complete treatment as compared to those who did not complain [OR=0.19 (95% CI: 0.11-0.31); p<0.001].

About 66% of males were unlikely to finish treatment compared to females [O R=0.34 (95% C I: 0.19-0.62); p <0.001]. Also, patients who complained of drug effects were 87% less likely to complete treatment compared to patients with no complains of drug side effects [OR=0.13 (95% CI: 0.07-0.24); p<0.001].

Table 4.4 Factors associated with tuberculosis treatment completion

	COR	95% CI	p-value	AOR	95% CI	p-value
Gender						
Female	1.0			1.0		
Male	0.54	[0.33-0.87]	0.012	0.34	[0.19-0.62]	<0.001
Age group (In years)						
<20	1.0			1.0		
20-29	0.49	[0.10-2.33]	0.372	0.45	[0.08-2.36]	0.349
30-39	0.19	[0.04-0.92]	0.039	0.25	[0.04-1.12]	0.069
40-49	0.29	[0.06-1.37]	0.119	0.31	[0.06-1.61]	0.166
50-59	0.45	[0.08-2.39]	0.350	0.49	[0.08-2.89]	0.430
60+	0.44	[0.09-2.32]	0.336	0.46	[0.08-2.67]	0.389
Location						
Rural	1.0					
Urban	1.16	[0.65-2.09]	0.597			
Type of patient						
New	1.0			1.0		
Relapse	0.11	[0.02-0.52]	0.006	0.15	[0.02-0.87]	0.034
Disease classification						
Extra-Pulmonary	1.0					
Pulmonary	0.76	[0.45-1.28]	0.304			
Complaints of drug side effect						
No	1.0			1.0		
Yes	0.19	[0.11-0.31]	<0.001	0.13	[0.07-0.24]	<0.001
HIV positive						
Negative	1.0					
Positive	0.78	[0.48-1.26]	0.311			

CHAPTER FIVEn

5.0 DISCUSSION

In this study, most of the TB incidences are males. This is in consonance with other studies undertaken in Egypt (60.4%), Nigeria (55%) and Malaysia (65%) (Fatiregun, Ojo & Bamgboye 2009; Liew et al. 2015; El-Shabrawy & El-Shafei 2017) where increased TB cases were reported among males for the period under review. The increased TB cases among males could probably be due to the fact that, males could be attributed to the risky health behaviors associated with them-their fondness of not adhering to safety protocols and maturely built nature. Further, most of the respondents in this scholarly work reside in urban communities and were new patients-only 9% were relapse patients. This is consistent for all the years under review. The location of the TB clinic where data was collected and the comprehensive TB activities such as education and Direct Observed Therapy (DOT) could explain this current observation. About one-third of the research participant (30.3%) endured extra-pulmonary TB. This discovery is comparable with studies conducted in Ethiopia (38.8%) (Tola et al. 2019) and Addis Ababa (40.1%) (Getahun et al. 2013). The increased burden of extra-pulmonic TB reported in this study might be as a result of high incidence of HIV, over-diagnostics or even misinterpretation prejudice as reported by a study (Fekadu et al. 2020).

Considering that tuberculosis is remediable and curable with standardize routine of antibiotics, the ailment lingers on to affect millions of lives worldwide. In 2019 for example, the World Health Organization report on *tuberculosis* indicated that an estimated 10 million people contracted tuberculosis in 2018 and around 1.5 million perished. However, the WHO consistently emphasized the need to achieve a minimum 90 percent curing success and 85% therapy proportion goals (WHO, 2021). For this is the only way to effectively contribute to a decrease of tuberculosis spread at all levels and associated complications and mortality. Nonetheless almost all global tuberculosis control programs are faced with series of challenges

in meeting target rates (Sakamoto et al. 2019). A major challenge is treatment completion. In this current retrospective study, 7 in 10 tuberculosis patients completed treatment with significant variation within years under review. Although treatment completion was high, there was a significant decrease in 2020 compared to 2018 and 2019. Treatment completion rate in this study is however higher than those observed in a study conducted Ethiopia where an estimated 62.1% (Tola et al. 2019) completed their treatment and Uganda (28%) (Izudi, Tamwesigire & Bajunirwe 2020).

Identification of factors influencing treatment completion is vital in order to address low treatment result. This study discovered that gender and complaints of drug side effect were associated with TB treatment completion. The current study identified male sex to be associated with lower odds of treatment completion among males. This result is in tandem with surveys undertaken in Uganda, Ethiopia, Zimbabwe and Nigeria where males were less likely to complete treatment compared to females (Gabida et al. 2015; Oshi et al. 2015; Zenebe & Tefera 2016; Izudi et al. 2020). With regards to the study conducted in Nigeria, it was reported that male gender was accompanied with lower mucus smear at 2- and 5-months curing which increase therapy failure. Plausible reason for males being prone to treatment failure may perhaps be ascribed to male's low health care access agendas compared to females which could probably translate into missing clinic visits leading to non-adherence to medication (Thompson et al. 2016).

Also, patients with complains of drug side effects were also less likely to complete treatment. This observation is similar to those reported in other studies (Babiarz, Suen & Goldhaber-Fiebert 2014). Reason for this observation could be due to the fact that, experiences due to the side effects of the drug could deter them furthering the course of treatment. Perhaps these side effect could influence their normal functioning within the day hence impeding productivity.

Also, the fear of the side effect of the drug causing another burden could also deter them from adhering to treatment. Besides, TB drugs involves taking daily tables and this can be difficult and challenging.

The relationship between TB and HIV presents a huge obstacle in realizing universal TB eradication targets. Luckily, the package of HIV testing among TB victims offers a prospect to provide the unsurpassed care for TB/HIV co-infected clients. The periodic testing for HIV amongst TB victims is widely endorsed by the WHO as a crucial element of TB compendium. Fortunately, the universal incidence of TB/HIV co-infection has been dropping as far back from 2008 (Osei, Oppong & Der 2020). This study also assessed HIV coinfection among patients. The prevalence of TB/HIV joint infection in this paper was 34.3%. Contrariwise, this paper discovered a consistent TB/HIV coinfection during the years 2018 to 2019. There was however an increase to about 50% in 2020. The total HIV coinfection among TB patients in this thesis is however higher than the international estimation of 19% (WHO, 2019) yet lower than the 22.6% and 18.2% that was previously reported in Ghana (Osei et al. 2020) and by Osei and colleagues (18.2%)(Osei et al. 2017). Reason for the increased HIV/TB coinfection could be due to the fact that, majority of the study participants resides in urban areas in Accra and this city is found to be among the top five cities with highest burden of HIV infection in the country (Duda et al. 2005).

CHAPTER SIX

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusion

Majority of TB patients for the years under review were males and resides in urban communities. About one-third were diagnosed of extra-pulmonary TB. More than 20% were lost to follow-up and majority were new patients. Complaints of drug side effects was prevalent among one-third of the patients. The incidence of TB-HIV joint-infection was relatively high, very dominant in urban areas, and persisted for two years and significantly increased in 2020. Overall treatment completion rate was 71.7% - significantly higher among males (51.8%), participants residing in urban settings (81.3%) and those who tested negative for HIV (67.3%). Treatment completion rate reduced in 2020 (72.2%) compared to 2019 (79.2%). Independent factors associated with treatment completion included: being a male and complains of drug side effects. Sex as socio-demographic characteristic and treatment factor; complains of drug side-effect and loss to follow-up were significantly associated with treatment completion rate per this project. However, there was no statistically substantial connection found amongst age of patient and co-infection on treatment completion rates.

6.2 Recommendations

- From the findings in this thesis, it is suggested that, frequent supportive supervision as well as educational programmes be conducted by Health Promotion Officers (HPOs) for all categories of patients who must undergo tuberculosis treatment.
- Intensify Patients education on possible side effects of drugs before starting treatment and continuous education must be scheduled during the period of treatment.

- The National TB Control Program (NTP) as well as National AIDS Control Program (NACP) must strategize and put in place measures to reduce the increasing rate of TB/HIV coinfections as evident at the Chest department, Korle-Bu Teaching Hospital.
- Further studies should be conducted among TB patients to explore behavior and background characteristics associated with treatment completion at the Chest department, Korle-Bu Teaching Hospital.

6.3 Limitations

The limitation to the study includes the limited time available to complete the project work. Findings of this study may also be limited to the study setting; hence, results of the study cannot be used for generalization beyond this population.

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APPENDICES

Ethical clearance letters

In case of reply the number
And the date of this
Letter should be quoted
My Ref. No. KBTH/MD/9821
Your Ref. No......

KORLE BU TEACHING HOSPITAL
KBTH
1923
Excellence in Healthcare

KORLE BU TEACHING HOSPITAL
P. O. BOX KB 77,
KORLE BU, ACCRA.

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Fax: +233 302 667759
Email: Info@kbth.gov.gh
pr@kbth.gov.gh
Website: www.kbth.gov.gh

24th November, 2021

DR. DIVINE LARDEY AGYEMANG
SCHOOL OF PUBLIC HEALTH
UNIVERSITY OF GHANA, LEGON

INSTITUTIONAL APPROVAL: KORLE BU TEACHING HOSPITAL-SCIENTIFIC AND TECHNICAL COMMITTEE/INSTITUTIONAL REVIEW BOARD (KBTH-STC/IRB/000151/2021

Following approval of your study entitled "Treatment Completion Rates of Tuberculosis Infection at the Chest Clinic, Korle-Bu Teaching Hospital, Ghana from 2018- 2020" by the Korle Bu Teaching Hospital-Scientific and Technical Committee/Institutional Review Board.

I am pleased to inform you that institutional approval has been granted for the conduct of your study in Korle Bu Teaching Hospital.

Please contact the Heads of Departments to discuss the commencement date of the study.

Please note that, this institutional approval is rendered invalid if the terms of the Institutional Reviewed Board/Scientific and Technical Committee approval are violated.

Sincere regards,

Dr. Ali Samba
Director of Medical Affairs
For: Chief Executive

MEDICAL DIRECTORATE
KORLE BU TEACHING HOSPITAL

24th November, 2021

THE HEAD
DEPT OF MEDICINE & THERAPEUTICS
KORLE BU

LETTER OF INTRODUCTION – DR. DIVINE LARDEY AGYEMANG "TREATMENT COMPLETION RATES OF TUBERCULOSIS INFECTION AT THE CHEST CLINIC, KORLE-BU TEACHING HOSPITAL, GHANA FROM 2018- 2020"

I have the pleasure to introduce to you the above named Investigator from School of Public Health, University of Ghana, Legon. Dr. Divine Lardey Agyemang sought and has been granted approval to conduct a study entitled: "Treatment Completion Rates of Tuberculosis Infection at the Chest Clinic, Korle-Bu Teaching Hospital, Ghana from 2018- 2020".

He is to contact you to discuss the commencement date of the study.

Please verify his identity with a Government issued National ID card and accord him the needed assistance.

Attached is the Scientific and Technical Committee and Institutional Review Board approval, which specifies the terms.

Sincere regards,

Dr. Ali Samba
Director of Medical Affairs
For: Chief Executive

Cc: The Head, Chest Clinic, Korle Bu

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And the date of this
Letter should be quoted
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22nd November, 2021

DR. DIVINE LARDEY AGYEMANG
SCHOOL OF PUBLIC HEALTH
UNIVERSITY OF GHANA, LEGON

TREATMENT COMPLETION RATES OF TUBERCULOSIS INFECTION AT THE CHEST CLINIC, KORLE-BU TEACHING HOSPITAL, GHANA FROM 2018- 2020

KBTH-IRB /000151/2021

Investigator: Dr. Divine Lardey Agyemang

The Korle Bu Teaching Hospital Institutional Review Board (KBTH IRB) reviewed and granted approval to the study entitled: "Treatment Completion Rates of Tuberculosis Infection at the Chest Clinic, Korle-Bu Teaching Hospital, Ghana from 2018- 2020"

Please note that the Board requires you to submit a final review report on completion of this study to the KBTH-IRB.

Kindly, note that, any modification/amendment to the approved study protocol without approval from KBTH-IRB renders this certificate invalid.

Please report all serious adverse events related to this study to KBTH-IRB within seven days verbally and fourteen days in writing.

This IRB approval is valid till 31st October, 2022. You are to submit annual report for continuing review.

Sincere regards,

DR. DANIEL ANKRAH
VICE CHAIR (KBTH-IRB)
FOR: CHAIR (KBTH-IRB

Cc: The Chief Executive Officer, KBTH
The Director of Medical Affairs, KBTH

In case of reply the number
And the date of this
Letter should be quoted

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29th September, 2021

DR. DIVINE LARDEY AGYEMANG
SCHOOL OF PUBLIC HEALTH
UNIVERSITY OF GHANA
LEGON

SCIENTIFIC AND TECHNICAL COMMITTEE APPROVAL
PROTOCOL IDENTIFICATION NUMBER: KBTH-STC 000151/2021

The Korle Bu Teaching Hospital Scientific and Technical Committee (KBTH-STC), on 29th September, 2021 approved your submitted study protocol.

TITLE OF PROTOCOL: **"Treatment Completion Rates of Tuberculosis Infection at the Chest Clinic, Korle-Bu Teaching Hospital, Ghana from 2018-2020"**

PRINCIPAL INVESTIGATOR: Dr. Divine Lardey Agyemang

This approval requires that you **forward your approved document to Korle Bu Teaching Hospital –Institutional Review Board (KBTH-IRB) for the ethical aspect of the proposal to be assessed before the project can be initiated.**

This STC approval is valid till 30th December, 2021

You may, however, request extension of the approval period, or renewal as the case may be, should the study extend beyond the stated period.

Upon completion, you are required to submit a final report on the study to the STC. This is to enable the STC ensure among others that, the project has been implemented as per the approved protocol. You are also required to inform the KBTH-STC and Research Directorate of any publications that may emanate from the research findings.

Kindly note that, should the need arise, the KBTH-STC or IRB may institute appropriate measures to satisfy itself that study is being conducted according to the highest scientific and ethical standards.

Please note that any modification to the study protocol without Scientific Technical Committee (STC) approval renders this approval invalid.

Sincere regards,

Prof. G. Obeng Adjei
Chairman, KBTH-STC

Cc: The Chairman, KBTH-IRB

MEDICAL DIRECTORATE
KORLE BU TEACHING HOSPITAL

24th November, 2021

THE HEAD
DEPT OF MEDICINE & THERAPEUTICS
KORLE BU

LETTER OF INTRODUCTION – DR. DIVINE LARDEY AGYEMANG "TREATMENT COMPLETION RATES OF TUBERCULOSIS INFECTION AT THE CHEST CLINIC, KORLE-BU TEACHING HOSPITAL, GHANA FROM 2018- 2020"

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He is to contact you to discuss the commencement date of the study.

Please verify his identity with a Government issued National ID card and accord him the needed assistance.

Attached is the Scientific and Technical Committee and Institutional Review Board approval, which specifies the terms.

Sincere regards,

Dr. Ali Samba
Director of Medical Affairs
For: Chief Executive

Cc: The Head, Chest Clinic, Korle Bu

Template- Data Extraction Sheet

DATA EXTRACTION SHEET: TREATMENT COMPLETION RATES OF TUBERCULOSIS INFECTION AT THE CHEST CLINIC, KORLE-BU TEACHING HOSPITAL, GHANA FROM 2018-2020

	SECTION A- SOCIO-DEMOGRAPHIC INFORMATION	
QUESID	**QUESTIONS**	**Data**
1.	Age …….	
2.	Sex 1. Male 2. Female	
3.	Location 1. Urban 2. Rural	
	SECTION B- CLINICAL INFORMATION	
4.	Disease classification 1. P/NEG 2. E/P 3. P/POS	
5.	Type of patient 1. New 2. Relapse	
6.	Smear resist at zero 1. Positive 2. Negative	
7.	Smear at 2/3 1. Positive 2. Negative	
8.	Smear at end 1. Positive 2. Negative	
9.	HIV result 1. Positive 2. Negative	
10.	Loss to follow-up? 1. Yes 2. No	
11.	If yes, how many visits before loss to follow-up? …….	
12.	Complaints of drug side effects?	
13.	1. Yes 2. No	