FACTORS RESPONSIBLE FOR THE HIGH DEFAULT RATE OF TUBERCULOSIS PATIENTS PARTICIPATING IN DIRECT OBSERVED TREATMENT SHORT COURSE

by

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Submitted in partial fulfilment of the requirements

for the degree of

MASTER OF PUBLIC HEALTH

at the

UNIVERSITY OF SOUTH AFRICA

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NOVEMBER 2008
DECLARATION

I declare that FACTORS RESPONSIBLE FOR THE HIGH DEFAULT RATE OF TUBERCULOSIS PATIENTS PARTICIPATING IN DIRECT OBSERVED TREATMENT SHORT COURSE is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references and that this work has not been submitted before for any other degree at any other institution.

SIGNATURE
(GAMELI KWAME NORGBE)
ABSTRACT

The purpose of this study was to describe the factors contributing to high default of DOTS implementation in the Kwaebibrim district of Ghana.

A quantitative, descriptive study was conducted to determine personal, health service, community and treatment factors contributing to high default of DOTS implementation in the district. Data collection was done using a structured questionnaire. Purposive sampling was done. The sample comprised of one hundred and thirty TB patients who were on DOTS implementation at the district chest clinic. The study highlighted TB patients’ knowledge about TB, socio-economic characteristics, organisation of care as well as community perceptions about the disease. The findings revealed that default to treatment is a complex behavioural issue involving multiple factors, an interaction of personal, social and health care factors as well as side effects of medication and duration of treatment. It is therefore recommended that interventions to prevent default of DOTS implementation should be designed with these factors in mind.

KEY CONCEPTS

TB; DOTS; default; non-adherence; treatment supporter; factors.
ACKNOWLEDGEMENTS

I am grateful to God for giving me the opportunity to complete this study, and give Him thanks and praise.

I would also like to give my thanks to the following persons for their invaluable support and unending encouragement:

- Ms JE Smith and Ms HS du Toit, my supervisors at UNISA, for all they taught me
- School of Public Health University of Ghana, for the many literature sources you helped find for me
- My wife Joyce and children Setor, Sena and Sedina together with my friends, who encouraged me, never gave up supporting and believing in me
- The Regional Health Directorate for permission to use Ghana Health Service facilities
- St Dominic’s Hospital Akwatia, Ghana for allowing me to do the research at the hospital
- Liza Abotsi for helping me with the typing of the dissertation
- Mrs R Coetzer, for formatting and finalising the manuscript
- Mrs IM Cooper, for critically and professionally editing the manuscript

To you all, my sincere thanks and love, and I wish you all strength in your endeavours – may people be as caring and helpful to you as you have been to me.
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<td>AETC</td>
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<td>Acquired Immunodeficiency Syndrome</td>
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<td>CHV</td>
<td>Community Health Volunteers</td>
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<td>DHMT</td>
<td>District Health Management Team</td>
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<td>DOTS</td>
<td>Directly Observed Treatment Short Course</td>
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<td>GHS</td>
<td>Ghana Health Service</td>
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<td>GTC</td>
<td>Global Tuberculosis Control</td>
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<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
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<td>IUATLD</td>
<td>International Union Against Tuberculosis and Lung Disease</td>
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<tr>
<td>KDHMT</td>
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<td>MDR</td>
<td>Multi Drug Resistance</td>
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<td>NTP</td>
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<td>TB</td>
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CHAPTER 1

Orientation to the study

1.1 INTRODUCTION

Tuberculosis (TB) is an airborne bacterial disease. The causal agent is the tubercle bacillus *Mycobacterium tuberculosis*, and occasionally *Mycobacterium bovis* and *Mycobacterium africanum* (Ait-Khaled & Enarson 2003:3; Harries, Maher & Graham 2004:23). In a few cases, the bacillus is transmitted to humans from infected cows through drinking non-sterilized milk. This mode of transmission only plays a minor role in the natural history of the disease in humans. Although TB can affect any organ of the body, lung or pulmonary TB accounts for over 80% of cases (Ait-Khaled & Enarson 2003:3). This form of TB may be infectious because it is spread from person to person through the air when people with pulmonary TB cough, sneeze, talk, or laugh. People nearby can breathe in the bacteria and become infected. Extra-pulmonary TB affects organs other than the lungs, most frequently the pleura, lymph nodes, spine, joints, genito-urinary tract, nervous system or abdomen (Enarson, Rieder, Arnadottir & Trebucq 2000:3).

The main symptom of pulmonary TB is a persistent cough for three weeks or longer. A person who has a persistent cough for three weeks or more usually has one or more of the following symptoms: chest pain, shortness of breath, weight loss, tiredness, fever, night sweats, loss of appetite, and coughing up blood (Bonsu, Asamoa & Bonso-Bruce 2003:7).

TB remains a major health problem in many tropical countries. In some countries dense overcrowding in urban slums aggravates the situation. The co-existence of Human Immuno-deficiency Virus (HIV) infection and TB is one of the most serious threats to human health since the Black Death and has been called “the cursed duet” (Lucas & Gilles 2003:159).

In most cases, the disease can be cured with current anti-TB drugs. To be effective, however, the drugs must be taken exactly as prescribed (WHO 2000:3). Non-
compliance with TB treatment has several negative consequences, not only for the individual patients and their families, but also for society, in the form of drug resistance.

Despite the implementation of the Direct Observed Treatment Short Course (DOTS) the default rate of TB patients in the Kwaebibirim district of Ghana remains a problem.

1.2 BACKGROUND TO THE PROBLEM

Mycobacterium TB infects a third of the world’s population, roughly two billion people (Coberly & Chaisson 2007:653). An estimated 8 to 10 million people develop overt TB annually as a result of primary infection, endogenous reactivation or exogenous re-infection (Lucas & Gilles 2003:159). In 2000 there were an estimated 8.3 million new cases of TB worldwide. Ninety-five percent (95%) of TB cases in developing countries are in the economically productive age group of 15 to 50 years (Knight 2000:7). Africa faces the highest TB rates per population but Asia carries the greatest absolute burden and the epidemic is worsening in other regions as well (WB 2003:1). Of 1.8 million deaths from TB in 2000, 226 000 (12%) were attributable to HIV. TB deaths comprise 25% of all avoidable adult deaths in developing countries (Harries et al 2004:25; WHO 2000:3).

TB is a major public health problem in Ghana. The National TB Control Programme (NTP) launched in 1994 aimed to reduce transmission of the disease to a level where it is no longer a major public health problem (Bonsu et al 2003:2).

Before 1997 there was virtually no clearly defined TB programme in the Kwaebibirim district. The resource capacity of the district was low with poorly motivated and ill-equipped staff, reluctant to manage TB patients; only a few ill-equipped diagnostic laboratories, and erratic drug supply with virtually no stock management procedures. Patients, who could afford it, bought their own drugs. Diagnostic and treatment procedures were ill defined. In 1997, the District Directorate of Health embarked on an intensive in-service training programme to arrest this situation. The intention was to equip the district with the necessary human resources to facilitate the implementation of the DOTS, while measures were being taken to improve the logistics situation.
The DOTS strategy was adopted by the World Health Assembly in 1991 and include the following four key pillars:

- Detection of smear-positive pulmonary TB in patients using sputum microscopy.
- Directly-observed treatment with short-course chemotherapy.
- Guaranteed continuous drug supply.
- A case recording system tracking treatment outcomes (Obermeyer, Abbott-Klafter & Murray 2008:2).

Implementation of the DOTS officially began in the Kwaebibirim district in 1998. National targets, corresponding to international standards, were set for DOTS implementation and the district was to comply with them. The targets were a cure rate of at least 85%, case finding of at least 55%, and default rate of 10% or less. A chest ward for TB patients was then created and a district TB coordinator was tasked to be in charge of the TB programme. As part of national policy, TB diagnosis as well as treatment is free of charge (Bonsu et al 2003:8). Compliance to the DOTS strategy would help in reaching the set targets.

There is only one chest clinic in Kwaebibirim district, located in St Dominic’s Hospital, Akwatia and managed by one professional nurse and one nurse assistant. All diagnostic procedures are done at St Dominic’s Hospital and confirmed TB patients then referred to the chest clinic for treatment. At the chest clinic, patients are registered in the TB register and undergo counselling about the disease, treatment regimen, side effects of TB drugs, duration of treatment, and preventive measures (Bonsu et al 2003:47).

Patients whose homes are close to the chest clinic go for their daily dose of medication under the direct observation of health personnel. Patients who live far away are given a weekly supply of medication which they take without supervision. At the end of each month reports of new cases, cure rates, defaulter rate, relapse, case detection rate, drug resistance and deaths are sent to the TB co-ordinator.

### 1.3 GEOGRAPHICAL AREA

The study was done in the Kwaebibirim district, one of nineteen (19) districts in the eastern region of Ghana.
The Kwaebibirim district covers 1230 square kilometres and is located in the southwestern part of the eastern region. It is bounded to the east by Birim North district, to the north and west by East Akim district, to the south by the Birim South district, and to the southwest by West Akim district.

The population of Kwaebibirim district consists mainly of indigenous Akans with settler communities of Ewe and Krobo extraction, and a few other minorities (GHS/KDHMT 2007:6).

The main activity is agriculture and includes oil palm and citrus plantations. Farming and timber activities, and perennial bush fires have depleted the forest vegetation in the district thereby leading to the emergence of secondary forest. About 90% of the population depends on fuel wood and charcoal as the major sources of energy.

There is a 60% prevalence of poverty, which means about 60% of the population earn less than one hundred and sixty Ghanaian cedis (¢160) or the equivalent of US$160 per annum (GHS/KDHMT 2007:13).

Literacy levels are fairly high (about 55%) even though many children drop out of school to engage in economic activities, especially on market days (GHS/KDHMT 2007:13).

The Kwaebibirim district is a rural district with poorly developed infrastructure. Unemployment levels are high thus contributing to a high poverty level. Health facilities are concentrated in and around the district capital where surface mining activities are carried out. The district is made up of six (6) zones called sub-districts where various health staff and community health volunteers (CHV) in conjunction with communities work together to provide essential care through the sub-district health facilities (GHS/KDHMT 2007:15).

1.4 RATIONALE FOR THE STUDY

The study sought to examine the factors that contribute to the defaulting of DOTS implementation in the Kwaebibirim district since the researcher could find no previous research on the topic in this district.
1.5 STATEMENT OF THE PROBLEM

Mosley (2008:4) describes a problem statement as “a statement that identifies the key research variables, specifies the nature of the population and suggests the possibility of empirical testing”.

Ghanaian government policy makes provision for free care to TB patients. This includes consultation, laboratory services and non-payment for drugs. Despite the availability of free drugs and laboratory services the DOTS programme in the Kwaebibirim district has witnessed a high default rate of 35%. According to the Ghana National Tuberculosis Programme (NTP), the national default rate should not be greater than 10% (Bonsu et al 2003:7). High default rates lead to multiple drug resistance (MDR) and hamper the control of TB, thereby increasing the morbidity and mortality rates associated with the disease. The MDR TB rate in Ghana is 1.6% (USAID 2008:1).

1.6 PURPOSE OF THE STUDY

The purpose of the study was to identify the factors contributing to the high default rate of DOTS implementation in the Kwaebibrim district of Ghana despite the availability of free diagnostic and treatment services. To do so, the researcher wished to answer the following research question:

Why do some TB patients in the Kwaebibirim district default on completing treatment despite the implementation of DOTS?

In order to answer the question, the objectives of the study were to

- describe how TB patients in the Kwaebibirim district of Ghana understand the condition and the treatment of TB
- identify factors that contribute to the defaulting of DOTS implementation among TB patients in the Kwaebibirim district of Ghana
1.7 SIGNIFICANCE OF THE STUDY

TB is one of the top four diseases in Ghana and the point prevalence is 0.2%; that is, 200 per 100 000 of the population. It is estimated that there are 30 000 cases of TB with 15 000 deaths in Ghana annually (Bonsu et al 2003:1). The researcher found no specific information available on Kwaebibirim district.

The results of this study should thus provide evidence-based information on factors contributing to the defaulting of DOTS implementation in the Kwaebibirim district and contribute to the existing body of knowledge. The findings should help the District Health Management Team (DHMT) design patient-centred approaches in implementing DOTS programmes. Finally, the findings should be relevant in designing TB advocacy programmes in the community.

1.8 RESEARCH DESIGN AND METHODOLOGY

A research design is “an overall plan for collecting and analysing data, including specifications for enhancing the internal and external validity of the study” (De Vos, Strydom, Fouche & Delport 2002:137). The researcher adopted a quantitative approach, using a cross-sectional and descriptive design to determine the factors that contribute to the high default rate in TB treatment (see chapter 3 for detailed description of research design and methodology).

- **Quantitative**

  Quantitative research deals with quantities and relationships between attributes and involves the collection and analysis of structured data (Bowling 2002:186). This study quantified the collected data and presented it numerically.

- **Cross-sectional**

  Sometimes termed a frequency survey or prevalence study, it is a descriptive study (survey) of a defined cross-section of the population at one particular point in time (Grimes & Schulz 2002:57). The respondents’ knowledge and understanding of TB and TB treatment as well as the defaulting of treatment were described at one point in time.
Descriptive

A descriptive study is a simple description of the phenomenon under study (Bowling 2002:194). This study described the knowledge of the respondents with regard to TB and its treatment. The respondents (defaulters and non-defaulters) were questioned about their attitudes, perceptions and knowledge of TB, and the reasons why they defaulted treatment.

This study did not use a comparative-descriptive design as the identified differences were not identified for statistical significance (Cormack 2000:219).

1.8.1 Population

A population is “an aggregate of people or objects with common characteristics of interest to the researcher” (Bowling 2002:157). In this study, the population was all smear-positive cases of TB in Kwaebibirim district of Ghana registered at St Dominic’s Hospital chest clinic from 2006 to 2007 which included defaulters and non-defaulters.

1.8.2 Sample and sampling

A sample is a subset of a population selected to participate in a study. Sampling is the process of selecting a portion of the population to represent the entire population. The selected elements are then referred to as the sample (De Vos et al 2002:198).

In this study, there was no sampling as the researcher included all the smear-positive TB patients registered in the Kwaebibirim district TB register from 2006 to 2007. Therefore the entire population of registered TB patients at the Kwaebibirim chest clinic was used. The population consisted of 130 defaulters and non-defaulters. Defaulters were indicated on the register and could therefore be identified. Consequently the researcher decided to analyse the data according to defaulters and non-defaulters.
1.8.3 Data collection and data-collection instrument

Data was collected by means of interview schedules with closed-ended questions completed by the research team on behalf of the individual respondents.

A questionnaire (interview schedule) is “a structured document that is used to collect information from respondents. Once collected, the information is converted into measures of factors that are important to the research question under investigation” (Bowling 2002:232).

Due to the high illiteracy rate (45%) in the district, the researcher and research assistants completed the interview schedules on behalf of the respondents. Tape recorders were also used to cross-check information at review meetings.

1.8.4 Data analysis

Data analysis is the process of presenting and interpreting data. Quantitative data analysis involves preparing the data for summarising. In the evenings, the fieldwork was reviewed and an inventory taken of the data collected. Data were checked for missing values and input errors. A statistician analysed the data, using the Statistical Package for Social Sciences (SPSS) for windows, version 10.0 program. The results were presented in the form of frequency tables, means, proportions, and descriptive cross-tabulations. Graphics in the form of histograms and pie charts were produced (Saunders, Lewis & Thornhill 2007:182).

1.9 VALIDITY AND RELIABILITY

The quality of a research instrument is determined by its validity and reliability. Reliability and validity are concerned with the quality of the data and appropriateness of the methods used in carrying out a research project. Validity addresses whether the data collection instrument measures what it should be measuring. It therefore deals with the appropriateness of the method (Cano 2008:5). Reliability is the degree of consistency or dependability with which the instrument measures the attribute it is designed to measure. If the instrument is reliable, the results will be the same each time the test is repeated (Polit & Hungler 1997:308). Reliability shows how reproducible
measures are in a retest. The more reliable a measure, the more sensitive the instrument and the fewer subjects needed to see a small change in the measure (De Vos et al 2002:168). See chapter 3 for the measures taken to ensure the validity and reliability of the study, such as face and content validity.

1.10 ETHICAL CONSIDERATIONS

Ethics deals with matters of right and wrong. Collins English Dictionary (1991:533) defines ethics as “a social, religious, or civil code of behaviour considered correct, esp. that of a particular group, profession, or individual”. The ethical principles governing research ensure that respondents should not be harmed as a result of participating in the research and they should give their informed consent to participate (Bowling 2002:134). The goal of ethics in research is to ensure that no one is harmed or suffers adverse consequences from research activities. Accordingly, the researcher obtained permission to conduct the study (see annexure 2); obtained informed consent from the respondents (see annexure 3), and ensured their anonymity and confidentiality (see chapter 3).

1.11 DEFINITION OF TERMS

For the purposes of this study, the following terms are used as defined below.

- **Defaulter**

  McLean (2003:5) describes defaulters as “patients whose treatment was interrupted for two or more consecutive months for any reasons; in other words, patients who fail to adhere to their drug regimen”.

  In this study, defaulters were TB patients on DOTS registered at St Dominic’s Hospital chest clinic who had interrupted their treatment for two or more consecutive months.

- **Defaulted**

  Defaulted refers to the cases that had interrupted their treatment for two or more months, out of the total number of new smear-positive cases registered for treatment.
In this study, patients who defaulted had not returned to the clinic for their medication or had not been served their medication for two months or more.

- **Direct observed treatment short course (DOTS)**

DOTS stands for Directly Observed Treatment Short course, which means that a trained second person watches the patient swallowing the tablets to ensure that the patient takes the right combination of drugs and for the appropriate duration. The important and unique feature of DOTS is the use of patient observers. The strategy, then, ensures that TB patients regularly take the medicines as prescribed and monitors their progress towards cure (Harries et al 2004:45).

In this study, DOTS was the strategy whereby a nurse or treatment supporter observed TB patients to ensure that they took their medication regularly at the clinic or at home.

- **Tuberculosis**

TB is a communicable bacterial disease caused mainly by the bacterium *Mycobacterium tuberculosis*, also known as tubercle bacilli or as acid-fast bacilli (AFB), which affects primarily the lungs, and occasionally by other species of the bacterium that could affect other parts of the body (Harries et al 2004:23).

In this study, TB was a chronic airborne bacterial infection caused by *Mycobacterium TB* that can spread to any organ in the body, but found most often in the lungs (pulmonary TB).

- **Treatment supporter**

Treatment supporters are persons nominated by the health workers and patients who watch the patients take their medication. Treatment supporters’ main role then is to make sure that TB patients take the TB drugs regularly, on schedule, for the full duration of the treatment. They also need to listen and encourage the patient as part of this support (AETC National Resource Centre 2006:3).
In this study, the treatment supporters’ role at the clinic and at home was the same but was frequently not complied with.

1.12 OUTLINE OF THE STUDY

Chapter 1 introduces the study and briefly outlines the problem, purpose and significance of the study, research design and methodology, and ethical considerations.

Chapter 2 describes the literature review conducted for the study.

Chapter 3 discusses the research design and methodology.

Chapter 4 presents the data analysis and interpretation, and findings.

Chapter 5 concludes the study and makes recommendations for practice and further research.

1.13 CONCLUSION

This chapter described the background to the problem, the purpose and significance of the study, the research design and methodology, as well as ethical considerations, and defined key terms. Chapter 2 discusses the literature review conducted for the study.
CHAPTER 2

Literature review

2.1 INTRODUCTION

A literature review is undertaken to assist researchers to comprehend and extend their knowledge of the phenomenon under study (Polit & Beck 2008:105). This chapter discusses the literature review conducted for this study. According to Babbie and Mouton (2001:565), the purpose of a literature review is “to determine the extent to which the topic under study is covered in the existing body of knowledge”. The literature review covered TB control, diagnosis and treatment; DOTS; adherence to TB medication, and factors influencing default of DOTS implementation.

2.2 TB CONTROL

Control of TB implies a reduction in the number of cases that occur each year within a community or population. Each case of TB must produce less than one secondary case. This simple and necessary goal of control has been largely overlooked in most international TB programming, which is chiefly focused on intermediary goals, such as case detection and cure rates (Coberly & Chaisson 2007:667).

The main symptom of pulmonary TB is a persistent cough for three weeks or more. People who have a persistent cough for three weeks or more usually have one or more of the following symptoms: chest pain, shortness of breath, weight loss, tiredness, fever, night sweats, loss of appetite, coughing up blood (Bonsu et al 2003:7).

In 1993, the World Health Assembly declared TB a global emergency because TB was out of control in many parts of the world (Coberly & Chaisson 2007:672; Harries et al 2004:41). According to Haynes, Montague and Olivier (2002:1), TB is out of control mainly because

- Governments in many parts of the world have neglected the disease.
• Inadequate TB control programmes have led to an increased burden of disease (inadequately treated TB patients live longer with chronic disease and infect other people) and the emergence of MDR TB.
• High rates of population growth have contributed to an increased number of TB cases.

In addition, the HIV epidemic has led to an enormous increase in the number of TB cases in places where HIV and TB are both common (Harries et al 2004:43).

Delay in TB diagnosis is common in Africa, due to patient- or provider-related factors, among other things. Patient-related factors include stigma of the disease, lack of information, dissatisfaction with the treatment and its delivery, and inaccessibility of treatment (Thomas 2002:371). People residing in remote rural areas or very poor parts of cities may not be covered by available TB services. In Ghana, rural residence is a common risk factor for patient-related diagnostic delay (Lawn, Afful & Acheampong 1998:635). Provider-related diagnostic delays are related to health care providers’ knowledge, awareness and skills, and inadequate health infrastructure (Thomas 2002:380).

2.2.1 International Standards for TB Care (ISTC)

In order to ensure high quality TB care and avoid disease complications as well as emerging drug resistance, it is necessary to standardise treatment guidelines. The ISTC was developed as a tool to unify public and private sectors in providing high-quality care for TB. The ISTC is evidence based and widely accepted. It should be noted that it is a tool and not an end in itself. The core of TB care and control is accurate diagnosis and effective treatment. Any clinician providing TB services to individuals is therefore assuming an important public health function as well as providing individual patient care (Migliori, Hopewell, Blasi, Spanevello & Raviglione 2006:688).

2.2.2 WHO standard TB treatment

All patients diagnosed with TB (including those with HIV infection) who have not been treated previously should receive an internationally accepted first-line treatment regime
using drugs of known bio-availability. The initial phase should consist of two months of isoniazid, rifampicin, pyrazinamide, and ethambutol. The preferred continuation phases consist of isoniazid and rifampicin given for four months. Isoniazid and ethambutol given for six months is an alternative continuation phase regimen that may be used when adherence cannot be assessed, but it is associated with higher rate of failure and relapse, especially in HIV-infected patients (Migliori et al 2006:690).

2.2.1.1 Standards for diagnosis

Migliori et al (2006:690) list the following standards for diagnosis:

- Patients must be given instructions on treatment.
- All persons with an otherwise unexplained productive cough lasting two to three weeks or longer should be evaluated for TB.
- All patients (adults, adolescents, and children who are capable of producing sputum) suspected of having pulmonary TB should have at least two, preferably three, sputum specimens obtained for microscopic examination. Where possible, at least one early morning specimen should be obtained.
- All patients with chest radiographic findings suggestive of TB should have sputum specimens submitted for micro-biological examination.

2.2.1.2 Standards for treatment

To foster and assess adherence, a patient-centred approach to administration of drug treatment, based on the patient’s needs and mutual respect between patient and provider, should be developed for all patients. Supervision and support should be gender-sensitive and age-specific and should draw on full range of recommended interventions and available support services, including patient counselling and education. A central element of a patient-centred strategy is the use of measures to assess and promote adherence to treatment regimen and to address poor adherence when it occurs. Such measures include DOTS (Veron, Blanc, Suchi & Raviglione 2004:139).
2.3 DIRECTLY OBSERVED TREATMENT SHORT COURSE (DOTS)

Dr Karel Styblo of the International Union against TB and Lung Disease pioneered the development of a model of TB control, based on a managerial approach to case finding, follow-up and treatment (Toman 2004:99). Styblo’s approach was adopted by the World Health Assembly in 1991 and that was the beginning of the development of DOTS. An effective DOTS system would not only increase the case detection rate and cure rates, but also reduce the default rate and thus increase compliance with the TB treatment. This would ultimately reduce the burden of the disease, and thus significantly reduce its public health importance. DOTS is a simple, cost-effective and reliable method. Under the DOTS system, case finding and diagnosis are well defined and reliable as is outcome information.

Different approaches were used to contain the devastating effect of TB. However, it became manifestly clear that the use of TB control strategies like chemoprophylaxis, ventilation systems and ultraviolet lights were unable to help significantly reduce the infection or mortality rate. Previously, the TB treatment regimen lasted for eighteen months and longer. This led to very high default rates as patients abandoned treatment long before they were cured, resulting in MDR (Harries et al 2004:4).

All patients should be monitored for response to therapy. In pulmonary TB patients, this is best judged by follow-up sputum microscopy (two specimens) at least at the time of completion of the initial phase of treatment (two months) at five months and at the end of treatment. Written records of all medication given, bacteriological response, and adverse reactions should be maintained for all patients. Patients who have positive smears during the fifth month of treatment should be considered treatment failures and have therapy modified appropriately (Harries et al 2004:4).

DOTS is one of the most cost effective of all health interventions, more cost effective than self-administered treatment (WHO/AFRO 2004:8). Chaulk and Kazandjian (1998:943) found superior treatment completion rates under DOTS compared to those achieved by non-supervised interventions. Median treatment completion rates with the DOTS ranged from 78.6% to 91.0%, depending on the degree to which incentives and enablers were used, compared to 61.4% for non-supervised therapy. In China, Cao,
Zhang and Zhu (1998:360) reported reduced relapse and drug resistance rates with DOTS.

### 2.3.1 Response to the TB epidemic

Public health programmes have a responsibility to ensure adherence to TB treatment in their potentially infectious patients. DOTS has been shown to increase patient adherence and decrease drug resistance and transmission of TB in the community. Nevertheless, DOTS may not be sufficient to ensure adherence in patients with substance abuse, housing, legal or other social problems, which are common among TB patients (McLean 2003:7).

#### 2.3.1.1 Global level

At the 1991 World Health Assembly, recognising the worsening TB epidemic, especially in developing countries, the World Health Organization (WHO) set a “global target of cure of 85% sputum-positive patients under treatment and detection of 70% cases by the year 2000, taking care to ensure that these programmes are integrated as far as possible into primary health care activities” (Knight 2000:3). However, by 2000, it was evident that most countries would not achieve the 1991 targets hence the target year was shifted to 2005 through Resolution WHA 53/5.5. In response to resolution WHA 51.13, the Stop TB Initiative, now called the Stop TB partnership, was established to lead a concerted effort to tackle the TB epidemic. The Stop TB Partnership formulated the Global Plan to Stop TB, which galvanised efforts to achieve the global targets (Knight 2000:4).

TB case detection under DOTS subsequently accelerated and the treatment outcome target was been met in some regions. The treatment success rate in the 2002 DOTS cohort was 82% on average, which is just below the 85% cure goal. By the end of 2005 the case detection rate was expected to reach 60% from 27% in 2000 (Knight 2000:4).

In Russia, the implementation of DOTS resulted in a sharp improvement in TB cure rates (WHO 2007:1). Before DOTS was introduced, medical staff at health centres had virtually given up treatment and follow-up of TB patients, as the majority of patients
dropped out after two months of treatment. With the introduction of DOTS, the 85% defaulter rate dropped drastically to an average of 3% (WHO 2007:1).

In a study in Atlanta, USA on whether incentives increased adherence to DOTS, Bock, Sales, Rogers and De Voe (2001:96-98) gave a US $5.00 grocery coupon for each DOTS appointment. Treatment completion rates were compared with a control group of TB patients who were also eligible for incentives, but did not receive them. The incentive group consisted of 55 patients and the control group consisted of 52 patients. Patients who received incentives completed therapy within 32 weeks (OR 5.73, 95% C.I 2.25 – 14.84) and the control group with no incentives within 52 weeks (OR 7.29, 95% C.I 2.45 – 22.73). A strong association was thus established between patient incentives and increased adherence (Bock et al 2001:96).

In a retrospective analysis of the clinical records of adult patients with TB at the Albert Schweitzer Hospital in rural Haiti from 1994 to 1995, Olle-Goig and Alvarez (2001:137-141) found that if well implemented, DOTS could achieve good results, even in an area of extreme poverty. Out of 143 patients in the non-DOTS group, 29% defaulted, 12% died and 58% had a successful outcome. However, of 138 patients in the DOTS group, 7% defaulted, 4% died and 87% had a successful outcome.

2.3.1.2 African regional level

In Africa, Tanzania, Malawi, Benin, Senegal and Mozambique were among the first countries in the International Union Against Tuberculosis and Lung Disease (IUATLD) to implement the DOTS strategy for TB control in the late 1970s and early 1980s (WHO/AFRO 2007:8). In 2003, thirty of the African member states of the WHO had achieved countrywide coverage with DOTS services. As DOTS-based programmes were extended, both case detection and treatment rates also increased, bringing the DOTS coverage to 85% in 2003 from 43% in 1995 (WHO/AFRO 2004:7). By 2006, all 46 African member states of the WHO were implementing the DOTS strategy (WHO/AFRO 2007:8).

The average case detection rate of 50% and treatment success rate of 72% in the African region still fall below the World Health Assembly targets and make it the worst among WHO regions. The relatively poor treatment success rate is mainly due to a
combination of a 10% default rate, 5% transferred out without follow-up rate, and 5% lost to follow-up rate (WHO/AFRO 2004:12). The default rate reflects the quality of the organisation of a TB control centre, and should be less than 10% in an efficient NTP. When this rate is too high (that is, more than 15%), the causes should be analysed and corrective measures taken (Ait-Khaled & Enarson 2003:137).

2.3.1.3 Ghana

Ghana falls outside the WHO’s 22 high-burden countries for TB. This notwithstanding, TB is a major health problem in Ghana. In 2004, Ghana recorded 44 733 new TB cases and ranked thirteenth in Africa for the highest estimated number of new cases per year (USAID 2008:1).

The National TB Control Programme (NTP), based on DOTS, was launched in 1994 and aimed to reduce transmission of the disease to a level where it is no longer a major public health problem (Bonsu et al 2003:2). DOTS was phased in with an initial strategy to roll out DOTS to all public health facilities in all regions and districts, reaching 100% coverage in 2000 (Bonsu et al 2003:5).

However, the quality of DOTS implementation in public health facilities is still below expectations. The case detection rate of sputum smear-positive (SS+) TB has remained static at 37%, and treatment success at 66% since 2003, both below the WHO standards of 70% and 85%, respectively (Edoh & Adjei 2002:162). The HIV/AIDS epidemic is fuelling TB incidence. Approximately 16% of adult TB cases are HIV-positive. Default of DOTS implementation leads to multi-drug resistance (MDR). With a 23.5% primary drug resistance rate, Ghana ranks among the African countries with a high prevalence of drug-resistant TB (Adjei, Berberich & Bonsu 2008:2). Further DOTS expansion has been limited through competing demands on limited health resources (USAID 2008:1).
Table 2.1 depicts the 2004 TB statistics for Ghana.

**Table 2.1 TB profile of Ghana**

<table>
<thead>
<tr>
<th>Country population</th>
<th>21 664 441</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated number of new TB cases</td>
<td>44 733</td>
</tr>
<tr>
<td>Estimated TB incidence (all cases per 100,000 population)</td>
<td>206</td>
</tr>
<tr>
<td>DOTS population coverage (%)</td>
<td>100</td>
</tr>
<tr>
<td>Rate of new sputum smear-positive (SS+) cases per (100,000 population)</td>
<td>34</td>
</tr>
<tr>
<td>DOTS case detection rate (new SS+) (%)</td>
<td>37</td>
</tr>
<tr>
<td>DOTS treatment success rate in 2003 (new SS+) (%)</td>
<td>66</td>
</tr>
<tr>
<td>Estimated adult TB cases HIV+(%)</td>
<td>16</td>
</tr>
<tr>
<td>New multidrug-resistant TB cases (%)</td>
<td>1.6</td>
</tr>
</tbody>
</table>

Source: USAID/GHANA (2008:1)

### 2.4 COMPLIANCE WITH TREATMENT

Between 20% and 50% of people with TB do not complete treatment within a 24-month period. This can lead to prolonged infectiousness, drug resistance, and relapse of TB or serious risk for the individual as well as the community (Volmink & Garner 2004:2).

In Vietnam, Johannson, Long and Diwan (1999: 862-868) found that non-compliance with TB treatment had many deleterious effects on individuals and society as a whole, culminating in the development of drug resistance with its attendant consequences. Multiple factors were responsible for non-compliance, including patients' beliefs and effect of procedures undergone at health facilities, financial constraints, and rejection by or lack of support from family. The social environment at the facilities coupled with the side effects of some anti-TB drugs contributed to non-compliance. In tandem with this was the poorly developed road and transport infrastructure of the district, which limited patients' access to some treatment facilities and thereby served as a barrier to compliance (Johannson et al 1999:862).

Volmink, Matchaba and Garner (2000:1348) found that the following factors influenced adherence to treatment:
Accessibility and responsiveness of the health service.
- Nature of the treatment itself.
- Cultural concepts of TB.
- Existence of other more pressing problems, such as unemployment, poor housing and poverty.

2.5 FACTORS CONTRIBUTING TO NON-COMPLIANCE

The factors contributing to non-compliance can be grouped into three categories, namely patient-related, health care, and community and treatment factors.

2.5.1 Patient-related factors

Steen and Mazonde (1998:627-634) conducted a study of delays in diagnosis of pulmonary TB in Kweneng District, Botswana. The purpose was to elicit the health seeking behaviour of TB patients, their beliefs about and attitudes towards TB. Some of the patients believed in the "traditional cause" (witchcraft) of TB, whilst others believed in the "modern theory" that TB is spread by inhalation of infectious droplets containing the TB bacilli. Steen and Mazonde (1998:627-634) observed that about 80% of defaulters were patients who believed in the “traditional cause" of TB, whilst 20% of defaulters were patients who believed in the modern theory of TB.

In Cali, Colombia, Jaramillo (1998:138-144) found the patients’ cultural explanation of TB, stigma attached to TB, and poor quality of health care services not only strong barriers to early diagnosis, but also the main reasons for defaulting.

Erhabor, Aghanwa, Yusuph, Adebayo, Argundade and Omidora (2000:235-239) point out that the increasing morbidity and mortality associated with TB in developed and developing countries has been blamed on neglect of the human dimension of TB control. Poor utilisation of available TB control programmes was attributed, among other factors, to poor compliance, which is a behavioural parameter. This led to the emergence of MDR TB. Erhabor et al (2000:235-239) therefore examined factors influencing compliance in TB patients on DOTS at Ile-Ife, Nigeria. When Erhabor et al (2000:237) analysed the records of the socio-demographic characteristics, treatment categories, complications of TB, results of investigations, as well as level of compliance
and treatment outcome for all the patients, the only factor found to have influenced the rate of compliance was proximity to the clinic.

In a study in Vietnam with the aim of exploring gender differences in knowledge, beliefs and attitudes towards TB and its treatment, Johansson et al (1999:862-868) found that insufficient knowledge and individual cost during treatment were the main obstacles to compliance among men while sensitivity to interaction with health staff, stigma, and society were the main obstacles among women.

In rural South Africa, Pronyk, Makhubele, Hargreaves, Tollman and Hausler (2001:619-627) examined people's knowledge, attitude and perceptions about TB. Of the respondents, 97% knew it was a disease that affected the chest; 85% considered it infectious, and 88% knew that the local clinic provided treatment. Their knowledge of the symptoms associated with the disease was good, and 16% indicated a reluctance to associate with people suffering from TB owing to a fear of infection (Pronyk et al 2001:619-627).

In Ghana, Dodor (2004:1337) found that patients appeared to be ashamed of their condition. This level of stigma was compounded by the patients' perceived biased manner in which health professionals' informed them of their condition. Moreover, the long duration of TB treatment was a heavy burden because it impacted negatively on their duties to care for children and provide income for the family (Dodor 2004:1338).

In their study of factors associated with tuberculosis treatment default and completion at the Effia-Nkwanta Regional Hospital in Ghana, Dodor and Afenyadu (2005:827-832) found that patients were tempted to cease therapy once their symptoms had abated. Some patients interpreted supervised treatment as a lack of trust in them and many described feelings of depression, anger and apathy with the disease process. The majority expressed the need for a support system, in terms of someone to talk to about their practical and emotional concerns. Many expressed rejection by family and members of the community. Unless such attitudes and perceptions about TB are addressed, adherence to the TB regime will be compromised (Dodor & Afenyadu 2005:830).
Kwamanga, Chakaya, Githui, Meme, Ouma, Gicheha, Karimi, Mansoor and Kutwa (2002:1-15) point out that most research on TB and health education has focused on the level of knowledge about the disease and little has been conducted on lay beliefs and explanations associated with TB. In a study of TB patients in an urban slum in Kenya, Kwamanga et al (2002:15) found that behaviour towards treatment is embedded in an intricate web of both social and psychological factors. These factors may need to be addressed in patients requiring long-term treatment. For better adherence to anti-TB treatment, therefore, Kwamanga et al (2002:15) emphasise that health education programmes must also focus on patients’ feelings about their condition.

2.5.2 Health care factors

McLean (2003:7) maintains that health care providers need to recognise factors relating to non-adherence and do everything possible to support patients to take medications prescribed, and to complete treatment. This includes close appraisal of the health care service offered to the patient and a commitment to removing health service barriers where possible. It also includes developing a relationship with patients and their families so that ‘patient factors’ can be understood and addressed, where appropriate (McLean 2003:7).

Veron et al (2004:139) emphasise that to foster adherence, a patient-centred approach to administration of drug treatment, based on the patient’s needs and mutual respect between patient and provider, should be developed for all patients.

In Nepal, Wares, Singh, Acharya and Dangi (2003:327-335) found that the poor attitude of service providers to TB patients, stigma, and cost associated with travelling long distances were serious barriers to adherence and compliance. Furthermore, the long duration of treatment sometimes discouraged patients from completion of the course, regardless of their education, income or gender.

In a comparative study of TB care provision associated with poor treatment outcome in a semi-private lung clinic and the NTP in two urban districts in Ho Chi Minh City, Vietnam, Lonnroth, Thuong, Lambregts, Quy and Diwan (2003:168) found that 50% of the patients opted for TB treatment at private clinics. Lonnroth et al (2003:169) maintain
that if private clinics are well equipped logistically and staff well trained, then case finding will be increased and the default rate significantly reduced.

However, Olle-Goig, Cullity and Vargas (1999:76) found a higher default rate of TB patients undertaking treatment in private clinics than in government health centres in Bolivia. In the same study they found out that in Santa Cruz, Bolivia, 70% of private physicians did not adhere to the standard norms for prescribing anti-TB drugs.

In a rural community in the Rakai district of Uganda, Nuwaha (1999:79-81) found that the following factors contributed to high compliance with TB treatment:

- Utilisation of a single health facility for both the intensive and continuation phases of treatment. Patients were more likely to default, if compelled to change their treatment centres especially after the intensive phase.
- Establishing good rapport between patients and health care providers.
- Good attitude of service providers.
- Providing treatment near patients’ home had a beneficial effect.
- Hospitalisation places a significant strain on family life, particularly if the patients are the breadwinners. Consequently, in the Rakai district, unless patients are seriously ill, ambulatory treatment is widely practised.
- Frequent (on-going, in-service) training of the staff at the peripheral health units and regular supervision by the TB Unit.
- Finally, the introduction of short course chemotherapy led to progressive high compliance over the years.

The abovementioned factors should be implemented word-wide to attain high compliance of TB treatment.

2.5.3 Community and treatment factors

Non-compliance with TB treatment has many negative effects, not only for the individual patients and their families, but also for society, in the form of drug resistance. Another important factor worth evaluating is the discrepancy between national recommendations and the reality of TB control in the district which can be explained by non-observance of programme guidelines by local staff, insufficient training of staff, ineffective supervision
and monitoring from the provincial level and lack of collaboration between provincial, district and community levels (Johansson et al 1999:865).

Liefooghe, Suetens, Meilmans, Moran and De Munynck (1999:1073) investigated the impact of counselling on treatment adherence of TB patients in Sialkot, Pakistan. Patients assigned to the intervention group received counselling each time they came to the outpatient department (OPD) for a control visit or weekly in the TB ward, while patients assigned to the control group received standard care. Liefooghe et al (1999:1073) found that counselling was an effective approach to enhance treatment adherence.

Table 2.2 summarises the reasons for non-adherence to TB treatment.

Table 2.2 Reasons for non-adherence

<table>
<thead>
<tr>
<th>Health care factors</th>
<th>Treatment factors</th>
<th>Patient factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inaccessible service – long travelling distance and lack of transport</td>
<td>Long duration of treatment</td>
<td>Life stressors (lack of resources, unemployment, life events)</td>
</tr>
<tr>
<td>Expenses incurred attending hospital</td>
<td>Large pills, or large number of pills</td>
<td>Low educational level or illiteracy</td>
</tr>
<tr>
<td>Long waiting times</td>
<td>Side-effects</td>
<td>Health beliefs, including cultural beliefs and attitudes, stigma and community attitudes</td>
</tr>
<tr>
<td>Unfriendly staff</td>
<td>Disruption of daily life</td>
<td>Poor understanding about TB and treatment rationale</td>
</tr>
<tr>
<td>Inadequate confidentiality</td>
<td>Prescribing or dispensing errors</td>
<td>Substance abuse, including alcoholism</td>
</tr>
<tr>
<td>See different health workers each time</td>
<td>Cost</td>
<td>Patient may not believe need for treatment. Does not feel sick.</td>
</tr>
<tr>
<td>Poor communication style (use of jargon, patronising language, lack of information, no opportunity for questions, lack of participation in interview)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of interpreters or culturally appropriate staff</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other personal and social characteristics of providers</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: McLean (2003:7)
2.6 HIV-RELATED TB

Infection with HIV increases the risk of TB disease (Lonnroth & Raviglione 2008:486). The WHO (2000:1) reported a sharp increase in TB, with reported incidence rates increasing two- to four-fold in countries with a high prevalence of HIV, particularly those in Sub-Saharan Africa. Table 2.3 lists the adult HIV-related TB incidence rates in 2000.

Table 2.3 Co-infected adults (15-49 years) in WHO regions, 2000

<table>
<thead>
<tr>
<th>WHO region</th>
<th>Number of people co-infected with TB and HIV (thousands)</th>
<th>% of global total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>7979</td>
<td>70</td>
</tr>
<tr>
<td>Americas</td>
<td>468</td>
<td>4</td>
</tr>
<tr>
<td>Eastern Mediterranean</td>
<td>163</td>
<td>1</td>
</tr>
<tr>
<td>Europe</td>
<td>133</td>
<td>1</td>
</tr>
<tr>
<td>South-East Asia</td>
<td>2269</td>
<td>20</td>
</tr>
<tr>
<td>Western Pacific</td>
<td>427</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>11440</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>


At the end of 2002, an estimated 42 million people were living with HIV globally (Harries et al 2004:43). Sub-Saharan Africa remains the worst affected region, with an estimated 29.4 million people living with HIV/Aids. While sub-Saharan Africa always had a huge TB burden, the region experienced a phenomenal upsurge in the incidence of TB cases and deaths, largely due to the direct impact of the HIV/Aids pandemic. The HIV epidemic is considered the primary factor driving the TB epidemic threatening to overwhelm even effective TB control programmes in the region. An estimated 30% to 50% of all newly diagnosed TB cases are also infected with HIV and about 40% of all AIDS deaths in the region are due to TB (WHO/AFRO 2004:4).

2.7 CONCLUSION

This chapter discussed the literature review, which covered TB control, diagnosis and treatment; DOTS; adherence to TB medication, and factors influencing default of DOTS. The factors contributing to non-compliance were grouped into three categories, namely patient-related, health care, and community and treatment factors.

Chapter 3 describes the research design and methodology.
CHAPTER 3

Research design and methodology

3.1 INTRODUCTION

This chapter describes the research design and methodology, including the population and sample; data collection and analysis; reliability and validity, and ethical considerations.

3.2 PURPOSE OF THE STUDY

The purpose of the study was to identify the factors contributing to the high default rate of DOTS implementation in the Kwaebibrim district of Ghana despite the availability of free diagnostic and treatment services. Accordingly, the objectives of the research were to

- describe how TB patients in the Kwaebibirim district of Ghana understand the condition and the treatment of TB
- identify factors that contribute to the defaulting of DOTS implementation among TB patients in the Kwaebibirim district of Ghana

3.3 RESEARCH DESIGN

A research design is an overall plan for collecting and analysing data, including specifications for enhancing the internal and external validity of the study (De Vos et al 2002:137). A quantitative, cross-sectional, descriptive design was selected as most appropriate for this study.
3.3.1 Quantitative

In quantitative studies, researchers identify variables or concepts that can be collected and measured. The data produce precise numerical information, which can be understood as the empirical representation of the concepts (Neuman 2000:157).

Quantitative data can be divided into two distinct groups: categorical and quantifiable. Categorical data refer to data whose values cannot be measured numerically but can either be classified into sets according to the characteristics the researcher is interested in or placed in a rank order. These are descriptive data. Quantifiable data are those whose values are more precise than categorical as researchers can assign each data value a position on a numerical scale. Quantifiable data were used for this study (Bowling 2002:186).

A quantitative approach was chosen for this study because it enabled the researcher to identify variables, describe the characteristics of the population of interest and provided a rationale for the selected population. Data could be collected from a large sample within a short time since time was of essence.

3.3.2 Cross-sectional – a snapshot in time

Cross-sectional studies are done to examine the presence or absence of disease and the presence or absence of an exposure at a particular time. Thus prevalence of defaulting and not incidence is the focus (Grimes & Schulz 2002:57). This study described what the respondents knew and understood about TB and its treatment.

Bowling (2002:176) points out that cross-sectional studies have advantages and disadvantages. Cross-sectional studies use standardised methods, therefore:

- They are relatively economical in relation to time and resources.
- Many people can be surveyed relatively quickly.
- Standardised data are easily coded.
- They are flexible.
- A lot of information can be gathered during the course of the study.
At the same time, however, care is needed with the design of the research instrument. Moreover, they cannot be used to impute causality because it is difficult to establish cause and effect.

The researcher chose a cross-sectional study because of its relative economy of resources and time. All the respondents could be surveyed quickly and answers to the study objectives easily obtained.

3.3.3 Descriptive

Descriptive studies describe the phenomenon of interest and observed associations in order to estimate certain population parameters, for example, prevalence (Bowling 2002:174). This study described the respondents’ knowledge and understanding of TB and its treatment, which could lead to defaulting.

Figure 3.1 presents the research design and methodology of the study in a flow chart.

3.4 POPULATION AND SAMPLE

The population consisted of all smear-positive cases of TB in Kwaebibrim district of Ghana registered at the St. Dominic’s Hospital chest clinic in 2006 and 2007.

Sampling was not done as all smear-positive patients registered during the period 2006 and 2007 were used as respondents. Therefore the entire population was used. Some of the patients were defaulters.

Sampling or eligibility criteria are the characteristics essential for inclusion in the study. In this study, the respondents had to be male or female; residing in the Kwaebibirim district of Ghana; smear positive, and registered at the St Dominic’s hospital chest clinic for DOTS.

Due to the relatively small number, namely 142, all the patients were included. However, at the time of the interviews, 2 had died, 7 were out of the district, and 3 could not be traced, leaving a population of 130: defaulters (49) and non-defaulters (81).
Design methodology

Determine feasibility

Develop instruments

Select sample

Conduct pilot test

Revise instruments

Conduct research

Analyse data

Prepare report

Figure 3.1 Research flow chart

Source: Survey and questionnaire http://www.statpac.com
3.5 DATA COLLECTION AND DATA-COLLECTION INSTRUMENT

Data collection is “the precise, systematic gathering of information relevant to the research purpose or specific objectives, questions or hypothesis of a study” (Polit & Beck 2007:67). Data was collected by means of an interview schedule consisting of closed-ended questions based on the literature and the researcher’s experience. The researcher conducted a one-day briefing session with two research assistants from the School of Public Health on the objectives of the study, administration of the questionnaire and quality control issues relating to biases, fabricated data, missing data and ethical issues. The researcher and the two research assistants administered the interview schedule in face-to-face interviews with the respondents at the clinic or at home.

3.5.1 Development of the interview schedule

The researcher constructed the interview schedule for this study based on the literature review and objectives of the study (see annexure 4). The interview schedule consisted of closed-ended questions. A structured interview schedule involves the use of fixed (standardised) questions, and batteries of questions which are presented to all respondents in the same way, with no variation in question wording, and with pre-coded response choices (Bowling 2002:186).

The strength of structured interview schedules is the ability to collect unambiguous and easy to count answers leading to quantitative data for analysis. Interview schedules are relatively economical and large numbers of people can be included (Bowling 2002:187).

The main weakness of closed-ended questions is that the pre-coded response choices may not be sufficiently comprehensive and not all answers may be easily accommodated. Some respondents may therefore be compelled to choose inappropriate pre-coded answers that might not fully represent their views.

Bowling (2002:189) points out that there is always scope for bias, namely interviewer bias in interview studies, recall (memory) bias, and framing, in which respondents’ replies are influenced by the design (frame) of the pre-coded response choices.
The questionnaire for this study was developed according to the objectives of the study and covered the following aspects:

Section A: Patient-related factors that might contribute to defaulting of treatment of TB patients which included
- socio-demographic characteristics
- knowledge, attitude and perceptions of TB
- barriers to compliance of treatment

Section B: Health service related factors that might contribute to defaulting of treatment of TB patients

Section C: Community and treatment factors that might contribute to defaulting of treatment of TB patients

3.5.2 Pre-test

A pre-test is a trial run to determine whether the instrument is clearly worded and free from major biases and whether it solicits the desired information (Brink, van der Walt & van Rensburg 2006:94). A pilot study helps researchers to identify problems in the design of questions, sequencing of questions, or procedure for recording responses (Burns & Grove 2001:422).

The researcher and two research officers of the Health Research Unit of the Ghana Health Service pre-tested the questionnaires with 30 respondents who did not participate in the main study. The patients were selected from the chest clinic register of the Asamankese Hospital in the West Akyem district. The West Akyem district is an adjoining district with similar geo-ethnic and socio-economic characteristics as the Kwaebibirim district. The West Akyem and Kwaebibirim districts once belonged to the same district. Of the respondents, 14 were defaulters and 16 were non-defaulters.

Following the pre-test, the researcher modified questions that were ambiguous or not clear and expanded the section on treatment side effects and duration of treatment in order to elicit more comprehensive answers.
3.5.3 Data collection

The researcher and the two research assistants administered the interview schedules in face-to-face interviews with the respondents at the clinic or at home. Data collection lasted three weeks. Prior to the start of data collection, the District TB Coordinator contacted all the respondents (130) during their routine visits to the chest clinic or through the community health officers nearest to them, sought their consent and arranged a time for the interview. The first day the research team visited the District Health Directorate and the district assembly to explain the objectives of the study and answer any concerns. Patients who met the eligibility criteria were briefed on the purpose of the study, informed consent obtained (see annexure 3) and the interview schedule completed during their routine visit to the chest clinic. Consent forms were duly signed or thumb printed after the objectives and purpose of the study had been explained to the respondents in their mother tongue. Those who were not at the clinic were traced to their homes where the interview schedule was administered to them. Face-to-face interviews were conducted due to the low literacy rate among the respondents. The interview schedules were in English. The interviews were tape-recorded with the respondents’ consent to double check whether the given answers were recorded correctly. The interviews were conducted in the respondents’ preferred language, which in most cases was Akan. The respondents’ confidentiality was assured and the format of the interview explained to them. The respondents were allowed to ask questions before the interview. The interviewers read the questions and responses to the respondents and ticked their corresponding answers on the interview schedules. At the end of the interviews, the interviewers went through the answers for completeness and thanked the respondents. Interviews lasted an average of 45 minutes. The research team met in the evenings to verify the data collected during the day by going through the interview schedules and playing back selected tape recordings.

3.6 DATA ANALYSIS

Data analysis is the process of bringing order, structure and meaning to collected data. In quantitative research, analysis techniques include descriptive and inferential analysis. The analysis techniques implemented are determined primarily by the research objectives, questions, or hypothesis (Burns & Grove 1999:43). Descriptive analysis was used for this study. The respondents’ identification numbers matched their registration
numbers in the clinic register, which included defaulters. The interview schedules of defaulters were therefore easily identified for analysis.

The data had to be cleaned for analysis by checking for missing values and input errors, and that the total number of responses matched the total number of respondents for each question (Saunders et al 2007:238).

A statistician analysed the data using the SPSS program, version 10.0, and presented the results in tables and graphs (see chapter 4). This study used univariate statistics, which are descriptive statistics for the analysis or description of one variable, such as frequency distribution, statistics of central tendency (Bowling 2002: 285).

3.7 VALIDITY AND RELIABILITY

The quality of research and research instruments is determined by their validity and reliability. Validity and reliability are concerned with the quality of the data and appropriateness of the methods used in carrying out research (Cano 2008:5). It is important for quantitative data to be as precise and objective (detached) as possible.

3.7.1 Validity

Validity is the degree to which an instrument measures what it is supposed to measure. Validity concerns the soundness of the study’s evidence – whether the findings are unbiased, cogent and well-grounded (Polit & Beck 2008:196).

In this study, the researcher focused on face and content validity. Face validity refers to researchers’ subjective assessments of the presentation and relevance of the interview schedule, namely whether the questions appear to be relevant, reasonable, unambiguous and clear. The researcher established this by means of the pre-test.

Content validity refers to judgements (usually made by a panel) about the extent to which the content of the instrument appears logically to examine and comprehensively include, in a balanced way, the full scope of the characteristic or domain it is intended to measure (De Vos et al 2002:166). A panel consisting of one medical officer, one nurse from the field site of the School of Public Health, and one researcher each from the
Health Research Unit of the Ghana Health Service and the University of Ghana School of Public Health reviewed the final interview schedule.

3.7.2 Reliability

Polit and Hungler (1997:308) describe reliability as “the degree of consistency or dependability with which the instrument measures the attribute it is designed to measure. If the instrument is reliable, the results will be the same each time the test is repeated”. Reliability addresses how accurately researchers’ research methods and techniques produce data (De Vos et al 2002:168-169).

In this study, the researcher and research assistants’ varied field experience, training and authority, and the clearly stated purpose of the study further assured validity and reliability.

3.8 BIAS

Bias in information collection is a distortion in the collected data so that it does not represent reality (Bowling 2002:96). The researcher and assistants were well trained and experienced in interviewing and made every effort to eliminate acquiescence response set; evaluation apprehension, and interviewer, recall (memory), and social desirability bias.

Acquiescence response set refers to the fact that respondents will more frequently endorse a statement than disagree with its opposite depending on interviewer style. The researcher carefully constructed the interview schedule to prevent this source of bias.

Evaluation apprehension refers to anxiety generated in people by virtue of being tested. The interviewers overcame this by establishing rapport with the respondents and putting them at their ease.

The interviewers did not indicate any values or views and did not ask leading questions. Consequently, there was no pressure on the respondents to answer in a particular way.
Recall (memory) bias refers to people’s selective memories in recalling past events, experiences and behaviour. The researcher minimised this through recall of linked or associated events and limiting the period of recall.

Social desirability bias may exert a small but pervasive effect because people wish to present themselves at their best (Bowling 2002:96). This was prevented by the pre-test or pilot study, and by assuring the respondents of privacy and confidentiality.

3.9 ETHICAL CONSIDERATIONS

Ethics deals with matters of right and wrong. Collins English Dictionary (1991:533) defines ethics as “a social, religious, or civil code of behaviour considered correct, esp. that of a particular group, profession, or individual”. Accordingly, the researcher obtained permission to conduct the study and respected the respondents’ privacy and confidentiality.

3.9.1 Permission

The researcher applied for and obtained permission to conduct the study from the:

- Regional Director of Health Services and District Director of Health Services, Kwaebibrim (see annexure 2).
- District Chief Executive Kwaebibirim District Assembly.
- Medical Director: St Dominic’s Hospital, Akwatia, which houses the chest clinic.

The researcher submitted an interview schedule to the supervisors of the study as well as the Health Research Unit of the Ghana Health Service for approval (see annexure 4).

3.9.2 Informed consent

The researcher explained the nature and purpose of the study to the respondents; obtained their informed consent (see annexure 3), and emphasised that participation was voluntary, and that they had the right to withdraw from the study at any time without penalty (Bowling 2002:138).
3.9.3 Privacy and confidentiality

The interviews were conducted privately and the researcher assured the respondents that their information would be treated as strictly confidential. Only the researcher and those directly involved with the study would have access to the data.

3.10 CONCLUSION

This chapter described the research design and methodology, including the population, data collection and analysis, validity and reliability, and ethical considerations.

Chapter 4 presents the data analysis and interpretation.
CHAPTER 4

Data analysis and interpretation

4.1 INTRODUCTION

This chapter discusses the data analysis and interpretation. The objectives of the study were to

- describe how TB patients in the Kwaebibirim district of Ghana understand the condition and the treatment of TB
- identify factors that contribute to the defaulting of DOTS implementation among TB patients in the Kwaebibirim district of Ghana

4.2 POPULATION

A total of one hundred and forty-two TB patients were registered at St. Dominic’s Hospital chest clinic, which implements DOTS in the Kwaebibirim district. However, 2 had died, 3 could not be traced, and 7 had travelled outside the district, therefore only 130 respondents were interviewed. Of the 130 respondents, 49 were defaulters and 81 were non-defaulters.

4.3 DATA ANALYSIS

The data was analysed using the Statistical Package for Social Sciences (SPSS) program, version 10.0. Data was collected in face-to-face interviews, using an interview schedule. The interview schedule was divided into four sections (A to D) and consisted of forty questions (items). The data analysis is discussed according to the sections of the interview schedule. Data are presented to distinguish between defaulters and non-defaulters.
4.3.1 Section A: Respondents’ biographical information

Section A covered the respondents’ biographical information, which included age, gender, marital status, religious affiliation, educational level, and occupation.

Item 1: Respondents’ age (N=130)

The respondents were between 15 and 74 years old, with 70% (n=91) between 25 and 54. The mean age was 41.3 years and the highest frequency or mode was 35 to 44 (see table 4.1).

Table 4.1 Respondents’ ages (N=130)

<table>
<thead>
<tr>
<th>AGE GROUPS</th>
<th>F</th>
<th>X'</th>
<th>FX'</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 – 24</td>
<td>14</td>
<td>19.5</td>
<td>273</td>
<td>10.8</td>
</tr>
<tr>
<td>25 – 34</td>
<td>28</td>
<td>29.5</td>
<td>826</td>
<td>21.5</td>
</tr>
<tr>
<td>35 – 44</td>
<td>43</td>
<td>39.5</td>
<td>1698.5</td>
<td>33.1</td>
</tr>
<tr>
<td>45 – 54</td>
<td>20</td>
<td>49.5</td>
<td>990</td>
<td>15.4</td>
</tr>
<tr>
<td>55 – 64</td>
<td>15</td>
<td>59.5</td>
<td>892.5</td>
<td>11.5</td>
</tr>
<tr>
<td>65 – 74</td>
<td>10</td>
<td>69.5</td>
<td>695</td>
<td>7.7</td>
</tr>
<tr>
<td>∑f =130</td>
<td></td>
<td></td>
<td>5375</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Mean $\bar{x} = \frac{\sum fx}{N} = \frac{5375}{130} = 41.3$ i.e. 41.3 years

In Bangalore, India, Vijay, Balasangameswara, Jgannatha, Saroja and Kumar (2003:187) found a significantly higher proportion of defaulters were above the median age of 30. Veron et al (2004:139) maintain that supervision and support “should be age-specific and gender-sensitive”.

Item 2: Respondents’ gender (N=130)

Of all the respondents, 53.1% (n=69) were males and 46.9% (n=61) were females. Of the males, 43.5% (n=30) were defaulters and 56.5% (n=39) were non-defaulters, while of the females, 31.1% (n=19) were defaulters and 68.9% (n=42) were non-defaulters.

These findings concurred with Vijay et al (2003:187) who found a significantly higher default rate among males than females.
Item 3: Respondents’ marital status (N=130)

Of the respondents, 59.2% (n=77) were single, 20.8% (n=27) were married, 10.8% (n=14) were divorced, and 9.2% (n=12) were widowed. Figure 4.1 indicates the respondents’ marital status.

Figure 4.1  Respondents’ marital status

McLean (2003:8) found living alone associated with non-adherence.

Item 4: Respondents’ employment status (N=130)

Of the 49 respondents who were defaulters, only 26.5% (n=13) were employed while 73.5% (n=36) were unemployed. Amongst the non-defaulters, 66.7% (n=54) were employed while 33.3% (n=27) were unemployed. Figure 4.2 depicts the respondents’ employment status. In total therefore 51.5% (n= 67) of the respondents were employed and 48.5% (n=63) unemployed.
Problems such as unemployment, poor housing, and poverty can negatively impact on treatment adherence (Volmink et al 2000:1348). In rural Bangladesh, Ahmed, Thomson, Petzold and Kabir (2005:1) found socio-economic indicators the single most pervasive determinant of health-seeking behaviour.

**Item 5: Respondents’ occupation (N=130)**

Of the 13 defaulters who were employed, 23.1% (n=3) were traders; 7.7% (n=1) were public servants; 15.4% (n=2) were farmers, and 53.8% (n=7) were engaged in surface mining. The majority (92.3%; n=12), then, were self-employed. Of the 54 non-defaulters who were employed, 13% (n=7) were traders; 74% (n=40) were public servants; 5.6% (n=3) were farmers, and 7.4% (n=4) were in surface mining. Table 4.2 reflects the respondents’ type of occupation.

**Table 4.2  Respondents’ occupation**

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Defaulters (N=13)</th>
<th>Non-defaulters (N=54)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Trading</td>
<td>3</td>
<td>23.1</td>
</tr>
<tr>
<td>Civil/Public Servant</td>
<td>1</td>
<td>7.7</td>
</tr>
<tr>
<td>Farmer</td>
<td>2</td>
<td>15.4</td>
</tr>
<tr>
<td>Surface mining</td>
<td>7</td>
<td>53.8</td>
</tr>
<tr>
<td>TOTAL</td>
<td>13</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Item 6: Respondents' number of dependants (N=130)

Of the 130 respondents, only 5.4% (n=7) had no dependants. The remaining 94.6% (n=123) had between 1 and 8 dependants.

Item 7: Respondents' educational level (N=130)

Of the respondents, 96.9% (n=126) had obtained a secondary education or less and only 3.1% (n=4) had a tertiary education. Among the defaulters, 98% (n=48) had a secondary education or less and 2% (n=1) had a tertiary education. Among the non-defaulters, 96.3% (n=78) had a secondary education or less and 3.7% (n=3) had a tertiary education. This reflected the literacy rate in the district. Although most of the respondents had some schooling, it was not enough to enable them read and understand some of the questions.

Figure 4.3 shows the respondents' level of education.

![Figure 4.3 Respondents' level of education](image)

Item 8: Respondents' religion (N=130)

Of the respondents, 73.8% (n=96) were Christians, 23.1% (n=30) were Moslems, and 3.1% (n=4) were African Traditional religion followers. This indicated that the majority of
the respondents were not superstitious about the mode of transmission of the disease. Figure 4.4 shows the respondents’ religious affiliation.

![Figure 4.4 Respondents’ religion](image)

**Figure 4.4** Respondents’ religion

**Item 9: Respondents’ ethnicity (N=130)**

The majority of the respondents were Akan, namely 65.3% (n=32) defaults and 70.4% (n=57) non-defaulters. The Kwaebibirim district is populated mainly by indigenous Akans with settler communities of Ewe and Krobo extraction. A few other minorities are also to be found (GHS/KDHMT 2007:6). Table 4.3 depicts the respondents’ ethnic background.

**Table 4.3 Respondents’ ethnic background**

<table>
<thead>
<tr>
<th>Ethnic group</th>
<th>Defaulters</th>
<th>Non-defaulters</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Akan</td>
<td>32</td>
<td>65.3</td>
<td>57</td>
</tr>
<tr>
<td>Krobo</td>
<td>7</td>
<td>14.3</td>
<td>8</td>
</tr>
<tr>
<td>Ewe</td>
<td>5</td>
<td>10.2</td>
<td>12</td>
</tr>
<tr>
<td>Northern extraction</td>
<td>5</td>
<td>10.2</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>49</strong></td>
<td><strong>100.0</strong></td>
<td><strong>81</strong></td>
</tr>
</tbody>
</table>
4.3.2   Section B: Respondents’ knowledge and understanding of TB

Section B covered the knowledge and understanding of the respondents of TB as a disease.

Item 10: TB as infectious disease (N=130)

The respondents were asked whether TB was an infectious disease. Among the respondents, 91.4% (n=74) of the non-defaulters and only 65.3% (n=32) of the defaulters knew that TB was infectious. Moreover, 24.5% (n=12) of the defaulters and only 4.9% (n=4) of the non-defaulters said TB was not infectious. Finally, 10.2% (n=5) of the defaulters but only 3.7% (n=3) of the non-defaulters did not know that TB was infectious (see table 4.4).

Table 4.4   Respondents’ knowledge of infectiousness of TB

<table>
<thead>
<tr>
<th>TB infectious?</th>
<th>Defaulters</th>
<th></th>
<th>Non-defaulters</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Yes</td>
<td>32</td>
<td>65.3</td>
<td>74</td>
<td>91.4</td>
</tr>
<tr>
<td>No</td>
<td>12</td>
<td>24.5</td>
<td>4</td>
<td>4.9</td>
</tr>
<tr>
<td>Don’t know</td>
<td>5</td>
<td>10.2</td>
<td>3</td>
<td>3.7</td>
</tr>
<tr>
<td>Total</td>
<td>49</td>
<td>100.0</td>
<td>81</td>
<td>100.0</td>
</tr>
</tbody>
</table>

In Vietnam, Johansson, et al (1999:862) found inadequate knowledge of the disease and individual cost the main obstacles to treatment compliance.

Item 11: Signs and symptoms of TB (N=130)

The respondents were asked whether they knew the signs and symptoms of TB. Of the respondents, 71.6% (n=58) of the non-defaulters and only 14.3% (n=7) of the defaulters had a fair notion of the symptoms and signs of TB. At the same time, however, 85.7% (n=42) of the defaulters and 28.4% (n=23) of the non-defaulters had only a vague or no notion of the disease. Table 4.5 depicts the respondents’ level of knowledge of the signs and symptoms of TB.
Table 4.5 Respondents’ knowledge of symptoms and signs of TB

<table>
<thead>
<tr>
<th>TB symptoms and signs</th>
<th>Defaulters</th>
<th></th>
<th>Non-defaulters</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Fair notion ≤ 5 symptoms</td>
<td>7</td>
<td>14.3</td>
<td>58</td>
<td>71.6</td>
</tr>
<tr>
<td>Vague notion = 1-4</td>
<td>29</td>
<td>59.2</td>
<td>17</td>
<td>21.0</td>
</tr>
<tr>
<td>No notion = 0</td>
<td>13</td>
<td>26.5</td>
<td>6</td>
<td>7.4</td>
</tr>
<tr>
<td>Total</td>
<td>49</td>
<td>100.0</td>
<td>81</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The main symptom of pulmonary TB is a persistent cough for three weeks or more. In addition to a persistent cough, people with pulmonary TB usually have one or more of the following symptoms: chest pain, shortness of breath, weight loss, tiredness, fever, night sweats, loss of appetite, and coughing up blood. Bonsu et al (2003:7) emphasise the importance of knowing the symptoms.

Item 12: Causes of TB (N=130)

The respondents were asked what caused TB. Among the respondents, only 32.7% (n=16) of the 49 defaulters knew that germs caused TB while 64.2% (n=52) of the non-defaulters answered correctly. However, 22.4% (n=11) of the defaulters and 3.7% (n=3) of the non-defaulters thought it was caused by witchcraft.

![Figure 4.5 Respondents’ knowledge of causes of TB](image-url)
Tuberculosis (TB) is an airborne bacterial disease caused by Mycobacterium tuberculosis. Ait-Khaled and Enarson (2003:3) and Harries et al (2004:23) stress the importance of knowing and recognising the symptoms and method of transmission.

**Item 13: Spread of TB (N=130)**

The respondents were asked whether TB could spread from one person to another. Of the respondents, 73.5% (n=36) of the defaulters compared to 28.4% (n=26) of the non-defaulters either did not know or answered ‘No’. Only 26.5% (n=13) of the defaulters compared to 71.6% (n=58) of the non-defaulters answered correctly (see table 4.6).

**Table 4.6  Person-to-person spread of TB infection**

<table>
<thead>
<tr>
<th>Person-to-person spread</th>
<th>Defaulters</th>
<th>Non-defaulters</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Yes</td>
<td>13</td>
<td>26.5</td>
</tr>
<tr>
<td>No</td>
<td>27</td>
<td>55.1</td>
</tr>
<tr>
<td>Don’t know</td>
<td>9</td>
<td>18.4</td>
</tr>
</tbody>
</table>

**Item 14: Transmission of TB (N=130)**

Regarding how TB is transmitted, 76.5% (n=62) of the non-defaulters and only 22.4% (n=11) of the defaulters knew that TB was transmitted through TB patients’ coughing, spitting, and sneezing. By contrast, 53.1% (n=26) of the defaulters and 8.6% (n=7) of the non-defaulters erroneously thought that TB was spread through exposed food (see figure 4.6).
Ait-Khaled and Enarson (2003:3) emphasise that when patients with pulmonary TB “speak, and particularly when they cough or sneeze, they produce an aerosol of droplets from the bronchial tree, each of which contains a number of bacilli: these droplets are infectious”.

**Item 15: Curability of TB (N=130)**

The respondents were asked whether TB was curable (see table 4.7). Among the defaulters, 81.6% (n=40) knew that TB is curable while 95.1% (n=77) of the non-defaulters knew about the curability of TB. However, 14.3% (n=7) of the defaulters compared to only 3.7% (n=3) of the non-defaulters did not know. This agrees with the findings of Wandwalo and Morkve (2000:1043) who found that the majority of patients believed that TB was curable.

**Table 4.7 Curability of TB**

<table>
<thead>
<tr>
<th>TB curable</th>
<th>Defaulers</th>
<th>Non-defaulters</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Yes</td>
<td>40</td>
<td>81.6</td>
</tr>
<tr>
<td>No</td>
<td>2</td>
<td>4.1</td>
</tr>
<tr>
<td>Don’t know</td>
<td>7</td>
<td>14.3</td>
</tr>
</tbody>
</table>
Item 16: Prevention of TB (N=130)

With regard to the prevention of TB, 70.4% (n=57) of the non-defaulters and 24.5% (n=12) of the defaulters knew that TB could be prevented by means of vaccination (see figure 4.7). Wandwalo and Morkve (2000:1043) found that 50% of patients were not sure whether TB could be prevented, while 44% thought it could be prevented.

![Figure 4.7 Prevention of TB](image)

Item 17: Availability of TB treatment (N=130)

All the respondents (100.0%; n=130) knew that TB treatment was available at the chest clinic (see table 4.8).

**Table 4.8 Respondents’ knowledge of availability of TB treatment**

<table>
<thead>
<tr>
<th>Availability of TB treatment</th>
<th>Defaulters</th>
<th>Non-defaulters</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Yes</td>
<td>49</td>
<td>100</td>
</tr>
<tr>
<td>No</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Don’t know</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

In a study in Burkina Faso, Sanou, Dembele, Theobald and Macq (2004:1479) concluded that while patients knew of the availability of treatment at the facility, experiences at the health facility served as a barrier to access treatment.
Item 18: Free treatment at the hospital (N=130)

The Ghana Health Service/Kwaebibirim District Health Management Team (2007:15) stressed that in order to achieve the goals of the national TB control programme the diagnosis and treatment of TB is free in all government-designated institutions.

The respondents were asked which of the treatment of hypertension, TB, measles or malaria were free (see table 4.9). Of the respondents, 100.0% (n=81) of the non-defaulters but only 79.6% (n=39) of the defaulters knew that TB treatment was free at the chest clinic.

Table 4.9  Respondents’ knowledge of treatment cost

<table>
<thead>
<tr>
<th></th>
<th>Defaulters</th>
<th>Non-defaulters</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Hypertension</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>TB</td>
<td>39</td>
<td>79.6</td>
</tr>
<tr>
<td>Measles</td>
<td>5</td>
<td>10.2</td>
</tr>
<tr>
<td>Malaria</td>
<td>2</td>
<td>4.1</td>
</tr>
<tr>
<td>Don’t know</td>
<td>2</td>
<td>4.1</td>
</tr>
</tbody>
</table>

Johansson et al (1999:862-868) found that individual cost during treatment was among the main obstacles to compliance.

Item 19: Mortality from TB (N=130)

The respondents were asked whether a person could die from TB. Of the respondents, 78.5% (n=102) knew that death could result from TB infection. Only 88.9% (n=72) of the non-defaulters and 61.2% (n=30) of the defaulters knew that people could die from TB (see table 4.10).

Table 4.10  Respondents’ knowledge of mortality from TB

<table>
<thead>
<tr>
<th>TB mortality</th>
<th>Defaulters</th>
<th>Non-defaulters</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Yes</td>
<td>30</td>
<td>61.2</td>
<td>72</td>
</tr>
<tr>
<td>No</td>
<td>6</td>
<td>12.3</td>
<td>4</td>
</tr>
<tr>
<td>Don’t know</td>
<td>13</td>
<td>26.5</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>49</td>
<td>100.0</td>
<td>81</td>
</tr>
</tbody>
</table>
Bonsu et al (2003:1) emphasise that TB is a serious disease that leads to death if not treated adequately. About 3 million people die from TB every year “and the developing world bears most of the burden”.

**Item 20: Completion of treatment (N=130)**

Regarding the duration of treatment, 92.6% (n=75) of the non-defaulters and only 49.0% (n=24) of the defaulters answered correctly that it took eight months to complete treatment.

Bonsu et al (2003:19) and Migliori et al (2006:690) state that the initial intensive phase of treatment lasts for two months. The preferred continuation phases of treatment consist of isoniazid and rifampicin given for four months. Isoniazid and ethambutol given for six months is an alternative continuation phase regimen that may be used when adherence cannot be assessed. However, it is associated with a higher rate of failure and relapse, especially in patients with HIV infection (Bonsu et al 2003:19; Migliori et al 2006:690).

**Item 21: Complacency about treatment (N=130)**

The respondents were asked whether they felt complacent about their treatment. Of the respondents, 90% (n=120) answered ‘no’. Amongst the defaulters, 26.5% (n=13) answered that they were complacent while 73.5% (n=36) did not think they were complacent.

In a study of TB patients in an urban slum in Kenya, Kwamanga et al (2002:15) found that behaviour towards treatment is embedded in an intricate web of both social and psychological factors.

**Item 22: Distance from home to clinic (N=130)**

The respondents were asked whether they found the distance from their home to the clinic a problem. Of the non-defaulters, 74.1% (n=60) had no problem while 25.9% (n=21) had a problem with the distance they had to travel to the clinic. Amongst the
defaulters, the distance did not present a problem for 20.4% (n=10), but was a problem for 79.6% (n=39) of them.


**Item 23: Finance as a barrier to treatment (N=130)**

Among the non-defaulters, 12.3% (n=10) found finance a problem while 87.7% (n=71) did not. Among the defaulters, 91.8% (n=45) found finance a barrier to treatment and only 8.2% (n=4) did not. In item 22, 25.9% (n=21) non-defaulters and 79.6% (n=39) defaulters indicated that the distance to the clinic was a problem which might be as result of financial problems with the transport.

Johansson et al (1999:865) found financial constraints and the need to support the family among the main factors that encouraged non-compliance.

**Item 24: Ashamed of TB (N=130)**

Stigmatisation and shame over TB can negatively impact on adherence to treatment. Of the respondents, 72.8% (n=59) of the non-defaulters and 87.8% (n=43) of the defaulters felt ashamed of suffering from the disease (see table 4.11).

**Table 4.11  Respondents’ shame over suffering from TB**

<table>
<thead>
<tr>
<th>Ashamed</th>
<th>Defaults</th>
<th>Non-defaulters</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Yes</td>
<td>43</td>
<td>87.8</td>
</tr>
<tr>
<td>No</td>
<td>6</td>
<td>12.2</td>
</tr>
<tr>
<td>Total</td>
<td>49</td>
<td>100.0</td>
</tr>
</tbody>
</table>

4.3.3 Section C: Respondents’ health care factors

Section C covered the health-related factors influencing the defaulting of treatment of TB patients.

Veron et al (2004:139) maintain that to foster adherence, a patient-centred approach to administration of drug treatment, based on the patient’s needs and mutual respect between patient and provider, should be developed for all patients.

Item 25: Diagnosis of condition (N=130)

The respondents were asked whether they were informed of their condition when they were diagnosed and 108 responded positively. Of these respondents, 66.7% (n=72) of the non-defaulters and 33.3% (n=36) of the defaulters had been told they had TB.

In order to improve adherence to anti-TB drug regimen, it is necessary to explain to patients their condition, symptoms of the disease and treatment during patient counselling and education (Bonsu et al 2003:41).

Item 26: TB as diagnosis (N=108)

All the respondents (100%; N=108) who indicated that they were informed about the diagnosis, correctly indicated TB as the diagnosis they were told.

Wandwalo and Morkve (2000:1043) indicated that 78% of patients had some information on diagnosis.

Item 27: Admission to hospital (N=130)

Among the defaulters, 16.3% (n=8) were admitted to hospital after diagnosis while 28.4% (n=23) of the non-defaulters were admitted.

Nuwaha (1999:79-81) found that hospitalisation places a significant strain on family life, particularly if the patients are the breadwinners. Consequently, in the Rakai district of Uganda, unless patients are seriously ill, ambulatory treatment is widely practised.
Item 28: Instructions after discharge (N=130)

Of the 8 defaulters who were admitted to hospital only 12.5% (n=1) remembered being given instructions about the treatment, 25% (n=2) said they were not given instructions, and 62.5% (n=5) did not remember. Of the 23 non-defaulters who were admitted, 73.9% (n=17) remembered they were instructed, 8.7% (n=2) said no, while 17.4% (n=4) could not remember.

Every health worker must educate TB patients about their disease and its treatment. This is crucial to obtain the patient's cooperation for the entire treatment period (Bonsu et al 2003:41).

Item 29: Instructions given to the respondents (N=130)

All the respondents who answered ‘yes’ in item 28 (13.8%; n=18) indicated that they were told to take all the remaining drugs at home, come back in a month’s time for review, and the duration of treatment would be eight months.

Item 30: Consultation before treatment supporter assigned (N=130)

Table 4.12 Consultation before choice of treatment supporter

<table>
<thead>
<tr>
<th>Consulted</th>
<th>Defaulters</th>
<th>Non-defaulters</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Yes</td>
<td>11</td>
<td>22.4</td>
</tr>
<tr>
<td>No</td>
<td>38</td>
<td>77.6</td>
</tr>
<tr>
<td>Total</td>
<td>49</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 4.12 indicates that the majority of the respondents, namely 77.6% (n=38) of the defaulters and 70.4% (n=57) of the non-defaulters were not consulted on the choice of a treatment supporter. A total of 73% (n=95) of the respondents were therefore not consulted. This could have had an influence on adherence to the treatment.
Item 31: Service providers’ attitude (N=130)

The respondents were asked about their perceptions of the service providers (see figure 4.8). Of the respondents, only 28.6% (n=14) of the defaulters and 12.3% (n=10) of the non-defaulters perceived service providers’ attitude as friendly. However, 26.5% (n=13) of the defaulters and 4.9% (n=4) of the non-defaulters perceived service providers as unfriendly.

![Figure 4.8 Respondents’ perception of service providers’ attitude](chart.png)

In Colombia, Jaramillo (1998:140) found that the stigma attached to TB and the poor quality of health care services were strong barriers to early diagnosis as well as the main reasons for defaulting.

4.3.4 Section D: Respondents’ community and treatment factors

Section D covered community and treatment factors influencing the defaulting of treatment of TB patients.

At the communicable diseases unit at the Effia-Nkwanta Regional Hospital, Ghana, Dodor (2004:1338) found that patients appeared to be ashamed of their condition. This level of stigma was compounded by the perceived biased manner in which health professionals informed TB patients of their condition. Furthermore, the long duration of TB treatment took a great toll on patients because it impacted negatively on their duties to care for children and provide income for the family.
Item 32: Adverse effects of TB drugs (N=130)

The respondents were asked whether they had any side-effects from taking the drugs. Of the respondents, 24.5% (n=12) of the defaulters and 25.9% (n=21) of the non-defaulters reported having adverse effects from taking anti-TB drugs (see table 4.13).

Table 4.13 Respondents’ with adverse effects

<table>
<thead>
<tr>
<th>Side effects</th>
<th>Defaulters</th>
<th>Non-defaulters</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Yes</td>
<td>12</td>
<td>24.5</td>
</tr>
<tr>
<td>No</td>
<td>37</td>
<td>75.5</td>
</tr>
</tbody>
</table>

To the above question, 24.5% (n=12) of defaulters answered in the affirmative while 75.5% (n=37) gave a negative answer. The corresponding proportion among non-defaulters was as follows: 25.9% gave a positive answer and 74.1% said no. In both groups the majority of respondents did not have any adverse effects from anti-TB medication.

Item 33: Respondents’ experience of reaction (N=130)

The respondents were asked to describe the side-effects experienced. The leading side-effects experienced were nausea, vomiting and diarrhoea (see figure 4.9).

Figure 4.9 Respondents’ reaction to anti-TB drugs
Bonsu et al (2003:31) point out that patients sometimes experience adverse effects from anti-TB drugs. These are classified as minor or major. Minor adverse effects include anorexia, nausea, abdominal pain, joint pains, and a burning sensation in the feet while major side effects include itchy skin, skin rash, deafness, dizziness (vertigo and nystagmus), jaundice, vomiting, confusion, and visual impairment” (Bonsu et al 2003:31).

**Item 34: Duration of treatment (N=130)**

The respondents were asked their feelings on the duration of the treatment. Of the respondents, 81.5% (n=106), namely 91.8% (n=45) of the defaulters and 75.3% (n=61) of the non-defaulters viewed the duration of the treatment as a problem. This might have caused patients to default and become despondent.

**Item 35: Respondents’ supervisor of medication (N=130)**

The WHO/AFRO (2004:8) DOTS is more cost effective than self-administered treatment. TB treatment supporters’ main role, then, is to make sure that TB patients take the TB drugs regularly, on schedule, for the full duration of the treatment. They also need to listen to and encourage the patients as part of this support (AETC National Resource Centre 2006:3). The study found that the respondents were visited and supported mainly by nurses, followed by family members for DOTS implementation (see figure 4.10).

![Figure 4.10 Respondents’ categories of supervisors](image)
**Item 36: Choice of treatment supporter (N=130)**

The respondents were asked who made the choice of treatment supporter for them (see table 4.14). Only 24.7% (n=20) of the non-defaulters and 4.1% (n=2) of the defaulters were involved in the choice of treatment supporter. The health care providers decided on treatment supporters for 77.6% (n=38) of the defaulters and 61.7% (n=50) of the non-defaulters. The family made the choice for 12.2% (n=6) of the defaulters and 8.7% (n=7) of the non-defaulters. Finally, friends decided for 6.1% (n=3) of the defaulters and 4.9% (n=4) of the non-defaulters. This finding corresponds with item 30 where 73% (n=95) of the respondents indicated that they were not consulted before the choice of a treatment supporter.

**Table 4.14 Choice of respondents’ treatment supporter**

<table>
<thead>
<tr>
<th>Choice of treatment supporter</th>
<th>Defaulters</th>
<th>Non-defaulters</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Self</td>
<td>2</td>
<td>4.1</td>
</tr>
<tr>
<td>Health personnel</td>
<td>38</td>
<td>77.6</td>
</tr>
<tr>
<td>Family</td>
<td>6</td>
<td>12.2</td>
</tr>
<tr>
<td>Friend</td>
<td>3</td>
<td>6.1</td>
</tr>
<tr>
<td>Total</td>
<td>49</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**Item 37: Proximity of treatment supporter (N=130)**

Regarding the proximity of the treatment supporters, 69.1% (n=56) of the non-defaulters compared to only 36.7% (n=18) of the defaulters indicated that their treatment supporters were located close to them.

**Table 4.15 Proximity of respondents’ treatment supporter**

<table>
<thead>
<tr>
<th>Treatment supporter close by?</th>
<th>Defaulters</th>
<th>Non-defaulters</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Yes</td>
<td>18</td>
<td>36.7</td>
</tr>
<tr>
<td>No</td>
<td>31</td>
<td>63.3</td>
</tr>
<tr>
<td>Total</td>
<td>49</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Item 38: Frequency of respondents' treatment supporter observations (N=130)

The respondents were asked how often their treatment supporters observed them taking the medication (see table 4.16). Of the respondents, 59.3% (n=48) of the non-defaulters and 24.5% (n=12) of the defaulters were visited daily, and 46.9% (n=23) of the defaulters and 6.2% (n=5) of the non-defaulters were visited once a week.

Table 4.16 Frequency of respondents' treatment supporter observation of taking medication

<table>
<thead>
<tr>
<th>Supporter visits</th>
<th>Defaulters</th>
<th>Non-defaulters</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Once a week</td>
<td>23</td>
<td>46.9</td>
</tr>
<tr>
<td>Twice a week</td>
<td>6</td>
<td>12.3</td>
</tr>
<tr>
<td>3-4 times a week</td>
<td>8</td>
<td>16.3</td>
</tr>
<tr>
<td>Once a day</td>
<td>12</td>
<td>24.5</td>
</tr>
</tbody>
</table>

Bonsu et al (2003:5) emphasise that the key to stopping the TB epidemic is DOTS. Treatment supporters must watch their patients swallow each dose of medicine and monitor their patients’ progress until they are cured (Bonsu et al 2003:5).

Item 39: Respondents’ family support during treatment (N=130)

Regarding adequate family support during treatment, 66.7% (n=54) of the non-defaulters and 14.3% (n=7) of the defaulters indicated that they received family support. However, 85.7% (n=42) of the defaulters and 33.3% (n=27) of the non-defaulters indicated that they did not receive family support (see table 4.17).

Table 4.17 Adequate family support

<table>
<thead>
<tr>
<th>Family support</th>
<th>Defaulters</th>
<th>Non-defaulters</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Yes</td>
<td>7</td>
<td>14.3</td>
<td>54</td>
</tr>
<tr>
<td>No</td>
<td>42</td>
<td>85.7</td>
<td>27</td>
</tr>
</tbody>
</table>

Johannson, Long and Diwan (1999: 862-868) found that non-compliance with TB treatment was facilitated by the effect of procedures undergone at health facilities, financial constraints, and rejection by or lack of support from family.
Item 40: Stigmatisation of TB (N=130)

With regard to stigmatisation, the respondents were asked whether people were prevented from mixing with others if they had TB (see table 4.18). Of the respondents, 77.6% (n=38) of the defaulters and 72.8% (n=59) of the non-defaulters indicated that people with TB were prevented from mixing with the community. However, 27.2% (n=22) of the non-defaulters and 22.4% (n=11) of the defaulters indicated that people were not prevented from mixing with the community.

Table 4.18  Respondents’ perception of stigmatisation of TB

<table>
<thead>
<tr>
<th>TB stigmatised</th>
<th>Defaults</th>
<th>Non-defaulters</th>
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<td>%</td>
<td>N</td>
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<tr>
<td>No</td>
<td>11</td>
<td>22.4</td>
<td>22</td>
</tr>
</tbody>
</table>

This was emphasised in a study conducted by Jaramillo (1998:140) who found that the stigma attached to TB and the poor quality of health care services were strong reasons for defaulting.

4.4 CONCLUSION

This chapter discussed the data analysis and interpretation with reference to the literature review. The results indicated that no single factor alone contributed to default of DOTS implementation. This concurred with the literature.

Chapter 5 concludes the study, presents the findings and makes recommendations for practice and further research.
CHAPTER 5

Findings, limitations and recommendations

5.1 INTRODUCTION

Chapter 4 discussed the data analysis and interpretation with reference to the literature reviewed. This chapter concludes the study, summarises the findings, describes its limitations, and makes recommendations for practice and further research.

5.2 RESEARCH DESIGN AND METHODOLOGY

TB is a major public health problem in Ghana. The National TB Control Programme (NTP) launched in 1994 aimed to reduce transmission of the disease to a level where it is no longer a major public health problem (Bonsu et al 2003:2). Ghanaian government policy makes provision for free care to TB patients, including consultation, laboratory services and non-payment for drugs. Despite the availability of free diagnostic and treatment services, there is a 35% default rate of the DOTS programme in the Kwaebibirim district. The study sought to identify the factors that contribute to the defaulting of DOTS implementation in the Kwaebibirim district since the researcher could find no previous research on the topic in this district. The researcher adopted a quantitative approach, using a cross-sectional and descriptive design to investigate the current knowledge and attitudes of diagnosed smear-positive TB patients in the Kwaebibirim district of Ghana who were on DOTS during 2006 to 2007.

The research population consisted of all the TB patients registered for DOTS from 2006 to 2007 at the St. Dominic’s Hospital chest clinic. A total of 130 respondents participated in the study. The respondents consisted of 49 defaulters and 81 non-defaulters. All the respondents resided in the Kwaebibirim district.

Data was collected in face-to-face interviews by means of interview schedules with closed-ended questions. Due to the high illiteracy rate (45%) in the district, the researcher and two research assistants completed the interview schedules on behalf of the respondents. The interview schedule covered the respondents’ demographic and
socio-economic characteristics; knowledge of TB; perceptions of service providers’ attitudes, the health facility, and stigmatisation, and effects of medication and treatment management.

5.3 FINDINGS

The findings revealed the following patient-related factors which could influence the defaulting of treatment:

The study found that the respondents were between 15 and 74 years old, with 70% (n=91) of TB patients between 25 and 54. Of the respondents, 53.1% (n=69) were males and 46.9% (n=61) were females. Of the males, 46% (n=30) were defaulters and 54% (n=39) were non-defaulters, while of the females, 31.1% (n=19) were defaulters and 68.9% (n=42) were non-defaulters. In the UK, Peate (2004:540-545) found that men were often unwilling to access healthcare services and took a lot of risk with their health.

The majority of the respondents were single, divorced or widowed. Only 20% (n=27) of respondents were currently married. Furthermore, of the 130 respondents, only 5.4% (n=7) had no dependants. The remaining 94.6% (n=123) had between 1 and 8 dependants. Of the 49 respondents who were defaulters, only 26.5% (n=13) were employed while 73.5% (n=36) were unemployed. Amongst the non-defaulters, 66.7% (n=54) were employed while 33.3% (n=27) were unemployed. The relatively high number of unemployed respondents points to the general poverty level amongst TB patients. Those who were employed were mainly government employees: civil and public servants. Private employers might not be willing to employ them or discharged them on health grounds. The findings are further discussed according to the objectives of the study.

5.3.1 Describe how patients in the Kwaebibirim district of Ghana understand the condition and treatment of TB

The findings indicated that the majority (71.6% of non-defaulters and only 14.3% of the defaulters) of the respondents knew the signs and symptoms of TB; that TB is an
infectious disease that is curable; of the availability of treatment at the chest clinic, and 
that people could die from TB.

At the same time, however, many of the defaulters did not know that germs caused TB, 
how TB was transmitted, and that vaccination prevented TB. Several of the defaulters 
were superstitious about the disease and thought that it was caused by witchcraft. 
Moreover, only 79.6% of the defaulters knew that the chest clinic provided free 
treatment for TB. This could have led to the perception of the high cost of treatment and 
interruption of treatment for economic reasons. Only 49% of the defaulters knew that it 
took eight months to complete the treatment.

Regarding distance, 25.9% (n=21) of the non-defaulters and 79.6% (n=39) of the 
defaulters had a problem with the distance they had to travel to the clinic.

The study found that 12.3% (n=10) of the non-defaulters and 91.8% (n=45) of the 
defaulters found finance a barrier to treatment. Most of them were unemployed and 
therefore poor. Bock, et al (2001:97) found that TB patients feared employers would 
discover that they had TB and consequently dismiss them from work with the attendant 
effects on adherence. Bock et al (2001:96-98) found that financial incentives improved 
adherence to treatment.

The findings revealed that 72.8% (n=59) of the non-defaulters and 87.8% (n=43) of the 
defaulters felt ashamed of suffering from the disease and perceived that there was 
stigma in the community. However, it could not be conclusively concluded that this 
played a dominant role in non-adherence to treatment, as there was little difference in 
response between the defaulters and the non-defaulters.

5.3.2 Identify the factors that contribute to the defaulting of DOTS implementa-
tion among TB patients in the Kwaebibirim district of Ghana

It was found that not all the respondents remembered being told of the diagnosis and a 
minority were initially managed as in-patients. Of those admitted to hospital, only one 
remembered being given instructions upon discharge. This could indicate that some TB 
patients leave hospital without receiving the requisite instructions. Failure to give
instructions could impact negatively on the course of treatment and treatment completion.

The respondents were asked their perceptions of the service providers (see figure 4.8). Of the respondents, only 28.6% (n=14) of the defaulters and 12.3% (n=10) of the non-defaulters perceived service providers’ attitude as friendly. However, 26.5% (n=13) of the defaulters and 4.9% (n=4) of the non-defaulters perceived service providers as unfriendly. However, 82.7% (n=67) of the non-defaulters and 44.9% (n=22) of the defaulters found the service providers indifferent. Unfriendly and indifferent attitudes could turn patients away to avoid embarrassment. In Colombia, Jaramillo (1998:140) found that the stigma attached to TB and the poor quality of health care services were strong barriers to early diagnosis as well as the main reasons for defaulting.

The majority of the respondents, namely 77.6% (n=38) of the defaulters and 70.4% (n=57) of the non-defaulters, were not consulted on the choice of a treatment supporter. An apparent lack of rapport between clients and caregivers increases the likelihood of treatment interruption. Non-involvement of patients in the management of treatment easily results in non-adherence to treatment regimens.

The respondents were asked whether they had any side-effects from taking the drugs. Of the respondents, 24.5% (n=12) of the defaulters and 25.9% (n=21) of the non-defaulters reported having adverse effects from taking the TB medication. This emphasised the importance of communication between patients and caregivers in promoting knowledge of side-effects and dealing with adherence to treatment.

5.4 LIMITATIONS OF THE STUDY

The researcher identified the following limitations in the study:

- The study was restricted to the Kwaebibirim district of Ghana. Accordingly, the findings cannot be generalised to other districts or the whole country.
- The use of structured interview schedules prevented the researcher from probing certain aspects of patient behaviour and attitudes.
- The population for this study was generated from the health facility. TB patients not registered at the clinic but residing in the district were therefore not included.
5.5 RECOMMENDATIONS

Based on the findings, the researcher makes the following recommendations for practice and further research.

5.5.1 Practice

The researcher recommends that the Ministry of Health and District Health Management Team

- Develop and implement patient-centred interventions that encourage shared decision-making regarding treatment. Given the relatively low level of literacy, efforts should be made to foster and improve patient autonomy in the treatment process.
- Provide ongoing (in-service) training to health staff to improve and upgrade their competencies with regard to health education and communication skills.
- Strengthen patient support, and community advocacy programmes aimed at eradicating the stigma associated with the disease. Emphasise the particular needs of individual patients and tailor the role of support systems to their needs.
- Plan interventions to reduce the influence of poverty and gender on patients and their treatment adherence by organising economic packages for patients in need.

5.5.2 Further research

The researcher recommends the following topics for further research:

- A qualitative investigation into the factors responsible for defaulting of patients on TB treatment.
- Factors responsible for defaulting on TB treatment in Ghana.
- Service providers’ experiences and perceptions of factors impacting on TB treatment default.
- Service providers’ views on improving TB treatment adherence.
5.6 CONCLUSION

This study confirmed that TB patients’ knowledge and perceptions, contribute to default of DOTS implementation in the Kwaebibirim district in particular. Moreover, compliance with treatment in the Kwaebibirim district is a complex behavioural issue involving different factors. To ensure the success of interventions to reduce the default rate of DOTS implementation, a holistic view must be taken of all these factors.

The findings should help the MOH and DHMT design patient-centred approaches in implementing DOTS programmes. Finally, the findings should be relevant in designing TB advocacy programmes in the community, and thereby eventually lead to a reduction in the default rate of DOTS implementation as well as the numbers of MDR TB.
BIBLIOGRAPHY


GHS/KDHMT – see Ghana Health Service/Kwaebibirim District Health Management Team.

Ghana Health Service/Kwaebibirim District Health Management Team. 2007. *Annual report*. Kade, Ghana:


WB – see World Bank.

WHO – see World Health Organization.


ANNEXURE 1

Permission requested to conduct research
ANNEXURE 2

Permission granted to conduct research
ANNEXURE 3

Informed consent form
ANNEXURE 4

Data collection tools
INFORMED CONSENT FORM

I…………………………………………………………………………………………have understood the aims and objectives of this study which have been explained to me in English/Akan/Ewe/Krobo.

I also understand and hereby give my consent that my participation is voluntary and if at any time I feel unable to continue participating I can withdraw without giving reasons for doing so. I understand and do believe that my subsequent withdrawal will be without prejudice to my status as a patient in the hospital.

I also understand and agree to same that no financial reward is due me by my participation in the study.

It has been explained to me the extent to which anonymity and confidentiality can be assured, as well as the mode of dissemination of findings from the study. Having understood the foregoing I do hereby agree to enroll and participate in the study.

Signature/Thumbprint of Respondent…………………………………………………………

Date…………………………………………..

Witness/Research Assistant……………………………………………………………………

Date………………………………………….
ANNEXURE 4

DATA COLLECTION TOOLS

QUESTIONNAIRE

Factors contributing to the high default rate of the DOTS system in the Kwaebibirim District of Ghana.

SECTION A: PATIENT-RELATED FACTORS

Socio-demographic characteristics

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
<th>Response</th>
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<tbody>
<tr>
<td>1. Age</td>
<td>15 – 24</td>
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<tr>
<td></td>
<td>25 – 34</td>
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<td>45 – 54</td>
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<td></td>
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<td>5</td>
</tr>
<tr>
<td></td>
<td>65 – 74</td>
<td>6</td>
</tr>
<tr>
<td>2. Sex</td>
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</tr>
<tr>
<td></td>
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<td>Widowed</td>
<td>3</td>
</tr>
<tr>
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<td>Divorced</td>
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<td></td>
<td>Unemployed</td>
<td>□</td>
</tr>
<tr>
<td>5. Occupation</td>
<td>Trading</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Civil/Public Servant</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Farmer</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Surface mining</td>
<td>4</td>
</tr>
</tbody>
</table>
6. How many people depend on you for a living?
   1 – 2  1
   3 – 4  2
   5 – 6  3
   >6    4

7. Educational Background:
   None ........................................1
   Primary .....................................2
   Secondary ..................................3
   Tertiary ....................................4

8. Religion:
   Christian ....................................1
   Traditional ..................................2
   Moslem ....................................3

9. Ethnicity:
   Akan ........................................1
   Krobo .......................................2
   Ewe ..........................................3
   Northern extraction .....................4

Knowledge, Attitude, Perceptions of TB
   Causes and Transmission of TB

10. Is TB an infectious disease?
    Yes □ 1
    No □ 2
    Don’t know □ 3
11. Which of the following are signs and symptoms of TB?
   
   - Cough .............................. 1
   - Fever/night sweat .................. 2
   - Chest pains ......................... 3
   - Hemoptysis (coughing blood) .... 4
   - Weight loss .......................... 5
   - Tiredness ............................ 6
   - Loss of appetite .................... 7
   - Others ............................... 8
   - Don’t know ........................... 9

12. What causes TB?
   
   - Germs ............................... 1
   - Cigarette smoking .................. 2
   - Alcohol drinking .................... 3
   - Witchcraft ........................... 4
   - Inherited ............................ 5
   - Don’t know ........................... 6

13. Can TB spread from one person to another?
   
   - Yes...................................... 1
   - No........................................ 2

   (if answer is No. proceed to question 11)

14. How is TB transmitted?
   
   a. Through cough, spitting, sneezing form TB patients .......... 1
   b. Through exposed food ........................................ 2
   c. Through shaking of hands ..................................... 3
   d. Don’t know .................................................. 4
Curability and prevention of TB

15. Is TB curable? Yes [ ] 1 No [ ] 2 Don’t know [ ] 3

16. How can TB be prevented?
   - Good hygiene [ ] 1
   - Nutrition [ ] 2
   - Taking anti-tuberculosis drugs [ ] 3
   - Vaccination [ ] 4
   - Isolation of TB patients [ ] 5

17. Is TB treatment available in the district hospital? Yes [ ] 1 No [ ] 2 Don’t know [ ] 3

18. What treatment is given free at the health centre?
   - Hypertension [ ] 1
   - TB [ ] 2
   - Measles [ ] 3
   - Malaria [ ] 4
   - Don’t know [ ] 5

19. Can a person die of TB? Yes [ ] 1 No [ ] 2 Don’t know [ ] 3

20. How long does it take to complete treatment?
   - Two weeks [ ] 1
   - Eight months [ ] 2
   - Ten months [ ] 3
   - When you are feeling better [ ] 4
   - Don’t know [ ] 5

21. Were you complacent during treatment, which could have led to default? Yes [ ] 1 No [ ] 2
22. Was the distance from home to clinic a problem to you?
   Yes [ ] 1    No [ ] 2

23. Was finance a barrier to you during treatment?
   Yes [ ] 1    No [ ] 2

24. Are you ashamed of the fact that you are suffering from TB?
   Yes [ ]    No [ ]

**SECTION B: HEALTH CARE FACTORS**

25. Have you ever been told of the diagnosis of your condition?
   Yes [ ] 1    No [ ] 2    Don’t remember [ ] 3

26. If No, proceed to question 29, if yes, what were you told?
   Malaria [ ] 1    Measles [ ] 2    Cancer [ ] 3    TB [ ] 4    Others [ ] 5

27. Were you admitted to hospital after diagnosis?
   Yes [ ] 1    No [ ] 2

28. Were you given instructions after your discharge?
   Yes [ ] 1    No [ ] 2    Can’t remember [ ] 3

29. If yes, what instructions were you given?

   To take all the remaining drugs at home, and not to come back for review [ ] 1
   To keep drugs and come back after one (1) month for review [ ] 2
   To take all the remaining drugs and come in a month’s time for review. [ ] 3
   Also informed that the duration of TB treatment will be eight (8) months? [ ] 4
30. Were you consulted before the treatment supporter was assigned?
   Yes  [ ]  No  [ ]

31. How do you perceive the attitude of service providers towards you?
   Friendly  [ ]  Indifferent  [ ]  Unfriendly  [ ]

SECTION C: COMMUNITY AND TREATMENT FACTORS

32. Did you have any adverse effect from the anti-TB drugs?
   Yes  [ ]  No  [ ]

33. If yes, what did you experience?
   Nausea and vomiting  [ ]
   Rashes  [ ]
   Drowsiness  [ ]
   Deafness  [ ]
   Diarrhoea  [ ]

34. Did the duration of treatment pose a problem to you during treatment?
   Yes  [ ]  No  [ ]

35. Who supervises you when you take your medication?
   Family  [ ]  Friends  [ ]  Nursing staff  [ ]  Medical staff  [ ]

36. Who chose the person as your treatment supporter?
   Self  [ ]  Health personnel  [ ]  Family member  [ ]  Friend  [ ]

37. Does your treatment supporter stay in your vicinity?
   Yes  [ ]  No  [ ]
38. How often does your treatment supporter observe as you take your medication.
   Once a week □  Twice a week □  3-4 week □  Once a day □

39. Did you receive adequate family support during treatment?
   Yes □ 1  No □ 2

40. In this community are people prevented from mixing with others if they have TB?
   Yes □  No □

THANK YOU