SCHOOL OF PUBLIC HEALTH, COLLEGE OF HEALTH SCIENCES,

UNIVERSITY OF GHANA

FACTORS ASSOCIATED WITH DEFAULTS FROM TREATMENT AMONG TUBERCULOSIS PATIENTS IN WESTERN SIERRA LEONE

BY

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THIS THESIS IS SUBMITTED

TO THE UNIVERSITY OF GHANA, LEGON

JULY, 2014

DEDICATION

This work is dedicated to the Almighty God for giving me the wisdom to fulfill this dream. This work is also dedicated to my wife, Juliana Esther Greene, and children for their immeasurable support for coping with the stress associated with my absence from home. Dr Yvonne Harding who encouraged me to enroll into this study and has been a source of support in diverse ways to see the fulfillment of this work.

DECLARATION

This work is the result of an independent investigation under the supervision of Dr. Samuel Sackey. Where my work is indebted to the works of others, I have fully acknowledged. I declare, therefore that this dissertation has not been presented elsewhere, either in part or in whole for another degree.

Signed by Resident ……

Jonathan Joseph Greene

Supervisor ……

Dr. Samuel Sackey

ACKNOWLEDGEMENT

I appreciate the enormous support and dedication to my supervisor Dr. Samuel Sackey, your timely interventions are so much appreciated.

To Dr. Yvonne Harding and staff of the German Leprosy and Tuberculosis Relief Association, Dr. Alie Wurie and staff of the National Leprosy and Tuberculosis control programme, staff of the Connaught Chest Clinic, Dr. Arnold Okoni-Williams for helping me with the analysis of the data, friends in research, you have been of great help, this work would not have been complete without your support. Dr. Brima Kargbo and staff of the HIV/AIDS, Secretariat.

Finally, sincerely thank all respondents who participated in this study.

Above all, I thank the Almighty God for bringing me this far.

ABSTRACT

Background: Successful treatment of tuberculosis (TB) involves taking anti-tuberculosis drugs for at least six months. Poor adherence to treatment means patients remain infectious for a longer period, and are more likely to relapse or succumb to tuberculosis and could result in treatment failure as well as foster emergence of drug resistant tuberculosis. Sierra Leone is among countries with high tuberculosis burden globally.

Objective: To identify factors associated with default from treatment among tuberculosis patients in Western Sierra Leone.

Method: A case-control study was conducted between September 2012 to August 2013 in Western, Sierra Leone. The study population consisted of tuberculosis patients on treatment who default (non-compliant) and those who have completed treatment (compliant) at the Connaught Chest Clinic. A sample size of 240, 120 for compliant and 120 for non compliant. Respondents completed structured questionnaire for socio-demographic characteristics, patient related factors, socio-economic variables, healthcare system related factors, default factors, stigma and discrimination and disease and medicine related factors. Factors associated with default were analyzed using logistic regression, bivariatr and multivariate analysis.

Results: Among the 120 defaulters interviewed, 34.2% (41) attributed their default to inadequate supply of medicines, 30.8% (37) to feeling better, 11.7% (14) not feeling better, 8.3% (10) lack of family support, 6.7% (8) no reason, 5% (6) stigma and discrimination and 3.3% (4) side effects . On multivariate analysis, food availability (OR=6.93,p=0.01) , patient waiting time (OR =0.09,p<0.01) , availability of medicine (OR=0.006,p<0.01),treatment

should be taken until six months(OR=0.007,p<0.01),leaving with friends(OR=5.85,p<0.01) were independently associated with default.

Conclusion: Non-availability of medicines, non-availability of food, long waiting times at the clinic, perception that TB treatment should be taken until six months, type of person living with the patient ,duration of stay in the current abode, disease classification ,HIV status and patients taking other medicines besides TB treatment had significant association with default from treatment among TB patients in Western Sierra Leone.

Key words: Tuberculosis, Compliance, Defaulter, Western Sierra Leone

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LIST OF ABBREVIATION

AIDS – Acquired Immunodeficiency Syndrome

ART – Anti-Retroviral Treatment

DOTS – Directly Observed Treatment Short-course

DR-TB – Drug- Resistant Tuberculosis

HIV – Human Immunodeficiency Virus

MDR-TB – Multi-Drug Resistant Tuberculosis

NTCP – National Tuberculosis Control Programme

NLTCP – National Leprosy and Tuberculosis Control Programme

PTB SM+ - Pulmonary Tuberculosis Smear Positive

PTB SM- - Pulmonary Tuberculosis Smear Negative

TB – Tuberculosis

TBCTA – Tuberculosis Coalition for Technical Assistance

WHA – World Health Assembly

WHO – World Health Organisation

CHAPTER 1

1.0 INTRODUCTION

Tuberculosis is an infectious and transmissible disease caused by mycobacterium tuberculosis and occasionally by mycobacterium africanum and mycobacterium bovis, these are the main pathogenic species within the mycobacterium tuberculosis complex (Madigan et al). Tuberculosis affects the lungs in more than 80% of cases; these are called pulmonary tuberculosis (WHO, 2009).

Tuberculosis spread from the primary lesions to other parts of the body via the blood stream and by lymphatic and bronchial systems, in this way affects any other organ causing extra-pulmonary tuberculosis. Transmission of the bacilli from person to person occurs exclusively by air. The primary source of infection is a person with pulmonary tuberculosis who coughs and spreads the infectious droplets.

In this 21st century, the world remains challenged by infectious diseases and tuberculosis in particular. Of the countries that have 80% of the world's tuberculosis burden 17 are classified as low income countries (WHO, 2008). Annually, 2.3 million people still die from the disease, while increased deaths due to drug resistant tuberculosis, as well as co-infection of tuberculosis and HIV produce even higher threats to the world. Tuberculosis remains a global emergency causing high morbidity and mortality in Sub-Saharan Africa (WHO, 2008:3). In Sierra Leone, about 7,000 cases are detected annually (NLTCP, 2011).

Successful treatment of tuberculosis involves taking anti-tuberculosis drugs for at least six months. Sierra Leone subscribes to the internationally accepted World Health Organization (WHO) strategy for tuberculosis control. In addition, the country has adopted the WHO recommended tuberculosis treatment regimen.

In the first two months of treatment (intensive phase), a combination dose of rifampicin, isoniazid, pyrazinamide and ethanbutol are used daily, followed by four months of rifampicin and isoniazid (WHO:2008)

Some patients fail to adhere to treatment and eventually default before completing the treatment regimen. Patients whose treatment are interrupted for two consecutive months or more, as defined by WHO are reported as default, at the end of the treatment period. Poor adherence to treatment means that patients remain infectious for longer and are more likely to relapse or succumb to tuberculosis. Erratic or selective compliance to treatment and default could result in treatment failure, foster emergence of drug resistant tuberculosis and may increase the cost of treatment.

According to Muture et al (2011) several risk factors associated with default from TB treatment were discussed. These risk factors are; social and economic factors, patient-related factors, health care and system related factors, and condition related factors.

In a study done in India by Vijay et al (2010) on risk factors associated with default from TB treatment, they concluded that some of the risk factors are personal and socio-demographic risk factors and treatment related risk factors.

The global default rate for new smear positive was 5%, for Africa the default rate was 8% and Sierra Leone have a default rate of 6% (WHO, 2009).

1.1 PROBLEM STATEMENT

In Sierra Leone, treatment default is a serious problem in tuberculosis control. In 2011, default rate increases from 7.2% to 10.8% in 2012. The rise in default is of public health

concern, as this may lead to persistence of infectious source, increased mortality, increase relapse rate, and facilitate the development of resistant strains. Therefore, there is need to identify factors associated with tuberculosis treatment default in Western, Sierra Leone.

1.2 SIGNIFICANCE OF THE STUDY

Identifying the factors associated with treatment default in Western Sierra Leone, will give insights into the reasons behind high defaulter and subsequently low treatment success rates. This will not only contribute to the existing body of knowledge on factors associated treatment default in general, but will also bring new knowledge specifically for Western Sierra Leone. Once these factors are identified, then targeted strategies to address them can be formulated.

The study will benefit the tuberculosis patients (current and future) as findings may be used to formulate strategies to improve the quality of care.

The Ministry of Health and Sanitation in Sierra Leone will also benefit as the findings of the study can be used as a basis for further generalizable studies.

Recommendations could be made to the National Tuberculosis Control Programme on how tuberculosis treatment default can be improved in Sierra Leone.

1.3 OBJECTIVES

The general objective for this study will be:

- To identify factors associated with default from treatment among tuberculosis patients in Western Sierra Leone.

The specific objectives for this study are:

- To determine the demographic factors relating to treatment status among tuberculosis patients in Western Sierra Leone.

- To determine host-related factors associated for default among tuberculosis patients in Western Sierra Leone.

- To determine environmental-related factors associated for default among tuberculosis patients in Western Sierra Leone.

CHAPTER 2

LITERATURE REVIEW

2.0 INTRODUCTION

In keeping with the aim of this study, namely to identify factors associated with poor compliances TB treatment in the Western District of Sierra Leone and to make recommendations on how TB treatment compliance can be improved, this chapter reviews relevant literature from previous studies on factors associated with or contributing to TB treatment compliance or non-compliance. The scope of this literature review, therefore, is to synthesize evidence from textbooks published research, scientific reports and other credible sources of scientific work done globally, mainly on TB treatment compliance issues.

2.1 TUBERCULOSIS AND RELATED CONDITIONS

According to WHO (1999:14), overcrowding, living in poorly ventilated dwellings and being in close contact with an infected individual are some of the risk factors to acquiring TB infection. When one is infected, poor nutrition and immune suppression predispose an individual to developing active TB disease (WHO 1999:15)

In Sierra Leone, about 7% of all TB patients are HIV positive (NLTCP: 2011). Caminero (2003:69) recommends that the diagnosis of PTB should be based on the clinical presentation with confirmation by sputum smear microscopy and/or culture. The author further recommends that diagnosis of TB should always include performance of microbiological investigations for confirmation. Making an accurate diagnosis of TB is important as complying with TB medication is a heavy burden for the patient and the family in terms of cost, potential side effects, and stigma. A wrong diagnosis may delay appropriate treatment

for the patient and be fatal. Therefore, greater efforts should be made to ensure early and correct diagnosis, initiation of correct treatment and compliance to treatment to increase the chances of cure or treatment success (Bonilla et al 2008:2957).

The emergence of drug resistant (DR) TB presents significant challenges to global TB control with an increase in incident cases reaching 489,000 MDR TB cases by 2006, representing a 65% increases since 2000 (WHO 2008c:13). Research has shown that failure to adhere to principles of TB control causes the development of almost all the DR TB, and poor or noncompliance to TB treatment is the main predisposing factor for an individual to develop DR-TB. This leads to treatment failure and subsequently may lead to death and further spread of DR-TB (Bonilla et al 2008:2957; Lalloo 2010:255). Given that current treatment success for MDR TB is about 60%, focus should be on preventing emergence of new DR-TB cases by ensuring proper management of drug susceptible cases (Orenstein et al 2009:153). According Gandhi et al (2006:1575) and Lalloo (2010:258), being infected with HIV is clearly a risk factor for developing DR TB, most likely due to intermittent TB treatment and poor absorption of anti-TB drugs.

2.2 HOST-RELATED FACTORS FOR DEFAULT AMONG TB PATIENT

Previous studies relating to the factors affecting TB treatment compliance have identified the following host-related factors: patient literacy or educational level, alcohol and substance abuse, knowledge of TB and treatment (treatment literacy), feeling better, socio-economic factors, patients attitude towards treatment and co-morbidities (Kudakwashe:2010).

Several studies have tried to look at the relationship of the patient's education level to their health status, seen as important to gain a better understanding of the causes associated with

adverse health outcomes, identifying patients at risk of such adverse outcomes and

subsequently developing appropriate interventions (De Walt et al 2004:1236).

A study carried out in Thailand aimed at determining the patient factors predicting successful treatment. Out of 1,241 patients studied, 81% with higher educational levels and knowledge of tuberculosis were successfully treated, the argument being that these factors are associated with better compliance to TB treatment and subsequently treatment success (Okanurak et al 2008:1162). Several other studies have demonstrated educational levels of TB patients as significant predictors of treatment compliance (Balasubramanian et al 2004:352; Date et al 2005:680; Johansson et al 1999:868; Mishra et al 205:1134).

Meanwhile, a Malaysian study demonstrated that, among other factors, non-compliance was associated with completed secondary education (O'Boyle et al 2002:307). Conversely, a study in Ndola (Zambia), found that age, marital status, and educational levels were not significantly associated with compliance (Kaona et al 2004:68). Studies have also showed that there is some relationship between default and alcohol intake and substance abuse.

Alcohol and substance abuse have often been cited as reasons for poor compliance to medication in general. The altered behaviour under the influence of alcohol and other substances is believed to be the reason for such observations. When one is under the influence of alcohol one is likely to forget to take the medicines, and if even if not the chances of developing side effects that may subsequently lead to poor compliance are high (Sansone et al 2008:43). According to a study in Tomsk (Russia), the authors identified substance abuse as a barrier to TB treatment and care as it leads to non-compliance, default and acquisition of MDR TB (Gelmanova et al 2007:649), while in Uzbekistan, alcoholism and homelessness were associated with TB treatment default (Hasker et al 2008:97). Sansone et al (2008:45) assert that physicians and other healthcare workers treating patients need to be wary of the potential impact on treatment compliance of alcohol and substance use. In other words, they

should always explore alcohol and substance use in all their patients and any indications of such behaviour would enable the physician to focus their treatment literacy on such patients.

Fry et al (2007:1027), insist that DOTS programmes are more likely to achieve better TB control outcomes if they include interventions aimed at improving diagnosis of alcohol and substance abuse and treating it concurrently with TB.

Treatment literacy has also shown to be a factor associated with default among TB patients by some research done previously. According to Smart (2010:1), knowledge and attitudes about TB and its treatment vary widely due to different cultural, religious or traditional beliefs, and access to education and information about the disease. Smart (2010:1), further states that, patients' lack of knowledge of TB symptoms or failure to recognize them, results in delays in seeking health care. Denial may be high due to stigmatization amongst misinformed communities. The above become barriers to early diagnosis and treatment, resulting in increased risk of transmitting TB to other close contact and the general community, as well as poor health outcomes for people with the disease (Afari-Twunamasi 2005:25).

According to DeWalt et al (2004:1238), lack of treatment literacy is associated with poor health outcomes and conversely treatment literacy improves health outcomes and compliance. In Botswana, research found that compliance to treatment was related to the availability of information, material and emotional support from family members (Kgatlwan et al 2005:6)

Several studies in India, Indonesia, Russia, (Woith et al 2009:1), Kenya, Tanzania, (Wandwalo et al 2000:1041) and South Africa (Afari Twunamasi 2005:23), have shown that knowledge of TB is generally low in many settings, even among healthcare workers. The study in India (Singla et al 1998:1005) surveyed 200 nurses and found that only 40% of TB nurses and 10% of general hospital nurses had a satisfactory knowledge of TB, and only 56%

of general nurses knew that TB was caused by mycobacterium tuberculosis. About 36% thought TB was caused by a virus, while in the Indonesian study only 40% of nurses knew its cause (Wahyuni et al 2007:135). In Kenya, Ayaya et al (2003:83) showed that most private medical practitioners were unaware of the correct methods of diagnosing TB and most used treatment regimens not recommended by the National Leprosy and TB Control Programme (NLTCP). Since most people with TB and their families get to know about TB from their healthcare providers, such poor knowledge of it among the providers will translate to lower knowledge among the patients themselves (Afari Twunamasi 2005:25).

Often, when patients commence treatment they will be very sick and may be inactive. However, as the treatment progresses and their condition improves, and symptoms start to regress, the improvement in itself may become a barrier to continuation of treatment. The patient might not see the need to continue with treatment when they are feeling better or well (Williams et al 2008:73135). In a Nepal cross sectional study of 130 compliant and 25 non-compliant TB patients, 48% of the latter were more likely to think that they could stop TB treatment once they were free of symptoms and feeling well, because they thought they were cured (Bam et al 2005:51). Studies in Malaysia and Zambia showed that non-compliance was associated with being free of Symptoms (O'Boyle et al 2002:307; Kaona et al 2004:68). Patient's defaulting behaviour occurs when the TB symptoms disappear and they feel well, usually after a few months of TB treatment (Pushpananthan et al 2000:20). Therefore, according to Bam et al (2005:56), the authors conclude that compliance to TB treatment could be improved by providing more information about TB to the patients. Compliance to TB treatment can, therefore, be improved by promoting TB treatment literacy among those with the disease, their families and communities through empowering the healthcare provider with knowledge of TB (Ndimande 2009:239).

Socio-economic factors is also associated with default from treatment among TB patients, these factors will cover employment status socio-economic status and cost of transport.

Differences exist as to whether employment and socio-economic status are contributory factors to patient TB treatment compliance (Pandit et al 2006:242). For some researchers, being employed may be associated with better socio-economic status, which enables one to afford cost of transport and healthcare fees, increasing the chances of treatment compliance (Okanurak et al 2008:1160; Tissera 2003:7; Hasker et al 2008:97). However, a study in India did not find socio-economic status to be significantly associated with TB treatment compliance (Pandit et al 2006:242). This study is located in the capital city of Sierra Leone and therefore it will be important to find out if socio-economic status has or has not any effect on TB treatment compliance.

Studies in Nepal (Bam et al 2006:275), Uzbekhistan (Hasker et al 2008:97), Malaysia (O'Boyle et al 2002:307), Swaziland (Pushpananthan et al 2000:218), and Zambia (Needham et al 1998:811) indicated that cost of transport accounts for non-compliance to TB treatment, especially once the patient feels better.

In the Malaysian study, cost and time of travelling to the treatment centre were major contributor factors associated with compliance to treatment, as non-compliant patients paid significantly more for transport than those compliant (O'Boyle et al 2002:310).

A prospective cohort study in Southern Ethiopia to determine factors predicting treatment adherence among smear positive pulmonary tuberculosis patients found that among 404 TB patients on treatment, 20% defaulted treatment. In addition, 91% of all treatment interruptions occurred in the continuation phase, when the patient felt better and had higher cost of transport to a treatment facility (Shargie et al 2007:285).

Self-efficacy, which is the belief that one can perform at a certain level to achieve certain goals, can determine a patient's attitude towards treatment (Ormro 2006:367). If contextualized in the treatment for TB, the self-efficacy model could be a method for TB control focusing on motivating the patient to take treatment until completion. Healthcare providers, treatment supporters or family members, other patients currently taking treatment or those who took treatment previously and completed it, would act as motivators through verbal persuasion. Patients need to believe that if they comply with TB treatment they can achieve the desired outcome, which is to be cured (outcome expectations).

Co-morbidities are illnesses occurring together, usually with one of the medical conditions or illness leading to the occurrence of the other. Psychiatric illnesses and HIV infection, as they are often homeless or have unstable housing conditions and lack food security, but they also frequently fail to comply with treatment for the same reasons (Fullilove et al 1993:324 31). A study in India however seemed to contradict the above findings as psychiatric disorders were not found to affect TB treatment compliance, whereas smoking tobacco did (Manoharam et al 2001:77). While there is no doubt that HIV predisposes an individual to developing TB, there is no consensus on whether HIV is associated with poor TB treatment compliance (WHO 2002:2). However, possibilities of increased pill burden if the patient is on Anti-Retroviral Treatment (ART), increased incidences of side effects and other co-morbid conditions which result from the HIV such as depression and dementia, may increase the likelihood of poor compliance.

2.3 ENVIRONMENTAL RELATED FACTORS FOR DEFAULT AMONG TB PATIENTS

According to some studies done on default among TB patients, the following environmental related factors were discussed: health system factors, compliance and non-compliance, stigma and discrimination. Health System factors will include correlation between patient and

programme needs, structural factors and staff knowledge and attitudes.

In depth interviews during a study in India, to "assess the needs and perspectives of patients and providers in two chest clinics in Delhi", showed that reasons for default are linked to poor correlation between patient and programme needs or priorities, and to particular characteristics of disease and its treatment. Some of the patient needs that are still to be met by health systems are convenient clinic timings, arrangements for provision of treatment in family emergencies, and provision for complicated cases such as alcoholics (Jaiswal et al 2003:625). In a study in Nepal inconvenient opening times for TB Clinics situated far from patients' homes accounted for defaulting in 28% of non-compliant TB patients (Bam et al 2005:54). Both studies recommended flexible clinic opening times to accommodate patients staying at a distance, so as to improve compliance to treatment.

A systematic review of qualitative research on patient adherence to TB treatment identified the barriers to completing TB treatment as structural (including poverty and gender discrimination), social, health service-related and personal (Munro et al 2007:238).

A number of studies have shown the importance of the relationship between health care workers and the patients as contributing to treatment compliance or non-compliance. Bam et al (2005:55), in a study conducted in Nepal, found that the quality of the health care provider and patient interaction and relationship contributed to differences in treatment adherence. Similarly, a study in South Africa (Peltzer et all 2002:67) established that the quality of healthcare provider and patient communication, coupled with correct causative belief, were associated with TB treatment compliance. Jaiswal et al (2003:625) demonstrated in a study in India that problems facing patients were poor interpersonal communication with health staff, lack of attention and support at the clinic, difficulties for patients to re-enter the system if they missed treatment, and long distances to the health facilities (inaccessibility).

The disease related problems were inability of the staff to manage side effects of medicine and patients perception of equating feeling well or better with being cured. A Madagascar study also identified quality of relationships of patients with medical staff and staff knowledge and attitudes regarding TB as contributing to compliance or non-compliance to TB treatment (Comolet et al 1998). In this study, quality of relationships with and attitudes of healthcare workers had a significant bearing on TB treatment compliance, as they determined whether patient would return for treatments in the facility.

In this study, compliance occurs when the patient take TB treatments without interruption for more than two months and completes the course. Non-compliance occurs when a patient interrupts treatment for more than two months. Compliance to TB treatment is one of the most important factors that determine the outcome of treatment, and the extent to which a patient's behaviour while on TB treatment coincides with medical advice (Pandit et al 2006:241).

Non-compliance to TB treatment has been associated with a number of factors as described. A study conducted in Colombo showed treatment compliance was negatively affected by disease-related problems such as inability of the staff to manage medicine side effects and patients' perception of equating feeling well or better with being cured (Janakan et al 2008:214-23). The study suggests that delays in addressing medicines' adverse effects or ignoring patients' complaints about adverse effects of medicines they are taking may thus promote non-compliance to treatment (Janakam et al 2008:222). A Thailand study also demonstrated an association of poor compliance to TB treatment and adverse medicinal effects (Okanurak et al 2008:1160).

According to the WHO (2008a:3), most TB patients complete treatment without experiencing significant side effects from taking the TB medicines. The few patients who

report or develop side effects commonly present with skin rashes, visual and auditory disturbances, jaundice, burning sensations in the limbs and painful limbs. These side effects or fear of side effects may cause patients to comply poorly with their treatment. Therefore, attention should be paid to diagnosis and prompt treatment of side effects, as well as educating patients about the possible side effects.

According to Kudakwashe:2010), some of the barriers postulated to be contributing to poor TB treatment compliance are:

- Communication difficulties
- Low literacy levels
- Inadequate knowledge and low awareness of TB disease
- Patient attitudes and beliefs in treatment efficacy
- Depression and other psychiatric illnesses
- Alcohol and substance abuse
- Unstable living conditions
- Negative health provider attitudes
- Stigma and discrimination
- Overcrowding and access to medicines.

The presence or perceived presence of stigma and discrimination in a community members, who may provide the much needed psychosocial support to the patient (Eastwood et al

2004:70). The same authors in a Gambian qualitative study to explore gender differences in care seeking behaviour demonstrated that patients often consulted traditional healers initially due to perceive stigma from health workers and the community. The study interviewed health workers and TB patients (male and female). Stigma therefore may result in delays in seeking treatment or taking treatment consistently and correctly. Furber et al (2004:1281) also concluded that stigma and discrimination of TB and HIV patients delaying seeking testing and treatment and thus poorer health outcomes. In most African societies, TB and HIV are associated with immoral behaviour and patients suffering from these conditions would be hesitant to disclose their status to their family members, a situation which may result in these patients not complying with their treatments as they do not want to be seen taking the medicines (Kaona et al 2004:68).

2.4 STRATEGIES USED TO CONTROL TUBERCULOSIS

The World Health Assembly (WHA) passed a resolution that recognized TB as a major global public health problem followed by the launch of DOTS as the internationally recommended TB control strategy in 1994 (WHO 2006b:6).

Most National TB Control Programmes (NTCP) experienced major progress in TB control when they implemented the DOTS strategy (WHO 2006b:6). The DOTS strategy was later expanded to form the Stop TB strategy, which seeks to build on the successes of the DOTS strategy (WHO 2006b:5), and which will be discussed as a TB control strategy.

Most of the successes in TB control globally have been attributed to the DOTS strategy, especially in high TB burden countries (WHO 2006b:6). In order to address the remaining challenges, especially in areas where the TB epidemic has been worsening (such as Sub-Saharan Africa and Eastern Europe), and to achieve the Millennium Development Goal

(MDG) and related Stop TB partnership targets by 2015, a new strategy was developed, namely the Stop TB Strategy (WHO 2006b:6; Dye et al 2005:2767). According to WHO (2006c:9) with DOTS as the central component, the Stop TB strategy set out-steps which national TB control programmes, their partners and state-holders needed to take to improve TB control.

To achieve TB control requires a comprehensive and persistent response that complements other measures aimed at addressing social and environmental factors that increase the risk of individuals to develop TB (WHO 2006b:11). Thus, further DOTS strengthening is required in the following areas, namely: political commitment with increased and sustained financing; case detection through quality assured bacteriology; standardized treatment with supervision and support; effective drug supply and management systems; monitoring and evaluation systems; and impact assessment (WHO 2006b:9).

The HIV epidemic has worsened the global burden of TB and increased the need to focus attention on strengthening the global TB and HIV programmes in order to tackle the two public health problems effectively (WHO 2004:3). TB has become the leading cause of death among people living with HIV, while infection with HIV is a large risk factor risk factor for latent and recent TB infection to convert to active TB disease (WHO 2006c:24). The international standards for TB/HIV as setout by WHO are aimed firstly at decreasing the burden of TB among people living with HIV by strengthening intensive TB case finding, provision of Isoniazid preventive therapy (IPT) for TB/HIV co-infected patients and TB infection control in healthcare and congregate settings. Secondly, the standards aim at decreasing the burden of HIV prevention and Cotrimoxazole prophylaxis, and HIV care and support, including provision of ART for eligible patients (WHO 2004:2). Therefore, collaborative activities between the TB and HIV programmes using the above strategies

should be implemented as they can help control TB among HIV patients (Maher et al 2002:3; WHO, 2006b:1).

The WHO (2006d:12) describes MDR TB as a threat to global TB control, worsened by inadequate treatment for those suffering from it; increase in MDR TB patients due to misuse of second line anti TB medicines; and absence of new effective anti-medicines. NTCPs should ensure early detection and correct treatment of all forms of DR-TB and patient adherence to this treatment.

TB control programmes also need to pay attention to special population groups such as prisoners, refugees and other high-risk groups associated with high TB transmissions due to overcrowding and poverty (WHO 2006b:13).

Improving access to quality health care services will benefit TB control, therefore TB control programmes should actively improve system wide policy, human resources, financing, management, service delivery and information systems (WHO 2006b:13).

Many patients with early symptoms of TB do actually consult private health care providers first and many such providers diagnose and treat TB (WHO 2006b: 14). The diagnosis of TB needs to be made without delay and once done the right treatment with adequate dosing need to be instituted with proper follow up of such patients. Thus, engagement of all health care providers (both private and public) is of paramount importance. Evidence suggests that failure to engage all care providers used by TB suspects and patients hampers TB case detection, delays diagnosis, leads to incorrect diagnosis as well as inappropriate and in complete treatment. Increases drug resistance and places unnecessary financial burden on the patients and health systems (Uplekar et al 2001:912).

In order to standardize the diagnosis and treatment of TB both in the public and private

sector, the Tuberculosis Coalition for Technical Assistance (TBCTA) developed a tool known as the International Standards for Tuberculosis Care (ISTC) to guide these sectors (WHO 2006c:6). The tool was designed with the idea of having the health care provider at the centre of TB control activities and the patient at the centre of care (WHO 2006b:15). The document has seventeen standards of care which are grouped into six standards of diagnosis, nine standards for treatment and two for addressing public health responsibilities (Migliori et al 2006:687). It places special emphasis on prompt diagnosis of TB with bacteriological examination where possible, correct treatment at the right doses and monitoring treatment with bacteriological examination, as well as evaluation of close contacts (TBCTA 2006:5). To achieve the maximum use of this tool there has to be collaboration with and from the NTCPs, with a deliberate attempt to promote public private mix using the DOTS approaches.

To achieve greater commitment to fight TB, Advocacy Communication and Social Mobilisation (ACSM) embraces the following: advocacy to influence policy changes and ensure sustained financial and political commitment; facilitation of communication between health care providers, TB patients and their communities in order to improve knowledge of TB and subsequently compliance to treatment; and social mobilization to engage the communities, partners and stakeholders in the fight against TB (WHO 2006b:15).

Conducting locally relevant operational research can identify challenges and practical solutions that can be tested in the field before scaling up the activities (WHO 2006b:16). NTCPs can thus develop new and effective strategies for TB control. The WHO (2006b:16) advocates TB programmes to facilitate and actively support research to develop new diagnostics, drugs and vaccines.

Studies in Malaysia and Zambia showed that non-compliance was associated with being free of symptoms (O'Boyle et al 2002:307; Kaona et al 2004:68).

Patient's defaulting behaviour occurs when the TB symptoms disappear and they feel well, usually after a few months of TB treatment (Pushpananthan et al 2000:216; Peltzer et al 2002:55).

Therefore, according to Bam et al (2005:56), the authors conclude that compliance to TB treatment could be improved by providing more information about TB to the patients. Compliance to TB treatment can, therefore, be improved by promoting TB treatment literacy among those with the disease, their families and communities.

CHAPTER 3

METHODS

3.0 STUDY SETTING

The study site for this research was Freetown the capital city of Sierra Leone. Freetown has a population more than one (1) million inhabitants, the chief port and the largest city of Sierra Leone. It is located on the rocky Sierra Leone peninsula on the Atlantic coast. Freetown was founded by Britain as a settlement for freed slaves in 1787. It was made capital of the independent Sierra Leone in 1961.

Freetown is of tropical climate with a rainy season - May through October, the rest of the year representing the dry season. The beginning and end of the rainy season is marked by strong thunder storms. This is a tropical savannah climate.

3.1 STUDY DESIGN

The study design for this study was an unmatched case control study.

3.2 STUDY POPULATION

The study population was tuberculosis patients registered at the Connaught Chest Clinic in Western Sierra Leone. The population consisted of tuberculosis patients on treatment who defaulted (non-compliant) and those who have completed treatment (compliant). The study population was comprised of the cohort of patients registered during the period September 2012 to August 2013 at the Connaught Chest Clinic. Cases were patients who interrupted treatment for two consecutive months or more (as defined by WHO), and controls were patients who completed the treatment course of six months.

Inclusion criteria for this study was all smear microscopy cases registered at the Connaught Chest Clinic during the study period and must have completed treatment or default during the study period.

3.3 SAMPLE SIZE

The TB facility register of the Connaught Chest Clinic was used to establish the sampling frame. The register has records of the registered patient's name, registration number, date of starting, treatment outcome, HIV status, demographic details, address, and classification of diagnosis. The sample size for this study was Fleiss unmatched case control sample size method.

Two sided confidence level (1 - alpha)	95
Power (% chance of detecting)	80
Ratio of control to cases	1
Hypothetical proportion of controls with exposure	12
Hypothetical proportion of cases with exposure	28.34
Least extreme Odds Ratio to be detected	2.9

	Fleiss	Fleiss CC
Sample size-cases	94	106
Sample size-controls	94	106
Total sample size	198	212

The Fleiss continuity correction (cc) was used as the sample size for this research. However, 120 cases and 120 controls was used for this study.

3.4 SAMPLING PROCEDURE

From the Connaught chest clinic facility register, all patients who defaulted and completed treatment within the study period was enrolled. A sample frame was formed with using all patients who defaulted and completed treatment within the study period .The participants for this study was selected by simple random sampling method from the sampling frame.

3.5 STUDY PROCEDURE

A structured questionnaire was used to capture data from individuals in the study population, and was comprised of closed ended questions that makes it easier to analyze the data. The questionnaire was divided into seven section (A to G), covering demographic information, patient related factors, socio-economic variables, health care system-related factors, default factors, stigma and discrimination, disease and medicine-related factors. Responses to each question was coded. A coded box, where the coding number for each of the responses to be entered was inserted for each question in the questionnaire. A list of variables was arrived at, after a review of relevant existing literature. The questionnaire was administered by research assistants who are familiar with the geography of Freetown and fluent in the local language,

but who had not worked at the Connaught Chest Clinic. A pilot test of the questionnaire was done at the TB clinic and appropriate adjustment was made.

After the sampling process was completed, a list of possible study participants was created using their names and contact details. The Research Assistants (RA) visited the participants at their respective homes.

The RA introduced themselves to the prospective participants and read through the individual participant consent from that detailed the title and purpose of the research as well as the rights of the participants and details of the person to be contacted for future questions. When a participant agrees to be interviewed, he/she was asked to provide written consent by signing or thumb printing. After obtaining the written consent, the RA entered the questionnaire serial number and date of interview and proceed with the interview using a language understandable by the participant. The RA entered responses given by the participant by circling the appropriate response number and enter the same number into the coding box. This was done to ensure data quality as the response number circle suppose to be the same as the one entered in the coding box. The process of data collection was continued until every effort to contact every study participant in the sample was exhausted. All completed questionnaire was kept in a safe cupboard with keys. Secondary data for each participant was captured from the facility register. In order to achieve the required sample size, replacement was made using the sample frame for those that were not traced or dead.

3.6 ETHICAL APPROVAL

Ethical approval for this study was obtained from the Ethical Review Committee in Sierra Leone, in the Ministry of Health and Sanitation. TB is strongly associated with HIV/AIDS

leading to stigmatization and is difficult to discuss in public. Informed consent was obtained from patients and confidentiality and anonymity was assured. Names and addresses of patients was collected only for the purposes of follow-up.

3.7 DATA ANALYSIS

All questionnaires were reviewed by the researcher for completeness and appropriate data cleaning was done. Data was then entered on a spreadsheet using MS Excel. Descriptive summary statistics and graphical summaries in charts are presented. Data was analysed using logistic regression, bivariate and multivariate analysis.

3.8 LIMITATION OF THE STUDY

The limitations of this study were that some member of the study population have transferred from their previous addresses and some have died. In order to achieve the required sample size for this study replacement was made using the sample frame for those who were not traced or dead by simple random sampling method.

CHAPTER 4

RESULTS

4.1 DEMOGRAPHIC FACTORS

4.1.1 RESPONDENTS' GENDER (N : 240)

Of all the 240 respondents, 63.3% (152) were males and 36.7% (88) females. Though no significant gender association occurred between the compliant and non-compliant groups(Table 4.1). There was a higher proportion of males in the both categories.There were 62.5% (75) males and 37.5% (45) females in the complaint group, whilst in the non-compliant group males accounted for 64.2% (77) and females 35.8% (43) of the total. The gender distribution among the cases and controls were as shown in figure 4.1 (below).

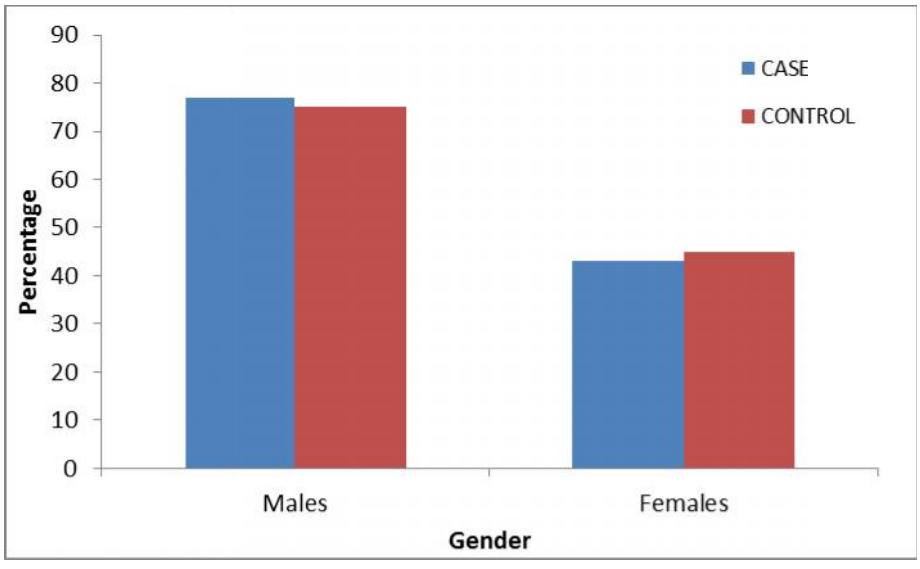


Figure 4.1 Sex distribution of cases and controls of TB treatment compliance

4.1.2 AGE OF RESPONDENTS (N=240)

The questionnaire grouped the respondents into age groups. The age distributions are shown in Figure 4.2.

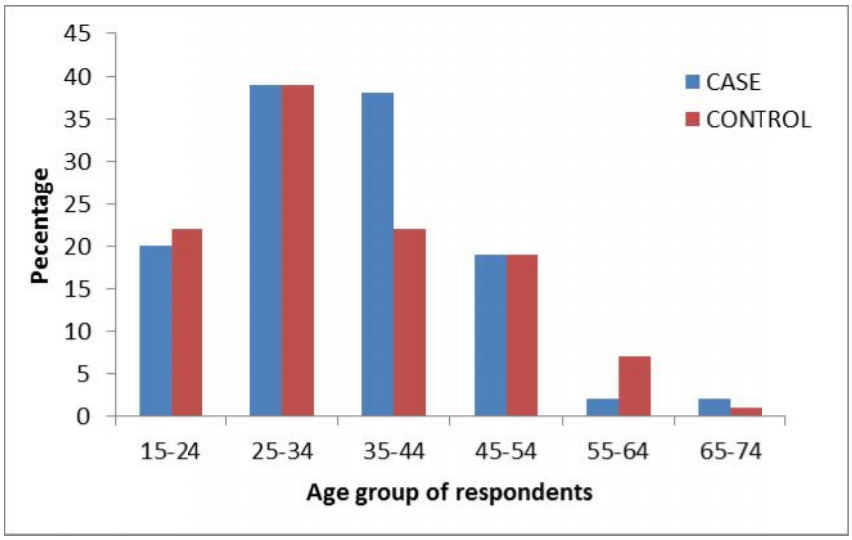


Figure 4.2Age distribution of case and control of TB treatment completion

Figure 4.2 shows that 57.5% (138) of respondents were between 25 and 44 years of age. The younger age groups between 25 and 34 years, accounted for both the highest proportions of compliant (39%) and non-compliant (39%) respondents. Age distribution did not account for any significant difference between the two groups (Table 4.1).

4.1.3 RESPONDENTS' RELIGION (N = 240)

A total of 35.8% (86) respondents reported they were Christians and 64.2% (154) reported they were Islam. Christians were equally distributed in both the compliant and non-compliant groups. The respondents' distribution with respect to their religion was as shown in Figure 4.3. All respondent's belonged to either of the two major religious groups in the country.

The religion practical did not account for any significant difference between two compliant and non- compliant groups (Table 4.1).

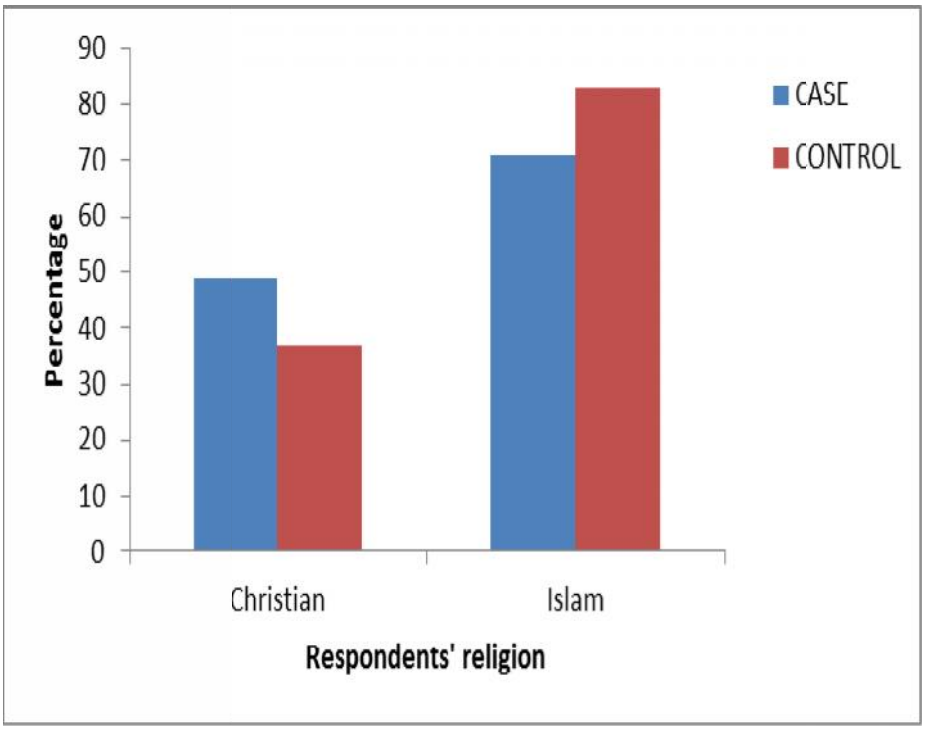


Figure 4.3Religion distribution of case and control of TB treatment completion

4.1.4 MARITAL STATUS (N-240)

With reference to marital status, 32.9% (79) of respondents reported that they were married, 103 (44.9%) of respondents were single. The largest proportions of respondents in both compliant and non-compliant group were found among the single and married respondents (Figure 4.4). Furthermore, there were higher levels of compliance among both married 54.4%(43) and single 53.4% (55) respondents, compared to the non-compliant group.

Only 24.2% (58) of the 240 respondents were widowed, separated and cohabiting. However, marital status did not account for any significance difference between the complaint and non-compliant groups (Table 4.1).

Figure 4.4 Marital status of case and control to TB treatment completion

4.1.5 EDUCATIONAL LEVEL ATTAINED (N = 240)

Among the respondents 44.2% (106) had secondary education, 34.6% (83) no formal education, 15.4% (37) primary education and 5.8% (14) tertiary education. About 54% of the respondent with secondary education did not complete TB treatment; similarly 56.7% (21 out of 37) respondents with primary education,46.9% (39 of 83) with no formal education and 21.4% (3 of 14) with tertiary education did not complete their TB treatment (Figure 4.5).

The level of education attained was not a significant factor in determining compliance and non-compliance to TB treatment (Table 4.1).

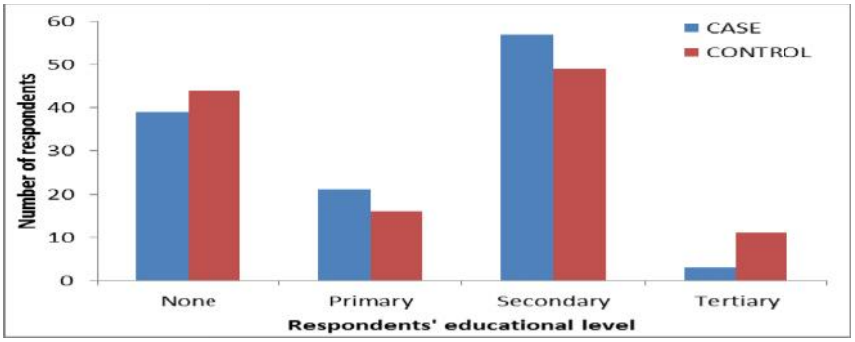


Figure 4.5 Educational levels attained case and control of TB treatment completion

Table 4. 1 Demographic factors for case and control

Factors	Case N(%)	Control N(%)	OR(95 % CI)	P Value
Gender				**0.788**
Male	77 (64.2)	75 (62.5)	1	
Female	43 (35.8)	45 (37.5)	0.9(0.55-1.57)	0.789
Age groups (years)				**0.064**
15 - 24	20 (16.7)	32 (26.7)	1	
25 - 34	39 (32.5)	39 (32.5)	1.6(0.78-3.26)	0.197
35 - 44	38 (31.7)	22 (18.3)	2.7(1.28-5.95)	0.009
45 - 54	19 (15.8)	19 (15.8)	1.6(068-3.73)	0.276
55 - 64	2 (1.7)	7 (5.8)	0.4(0.08-2.24)	0.356
15 - 24	2 (1.7)	1 (0.8)	3.2(0.27-37.62)	0.355
Religion				**0.105**
Christian	49 (40.8)	37 (30.8)	1	
Islam	71 (59.2)	83 (69.2)	0.64(0.37-1.09)	0.107
Marital Status				**0.052**
Married	36 (30)	43 (35.8)	1	
Widowed	8 (6.7)	11 (13.3)	0.8(0.31-2.39)	0.785
Separated	17 (14.2)	6 (5)	3.4(1.21-9.48)	0.020
Single	48 (40)	55 (45.8)	1.0(0.57-1.87)	0.890
Cohabiting	11 (9.2)	5 (4.2)	2.6(0.83-8.26)	0.098

4.2 PATIENT-RELATED FACTORS

4.2.1 CIGARETTES SMOKING (N=240)

A total of 17.9% (43) of the respondents reported having smoked cigarettes during the previous six months while 82.1% (197) had not done so (Fig 4.6). There were a higher proportion of respondents who had smoked in the previous six months in the non-compliant group (26.7%) compared with the compliant group (9.2%). Smoking cigarettes in the previous six months was found to be significantly associated with compliant or non-compliant to TB treatment groups (**OR=0.3(0.14-0.63)**)(Table 4.2).

4.2.2 DRINKING ALCOHOL (N =240)

A total of 19.6% (47) drank alcohol in the previous six months while 80.4% (193) had not done so. Among those who had drank alcohol, 26.7% (32) did not complete TB treatment (non-compliant), compared to 73.3% (88) patients in the same non-compliant group who had not drunk any alcohol in the previous six months. There was significant association between whether or not the respondent had drunk alcohol in the previous six months and their TB treatment compliance status(OR=0.3(0.19-0.77)) (Table 4.2).

4.2.3 AVAILABILITY OF TREATMENT SUPPORTER (N = 240)

Among respondents, 74.2% (178) of the patients had treatment supporters while they were taking treatment and only 25.8% (62) of the respondents did not have one. However 61.8% (110) of the respondent who had treatment supporter were compliants while 68 (38.2%) were non-compliant. The analysis showed that having a treatment supporter was significantly associated with compliant to TB treatment, indicating that respondents with having treatment supporters are most likely to complete their TB treatment (**OR=8.4(4.0-17.6)**) (Table 4.2).

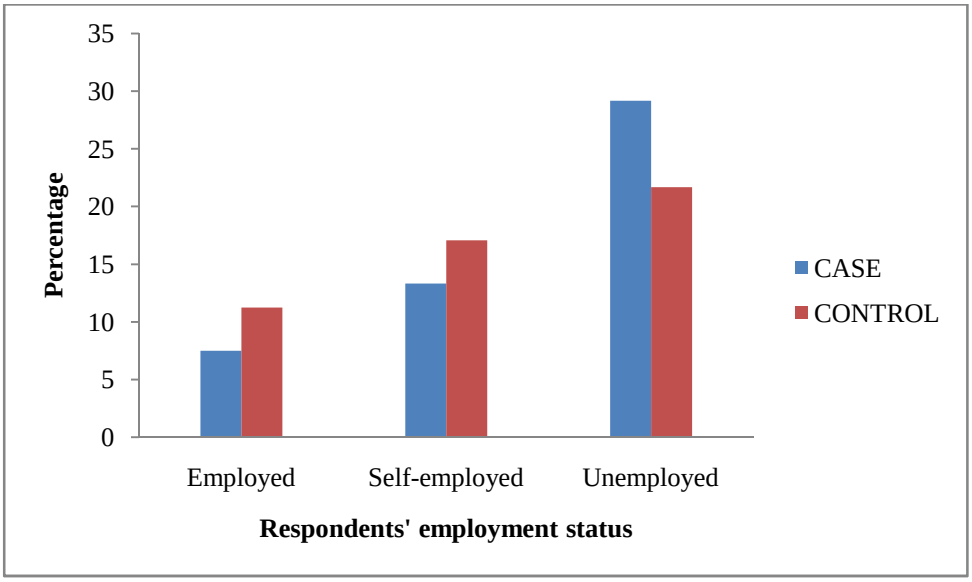
Table 4. 2 Patient related factor for case and control

Factors	Case N(%)	Control N(%)	OR(95%CI)	Pvalue
Smoking				**0.0007**
Yes	32 (26.7)	11 (9.2)	1	
No	88 (73.7)	109 (90.8)	0.3(0.14-0.63)	0.001
Alcohol				**0.005**
Yes	32(26.7)	15(12.5)	1	
No	88(73.3)	105(87.5)	0.3(0.19-0.77)	0.007
Treatment Supporter				**0.000**
Yes	68(56.7)	110(91.7)	1	
No	52(43.3)	10(8.3)	8.4(4.0-17.6)	

4.3 SOCIO-ECONOMIC FACTORS

4.3.1 EMPLOYMENT STATUS (N=240)

Of the 240 respondents, 50.8%(122) unemployed, 30.4% (73) self-employed and only 18.8% (45) were employed.Respondents in all three employment categories were fairly distributed among the compliant or non-compliant to TB treatment completion groups (Fig. 4.6).Employment status was not a significant factor in determining compliance or non-compliance to TB treatment completion (Table 4.3).



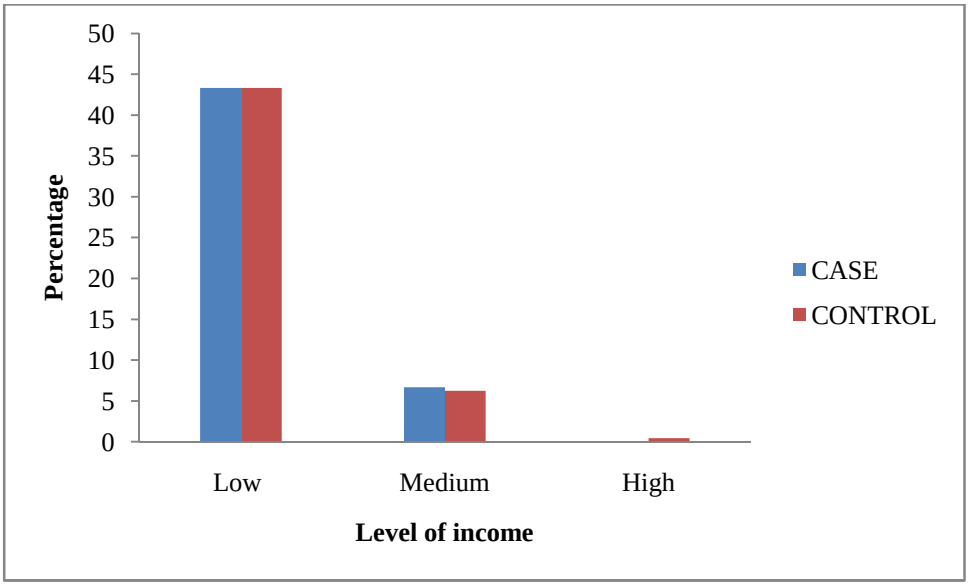


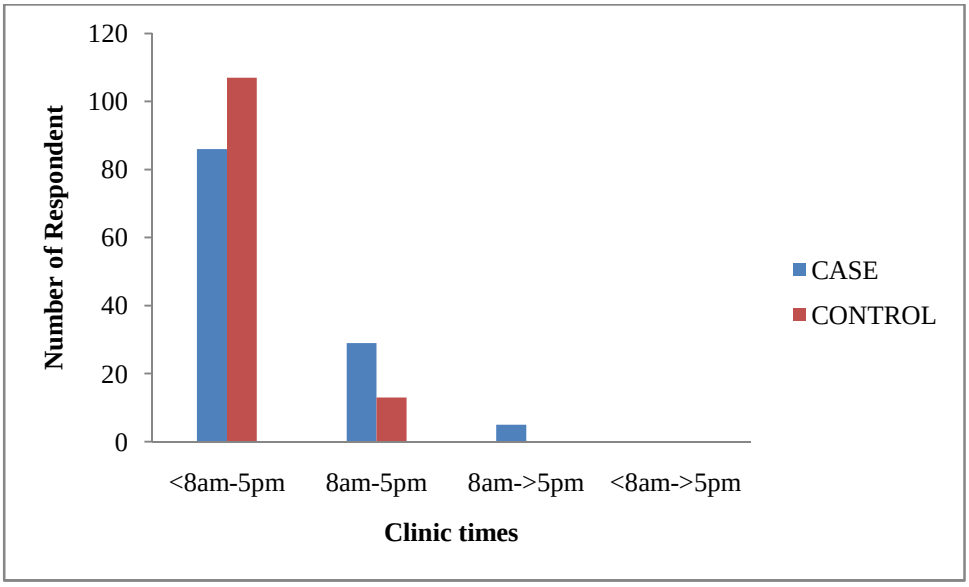
Table 4. 3 Socio- economic factors for case and control respondents

Factors	Case N(%)	Control N(%)	OR(95% CI)	PValue
Employment status				**0.061**
Employed	18 (15)	27 (22.5)	1	
Self-employed	32 (26.7)	41 (34.2)	1.1(0.55-2.48)	0.682
Unemployed	70 (58.3)	52 (43.3)	2.0(1.0-4.0)	0.048
Income level (Le)				**0.8669**
< 400,000	104 (86.7)	104 (86.7)	1	
400,000 – 1,000,000	16 (13.3)	16 (13.3)	1.0(0.50-2.26)	0.867
>1,000,000	0	1 (0.8)		
Food availability				
Always available	70 (58.3)	111 (92.5)	1	
Available most times	34 (28.3)	7 (5.8)	7.7(3.23-18.32)	0.000
Not always available	16 (23.3)	2 (1.7)	12.6(2.83-56.85)	0.001

4.4 HEALTH CARE SYSTEM - RELATED FACTORS

4.4.1 CONVENIENT TB CLINIC OPENING TIMES (N=240)

Respondents response to which TB clinic opening times were most convenient for them show that 80.4% (193) said that before 0.8hrs - 17hrs would be the most convenient opening times for the TB Clinic, followed by 17.5%(42) who wanted the clinic to be open at 08hrs until 17hrs, and 2.1%(5) to open at 0.8 hrs and close after 17 hrs (Fig 4.8). There was a significant association difference between preference for TB clinic opening time and the compliant and non-compliant to TB treatment completion (**p=0.003**) (Table 4.4).



kilometers.Distance was not a significant factor between the compliant and non-compliant groups to TB treatment completion (Table 4.4). This may be explained by the much lower proportion of respondents that travelled more than 15 km to TB clinics, which was equally distributed between the two groups.

4.4.4 COST OF TRANSPORT (N = 240)

The cost of transportation to TB clinic was tested as a factor influencing respondents completion of treatment. In total, 40.8% (98) respondents did not have to pay anything, 52.5% (126) had to pay less than Le 10,000 and 6.7% (16) paid between Le10,000 and Le15,000 each time they went to the clinic, 38.3% (46) of the respondents in the non-compliant group did not have to pay anything to get to the clinic, while 2.5% (15) had to pay between Le10,000.00 and Le15,000.00. There was significant difference between the compliant and non-compliant groups with respect to the cost of getting to the clinic to collect medicines those paying between Le 10,000-Le 15,000(Table 4.4)

4.4.5 DOT STATUS (N = 240)

The respondents were asked who was supervising them while they had to take their TB medicines. The options they had to choose were either health worker, family member, community member or none. The DOT status was observed for the first two months at the clinic. 2.1% (5) had no one supervising them, 1.3%(3) were surpervised by family members and 96.7% (232) by health workers. DOT status did not contribute to any significant difference between the two groups.

4.4.6 HEALTH WORKERS ATTITUDES TOWARDS PATIENTS (N= 240)

The respondents rated the attitude of health workers who attended them at the TB clinic as follows: 69.2% (166) very friendly, 25.4% (61)Friendly, 5% (12) unfriendly and 0.4% (1) very unfriendly. The only patient who rated the attitude of the health worker who attended to them at the clinic as unfriendly completed his/her TB treatment.There was no significant association between health workers attitude and compliant or non-compliant to TB treatment completion (Table 4.4).

4.4.7 MEDICINE AVAILABILITY (N = 240)

Respondents were asked about the availability of medicines when they attended TB clinic. 70.4% (169) said medicine was always availability,33.1% (56) of those whose said medicine was always available did not complete TB treatment. 29.6% (71) of the respondents said that medicine was sometimes available, 90.1% (64) of them did not complete their treatment. The availability of medicine was found to have a significant association between compliance or non-compliance to TB treatment completion (**OR = 18.4(7.93-42.88)**) (Table 4.4).

Table 4. 4 Healthcare system related factors for case and control respondents

Factors	Case N(%)	Control N(%)	OR(95% CI)	PValue
TB Clinic Opening Times				0.003
Before 8 am - 5pm	86 (71.7)	107 (89.2)	1	
8 am - 5 pm	29 (24.2)	13 (10.8)	2.7(1.36-5.66)	0.005
8 am - later than 5pm	5 (4.2)	0		
Clinic Waiting Times				**0.0000**
< 1 HR	46 (38.8)	53 (44.2)	1	
2 HRS	70 (58.3)	43 (35.8)	1.87(1.08-3.24)	0.024
> 2 HRS	4 (3,3,)	24 (20)	0.2(0.06-0.59)	0.004
Distance to the clinic(km)				
< 5	70 (58.3)	56 (46.7)	1	
5 - 10	34 (28.3)	40 (33.3)	1.7(0.76-2.44)	0.289
10 - 15	25 (20.8)	10 (8.3)	3.1(1.35-7.14)	0.007
16 - 20	6 (5)	6 (5)	1.2(0.37-4.12)	0.720
> 20	0	8 (6.7)		
Travel cost (x Le 1000)				
0	42 (35)	56 (46.7)	1	
<10	63 (52.5)	63 (52.5)	1.33(0.78-2.26)	0.288
10 –15	15 (12.5)	1 (0.8)	20(2.54-157.45)	0.004
Attitude of health workers				
Friendly	39 (32.5)	22 (18.3)	1	
Very Friendly	70 (58.3)	96 (80)	2.4(1.32-4.55)	0.004
Unfriendly	11 (9,2)	1 (0.8)	15.1(1.90-119.57)	0.01
Very unfriendly	0	1 (0.8)		
Avaliability of drugs				
Always	56 (46.7)	113 (94.2)	1	
Sometimes	84 (53.3)	7 (5.8)	18.4(7.93-42.88)	0.000

Table 4.4 Health care related system for case and control

4.5 KNOWLEDGE OF TUBERCULOSIS AND TREATMENT

4.5.1 KNOWLEDGE OF SYMPTONS (N=240)

Knowledge of the symptoms asked about to TB respondents included coughing, night sweats, loss of weight and chest pain, to which they responded with a "yes" or "no" respectively. In total, over 50%of compliant and non-compliant groups, respectively,had knowledge of the symptoms for TB. Of the respondents 95% (228) said coughing as a symptom,81.7% (196) said chest pain, 63.8% (153) said night sweat and 76.7% (184) said loss of weight are symptoms of TB. These proportions were distributed equally between the compliant and non-compliant groups and so there was no significant association between knowledge of symptoms and compliance or non-compliance to completion of TB treatment (Table 4.5).

4.5.2 PERIOD OF TREATMENT FOR TB (N = 240)

The questions were whether TB should be treated for six months, until one feels better or six months and health worker stops them. With regards to treatment should be for six months, 87.1% (209) said "yes" and 12.9% (31) said "no". All the eight respondents who said " no" did not complete their treatment in addition to the 112 of the 209 who said "yes". Perception on the period for treatment was found to be significantly associated with completion of TB treatment (**P= 0.003**),(Table 4.5). Respondents who think TB treatment should be taken until one feels better accounted for higher proportion of non-compliance to TB treatment completion. Also, there was no statistical association between the compliant and non-compliant groups(**P=0.08** (Table 4.5). Respondents who thinks one should take the treatment for six months and health worker tells them to stop was found to be statistically associated with the completion of TB treatment (**P= 0.001**) (Table 4.5).

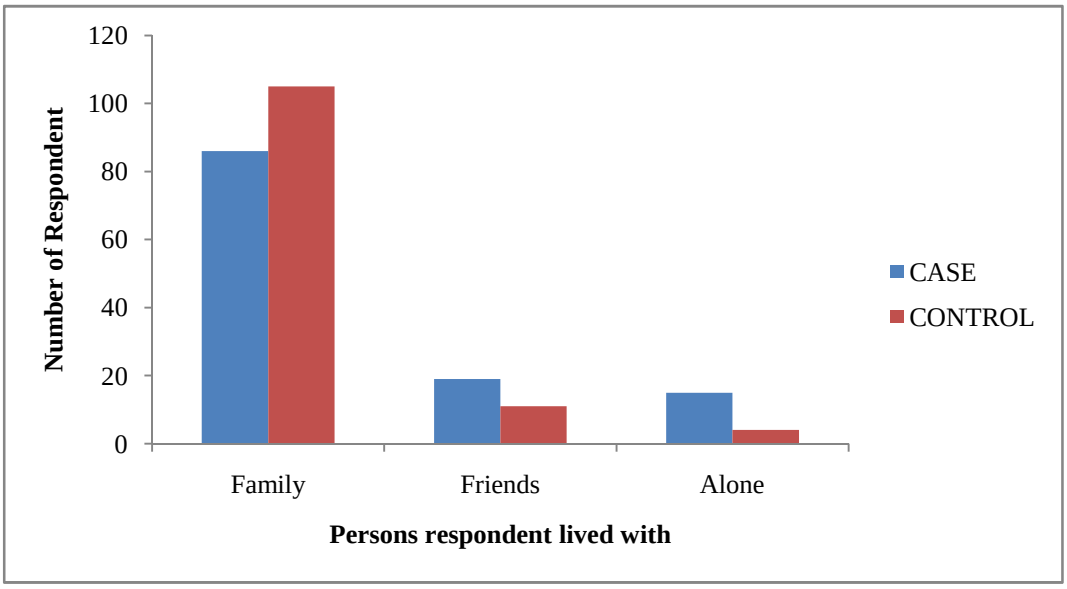
Table 4. 5 Knowledge and treatment of TB for case and control respondents

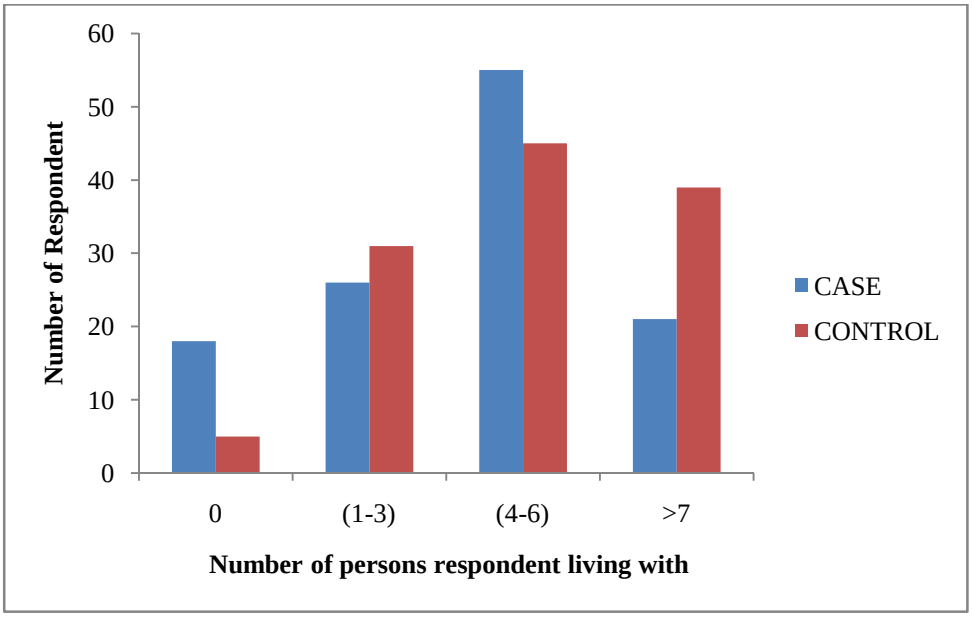
Factors	Case N(%)	Control N(%)	OR(95% CI)	P Value
Treatment for 6 months or more				**0.003**
YES	112 (93.3)	97 (80..8)	1	
NO	8 (6.7)	23 (19.2)	0.3(0.12-0.70)	0.006
Treatment until feels better				**0.08**
YES	7 (5.8)	2 (1.7)	1	
NO	113 (94.2)	118 (98.3)	0.3(0.05-1.34)	0.111
Treatment until health worker tells you to stop				**0.001**
YES	118 (98.3)	106 (88.3)	1	
NO	2 (1.7)	14 (11.7)	0.1(0.03-0.57)	0.007

4.6 DEFAULT FACTORS

4.6.1 WHO RESPONDENTS LIVES WITH (N = 240)

Respondents were interviewed in respect to who they live with 79.6% (191) lived with their family, 12.5% (30) friends and 7.9% (19) alone. Among the respondent who lived with their family, 45% (86) were in the non-compliant group. Also among the 19 respondents who lived alone 78.9% (15) were in the non-compliant group (Fig. 4.9). There was a strong significant association between who the respondent lives with and the compliance status to TB treatment completion (**P= 0.004**) (Table 4.6).





stayed in their houses between three to twelve months and 70.8% (170) had stayed in their houses for more than twelve months, most of the respondents were fairly stable. Of the respondents who had lived in their current place for more than twelve months 46.5% (79) belongs to the non-compliant group. However, the length of stay was not a significant factor contributing to compliance or non-compliance, of TB treatment completion (Table 4.6).

Table 4. 6 Default factors in TB treatment for case and control respondents

Factors	Case N(%)	Control N(%)	OR(95% CI)	PValue
Number of people living with				
0 (alone)	15 (12.5)	4 (3..3)	1	
1 - 3	28 (23.3)	32 (26.7)	0.2(0.07-0.71)	0.011
4 - 6	55 (45.8)	45 (37.5)	0.3(0.11-0.98)	0.047
> 7	22 (18.3)	39 (32.5)	0.1(0.04-0.46)	0.001
Relationship to persons living with				0.004
FAMILY	86 (71.7)	105 (87.5)	1	
FRIEND	19 (15.8)	11 (9.2)	2.1(0.95-4.67)	0.066
NONE	15 (12.5)	4 (3.3)	4.5(1.46-14.30)	0.009
Size of household				
1 – 2	56 (46.7)	56 (46.7)	1	
3 – 5	55 (45.8)	41 (34.2)	1.3(0.77-2.32)	0.249
> 5	9 (7.5)	23 (19.2)	0.3(0.16-092)	0.031
Length of stay in house				
< 3 months	12 (10)	7 (5.8)	1	
3 - 12 months	29 (24.2)	22 (18.3)	0.7(0.25-2.27)	0.635
> 12 months	79 (65.8)	91. (75.8)	0.5(0.19-1.34)	0.173

4.7 STIGMA AND DISCRIMINATION

4.7.1 DISCLOSED TB STATUS (N =240)

The respondents were asked whether they had disclosed their TB status to either a family member or friends: 92.1% (221) of the respondents had disclosed their TB status, 7.9% (19) had not disclosed their status . 73.7% (14) of those who did not disclosed status belong to the non-compliant group. The disclosure of TB status was not associated with any significant difference between the compliant and the non-compliant groups.

4.7.2 REASONS FOR NON-DISCLOSURE (N = 19)

Among the respondents interviewed 7.9% (19) did not disclosed their TB status. 84.2% (16) said it was because of fear of being isolated, Out of the 16 who said that it was because of fear of being isolated, 68.7% (11) did not complete their treatment. Three of the non-compliant said they have no one to trust as a reason for non-disclosure.

4.8 DISEASE AND MEDICINE RELATED FACTORS

Respondents were asked a number of questions to assess various disease and medicine related factors that could contribute to compliance or non-compliance to TB treatment.

4.8.1 EXPERIENCED SIDE AFFECTS TO TB MEDICINES (N = 240)

In relation to experience with side while taking TB treatment. 65.4% (157) of the patients had experienced some side effects while taking medicines while taking medicines, while 34.6% (83)had not.Out of the 157 that experienced side effects, 46.5% (73) did not complete treatment.

4.8.2 TYPE OF SIDE EFFECTS RESPONDENTS EXPERIENCED (N = 157)

Those who reported having experienced side effects were asked about the type of side effects they had. Some of the respondents may have had more them one side effects but the questionnaire did not capture these. The commonest side effects reported were headache and dizziness 34.4% (54), followed by 26.1% (41) with skin rashes and 24.2% (38) with painful limbs. Side effects were also common among both compliant and non-compliant groups. Table 4.7 (below) summarizes side effects among the compliant and non-compliant group.

Table 4. 7 Summary of the distribution of side effects among the compliant and non- compliant group

Side effects	Compliant	Non-Compliant
Headache and Dizziness	30	24
Skin rashes	21	20
Painful Limbs	18	20
Numb foot and hands	6	5
Diarrhoea & vomiting	3	2
Yellow eyes	0	2
Others	6	0

4.8.3 BEFORE TIME IT TOOK YOU FELT BETTER? (N = 240)

Respondents were asked how long it took them to start feeling better on TB treatment. 43.3% (104) of the patients took less than two months to feel better, 49.6% (119) took between two and four months, 8.3% (2) between five to six months, while 6.3% (15) reported they never felt better at all. Out of the 15 who reported that they never felt better at all, 93.3% (14) did not complete treatment.

4.8.4 RESPONDENT'S REASONS FOR NOT COMPLETING TREATMENT (N = 120)

The 120 respondents who were non-compliant gave the following reasons: 34.2% (41) inadequate supply of medicines, 30.8% (37) feeling better, 11.7% (14) not feeling better, 8.3% (10) lack of family support, 6.7% (8) no reason, 5% (6) stigma and 3.3% (4) side effects as their reasons for not completing TB treatment. Table 4.8 (below) gives a summary of reasons for not completing TB treatment.

Table 4. 8 Reasons given for non-compliance, by cases (defaulters)

Reason	Number (N)	Percentage
Inadequate supply of medicines	41	34.2
Feeling better	37	30.8
Not feeling better	14	11.7
Lack of family support	10	8.3
No reason	8	6.7
Stigma	6	5
Side effects	4	3.3

4.8.5 TB DISEASE CLASSIFICATION (N = 240)

Of the 240 respondents, 81.3% (195) had smear positive pulmonary TB (PTB SM+), while 18.7% (45) had smear negative pulmonary TB (PTB SM-) . Out of the 195 that had PTB SM+,47.7% (93) were non-compliant, and 60% (27) of those who had PTB SM - were also non-compliant. Among the respondents non belong to the extra pulmonary TB group. There was no significant difference between the two groups with respect to TB classification.

4.8.6 HIV STATUS (N = 240)

Of the 240 respondents, 23.3% (56) had an HIV test result positive, while 76.7%(184) had a negative HIV result . 50% (28) of the 56 HIV positive respondent did not complete TB treatment. HIV status among the respondents was equally distributed and was not a significant factor contributing to compliance or non-compliance.

4.8.7 THE TAKING OF OTHER MEDICINCES BY RESPONDENTS (N = 240)

Respondents were assessed if they were taking other medicines besides TB treatment, 36.3% (87) were taking other medicines while 63.7% (153) said they were not taking other medicines. Taking other medicines was not significantly associated with compliance or non-compliance .

4.8.8 WHAT OTHER MEDICINES WERE TAKEN? (N = 87)

All the 87 respondents who said they were taking , 51.7% (45) were taking Highly Active Anti-Retroviral Therapy (HAART), 5.7% (5) anti-hypertensive's, 23% (20) Psychiatric and 19.5% (17) other medicines. 57.8% (26) of the 45 patients on HAART did not complete TB treatment. Of the 17 patients taking other medicines all belongs to the non-compliant group.

4.8.9 PATIENTS' OPINION ON WHAT COULD MAKE TB PATIENTS COMPLETE TREATMENT

This was an open question to the respondents seeking their opinion in what could make TB patients complete their treatment several responses were given including, 32.1%(77) of the respondent said that family support will help TB patients complete their treatments, 22.1% (53) availability of medicines, 12.9% (31) health talks, 12.5% (30) waiting time, 10% (24) supervision of patients, 5.8% (14) transportation and 4.6% (11) attitude of clinic staff. Table 4.9 (below) gives a summary of the opinion of patients in relation to compliance.

Table 4. 9 Patients opinion with regards to compliance

Opinion	Number(N)	Percentages(%)
Family support	77	32.1
Availability of medicines	53	22.1
Health talks	31	12.9
Waiting time	30	12.5
Supervision of patients	24	10
Transportation	14	5.8
Attitude of clinic staff	11	4.6

Table 4.10. Multivariable model (Binary logistic regression) of factors associated with default from treatment among tuberculosis patients in Western Sierra Leone

Factors	Odds ratio	95%CI		p-value
		Lower	Upper	
During the time you were taking TB medicines, what would you say was your situation in terms of food availability				
Always available to take with medicines (RC)	1.00			
Available most of the time	6.93	1.52	31.63	0.01
Not always available	2.91	0.24	35.25	0.40
How much time do you usually wait at the TB clinic before being attended?				
<1hr(RC)				
1-2hrs.	0.60	0.25	1.41	0.24
>2hrs	0.09	0.02	0.40	0.00
When you went to pick your medicines at the TB clinic, what would you say about the availability of medicines there?				
Always available	0.006	0.001	0.052	0.00
Sometimes not available (RC)	1.00			
Loss of weight is a symptoms of TB				
Yes (RC)	1.00			
No	0.19	0.03	1.05	0.06
TB treatment should be taken until 6months				
Yes (RC)	1.00			
No	0.007	0.001	0.062	0.00
Who do you live with?				
Family(RC)	1.00			
Friends	5.85	1.81	18.86	0.00
Alone	0.63	0.04	10.85	0.75

How long have you stayed in your current dwelling/ house?				
<3months(RC)	1.00			
3-12 months	0.12	0.02	0.85	0.03
>12months	0.07	0.01	0.40	0.00
Disease Classification (according to treatment card or TB register)				
PTB-SM+(RC)	1.00			
PTB-SM-	3.06	1.20	7.79	0.02
HIV Status (as indicated onTB treatment card or TB register)				
Positive(RC)	1.00			
Negative	5.31	1.49	18.91	0.01
Were you taking other medicines besides TB treatment				
Yes (RC)	1.00			
No	0.15	0.05	0.46	0.00

***RC*: Reference Category**

CHAPTER 5

DISCUSSION OF RESULTS

5.1 INTRODUCTION

This chapter present the discussion of the results of the research. The chapter dilates on how the finding of the research relates to the objectives of the study and compares the research findings with existing literature.

The present study has been one of the few research endeavours to identify factors associated with default to TB treatment in Western Sierra Leone. The researcher set out to identify factors associated with default from TB treatment in Western Sierra Leone and to identify host and environmental related-factors that contribute to some patients not completing their TB treatments.

Data was collected from respondents through structured questionnaires, all of which were then checked for completeness and appropriate cleaning performed. Data was entered onto MS Excel spreadsheets for analysis. Logistic regression test was used to described the data and identify significant differences between the compliant and noncompliant groups. MS Excel was used to provide descriptive and graphical summary statistics in the form of graphs and tables. The following is a discussion of the findings in line with the study objectives.

5.2 FACTORS ASSOCIATED WITH DEFAULT TO TB TREATMENT

TB treatment non-compliance is recognized as one of the major challenges in achieving TB control. Some of the most cited factors contributing to non-compliance in developing countries include TB treatment Illiteracy; the impression of being cured once medicines begin to take effect and the patient feeling better; medicinal side effects; economic problems and transport challenges (Needham et al 1998: 811; O'Boyle et al 2002: 307; Peltzer et al 2002; 55; pushapanathan et al 2000: 291). The factors discussed include those that are socio-demographic, host-related factors (including patient literacy or educational level, patient related factors, socio-economic) and environmental related factors (health system, stigma and discrimination, clinic staff attitude, disease and medicine related factors and default factors).

5.2.1. SOCIO-DEMOGRAPHIC CHARACTERISTICS

The Socio-demographic factors included gender, age, religion, maritial status and the level of formal education. There were more Males in both the compliant and non-compliant groups. In the compliant group, there were 62.5% (75) males and 64.2% (77) males in the non-complainant group. Gender, age, religion, marital status and level of formal education did not contribute to any significant difference between the two groups.

Most studies had similar findings with respect to gender, marital status and religion, but level of education has been found to contribute to treatment compliance (Balasubramaniam et al 2004: 352; Date et al 2005: 680; Johansson et al 1999: 868; Mistura et al 2005:1134).

5.2.2 PATIENT RELATED FACTORS

Smoking, drinking alcohol and availability of a treatment supporter are patient-related factors that will be discussed.

A total of 17.9% (43) patients had smoked in the previous six months, while they were still taking TB treatment, while 19.6% (47) patients drank alcohol during treatment. 74.4% (32) of the 43 patients that smoked cigarette in the previous six months did not complete their treatment and 68.1% (32) of the 47 patients that drank did not complete their treatment. Out of the 240 respondents, 74.2% (178) had treatment supporters.

The implication of patients taking alcohol while on treatment are twofold. Firstly, patient may forget to take their medicines when drunk and secondly, there may be more side effects to TB medicines, particularly when patients are taking other medicines, which may result in their being non-complaint (Sansone et al 2008; 43) . Smoking may result in their delayed healing from treatment, in turn giving the patients the false impression that the TB medicines are not working and cause them to be non-compliant. Out of the 178 patients that had treatment supporters, 61.8% (110) were compliant.

Treatment supporters are expected to play the role of a DOT supporters, observing the patient swallowing the TB medicines. In realty this may not be the case as some of the treatment supporters do not even live with the patients and are therefore unlikely to observe the patient taking medicines all the time. Smoking and availability of treatment supporter were associated with significant differences between the compliant and non-compliant groups, while drinking alcohol was not associated with any significant difference between the compliant and the non-complaint groups.

5.2.3. Socio-Economic Status

Employment status, income and availability of food are the socio-economic status that will be discussed. Employment status, income and availability of food may affect TB treatment compliance (Okanurak et al 2008: 1160; Tissera 2003: 7; Hasker et al 2008: 97). Only 18.8% (45) of the patients were employed, 30.4% (73) self-employed and 50.8% (122) unemployed. About 86.7% were having less than Le 400,000/00 per month, 12.9% earning between Le 400,000 - Le 1,000,000/00.

75.4% (181) reported that food was always available, 17.1% (41) reported that food was available most times and 7.5% (18) reported that food was not always available. 16 (88.9%) out of 18 patients that did not always have food did not complete. Availability of food was a significant with regard to compliance or non-compliance (**OR= 12(2.83-56.85)**) (Table 4.3).

While employment status and level of income were not associated with any significant difference between the compliant and non-compliant groups.(Table 4.3)

The findings are consistent with one conducted in India which did not find employment status and income to be significant factors affecting compliance to TB treatment (pandit et al 2006: 242). Some TB patients in Western Sierra Leone have often cited lack of food as a reason for discontinuing treatment. Therefore, the study findings show that this concern from patients should be taken seriously and addressed as it contributes to non-compliance. The implication is that unemployment results in food scarcity and lack of enthusiasm to take medication.

5.2.4. Treatment literacy related-factors

Patient knowledge about their disease and its treatment enhance treatment compliance. The patients' knowledge of symptoms of TB was very high as majority of the respondents were

able to identify coughing, chest pain, loss of weight and night sweatt as presenting symptoms of TB. Knowledge of TB symptoms was however not associated with any significant different between the compliant and non-compliant groups.

Knowledge of TB treatment duration was significant, as those patient who said. TB treatment should be taken for six months was 87.1% (209) out of the 240 respondents (**p=0.003**) .

Patient who said TB treatment should be taken until one felt better were more likely to be non-compliant and thus did not complete TB treatment. patients who said that TB treatment should be taken for six month and stop by health worker was significant(**OR =0.1(0.03-0.57)**) .

Lack of education may result in patients not undertaking the importance of complying with treatment and the ramifications of not completing treatments. It is important for all patients who have started on TB treatment to complete treatment as prescribed by the health worker according to the national guidelines. Failure to do so is associated with treatment failure and development of drug resistance. Bam et al (2005:51), in a Nepal Cross-Sectional study, found that 48% of non-compliant TB patients would discontinue TB treatment once they felt better and were free of symptoms, as they thought they were cured. Several other studies had similar findings about feeling better being associated with studying TB treatment and non-compliance (Kaona et al 2004: 68; O'Boyle et al 2002: 307-12; Peltzer et al 2002: 55; push pananthan et al 200: 216;)

5.2.5. Healthcare System related factors

Health worker attitudes, clinic opening times, availability of medicines, and accessibility issues (distance and cost of getting to the health facility) have been shown in other studies to be important factors affecting TB treatment compliance. This is because health workers attitudes, such as being unfriendly to patients, tend to deter patients from seeking treatment or coming to collect medicines once they are finished. 227 patients ranked the health workers attitudes from friendly to very friendly; 12 ranked as unfriendly and 1 ranked as very friendly.

Despite this, 48% (109) of those who ranked the attitude as ‘friendly’ to ‘very friendly’ were non-compliant. In trying to minimize bias, the research assistant was not a worker at the clinic

Clinic opening times may be inconvenient, particularly to patients who are also employed and traders, as the clinic times are often the same working or trading hours of the patients. More than 80% (193) of the respondents would prefer the clinic to have flexible opening hours, that is opening before 08hr and closing by 17hrs. Therefore, flexible hours may be necessary to cater for the employed and trailer patients.

Out of the 240 respondents interviewed, 70.4% (169) said that medicines was always available, 33.1% (56) belong to the non-compliant group. The supply chain system for medicine was therefore unsatisfactory. Medicine unavailability may mean that even if the patient times on time to pick up their medicines, if they are unavailable patients will inevitably be forced to interrupt treatment. 29.6% (71) patients reported that medicines were sometimes unavailable and 90.1% (64) belongs to the non-compliant group. Availability of medicines was a significant factor with respect to compliance and non-compliance(OR= 18.4 (7.93-42.88) .

Distance to the clinic was a significant factor affecting compliance.Out of the 35 patients that lived between 11-15 kilometers, 71.4% (25) did not complete their treatment. This could mean that distance and medicine availability may be deterring factors for patients to complete their treatment. Other studies found that the farther the clinic was from the patient the more chances the patient would be non-compliant. (Bam et al 2005: 54; Jaiswal et al 2003: 625).

The cost of travelling to the clinic was a significant factor (**P=0.004**) (Table 4.4) . Among the 16 patient who pay between Le 10,000 - Le 15,000 to come to to the clinic, 93.8% (15) did not complete their treatment. The time patients had to wait at the clinic before attended to was also a significant factor contributing to treatment compliance, as the patients who waited longer than one hour were more likely to be non-complaint with treatment (**p=0.000**)(Table 4.4) . 96.7% (232) of the respondents were supervised by health workers when taking treatment during the first two months. The rest of the four months were to be supervised by treatment supporter. Out of the 178 (74.2%) that had treatment supporters, 38.2% (68) did not complete their treatment. However, the number of patients not complying with treatment but having treatment supporters who are to supervise the taking of medicines makes it doubtful that they were actually being observed doing so. If they were not providing DOT properly, the treatment supporter would then have quickly notified the clinic, once they noticed the patient was not taking treatments.

5.2.6. Default Factors

Default factors described include size (number of rooms), of the current dwelling, number of inhabitants, length of stay in the present dwelling and who the patient live with. In this study there was no significant difference with respect to the size (number of rooms) of the current dwelling, number of inhabitants, and length of stay in the present dwelling. However, there

was a significant difference with respect to who the patient live with (**p=0.004**)(Table 4.6)

A study in Columbia however showed that the more unstable the patient in terms of a place to stay, the more likely those who stay alone or in overcrowded environment (> 2 per room) were to be non-compliant with TB treatment (Mateus Solarte and Carvajal - Barona 2008: 525).

5.2.7 Stigma and Discrimination

Stigma and discrimination will cover disclosure issues. 92.1% (221) of the patients had disclosed their TB status to a family member or friend. Only 19 respondents did not trust and fear of being isolated by family and friends as the reasons, 73.7% (14) of the 16 patient who did not disclosed their TB status did not complete treatment. Disclosure status did not show any significant difference between the compliant and non-compliant group . Kaona et al (2006: 68) reported stigma and discrimination of TB patients as factors affecting treatment compliance.

5.2.8. Disease and Medicine related

The disease and medicine-related factors include the TB disease classification, HIV status, Co-morbidities and other medicines taken. Extra pulmonary TB disease and patients taking other medicines are often associated with non-compliance due to longer treatment period, higher pill burden and higher incidence of medicine side effects (Tessema et al 2009:6). Out of the 240 respondents, 81.3% (195) had PTB SM+ and 18.7%(45) had PTB SM- . A total of 240 TB patients were tested for HIV and 23.3% (56) were HIV positive. The HIV status was even distributed among the compliant and non-compliant group. Among the co-infected patients 45 were taking HAART, 26 (57.8%) did not complete their treatment. Patients on HAART and TB treatment will have a higher pill burden than those not on HAART, which

may affect treatment compliance negatively.

In addition, the some patients may also experience more side effects to the medicines. Both these factors require health workers to intensify health education in patients co-infected with TB and HIV, to ensure they comply with all their treatment, because if they are not cured of TB, HAART will not work. About 65% of all the patients had experienced at least one side effect of TB medicine, the commonest being headaches and dizziness (34%), skin rashes (26%) and painful feet and hands (24%).

Medicine side effects may discourage the patients from taking their treatments, particularly during the first few weeks as they may actually feel worse on treatment. It is therefore important that side effects are managed as soon as they occur, as well as providing health education to the patients so that they anticipate them. This finding is not consistent with other studies (Janakan et al 2008:222; Okanurak et al 2008: 160) which identified medicine side effects as factors affecting TB treatment compliance, In this study patients health status in the form of feeling better once they started treatment was a significant factor associated with non-compliance. It was found that 43% (104) of the patients took less than two months to feel better, 50% (119) took between two to four months, 0.8% (2) took between five to six months and 6.2% (15) reported not feeling better at all.

A patient feeling better on treatment is a sign that medicines are working well and the expectation is that the patient would be internally motivated and confident to continue taking their medicines until completion. Out of the 240 respondents, 120 did not complete their TB treatment and they cited the following as the main reasons for non-compliance; inadequate supply of medicines (34.2%), feeling beeter (30.8%), not feeling better (11.7%), lack of family support (8.3%), no reason (6.7%); stigma (5%) and side effects (3.3%).

5.2.9. Patient's opinion on improving treatment compliance.

There were several responses from the patients when they were asked their opinion on what could be done to help TB patients complete their treatments. All of the respondents responded to the question, 32% (77) said family support, 22.1% (53) availability of medicine, 12.9% (31) health talks, 12.5% (30) improvement on waiting time, 10% (24) supervision of patients 5.8%(14) transportation for patients and 4.6% (11) clinic staff should improve their attitude. The patients responses reinforced the need to address the area of support and availability of medicines. If these candid opinion of patients are addressed, then TB treatment compliance will be greatly improve.

As shown in Table 4.10, the multivariable analysis identified some factors that had significant association with default from treatment among tuberculosis patients in Western Sierra Leone. The factors included: food security/availability for drug consumption; clinic waiting time; availability of medicine at TB clinic; perception that TB treatment should be taken until 6 months; type of person living with the patient; duration of stay in the current place of abode; disease classification, HIV status; and patient taking other medicines besides TB treatment. The analysis reveals that patients who claimed to have food most of the time were about seven times (OR=6.93, p=0.01) more likely to default than those who always had food to take with medicines. Those who usually wait at the TB clinic for more than two hours before being attended were found less likely (OR=0.09, p<0.01) to default than those who usually wait for less than one hour before being attended. Compared to those who claimed that medicines were sometimes not available at the TB Clinic, those who claimed that the medicines were always available were less likely (OR=0.006, p<0.01) to default. Those who opined that TB treatment should not be taken until 6 months were less likely (OR=0.007, p<0.01) to

default than those agreed that it should. Those living with friends were about six times (OR=5.85, p<0.01) more likely to default than those living with family. Those who have stayed in their current dwelling/houses for 3-12 months (OR=0.12, p=0.03) or more than 12 months (OR=0.07, p<0.01) were less likely to default from treatment compared to those who have for less than 3 months in their current dwelling/houses. With respect to disease classification and HIV status, those classified as PTB-SM-(OR=3.06, p=0.02) and those who were HIV negative (OR=5.31, p=0.01) were more likely to default from treatment than those classified as PTB-SM+ and who were HIV positive respectively. Lastly, those who were not taking other medicines besides TB treatment were less likely (OR=0.15, p<0.01) to default than those who were taking other medicines besides TB treatment.

CHAPTER 6

CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

Patients compliance to TB treatment in Western Sierra Leone is associated with the availability of medicines, availability of food with which to take medicines,patients waiting time at the TB clinic and feeling better on treatment. One of the aims of the TB control programme is to improve TB treatment compliance. This study suggests that reducing patient waiting time at the clinic, making food available to patients on TB treatment through linkages with social services and community programmes, providing medicines at all times, so that patients cannot interrupt their TB treatment and improving patient TB treatment literacy would improve TB treatment compliance in Western Sierra Leone. The forms of TB treatment literacy should be at four levels namely, patient, health workers, family members and community members.

6.2 Recommendations

Based on the findings from the study the following recommendations are made:

6.2.1 Recommendations for further research studies to be conducted by the National TB Programme

- Further research is needed to identify the comparison between male and female non-compliance in Western Sierra Leone

- Further research on non-compliance by TB/HIV co-infected patients on HAART treatment should be conducted.

6.2.2 Recommendations to decrease non-compliance to tuberculosis treatment

The following recommendations are for the Western Area District Health Management Team, Sierra Leone.

- Intensify health education to communities and all TB patients , particularly at the beginning of treatment, with reinforcement at each visit using the language locally used. The information should be complete encompassing duration of treatment , possible side effects and how to deal with them in order for the patients to make their own judgements on their capabilities.
- Reduce patient waiting times at the clinic by providing more clinic staff. Health professionals should be trained on customer service.
- Initiate income generating activities to improve food provision for patients on TB treatment. Also, link TB patients to social services and community programmes that provide food.
- Initiate flexible hours for TB clinic to cater for the patient needs.
- Government should come up with policy to stop stigmatization and discrimination against TB patients .
- Involve TB patients in developing strategies to improve treatment compliance.
- Promote task shifting of the nurses roles, such as dispensing medicines to lay counselors and TB promoters assisting at the TB clinic. This would reduce the burden of work that is often experienced by nurses at the health facilities and improve efficiency. Patients may then not necessarily have to wait for long hours just to collect their medicines.
- The National TB programme should ensure that there adequate supply of medicine so that patients can have their treatment uninterrupted.

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ANNEX 1: QUESTIONNAIRE

Individual Patient's Questionnaire Number: | | | |

Date of Interview: ----------

Instructions:

ENTER THE OPTION IN THE BOX for all the questions using figures except for Qn. 32 for which you should enter text in the space provided.

SECTION A: DEMOGRAPHIC INFORMATION

Qn. 1. Age in Years:

1. (15-24) 2. (25-34) 3. (35-44) 4. (45-54) 5. (55-64)

6. (65-74) 7. (>74)

Qn. 2. Religion:

1. Christian 2. Islam 3. Other

Qn. 3. Gender:

1. Male 2. Female

Qn.4. Marital Status:

1. Married 2. Widowed 3. Separated 4. Single

5. Cohabiting

Qn. 5. How much formal education did you get?

1. None 2. Primary 3. Secondary 4. Tertiary

SECTION B: PATIENT RELATED FACTORS

Qn. 6. Have you smoked cigarettes in the last 6 months?

1. Yes 2. No 3. Cannot remember

Qn. 7. Did you drink alcohol in the last 6 months?

1. Yes 2. No 3. Cannot remember

Qn. 8. Do you have a Treatment Supporter?

1. Yes 2. No

SECTION C: SOCIO-ECONOMIC VARIABLES

Qn. 9. Employment status:

1. Employed 2. Self-employed 3. Unemployed

Qn. 10. What is your income (Le/ 000/per month)?

1. Low (<400) 2. Medium (400-1,000,000)
3. High (>1,000,000)

Qn. 11. During the time you were taking TB medicines, what would you say was your situation in terms of food availability?

1. Always available to take with medicines
2. Available most of the time
3. Not always available
4. Never available

SECTION D: HEALTH-CARE SYSTEM RELATED

Qn. 12. What would be the most convenient TB clinic opening times for you?

1. [<8am-5pm] 2. [8am-5pm] 3. [8am->5pm]
4. [<8am->5pm]

Qn. 13. How much time do you usually wait at the TB Clinic before being attended?

1. [<1 hr.] 2. [1-2 hrs] 3. [>2 hrs]

Qn. 14. How much distance do you travel to collect your TB medicines (Km)?

1. [<5] 2. [5-10] 3. [11-15]

4. [16-20]5. [>20]

Qn. 15. How much does it cost you to get to the health facility (Le)?

1. Nothing (walking distance) 2. [<10] 3. [10-15]

4. [>20]

Qn. 16. Who supervised you when you were taking your TB medicine? (DOT Status)

1. None 2. Family member

3. Health Worker at the facility 4. Community member

Qn. 17. How would you rate the attitude of staff who attended you at the health facility?

1. Very friendly 2. Friendly 3. Unfriendly

4. Very unfriendly

Qn. 18. When you went to pick your medicines at the TB Clinic,

What would you say about the availability of medicines there?

1. Always available 2. Sometimes not available

Qn. 19. I just want to take some time to find out what you know about TB, The following is/are symptoms of TB.

(a) Coughing: [1. Yes 2. No]

(b) Night sweats: [1. Yes 2. No]

(c) Loss of Weight [1. Yes 2. No]

(d) Chest Pains [1. Yes 2. No]

Qn. 20. TB treatment should be taken until [Yes or No]:

(a) 6 months [1. Yes 2. No]

(b) One feels better then stop on your own

[1. Yes 2. No]

(c) 6 months completed and health worker tells you to stop

[1. Yes 2. No]

SECTION E: DEFAULT FACTORS

Qn. 21. Who do you live with?

1. Family 2. Friends 3. Alone 4. Other

Qn. 22. How many other people live with you?

1. (0) 2. (1-3) 3. (4-6) 4. (>7)

Qn. 23. How big is your dwelling/house (number of rooms)?

1. (1-2) 2. (3-4) 3. (>5)

Qn. 24. How long have you stayed in your current dwelling/house?

1. (<3 months) 2. (3-12 months) 3. (>12 months)

SECTION F: STIGMA AND DISCRIMINATION

Qn. 25(a) Did you inform your family of friends that you were on TB treatment?

1. Yes 2. No

Qn.25(b) If no, why?

1. Fear of being isolated by friends or relatives
2. No one to trust
3. Other

SECTION G: DISEASE AND MEDICINE RELATED

Qn. 26(a) Did you experience any side effects when you were taking TB treatment?

1. Yes 2. No

Qn. 26(b) If Yes to above question, which side effects did you experience?

1. Diarrhoea & Vomiting
2. Headaches and dizziness
3. Skin rashes
4. Numb feet or hands
5. Yellow eyes
6. Painful limbs
7. Other

Qn. 27. From the day you started taking you TB medicines,

how long did it take you before you felt better? (months)

1. [<2] 2. [2-4]3. [5-6]4. [Did not feel better]

Qn.28(a) Did you complete your TB treatment?

1. Yes 2. No

Qn.28(b) If the response to the above question is No,

what were the reasons for you to stop treatment?

1. Side effects
2. Feeling well
3. Too many tablets
4. Stigma
5. Distance
6. Cost of travel
7. Lack of family support
8. No food
9. Inadequate supply of medicines
10. Medicine not working
12. Not feeling better on medicines
13. No reason
14. Other

Qn. 29. Disease Classification

(Tick appropriately according to treatment card or TB register)

1. PTB-SM+ 2. PTB-SM- 3. EPTB

4. PTB and EPTB 5. Not Indicated

Qn. 30. HIV Status (as indicated on TB treatment card or TB register)

1. Positive 2. Negative 3. Not Known/Indicated

Qn.31(a) Were you taking other medicines besides TB treatment

1. Yes 2. No

Qn.31(b) If yes to the above question, which medicines was the patient taking?

1. HAART 2. Anti-hypertensive

3. Psychiatric (antipsychotic, antidepressants) 4. Other

Qn. 32. In your opinion, what could make patients complete their TB treatments?

ANNEX2: PATIENT CONSENT FORM

PATIENT CONSENT FORM

Study Title : Factors Associated With Default From Treatment Among Tuberculosis Patients In Western Sierra Leone

Investigator : Mr. Jonathan Joseph Greene

Dear Sir/Madam,

Mr. Jonathan Greene is conducting a study to identify factors associated with default from treatment among tuberculosis patients. The findings of the study will be used to improve TB patient care management and thus reduce further spread of TB in the community.

The study and its procedures have been approved by the Ministry of Health and Sanitation. A trained interviewer will administer a questionnaire in order to collect data and it should take about 30 minutes to complete. There are no foreseeable risks associated with the interview and you can contact me on the following cell phone numbers, 078606190 or 088884742, or to contact the Medical Officer of Connaught Chest Clinic, if you have any further questions after the interview.

Your participation in this study is voluntary. I therefore request you to assist with answering the questions included in this questionnaire. The information you may give us today could help us achieve the objectives of this study. Please note that any information which may identify you will be kept strictly confidential and your responses will in no way lead to any adverse effect on you and no medical care will be withheld from you because of the responses you may provide.

If you agree to this interview you may sign below, but if you do not agree , you can let me know at this point and I will not proceed with the interview. Signature/Thumb print of respondent……..

Date……

SIERRA LEONE GOVERNMENT
MINISTRY OF HEALTH AND SANITATION
OFFICE OF THE PERMANENT SECRETARY

Ref: M1/ 159/ 4/ Vol. 1

6th January, 2014

Mr. Jonathan J. Greene
German Leprosy/TB Relief Association
29 Soldier Street
Freetown

Dear Mr. Greene,

Re- Factors associated with default from treatment among tuberculosis patients in Western Sierra Leone.

1. Reference is made to your application to conduct the above – mentioned study
2. The proposal has been evaluated and found to have merit
3. Kindly be informed that approval has been granted under the following conditions:

3.1 The data collected is only to be used for academic purpose
3.2 A quarterly progress report is to be submitted to the Ministry's Research Unit
3.3 Preliminary findings are to be submitted to the Ministry before final report
3.4 Final report to be submitted upon completion of the study
3.5 Separate permission to be sought from the Ministry for the publication of the findings.

GOVERNMENT OF SIERRA LEONE
MIN. OF HEALTH & SANITATION

Yours Sincerely

S.M. Kapuwa
Permanent Secretary

Ministry of Health and Sanitation 4th Floor, Youyi Building, Brookfield's, Freetown
Email: Tel: 076 - 660 580