DETERMINANTS OF TREATMENT SEEKING BEHAVIOUR OF BURULI ULCER (BU) PATIENTS: A CASE STUDY OF ATWIMA NWABIAGYA DISTRICT IN THE ASHANTI REGION OF GHANA
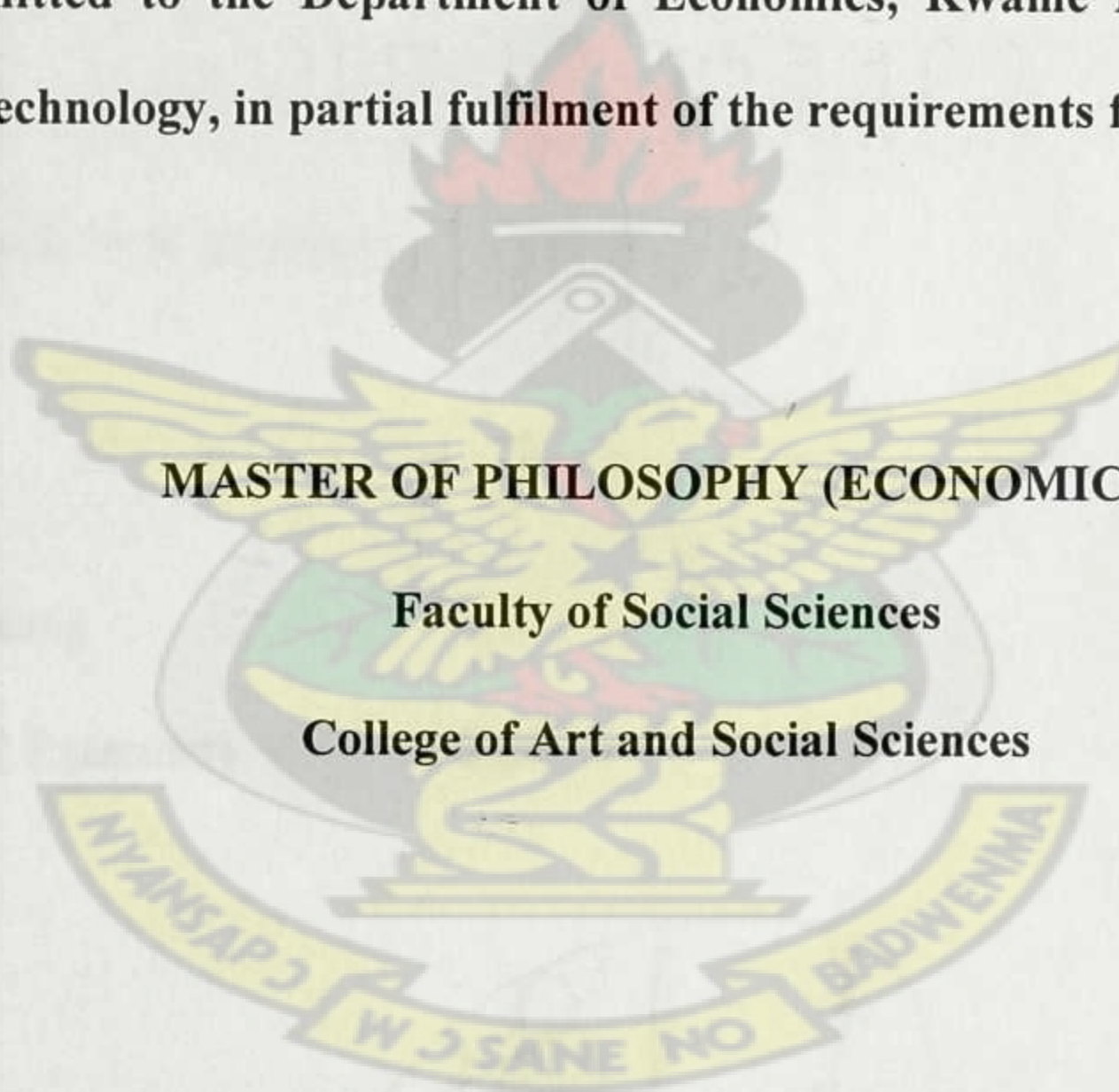
BY

PAULINE SOBIESUO, BA (Hons.) Economics

KNUST

A thesis submitted to the Department of Economics, Kwame Nkrumah University of Science and Technology, in partial fulfilment of the requirements for the degree of

MASTER OF PHILOSOPHY (ECONOMICS)

Faculty of Social Sciences

College of Art and Social Sciences

MAY, 2013

DECLARATION

I hereby declare that this thesis herein summited in partial fulfilment of the requirements for the award of the Master of Philosophy (Economics) degree is my own work and has been dully undertaken under supervision except where due acknowledgement has been made in the text.
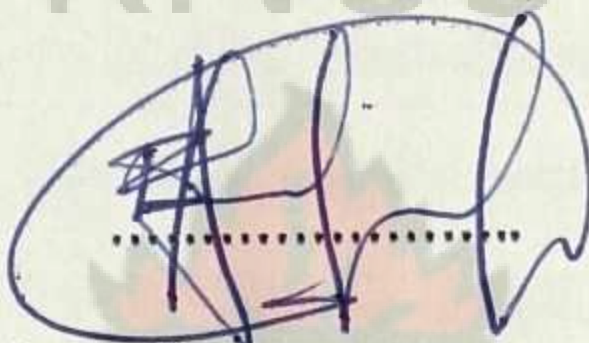
SOBIESUO, Pauline 22/10/13

(Index No.: PG5543011)   Signature   Date

Certified by:

Dr. (Sr.) Eugenia Amporfu 23/10/13

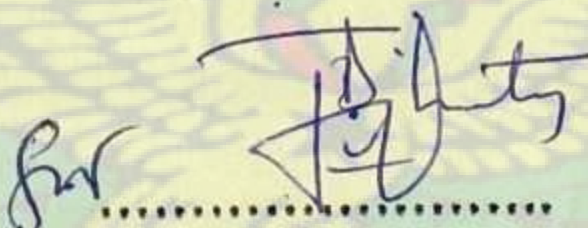(Supervisor/First Internal Examiner)   Signature   Date

Certified by:

Mr. Kwaku Boateng 23/10/13
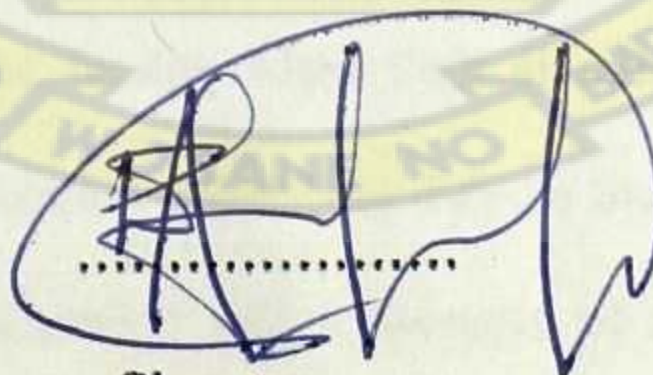
(Second Internal Examiner)   Signature   Date

Certified by:

Dr. (Sr.) Eugenia Amporfu 28/10/13

(Head of Department)   Signature   Date

ii

ABSTRACT

Mycobacterium Ulcerans *(MU)* popularly known as Buruli Ulcer (BU) is the third most common mycobacterial disease after tuberculosis and leprosy. The source and mode of transmission remain unknown, leaving early and timely treatment of affected persons as a sole option to manage the disease and reduce cost of treatment. Despite free medical treatment at the treatment centres, most affected persons seek late treatment which renders them incapacitated. Clarifying the socio-economic determinants of early and late treatment in affected areas will serve as a directive for public health policy in managing the disease to minimise deformities. This study was carried out in Nkawie Nwanbianya, an endemic district in Ashanti region to ascertain the factors determining the treatment seeking behaviour of patients at the Nkawie Nwanbiaya district hospital. Structured questionnaires were used to gather data. Out of 190 patients sampled for the study, 134 BU patients sought late treatment and the remaining reported early for treatment per the WHO clinical classification of the disease. Logistic regression was used to determine factors, which influenced patients' treatment-seeking behaviour at the facility. All economic determinants in the model; income, transport cost and travel time significantly influenced treatment behaviour at the facility. Another principal finding of the study is that prior knowledge of debilitating effects of delayed treatment is crucial in reducing morbidity. Patients who used herbal medicine or home remedy as first therapy of treatment sought treatment at the facility when their situation deteriorated. With the current increase and spread in cases, education should not only be focused in endemic areas, as it is the current practice. Nationwide education and awareness of the disease will help reduce its morbidity to the barest minimum. To prevent further impoverishment of these communities, government should give priority to endemic areas when designing and implementing pro-poor programmes such as the Livelihood Against Empowerment Programme (LEAP).
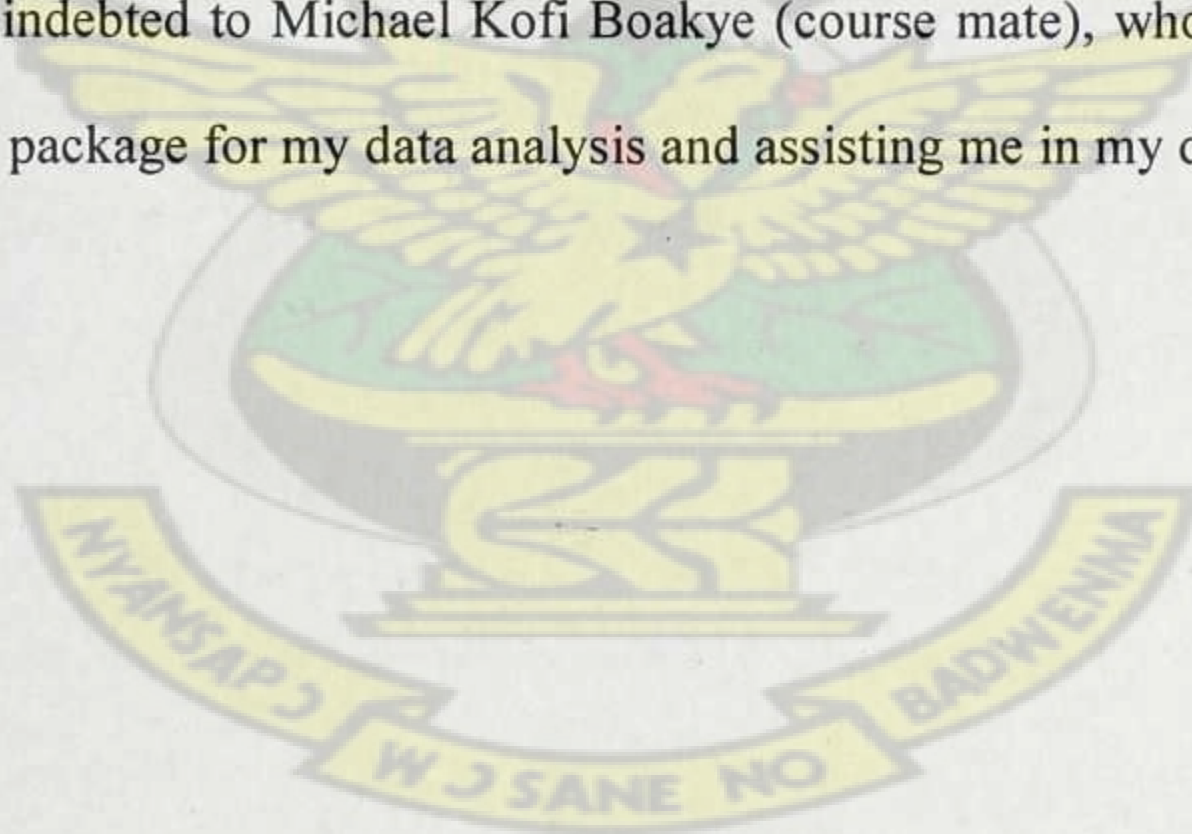
ACKNOWLEDGEMENT

DEDICATION

This study is dedicated to my wonderful parents, Mr and Mrs Cletus Sobiesuo, my uncle in the person of Prof. Andrew Sobiesuo and my husband, Dr. Richard B. Nyuur.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS AND ABBREVIATIONS

BU   ------------ Buruli Ulcer

HSB ---------- Health Seeking Behaviour

LEAP --------- Livelihood Empowerment Against Poverty

MDGs --------Millennium Development Goals

MU   ------------ Mycobacterium Ulcereans

NBUCP------ National Buruli Ulcer Control Programme

NHIS --------- National Health Insurance Scheme

WHO-------- World Health Organisation

CHAPTER ONE

INTRODUCTION

1.0 Background

Over the years much attention and focus has been on few diseases that perhaps are known to have higher mortality rates, but to the neglect of other diseases like Buruli ulcer that equally have devastating effects on the affected persons and their countries. Manderson et al, (2009) for instance note that the level of attention on the 'big three' tropical diseases; HIV/AIDS, tuberculosis (TB) and malaria; usually over shadow the devastating effects of a group of diseases commonly referred to as Neglected Tropical Diseases (NTDs) on health and poverty. This they suggest is partly due to their high mortality rates in contrast to NTDs, which have relatively low mortality rates , but high incidences of disability, disfigurement and social isolation, and thus high disease burdens. These neglected tropical diseases (NTDs) are a group of thirteen major infections caused by parasitic worms, protozoa or bacteria which affects the world's poorest population in Sub-Saharan Africa, Asia and Latin America (Hotez et al, 2007; Conteh et al., 2010). They include ascariasis, hookworm infection, trichuriasis, lymphatic filariasis, onchocerciasis, dracunculiasis, schistosomiasis, Chagas' disease, human African trypanosomiasis, leishmaniasis, Buruli ulcer, leprosy, and trachoma.

Neglected tropical diseases affect mostly people living in remote rural areas, urban slums or conflict zones that are characterised by poor sanitation, lack of portable water and essential medicines (Liese et al, 2010; Aagaard-Hansen and Chaignat (…)). For instance, BU affects mostly poor people who live near rivers or wet lands (WHO, 2012). Beyond their negative impact on health, NTDs contribute to an on-going cycle of poverty and stigma that leaves people unable to work, go to school or participate in family and community life (Kariuki et al,

1

2011). They are often referred to as 'poverty promoting chronic infectious diseases' as they are prevalent in poor regions, and tend to deepen poverty (Neglected Tropical Disease Coalition,.).

Mycobacterium Ulcerans (MU) commonly known as Buruli Ulcer (BU) is the third most common mycobacterial disease of humans after tuberculosis and leprosy, which leads to severe disfiguring of the skin (WHO, 2000). Cook, a physician at Mengo Hospital in Kampala in 1897, reported the first suspected cases and this was later followed by a clinical confirmation by MacCallum among patients from the Bairnsdale area near Melbourne, Australia in 1948. In the early 1960s, many cases occurred in the Buruli County (Now known as Nakasongola District) near Lake Kyoga in Uganda, giving rise to the most widely used name for the disease- Buruli ulcer, though in Southern Australia, it is known as Bairnsdale ulcer. The disease usually begins with a painless nodule or papule in the skin, which, if left untreated, leads to massive skin ulceration (Asiedu et al., 1998; WHO, 2000). According to the clinical case definition of the World Health Organization (WHO), the pre-ulcerative stage includes nodules, plaques, or edema. However the mode of transmission up to date remains enigmatic (Werf et al.2005) of the disease is unclear, though aquatic insects have been suspected as a, a vector of *M. ulcerans* (Marsollier et al, 2002). Case control studies among people living in endemic areas reveals that there is a striking association of the disease with stagnant and slowly flowing water bodies (Debacker et al.,2006;Pouillot et al., 2007; Raghmathan et al., 2005 ; Aiga et al.,2004 Duker et al., 2004).

Buruli ulcer has been reported from 33 countries in Africa, Asia, South America and the western Pacific. The disease commonly affects poor people who live near rivers or wetlands (WHO, Global Buruli Ulcer Initiative 2000). Although the disease affects all age groups, children under the age of 15 years (2–14 years) are predominantly affected (WHO, 2004). The WHO (2012) further reveals that 5000 - 6000 cases are reported annually with most cases

2

occurring in Sub-Saharan Africa. Since its large occurrence in Uganda in the early 1960's and late 1970's, the disease has in recent times, emerged dramatically in West Africa, particularly in Ghana, Benin and Cote D'Ivoire (Werf et al., 1999).This prompted the action of WHO to organise the first conference on BU in Yamoussokor in 1998, which led to the Global Buruli Ulcer Initiative.

The first case of Buruli ulcer in Ghana was reported in the Greater Accra Region in 1971 with additional cases along the tributaries of the Densu River. In 1989, 96 cases were described in the Asante Akim North District of the Ashanti region (Werf et al., 1989). Its increasing prevalence in Ghana has seen the country ranked the second endemic country only to Cote D'Ivoire globally (WHO, 2012). Prevalence rate in endemic districts in Ghana is reported to be about 150 per 100,000 persons (Amofah et al., 2002 Werf et al., 1999). In 2010, the number of reported BU cases in the country was 1,048 while Cote D'Ivoire recorded over 2,000 cases, though there is considerable under-reporting(WHO, 2012). The current annual average BU cases in the country 1000. Affected regions in Ghana are Brong Ahafo, Ashanti, Eastern, Greater Accra, and Western with the most affected districts being Amansie Central, Amansie West and Ga West (Etuaful, 2003). Amansie Central district records a monthly average of 50 new cases, ranking third in national prevalence rate (myjoyonline, September 21, 2012). According to the Dr. Edwin Ampadu, more than 11,000 people have been affected between 1993 and 2011.

Though the disease is a treatable, it is the 'most' neglected tropical disease in Ghana due to the little attention given to the disease in terms of public health programmes in the country (Abayie H.2011 Daily Guide, November 19, 2011). Early detection and treatment reduces the disability and deformity such as the amputation of a leg or arm, joint contracture associated with the disease, but most affected people do not seek treatment early (Asiedu et.al, 1998). Public health

3

programmes recommend people seek early treatment, but this has had little impact on the endemic communities. Cost of treatment, social and cultural beliefs and social cultural factors, are obstacles to early medical treatment (Ackumey et al., 2011; Mulder et al., 2008; Debacker et al., 2004; Asiedu et al., 1998; Ackumey et al., 2012). It has been revealed that combination of antibiotics, namely rifampicin and streptomycin together with surgery yields good treatment outcomes for affected persons who seek early treatment (Amofah et al., 1998; WHO, 2004; Etuaful et al., 2005; Adu et al 2011).

1.1 Problem Statement

BU cases are currently on the rise in Ghana, with the country ranking as the second endemic country in the world after Cote D'Ivoire (WHO, 2012). The reason for the spread of the disease remains unclear, especially in Ghana. On the average more than 1000, cases are recorded annually, though large underreporting exists. The rapid increase in cases in the endemic areas therefore poses a further strain on health resources in the country. In the absence of a proven strategy for preventing infection unlike the case of malaria and other tropical diseases, control of Buruli Ulcer (BU) relies on efficient health services to prevent progression of pre-ulcerative conditions (Ackumy et al., 2011).

Public health programmes recommend that patients report early at health facilities to reduce cost of treatment for both patients and health facilities. Delay in treatment lead to permanent deformity and disability even after treatment. If cases are detected early, more than 80% of people could be treated without the need for hospitalization, surgery and without any disability (WHO, 2012). This means that if affected individuals report early at health facilities for treatment, it will not only reduce cost of treatment on both patients and health facilities, but treated persons will be left with little or no deformity. Ironically, most affected people seek for treatment at the late stages of the disease, which leaves them incapacitated and with cosmetic

4

problems (Steinstra et al., 2004; Agbenorku et al, 2012). In the 1990's the average cost of treatment was close to a thousand dollars, which was highly unaffordable for patients and their household and hence the delay (Asiedu et al, 1998). In Xu et al, (2003), the cost of care per patient with Buruli ulcer in a household in the poorest earning quartile was reported to be 242% (193–315%) of their annual earnings, which can be regarded as catastrophic.

However, after the first BU conference in Yamoussoukro in 1998 where it was declared that support should be given to affected countries government to provide free treatment and awareness creation and with the introduction of NHIS, medical treatment is almost free. Despite free medical treatment, many affected persons do not still seek early treatment (Agbenorku et. al., 2012, Steinstra et. al., 2004; Ackumey et al, 2012) making management of the disease difficult.

For an effective public health policy to reduce the morbidity associated with the disease there is the need for studies to be conducted in the endemic areas in Ghana to establish the factors that influence the treatment seeking behaviour of patients at health facilities. The WHO has socio-economic studies as one of its priority areas on its research agenda (WHO, 2008). However, very few studies are available concerning this subject matter. A recent study by Ackumey et al (2012) looked at the effect of socio-cultural factors on timely and late treatment of BU in the Ga-West Municipal. The study however focused more on socio-cultural factors, failing to find the effect of important economic factors, which influence patients such as travel cost, travel time and other indirect cost on the treatment seeking behaviour of the patients. This has therefore left an important research lacuna to be filled. There is therefore the need to conduct an independent study to find out the effects of such factors on the treatment seeking behaviour of BU patients. A better understanding of the factors that influence treatment-seeking behaviour of patients is of vital importance in the management of the disease; reduce morbidity.

5

1.2 Study Objectives

The general objective of the study is to find out the factors determining the treatment seeking behaviour of BU patients'. The specific objectives will include,

➢ To find the effect of the availability and use of herbal medicine on patient treatment seeking behaviour.

➢ To find the effect of health insurance, income, travel cost and distance on treatment seeking behaviour of patients (late or early treatment).

➢ To find the determinants of the use of herbal medicine prior to seeking formal health care.

➢ To provide policy guidelines that will further facilitate the control and management of BU

1.3 Justification

Numerous programmes on awareness creation are being undertaken by the Ghana Buruli Ulcer Control Programme in collaboration with Global Buruli Ulcer Initiative, particularly in BU endemic districts, aimed at educating people to seek early treatment in order to reduce the morbidity associated with the disease. As BU cases are currently on the rise in the country, there is the need to find out and understand the factors, which influence the behaviour of patients towards treatment of the disease. This study is therefore justified since it will attempt to find out whether patients sought early treatment or not and the reasons that informed their decisions, hence serve as a directive to public health policy. Controlling NTDs and for that matter BU will contribute to the achievement of MDGs especially the first and second goals of reducing poverty and universal education.

Most importantly, the study will also attempt to fill the gap in literature as noted earlier above. In addition, the study will be a response to the call for more economic studies to be conducted to provide a detailed description of the economic effects of the disease especially on the

6

household (Stienstra et al., 2004; Mock et al., 2003; Ghana national Buruli Ulcer control Programme, 2006). The study also seeks to educate people on the disease and the need to seek early treatment. All the above justify the relevance and appropriateness of this study.

Among the many potentially important research areas in BU enumerated at the fifth WHO Advisory Group Meeting on BU is cultural and socio-economic studies (WHO, 2002). Thus, policy makers could incorporate the findings of this study in designing policies aimed at managing the disease.

1.4 Methodology

Primary data is used for the study. The non-existence of certain vital information on BU patients needed for the study explains the rationale for using primary data.. Purposive sampling was used in selecting respondents. The target group included both new and old BU patients who are undergoing treatment in a BU treatment centre. Respondents provided information on their demographic factors, health insurance status, and cost of transportation to the facility, travel time to the facility and days of hospitalisation if applicable through personally administered structured questionnaire. Both descriptive and quantitative methods are used for the data analysis. Tables and logistic regression were used for descriptive and quantitative analysis respectively. The detailed methodology for the study is provided in chapter three.

The researcher obtained ethical considerations from the Nkawie-Toase District Hospital ethnical committee to enable her have access to patients' information on their clinical forms.

1.5 Scope of the Study

This study focused on BU patients undergoing treatment at Nkawie-Toase District hospital in the Ashanti Region. Nkawie Nkwanbiayga is one of the BU endemic districts in the region. BU patients from the surrounding villages seek treatment at this health facility, which also

7

serves as one of the referral centres for most cases in the region. Hence, it will be relatively easier to obtain the sample size needed for the study. The reasons for limiting the study to this area are time constraint, proximity and convenience to the researcher.

1.6 Organisation of the study

The study is organised into five main chapters with each chapter comprising of sections and sub-sections. Chapter one introduced the study, chapter two reviewed literature, and chapter three focused on methodology. The results of data collected were analysed and discussed in the fourth chapter whiles the fifth chapter presented the summary of findings, policy recommendations as well as conclusion to the study.
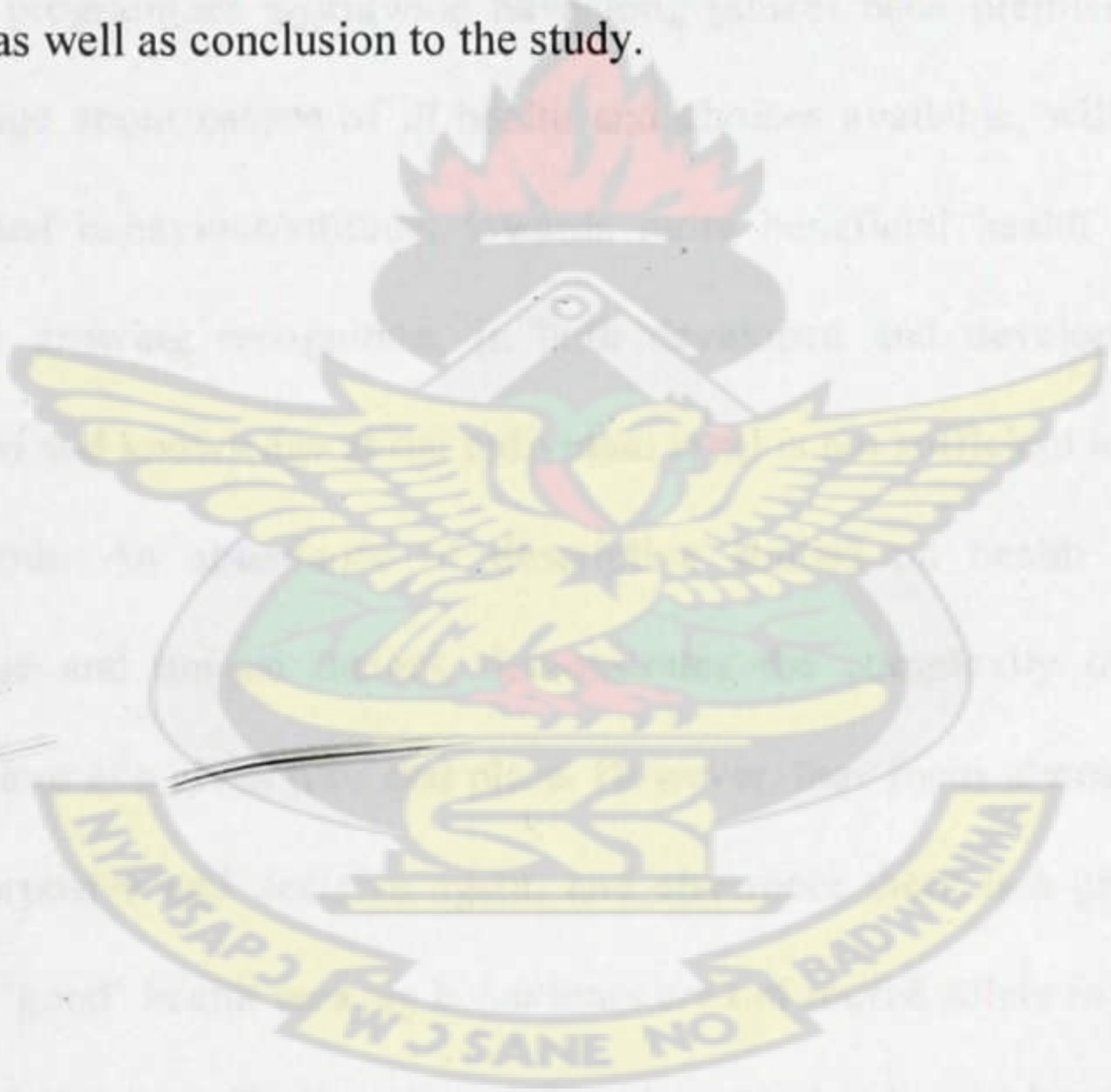
CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This section contains the concept behind health care or treatment seeking behaviours, the types of health care seeking behaviour studies as well as a review of several studies on healthcare seeking behaviours of several illness and diseases. The chapter also provides detailed information the history of BU, risk factors of the diseases, its prevalence, endemic countries and districts in Ghana and available treatments.

2.1 Definition and Concept of Health/Treatment Seeking Behaviour

Health promotion programmes worldwide have long (since) been premised on the idea that providing knowledge about causes of ill health and choices available, will largely promote a change in individual behaviour/attitude, towards more beneficial health seeking behaviour. However, there is growing recognition, in both developed and developing countries, that providing education and knowledge at the individual level is not sufficient in itself to promote a change in behaviour. An abundance of descriptive studies on health seeking behaviour, highlighting similar and unique factors, demonstrates the complexity of influences on an individual's behaviour at a given time and place. However, they focus almost exclusively on the individual as a purposive and decisive agent, and elsewhere there is a growing concern that factors promoting 'good' health seeking behaviours are not rooted solely in the individual, they also have a more dynamic, collective, interactive element. Academics have therefore begun to explore the way in which the local dynamics of communities have an influence over the well-being of the inhabitants (Mackain, 2003).

Olenja (2003) contends that health seeking behaviour is complex and therefore no one-single method may be used to explain or establish any pattern for the patients care seeking behavior

9

since it is a reflection of the prevailing conditions, which interact synergistically to produce a pattern of care seeking but subject to change.

Ward et al (1997) defines Health (care) seeking behaviour as any action undertaken by individuals who perceive they have a health problem or to be ill for finding an appropriate remedy for the particular health problem or illness. It is usually based on specific signs and symptoms by which the illness is recognised; presumed cause of the illness and prognosis established which are in turn interpreted by individuals and or significant others and on labeling the problem, proceed to address it appropriately through recommended therapies(Foster and Anderson, 1980; Fabrega, 1974).Olenja (2003) contends that health seeking behaviour is preceded by a decision making process influenced by individual and/or household behaviour, community norms and expectations as well as characteristics and the behavior of the provider.

Tipping and Segall (1995)) and MacKain, 2003) categorises Health seeking behaviour into two; utilization of formal system ('endpoint') and illness response (process). The former refers to healthcare seeking behaviours towards the utilization of the formal health system or conventional health facilities to remedy an illness. Although the act of seeking 'healthcare' as defined officially in a particular context may comprise of self-care, visits to more traditional healers and unofficial medical channels, these are often seen largely as something that should not be encouraged, but rather encourage people to opt first for the official channels, i.e. conventional healthcare delivery (Ahmed, et al, 2001). The second health seeking behaviors' category considers how individuals respond illness in general. Thus, the second health seeking behaviours seems to be rooted in psychology and and takes into account health behaviours more in general terms by drawing out the factors which encourage or prevent people from making 'healthy choices', in either their lifestyle behaviours or their use of medical care and treatment, MacKian (2003). Ahmed et al (2000) argues that the literature of healthcare seeking

10

behaviour is conceptualised as a 'sequence of remedial actions' taken to rectify 'perceived ill-health', but in the second approach responding specifically to *perceived ill health*, may be dropped, and a wider perspective on affirmative, health promoting behaviours is adopted.

2.1.1 Operational Definition of Treatment Seeking Behaviour

The operational definition for treatment seeking behaviour differs slightly from the orthodox definition given in section 2.1. Treatment seeking behaviour in this study refers to seeking either timely or late treatment in a conventional health facility.

2.2 Factors influencing health/treatment seeking behavior of patients

MacKian (2003) notes that researchers have long been interested in what facilitates the use of health services, and what factors influences people to behave differently in relation to their health. Thus, factors determining peoples' behavior in seeking treatment for their illness in conventional health facilities are very crucial if health programmes is to be achieved.

As a result, extensive social science research has been conducted on health-seeking behavior, for example in most African rural environments, over the last few decades, Franckel (2002). Anthropologists and economists among others have contributed to a better description and a deeper understanding of how illness is perceived and of the barriers to seeking treatment, whether cultural, cognitive or non-cognitive, economic or related to the health system itself (McCombie, 1996; Heggenhougen, 2003; Olenja 2003). These different perspectives with their complementary developed methodological tools have led to the incorporation of wide spectrum socio-economic and cultural variables to look at the factors influencing treatment seeking behaviour, Franckel (2002).

Tipping and Segall (1995) and MacKian (2003), on the other hand, argues that the decision to engage with a particular medical channel is usually influenced by a number of factors (social, cultural, geographical, organisational and economic) like sex, age, the social status of the

11

patient, the type of illness, access to services of conventional health facility and perceived quality of the service. Understanding health seeking behaviours is currently a subject of special importance especially in developing countries where there are fee for service exemptions for the poor, yet still there is a preference for the use of private providers and other means even among those guaranteed free access to public providers (Grundy and Annear, 2010). Thus, proper understanding of health seeking behaviour could reduce delay to diagnosis, improve treatment compliance and improve health promotion strategies in a variety of contexts.

In finding out the factors that encourage or discourage people from seeking care, various models like 'social cognition models' have been developed in this tradition, to predict possible behaviour patterns, and they are usually based on a mixture of demographic, social, emotional and cognitive factors, perceived symptoms, access to care and personality (Conner and Norman, 1996a; 1996b). The underlying assumption is that health-seeking behaviour is best understood in terms of an individual's perception and beliefs of his social environment.

Health seeking behaviour is part and parcel of a person's, a family's or a community's identity, which is the result of an evolving mix of social, personal, cultural and experiential factors, MacKian (2003). Uzma et al (1999) agrees that the process of responding to 'illness' or seeking care involves multiple steps, and can rarely be translated into a simple one off choice or act, or be explained by a single model of health seeking behaviour. For example, Rahman (2000) demonstrates that a woman's decision to attend a particular health care facility is the composite result of personal need, social forces, the actions of health care providers, the location of services, the unofficial practices of doctors, and in some contexts has very little to do with physical facilities at a particular service point.

The view for treatment is that the desired health care seeking behaviour is for an individual to respond to an illness episode by seeking first and foremost help from a trained medical doctor, in a formally recognised healthcare setting (conventional health facility) but consistent finding

12

in many studies is that, for some illnesses, people will chose traditional healers, village homeopaths, or untrained medical doctors above formally trained practitioners or government health facilities (Ahmed et al, 2001; MacKian, 2003). These suggest that there are many different factors that influence a person's decision to seek care for his illness in a conventional health facility. A summary of some of the factors are presented in the table 1.

Table 2.1: Summary of factors influencing health-seeking behaviour

Category	Determinant	Details
Cultural	Status of women, norms and beliefs	Elements of patriarchy
Social	Age, Gender	
Socioeconomic	Household resources	Education level Maternal occupation Marital status Economic status
Economic	Cost of care	Treatment Travel Time
	Type and severity of illness	
Geographical	Distance and physical access	
Organizational	Perceived quality	Standard of drugs Standard of equipment Competence of staff Attitudes of staff

Determinants of healthcare seeking behavior, Adopted from MacKian 2003)

In a similar manner, Hausmann-Muela et al (2003) contend that behavioural intention in seeking health care is determined by factors such as: Subjective norms, (the belief in whether other relevant persons will approve one's behaviour, plus the personal motivation to fulfill with the expectations of others in the particular society); perceived behavioral control which is usually influenced by the belief about access to the resources needed in order to act successfully, plus the perceived success of these resources (information, abilities, skills, dependence or independence from others, barriers, opportunities etc.) as well as socio-demographic variables

13

and personality traits which condition attitudes, subjective norms and perceived behavioral control. These are related to the categorizations by MacKian (2003).

In earlier studies, Foster and Anderson (1980) however disagreed that underutilization of formal/conventional health services is due to the influence of local beliefs or an aversion of western medicine. Their study however conforms to later studies that cost, the availability of services and client perspective on quality of care as experienced through client-provider encounter are prime factors that influence health care seeking behaviours.

2.3 Review of empirical literature on the health seeking behavior of patients

Many studies have been conducted to find out the factors encouraging or discouraging people's healthcare seeking behaviour. The studies have usually looked at cultural, economic and social factors among others. This section therefore reviews empirical studies on the health/treatment seeking behaviour of patients.

Okereke (2010) examined unmet reproductive health needs and health-seeking behavior of adolescents in Owerri, Nigeria using primary information obtained through questionnaire, FGDs and in-depth interviews. The study found that contraceptive use was low, due to culture. Again, 27.2% of the ever had sex have had STIs, mostly gonorrhea and syphilis; 30.2% of the female adolescents have had unintended pregnancies, amongst who 73.3% had recurrent pregnancies and 19.6% of all the females have had abortion. The primary contact for health-care was patent medicine operators rather than formal treatment seeking in a health facility. He therefore advocated for more accessible and cost-effective method of disseminating STI/HIV information involving the use of local opinion leaders to encourage the use of health facilities.

Brita et al (2007) studied the determinants of health care utilization for respiratory symptoms in the first year of life based on a prospective birth cohort study on respiratory illness. Using

14

logistic regression technique, they found that every extra week of respiratory symptoms was associated with a 4.3% higher chance of visiting a physician. Furthermore, the chance was higher in boys, children attending day care, children with nonwhite mothers, and children whose mothers had supplementary health care insurance. In addition, parental age over 30 also determined physician visits towards remedying respiratory illnesses among infants.

Raghupathy (1997) investigated the use of maternal and child health services by women who have unwanted or mistimed pregnancies. Using a sample of 2754 live births, it was found that'wantedness' of births exerts a significant influence on health care use in Thailand, after controlling for other determinants of utilization. Women with unwanted pregnancies are less likely to seek prenatal care or receive tetanus toxide inoculations. Further, women from disadvantaged socioeconomic groups, women with high parity and those with lower educational levels have the highest proportion of unintended pregnancies.

Beiersmann et al (2007) studied local illness concepts, patterns of traditional treatment and influence on health-seeking behavior for Malaria in rural Burkina Faso. Their data were collected through eight focus group discussions, 17 semi-structured interviews with key informants, and through the analysis of 100 verbal autopsy questionnaires of children under-five diagnosed with malaria. The study found that local concepts of illness strongly influence treatment and choice of provider.

Mulder et al. (2008) developed a model that captured the internal and external factors that influence the decision making of BU patients in the Zou and Lalo provinces in Benin. In-depth interviews and questionnaires were used to gather data from BU patients treated in hospitals and community members not affected by BU. In all 107 respondents was used for each group. Factors causing delay in seeking treatment at the hospitals, the use of traditional medicine, costs of duration of admission, the disease not being considered serious enough and the fear of

15

treatment, which patients expected to be fear of amputation. The study confirmed the importance of self-treatment and traditional healing in the study area. However, this study was conducted before the introduction of antimicrobial treatment proposed by the WHO in Benin and other endemic countries in West Africa. They suggested that the model and the results should be used as a baseline to measure the introduction of antimicrobial treatment in on the health seeking behaviour of BU.

Grietens et al. (2008) employed focused group discussion by the use of both quantitative and qualitative methods and found out that despite free of charge biomedical treatment; the cost burden of Buruli ulcer disease (Bu) hospitalisation in Central Cameroon accounts for 25% of households' yearly earnings, surpassing the threshold of 10%, which is generally considered catastrophic for the households in the economy. The high non-medical costs and productivity loss for Bu patients and their households make household involvement in the healing process unsustainable leading to abandonment of biomedical treatment or avoidance. The need for further investment and research to urgently evaluate new intervention strategies that are both socially and financially acceptable and appropriate in local settings were recommended by the authors.

Agbenorku et al, (2011) examined factors that might enhance control and hoilistic BU treatment in Bomfa, a sub-district in the Ashanti region of Ghana by using 189 patients that were treated at the Global Evangelical Mission Hospital, Apromase from Jan to Dec, 2005. 76.7% of the patients reported at the advanced stage of the disease, which were treated with surgery. A follow-up survey after the introduction of the psychosocial approach recorded fewer (85) new Buruli ulcer (BU) cases of which, the majority (78.8%, 67) were nodules and only 21.2% (18) were ulcers. Health education plays a major role in the holistic treatment of BU. The paper proposed a further study in other endemic areas to prevent late treatment.

Another study was conducted by Ackumey et al., 2012 on the socio-cultural determinants of timely and delayed treatment in the Ga-West and Ga-South Municipalities in the Greater Accra region of Ghana. A semi-structured explanatory model interview based on the explanatory model interview catalogue (EMIC) was administered to 178 BU-affected persons. Based on research evidence, respondents were classified as timely treatment (use of medical treatment 3 months from awareness of disease) and delayed treatment (medical treatment 3 months after onset of disease and failure to use medical treatment). The outcome variable, timely treatment was analysed with cultural epidemiological variables for categories of distress, perceived causes of BU, outside-help and reasons for medical treatment in logistic regression models. The median time for the onset of symptoms to treatment was computed in days. Qualitative phenomenological analysis of respondents' narratives clarified the meaning, context and dynamic features of the relationship of explanatory variables with timely medical. The median time for initiating was 25 days for pre-ulcers, and 204 days for ulcers. Respondents' use of herbal medicine was negatively related with timely treatment significantly. Easy access to herbalists was the reason given. Their findings showed that health system factors of access are responsible for non-compliance to treatment regimes.

Asiedu and Ettuaful (1998) studied the socioeconomic implications of treating 102 cases of BU between 1994 and 1996 at St. Martin's Catholic Hospital in Agroyesum in the Amansie West district of the Ashanti region of Ghana. Seventy per cent of the cases were children (up to 15 years of age). There was no sex difference in the distribution of cases. Hospitalization was prolonged (average 5 186 days in 1994, 103 days in 1995, and 102 days in 1996) with no significant age and sex differences. There were 10 limb amputations, 12 patients were left with contracture deformities, one patient lost sight in one eye, and two died of sepsis and tetanus. Direct costs in this study comprised of expenses made on impatient services, surgery, dressing of wounds, laboratory tests, drugs, miscellelanous and unmeasured cost while that of the

17

indirect cost included loss of productivity, feeding cost, miscellaneous and unmeasured cost. They were unable to measure costs such as traveling to the hospital, previous costs of seeking care for the disease, productivity losses before and after hospitalization, and the cost of visiting the patient by friends and relatives, so they named this unmeasured indirect cost. Due to the difficulty in measuring the staff time used on patients with BU, labour costs were excluded. The time and energy used on surgery and wound dressing were however considered. The average total treatment cost per patient was $966.85 (62% indirect) in 1994, $706.08 (75% indirect) in 1995, and $658.74 (79% indirect) in 1996. With increasing number of cases, high treatment costs, and serious complications, it was recommended that urgent attention should be given to the disease in terms of control and research efforts aimed at early detection and treatment.

Bourne P.A. (2009) examined self-rated health status and health care-seeking behaviour of Jamaicans, and to ascertain the socio-economic determinants of health care seeking behaviour as well as good health status. To that end, a cross-sectional descriptive study of 1,006 respondents who answered the question on health-seeking behaviour was used, and this was extracted from a larger nationally representative probability sampling survey of 6,783 Jamaicans. Descriptive statistics were used to provide background information on the demographic characteristics of the sample, chi-square was used to examine correlation between two non-metric variables, and logistic regressions were employed to establish the predictors of health care-seeking behaviour and good self-rated health status. The study recommended that health service professionals need to increase awareness about the benefits of purchasing prescribed medication, and that this must be more so for rural and urban residents.

Asbroek, Bijlsma et al. (2008) used semi-structured interviews to examine factors affecting the treatment pathway for TB patients in Nepal. Patient factors such as severity of complaints, the ability to pay for services and peer assistance in choosing a provider and availability of health

18

services and specific health services factors which included perceived quality, costs and lack of provider-initiated referrals.

Coton et. al. (2008) also carried out a similar study on the healthcare seeking behaviour of schizophrenic patients in Cambodia. They employed cross-sectional survey on psychiatric patients and their caregivers. They findings concluded that traditional and spiritual remedies were the first treatment therapy choice for mental patients. Lack of knowledge about the availability of mental health facilities was the main determinant of psychiatric patients' treatment or care seeking behaviour.

2.4 Epidemiology and Risks Factors of BU

Epidemiological studies suggest BU often occurs near water bodies – slow flowing rivers, ponds, swamps and lakes; cases have also occurred following flooding. BU commonly affects populations in remote rural areas. There is enough evidence to point BU as water related infection; M.ulcerans infection occurred after unprecedented flooding. The first patients from the Bairnsdale district in Australia were recorded in 1948 after the district experienced the worst floods ever (Meyers et al., 1996). Large numbers of infections were first recorded in the Buruli District in Uganda near Lake Kyoga, giving rise to the most widely used name for the disease. The first patient that was found with the infection in Cote D'Ivore was a 7 year old boy who lived around a man-made Lake called Kassou (Perraudin et al, 1980). In Papua New Guinea, MU infections usually occurs near two rivers-Sepik and Kumusi rivers. The disease spread/increase in Papua New Guinea after flooding which followed the eruption of Mount Lamington in 1951(WHO, 2000, 29).The first cases in Ghana were found along the River Densu area in 1971, several other cases reported later along the Tano and Offin rivers (burulighana, 2011). Clearly, it can be deduced that people who live near water bodies and

wetlands or swampy areas are at risk, with the risk increasing during flooding and raining seasons.

The mode of transmission and the reason for the growing spread of BU however is still not clear, though aquatic insects, adult mosquitoes and other biting arthropods are suspected to be vectors of Mycobacterium infections (WHO, 2012). It however appears that different modes of transmission occur in different geographic areas. In south-eastern Australia for example, there is growing evidence that mosquitoes may be involved in the transmission cycle. Recently, Australian scientists discovered high levels of *M. ulcerans* DNA in the faeces of common ringtail and common brushtail possums collected in endemic areas. However, studies done in Africa on small mammals in endemic areas did not find any *M. ulcerans* (WHO, 2012). Martson et al, 1995 however found that wearing of protective clothes, long pants and shirts reduces the risk of contracting the diseases.

All ages and sexes are affected, but the age group, which is mostly affected, is 5-15 years. In general, there is no difference in the infection rate among males and females. The disease can affect any part of the body, but in about 90% of cases the lesions are on the limbs, with nearly 60% of all lesions on the lower limbs (Asiedu and Ettuaful, 1998; WHO 2012; Aiga et al.,). Unlike tuberculosis (TB), there is no evidence to suggest that infection with the human immunodeficiency virus (HIV) predisposes individuals to BU infection. There is also no evidence that the disease can be transmitted from person to person.

2.5 Prevalence/ Morbidity and Mortality associated with the disease

Cases of BU have been found all over the world, even in developed counties like Australia.. Unfortunately, according to the WHO, cases are commonly underreported and cause the total magnitude of the problem to be understated. Most people who are infected with this disease live in rural areas that are far away from the health facility and are unable to get proper treatment

20

and diagnosis. Incidence of the disease seems to be increasing in many African countries as well as a couple others around the world.

According to the WHO, 2012 report, Buruli ulcer has been reported from 33 countries in Africa, the Americas, Asia and the Western Pacific, mainly in tropical and subtropical regions, with most cases occurring in West Africa notably Benin, Cote D'ivoire and Ghana. The geographical distribution and the incidence of the disease is however not fully known due to underreporting and the fact that most affected persons live in remote rural areas where health systems do not exist (WHO, 2012; WHO, 2000). Although Bu has a very low mortality rate of BU is as low as 2% globally, morbidity is high (WHO, 2004). Although Buruli ulcer has a low mortality rate, it frequently causes disabilities, and the costs of treatment and rehabilitation are prohibitive in the most severely affected areas.

Globally, the WHO, 2012 estimated that between 5000-6000 cases are reported annually from 15 of the 33 countries but considerable underreporting exists within countries' and hence the figure is an underestimation of what pertains on the ground. In Côte d'Ivoire, approximately 24 000 cases have been recorded between 1978 and 2006. In Benin, nearly 7000 cases have been recorded between 1989 and 2006; in Ghana more than 11 000 cases have been recorded since 1993(WHO, 2006). In the year 2010, Ghana and Cote D'Ivoire recoded about 1048 and 2500 cases respectively. In Australia, more cases of BU are being reported recently – 25 in 2004, 47 in 2005 and 72 in 2006, with most of the recent cases come from the State of Victoria and the town of Point Lonsdale. These statistics clearly indicates that the disease is spreading rapidly in Africa than the other continents.

Table 2.2: Regions and countries with reported cases of Buruli Ulcer globally

Region	Countries
West Africa	Benin, Burkina Faso, Cameroon, Côte d'Ivoire, , Ghana, Guinea, Liberia, Nigeria, Sierra Leone and Togo
Other parts of Africa	Angola, Congo, Democratic Republic of Congo, Equatorial Guinea, Gabon, Kenya, Malawi, Sudan and Uganda
Asia	China, India, Indonesia, Japan, Malaysia
Western Pacific	Australia, Kiribati, Papua New Guinea, Sri Lanka,
Americas	Brazil, French Guiana, Mexico, Peru, Suriname

Source: WHO, 2012

In Ghana, over the years the endemic districts have increased from 6 districts to over 30 districts in six regions of the country, with Ashanti, Eastern, Greater Accra and Central regions being the most affected (MoH,2011;burulighana, 2011). Though the national prevalence rate in Ghana is 20.7 per 100, 000 people, the rate is high as 150.8 per 100,000 persons in some highly endemic districts (Amofah et al., 2002). Tawiah, 2012 reported that 50 new cases are recorded each month in the Amansie Central, which is third in the prevalence rate after Amansie West and Ga West districts.

22

Table 2.3: Bu endemic districts in Ghana and treatment centres

Region	Districts	Treatment Centres
Ashantti	Ejura, Atwima Mponua, Amansie Central , Atwima Nwabiagya, Afigya Sekyere ,Ahafo Ano South , Amansie West, Asante Akim South Bosomtwi Atwima Kwanwonma, Ejisu Juaben, Kwabre, and Offinso, Obuasi Municipal, Adansi South,Ahafo Ano North,Asante AKim North	Avrilkeon Community Clinic, Agogo Presby Hospital, Tepa Govt Hospital, Bekwai Govt Hospital, Nkawie Hospital
Eastern	Yilo Krobo , Kwahu South,Fanteakwa ,Asuogyaman Afram Plains, West Akim, Akuapem South	Akorabo Health Centre, Asuboi Health Centre, Dokrochiwa Health Centre, Pakro Health Centre
Greater Accra	Ga East, Ga West,	Amasaman Health Centre and Obom Health centre
Brong Ahafo		
Central	Gomoa, Assin South , Assin North, Upper Denkyira	Dunkwa Govt Hospital, St. John Community Clinic, Nkotumso, SDA Clinic, Dominase, SDA Clinic, Dominase
Western	Juaboso, Ahanta West , Wassa West	

Source, National Buruli Ulcer Control Programme-Ghana

Figure 2.1: Number of new BU cases reported annually (2002-2010)
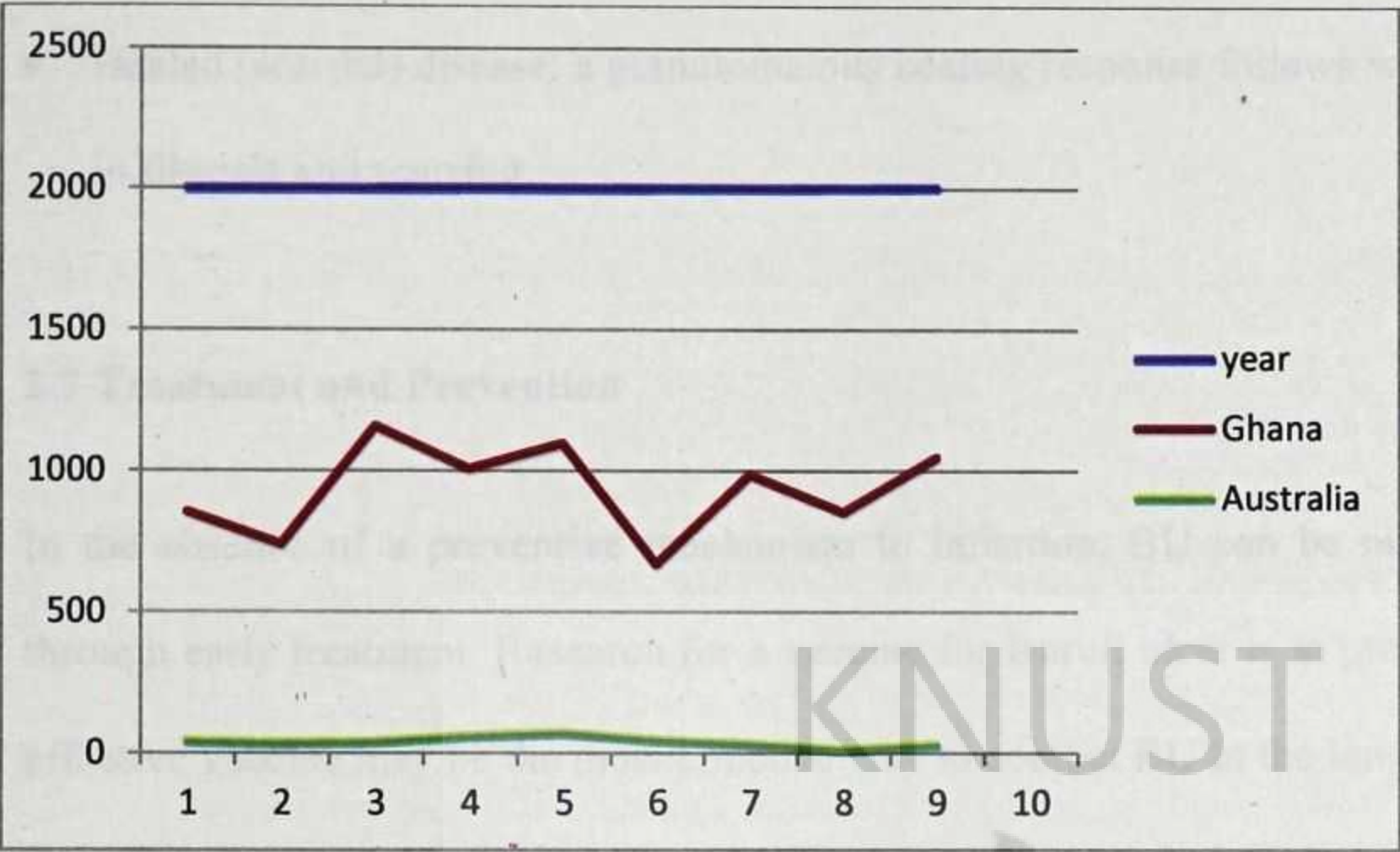
Source of data: WHO, 2012

2.6 Signs and Symptoms

Many clinical researchers describe different types of symptoms of BU but that of WHO, 2012

clinical definitions of the disease is used in this study. The disease usually starts as a painless

mobile skin nodule or a large area of swelling, usually on the limbs. Specific signs and

symptoms differ depending on the strain of mycobacterium that is causing the disease. The

absence of fever and pain at the early stages of the infection partly often lead to delay in seeking

medical treatment. Without intervention, massive, disfiguring ulcers form. The disease

eventually causes extensive destruction of skin and soft tissue. Patients who are not treated early

are often left with severe scarring and with long-term disabilities. About a quarter of patients are

left with permanent disabilities (who, 2012)(A Global Health Initiative paper, 2009).

The WHO has described three main clinical stages of Buruli ulcer;

• Pre-ulcerative; lesions can present as a nodule, papule, plaque or oedema.

24

- Ulcerative; as the lesion enlarges the skin and underlying tissue sloughs off to form an ulcer with an undermined edge.

- Healed (scarred) disease; a granulomatous healing response follows which ultimately results in fibrosis and scarring.

2.7 Treatment and Prevention

In the absence of a preventive mechanism to infection, BU can be managed and controlled through early treatment. Research for a vaccine for Buruli ulcer is in progress, since a safe and effective vaccine may be the most effective way to combat BU in the long term.

The disease is usually diagnosed and treated based on clinical findings by medical experts in endemic areas. The current WHO recommendations for treatment are as follows:

1. Combination of antibiotics (rifampicin and streptomycin/amikacin) for eight weeks as a first-line treatment for all forms of the active disease; Nodules or uncomplicated cases can be treated without hospitalization

2. Surgery to remove necrotic tissue, cover skin defects and correct deformities.

3. Interventions to minimize or prevent disabilities

2.8 Why BU and other diseases are termed/referred to as neglected diseases?

A problem arises as to what the term 'neglect' means in the context of NTDs. It seems obvious that these diseases are, neglected in terms of inadequate health interventions, research and development. However, NTDs are 'neglected' in many other ways, namely: in terms of the diagnosis/treatment and infrastructure, NTD finances, within the MDGs, in terms of the DALY measurement, within the media and in terms of recognition and awareness. These sources of neglect are outline below.

2.8.1 Neglect in terms of geographical location and finances or funds

25

In the terms of geographical location, NTDs' are disproportionately prevalent in developing countries, in comparison to wealthier nations (as shown in figure 2.1 and table 2.2).Hence, the reason why they are term tropical as it refers to countries which are mainly located between the tropics. These countries happen to include the world's poorest countries and NTDs act as an additional and unnecessary extension to the diseases suffered throughout the world (Chitsulo, 2005). Saying this, some countries where NTDs are endemic offer little in terms of funding towards their research. This is partly due to the lack of political voice the poor marginalised communities possess, but where NTDs flourish (Liese *et al.*, 2010). Governments are therefore not under pressure to assist in the development of control programmes for these diseases. As well as the lack of pressure, a lack of economic resource is also blamed for the neglect of NTDs within countries with high prevalence.

The low mortality rates associated with NTDs implies that they have low recognition status among wealthy nations. This, together with the fact that travellers to tropical countries face a low risk of contracting an NTD, decreases the market for NTD research and development within developed countries (Hotez *et al.*, 2006a; WHO, 2006). This is problematic, as these wealthier nations do have the economic and technological resources to help treat and prevent these diseases in developing countries (Boutayeb, 2007). Many pharmaceutical companies feel that, as NTDs occur in countries unable to buy (or buy at full price) the drugs they develop, they are not a feasible and worthy investment (Chitsulo, 2005). The low purchasing power of endemic countries generates a high level of risk for researchers and developers, who are mainly profit driven (Trouiller and Olliaro, 1999). There is also the problem of the information gap, due to the discrepancies in what constitutes an NTD, there is a low consensus on which diseases need funding (Moran *et al.*, 2009). Therefore, donors willing to provide funding are ill informed, and can miss opportunities to invest in diseases which really need the money. This means that "research funding is highly concentrated and has little correlation with burden, as measured in

26

DALYs" (Moran *et al.*, 2009:145).The gap 22 has been partially closed by the NTD list dividing tool ready and tool deficient NTDs, but more needs to be done in order to secure funding for NTDs (WHO, 2007). Considering the burdens in terms of DALYs of HIV/AIDS (84.5 million), malaria (46.5 million), TB (34.7 million) and NTDs (between 19.4 and 56.6 million (Hotez *et al.*, 2009)), Official Development Assistance (ODA) for health does not reflect this burden (Liese and Schubert, 2009). ODA is a statistic assembled by The Development Assistance Committee (DAC) to measure funding given to certain aspects of welfare.

2.8.2 Neglected in terms of MDGs

Within the Millennium Development Goals (MDGs), a set of eight goals designed to combat poverty, the NTDs were only heedlessly referred to in the collective 'other diseases' in MDG 6 ('Combat HIV/AIDS, malaria and other diseases' (WHO, 2003a)), reiterating their perceived low importance (Boutayeb, 2007). This has led to these 'other diseases' being overlooked in favour of the named diseases, HIV/AIDS and malaria. However, many consider the targets of MDG 6 unachievable if the focus remains solely on the well-known diseases and if the NTDs are ignored by policy makers (Molyneux, 2008). Fenwick *et al* (2005) go a step further, and claim that 7 out of the 8 MDGs need to involve the control of NTDs in order to reach their targets. Molyneux (2008) believes that the MDGs' success relies upon a 're-evaluation of what can be done with the tools available now' and those tools are the simple, efficient and cost-effective NTD treatments and eradication plans of tool ready diseases. It may therefore be easier to reduce disease prevalence in the poorest billion people by concentrating on NTDs, rather than the harder to tackle diseases such as HIV/AIDS (Molyneux, 2008). Thus NTDs can be cheaply eradicated as compared to the big three diseases but breed huge improvements in the lives of the affected populations.

27

Table 2.4 Millennium Development goals

MDGs	Goals
MDG1	Eradicate extreme poverty and hunger
MDG2	Achieve universal primary education
MDG3	Promote gender equality and empower women
MDG4	Reduce child mortality rates
MDG5	Improve maternal health
MDG6	Combat HIV/AIDS, malaria and 'other' diseases
MDG7	Ensure environmental sustainability
MDG8	Develop a global partnership for development

Source: UN website: http://www.un.org/millenniumgoals/poverty.shtml

For instance, the first sub target1 of MDG is to halve the proportion of people living on less than $1 per day. NTD control could potentially support the accomplishment of this target, as a reduction in any disease will increase 'healthy time', and therefore increase the economic productivity of the household and the country (Grossman, 1972).

2.8.3 Neglected in terms of the Daily Adjusted Disability Life Years (DALY)

A major challenge within NTDs research is quantifying their disease burden, and the lack of dependable measures has hindered awareness campaigns and requests for funding (WHO, 2007). "DALYs are the most widely accepted quantitative indicator of burden of disease" (Moran *et al.*, 2009:145) and were designed to support the fair allocation of resources (Gold *et al.*, 2002). However, the DALY measurement is speculated to be a source of neglect. DALYs were designed to be a comprehensive health measure that could overcome the challenge that 'what cannot be counted simply doesn't count' (Hoos, 1979:3).

28

2.8.4 Media Neglect

It is in fact the case that the issue of the media neglecting NTDs, has itself been neglected, with a 2008 paper claiming to be the first published study on the lack of NTD coverage in the media (Balasegaram et al., 2008). NTDs are neglected within the media, as very few cases make the headlines (Balasegaram et al., 2008). This is perturbing as media coverage can initiate action towards policy change and increased awareness This holds true for all types of media; print and electronic (Holder and Treno, 1997). Some articles that were found to be specific to NTDs as a collective, or singularly, only referred to the problems they created within the western world, such as a threat to the American blood supply and the danger to US troops (Balasegaram et al., 2008). Journalists who were interviewed about NTD news stories often claimed that they were not newsworthy, because the public did not warrant them as important, or interesting, news story (Balasegaram et al., 2008). If advocacy for NTDs is to be increased, then a strategy to increase media coverage is urgently needed (Balasegaram et al., 2008).

2.8.5 Conclusion

Although NTDs are still highly neglected, there have been important advances in the field in recent years to increase their advocacy. The Bill and Melinda Gates Foundation giving a series of grants to be used in NTD research, and the implementation of control programmes (Lammie et al., 2006; Liese et al., 2010) exemplify this. It has been shown in the MDGs subsection that NTD control and elimination could play a critical role in achieving these poverty reduction goals, and therefore must be considered of great importance.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter of the study lays emphasis on the sources of data, methods of data collection and analysis. It also focuses on the background of the study area. In addition to descriptive analysis, logistic regression model is employed to find the determinants of patients' healthcare or treatment seeking behaviour.

3.1 Background of Study area

Nkawie is a small town and is the capital of Atwima Nwabiagya district in the Ashanti region of Ghana. The district was carved out of the Atwima district in 2004. Nkawie is bounded by two other towns - Toase and Nkawie Panin. Major settlements in the district include Abuakwa, Nkawie Toase, Asuofua, Barekese, Atwima Koforidua, and Asenemaso.The district is one of the Buruli Ulcer endemic districts in the region.

Atwima Nwabiagya district lies approximately on latitude 6^075'N and between longitude1^045 and 2^000'.The district covers an estimated area of 294.84 sq.km with its surface area drained by the Tano, Offin, and Owabi rivers. It is situated in the western part of the region and shares boundaries with Ahafo Ano South and Atwima- Mponua districts (to the west), Offinso district (to the North),Amansie- West and Bosomtwe-Atwima Kwanwoma districts (to the South),Kumasi Metropolis and Kwabre districts (to the East). The district, in terms of land area, is third in the region after Kumasi Metropolis and Kwabre districts. There are several streams in the area and these include Dwehen and Kobi. Two major Dams, Owabi and Barekese have been constructed across the Owabi and the Offin rivers respectively. These dams supply pipe borne water to the residents of Kumasi and its environs (MoFA, 2011).

The area lies between the semi-equatorial zones with double maximum rainfall ranging from 170cm to 185cm per annum. Temperature is uniform ranging between 27^0C (August) and 31^0C (March). Relative humidity of the district is about 93 per cent. Large acres of forest reserves exist; Tano Offin, Owabi Water Works forest and Gyemena.

According to the 2010 Population and Housing Census (PHC), total population of the district was 149,025; the census revealed that there are more males than females in the district (71,984 males and 77,077 females). About 68.5% of the total population live in the rural settlements while 31.47% live in the urban areas.

Agriculture is the main economic activity of the area. About 67% of the working population in the study area are employed in agriculture while 3.5%, 17.5% and 12% are engaged in manufacturing, services and commerce respectively. In addition to food crops, three tree crops are cultivated in the area; cocoa, citrus and oil palm. It is estimated that the district produces about 225,000 mt of citrus per anum (MoFA, 2011).

The district has one hospital, four health centres, three private clinics, five private maternity homes and forty-one trained traditional birth attendants (TBAs). The district hospital is located at Nkawie-Toase (District Health Directorate, Nkawie, 2005).

3.2 Theoretical Framework

Treatment seeking behaviour depends on several factors as elaborated in the literature review. Mathematically,

Y=f(C, D, SE, E, G, O)

Where Y= Treatment seeking behaviour, C= Cultural factors, D= Demographic factors, SE= Socioeconomic factors, E= Economic factors, G= Geographical factors and O= Organisational factor

31

3.3 Model Specification

A logistic regression is used to find the determinants of treatment seeking behaviour of BU patients, given that the dependent variable (ie treatment seeking behaviour) is dichotomous.

$$Yi = g(Xi)$$

Let Y_i (binary variable) represents the observed response of each respondent (ith observation). Therefore, $Y_i = 1$ for a patient who sought medical treatment early and $Y_i = 0$ for a patient who sought medical treatment late.

g is the functional form of the model. Following the specification of Agresti (2007) and Greene and Hensher (2009), the logistic regression model for the study is specified below

$$Y_i = ln\left(\frac{P_i}{1-P_i}\right) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11} + \beta_{12} X_{12} + + \beta_{13} X_{13} + \beta_{14} X_{14} + \beta_{15} X_{15} + \beta_{16} X_{16} + \beta_{17} X_{17} + \beta_{18} X_{18} + \beta_{19} X_{19} + \beta_{20} X_{20} + \varepsilon_i$$

Where Y_i = Qualitative dependent variable (treatment-seeking behaviour): 1 if a patient seeks early treatment; 0 if patient seek late treatment.

$P_i = \frac{1}{1+ e^{-(\beta_1 + \beta_2 X_i)}}$ represent the probability of a patient seeking late treatment

X_1 =age

X_2 = Monthly Income

X_3 = transportation cost

X_4 = travel time

X_5 =gender (Dummy variable (X_5= 1 if female, X_5= 0 if male)

X_6 = Dummy variable (X_6= 1 if basic education, X_6= 0 if otherwise)

X_7 = Dummy variable (X_7= 1 if senior high education, X_7= 0 if otherwise)

X_8 = dummy variable (X_8 = 1 if tertiary education, X_8= 0 if otherwise)

X_9=dummy variable (X_9=1 if farmer, X_8= 0 if otherwise)

X_{10}= dummy variable (X_{10}= 1 if trader, 0 if otherwise)

X_{11}= dummy variable (X_{11}= 1 if student, 0 if otherwise)

X_{12}= dummy variable (X_{12}=1 if patient has BU knowledge, 0 if no BU knowledge)

X_{13}= dummy variable (X_{13}= 1 if high medical cost, 0 if otherwise)

X_{14}= dummy variable (1 if non-severity, 0 if otherwise)

X_{15}= dummy variable (loss of income, 0 if otherwise)

X_{16}=dummy variable (use of traditional/herbal medicine)

X_{17}= dummy variable (1 if insured, 0 if uninsured)

X_{18}= dummy variable (1 if long distance, 0 if otherwise)

X_{19}= dummy variable (1 if natural cause, 0 if otherwise)

X_{20}= dummy variable (1 if spiritual, 0 if otherwise)

ε_i = Stochastic error term.

3.3.1 Operational Definition of Variables

Travel cost; this includes the cost a patient incurs on transportation on a single visit to the facility. This cost covers both in and out fare Travel time; this is the number of minutes spent to get to the facility. More time could be spent in traveling from shorter distances to the facility due to the nature of roads.

Income; The researcher considered the monthly incomes levels of patients. Due to the fact that most BU patients are farmers and informal sector workers, their monthly expenditures used as a proxy for their monthly income. In instances where patients were toddlers and children below age 15, parents/guardians incomes were used as proxies for such patients' incomes.

Education; this takes into consideration the educational level of patients. In cases where patients were toddlers and children below the age of 15, their parents/guardians educational level was used as a proxy for their educational level.

Treatment seeking behaviour; this is subdivided into early treatment and late treatment. Patients who sought treatment at the conventional facility with category I of the disease are classified as early treatment. However, patients with categories II and III are classified as patients who sought late treatment.

BU knowledge; damage caused by the disease if treatment is not sought until the advanced stage of the disease

Perceived causes of BU; in this study, the perceived causes of BU are divided into two; natural and spiritual. Natural causes include drinking contaminated water and aquatic insects' bites while spiritual causes include curses and family members after their downfall.

3.3.2 A priori expectation of parameters

The relationship between ages(x_1) is unknown since it is not certain which age groups of BU patients will seek early treatment or late treatment. Thus, the sign for β_1 as shown in the specified model can be either negative or positive.

Income(x_2) is expected to have a positive relationship with the qualitative dependent variable (Y_i). People with higher income have the resources or means to seek health care regularly and hence BU patients with higher incomes are likely to seek early treatment than their counterparts with meagre incomes. In addition, the opportunity cost of people with higher incomes for not working is higher relative to those with lower incomes, so they are more likely to seek early treatment to quickly restore their health. Hence, the sign for β_2 is expected to be positive.

The relationship between the cost of transportation to the facility(x_3) and the treatment seeking behaviour is negative. The affordability of transport cost (lower cost) increases the possibility of a person affected with the disease to seek early treatment. B_3 is expected to have a negative sign.

The researcher expects travel time to be inversely related with Y_i. People who spend several minutes or hours to arrive at the health facility are likely to seek late treatment. Thus, proximity

34

to health facilities constitutes an important factor for seeking early treatment. The sign for β_4 is expected to be negative, holding all other things equal.

The number of years of schooling (education) of patients is expected to have a positive relationship on early treatment. Patients with basic level of education (x_6), senior high education (X_7) and tertiary education (x_8) are expected to have a positive relationship with early treatment.

The relationship between being a farmer(x_9), trader(x_{10}) or a student(x_{11}) and the qualitative dependent variable (Yi) is unknown. It is not certain whether the type of occupation of patients will influence early treatment negatively or positively because of variations in opportunity cost of seeking treatment at different times or seasons.

Patients' knowledge of BU is expected to be positively related with their treatment seeking behaviour. A patient who has knowledge of BU will seek early treatment. Hence, β_{12} sign is positive. It is expected that awareness and knowledge of anticipated debilitating outcomes of BU may prompt timely and appropriate medical treatment.

3.2 Data Sources and collection

Primary data obtained through facility based survey and personally, administered structured questionnaires constitute a major source of data for this research. The questions captured the demographic characteristics of patients, income, transportation cost, travel time, patients' knowledge on the disease and whether patients used traditional/self-medication before seeking care at conventional facility, duration of symptoms before seeking care at the hospital. However, information on whether a patient sought treatment early or late was obtained through patients clinical forms with the assistance of a medical worker. Patients' hospital card numbers were recorded on questionnaires to enable the researcher trace their forms

Non-probability sampling technique, specifically purposive sampling method was employed in the study. Respondents of the study were chosen based on convenient accessibility to the

35

researcher. The target group for the study is both new and old BU patients seeking treatment at Nkawie-Toase district hospital in the Ashanti region of Ghana. A sample size of 200 was used for the study.

3.3 Ethical Consideration

The researcher obtained the consent of adult patients and parents/guardians of children before questionnaires were administered. Ethical approval was obtained from Nkawie-Toase district hospital.

3.4 Data Analysis Methods

Both descriptive (qualitative) and quantitative methods were used for the data analysis. Qualitative analysis provides a pictorial and an in-depth understanding of the data generated or collected. , tables are used to analyse the data gathered descriptively. Grundy and Annear(2010) opines that the qualitative study of healthcare seeking behaviour affords much opportunity to enable one to investigate the motivations for patients decisions towards healthcare and thus unveil the contextual influences on understanding of the causation of the disease.

Quantitative analysis however provides the basis for the actual estimate of the degree of relationship between concepts (Alan, 2008). Quantitative study is usually based on causal inference and the use of standardized measures to produce qualified data that can be statistically analysed (Patton, 2002). Strauss and Corbin (1990) are of the view that quantitative methods are useful to unveil knowledge and to facilitate our understanding on phenomenon that much is not known about. The study employs logistic regression to find out the impact of demographic factors and economic factors on seeking late or early treatment. A logistic regression is appropriate in this instance because the dependent variable is dichotomous (binary).

Logistic regression is a type of regression analysis used for predicting the outcome of a categorical variable (a dependent variable that can take on a limited number of categories). The most popular model for binary data is logistic regression (Agresti, 2007) and A logistic regression is used because the dependent variable is binary or dichotomous. Methods that are popularly used to analyse binary responses include discriminant analysis, probit regression and logistic regression. However, the last of the three methods was chosen for this study based on its advantages over the other two. Discriminant analysis assumes that the predictor variables are normally distributed and the variables together assume a multivariate normal distribution. These assumptions are usually violated since several variables in a regression are either discrete or dichotomous. Also since the discriminant, analysis examines the distribution of X in terms of Y; it relies on Bayes Theorem to extract the key variables. Probit regression on the other hand is based on the probability integral transformation and hence probit model lacks natural interpretation of parameters (Hailpern and Visintainer, 2003).

In contrast, the logistic regression model does not make normality assumption about the variables distribution; it is a direct probability in terms of $Pr\{Y=1/X\}$. In addition, the logit model has the ability to provide valid estimates, irrespective of the study design (Harrell, 2001). The odds ratio (exponetiated coefficients) in a logistic regression further quantifies the effect of each predictor on the dependent qualitative variable (Hailpern and Visintainer, 2003).

37

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.0 Introduction

This chapter presents the results and analysis. STATA 11.0 was used to analyse data both descriptively and quantitatively. Descriptive results are presented in the form of tables while a logistic regression was used to show the impact of both discrete and qualitative variables.

4.1 Descriptive Analysis

Table 1.1: Descriptive statistics of discrete variables used in the study

Variable	Mean Value	Standard deviation	Minimum value	Maximum value
Age (years)	37.28421	24.53209	1	86
Income (monthly)	251.6053	145.3842	30	800
Travel cost (Gh. Cedis)	9.178947	5.954473	1.2	45
Traveltime (minutes)	48.8	29.22603	10	180
Durationbefore treatment (weeks)	12.92368	17.79129	1	110

Source: Field survey, 2013

The above table provides summary of some of the demographic socio-economic characteristics of respondents and the resources (time and money) spent to get the health facility. From the table the ages of BU patients used in the study ranges from 1-86. The average age of the group (37 years) falls within the labour force. The lowest income earner among the study sample earned 30 cedis monthly while the highest earner received 800 cedis monthly indicating wide variation in incomes of respondents. The average monthly salary of respondents in the study was 252.00 cedis. The average cost patients incurred in going to the hospital on a visit in and out was approximately 9 cedis. However, the lowest transport cost incurred on a visit is 1.20 cedis while the highest is 45 cedis. It must be noted that the disparity in the cost was not only

caused by distance to the facility but also the quality of road network linking communities to the facility. The average travel time to the facility was 50 minutes approximately with the lowest time being 10 minutes and the highest being three hours. On the average, patients reported for conventional treatment after thirteen weeks of realizing symptoms, which is partly explained, by the painless symptoms at the initial stages. The minimum duration before a patient reported for treatment at conventional facility is one week while the maximum is about two and half years approximately.

Table 4.2: Characteristics of patients

Variable	Percentage
Male	43.68
Female	56.32
Uneducated	20.00
Basic education	56.32
SHS education	18.42
Tertiary	5.26
Farmer	39.47
Trader	9.47
Student/pupil	32.11
Other occupations	18.95

Source: Field survey, 2013

The above table summarizes the demographic characteristics of respondents. There was no vast difference between the percentage of males and females. Males represented 43.68% of total respondents while females were the majority of 56.32%. In terms of the educational level of patients', 20% of the respondents were uneducated (i.e. has never had formal education), only 5.26% had tertiary education, 18.42 had completed Senior High school and the majority representing 56.32% had primary and junior high school education. Majority of the patients' representing 39.47% were farmers. This is not surprising because the main occupation of people

in the endemic communities is farming, specifically cocoa and foodstuffs farming. Only 9.47% of respondents were trading/selling foodstuffs and vegetables like tomatoes and pepper. A significant number of patients were children as 32.11 of patients were students and pupils. The aged and toddlers were however grouped under other occupations together with other minor occupations such as masons and food venders, representing 18.95% of total sample.

Table 4.3: BU patients' treatment seeking behaviour

Variable	Percentage (%)
Early treatment	29.47
Late treatment	70.53
Use of traditional medicine before CT	
Yes	56.32
No	43.68

Source: Field survey, 2013

From the above table, only 29.47% of the BU patients used for the study sought early treatment while the majority representing 70.54% of the sample sought late treatment. Thus, more than half of the sampled population (190) reported to the facility with categories one and two of the disease. Concerning the use of traditional medicine or herbs by patients before they sought treatment at the facility, 43.68% of respondents revealed that they did not use traditional medicine or any homemade concoction while 56.32% revealed that they used traditional medicine or herbs, which includes mixture of antibiotics and herbs and balms and other homemade concoctions before seeking treatment at the facility. This to a large extend confirms the findings in other studies; Ackumey et al, 2012 and Mulder et. Al, 2008 that the use of traditional medicine at the initial stages of the disease often caused delay in seeking treatment at

40

conventional health facilities. They therefore resort to treatment at health facilities if their condition deteriorates even after the use of herbs.

Table: 4.4 Patient Perceived cause of illness

Perception	Percentage
Natural cause	51.05
Spiritual cause	17.37
Don't know	31.58

Source: Field survey, 2013

On the perceived causes of the diseases from the patient perspectives as shown in table, 4.4 51.05% of the sample associated it to natural causes such as insect bites on their farms and drinking water contaminated by the insects that carry the causative agent of the disease. 17.37% of patients however still perceived that their predicament was caused by witchcraft and curses. 31.58% of them did not have any perceived cause of their condition

Table 4.5: Patients knowledge on the debilitating effects of BU

BU knowledge	Percentage
Yes	43.16
No	56.84

Source: Field survey, 2013

On patients prior knowledge about the debilitating effects of the disease before they were infected, 43.16% of the respondents had knowledge on the disease before they were infected while majority of them representing 56.84% had no or little knowledge of the effects of delay in treatment before they were infected.

41

Table 4.2: Reason/ Challenge for non-early treatment

Reason/Challenge	Percentage
High medical cost	
Yes	76.32
No	23.68
Non-severity	
Yes	61.05
No	38.95
Long distance	
Yes	52.11
No	47.89
Loss of income	
Yes	45.79
No	54.21

Source: Field survey, 2013

To ascertain the reasons or challenges that influence treatment seeking behaviour, 56% of respondents ironically cited high medical cost of treatment as a reason for delay in seeking treatment while 23.68% did not see high medical cost as a challenge. 61.05 per cent alluded to non-severity of the disease at the initial stages as one of cause of delay while 38.95 per cent said it was not a reason for delay. To some, once they had a painless boil, which did not bother them, they did not see the need to seek care in a conventional facility. 45.79% of patients said that loss of income was a reason for delaying treatment. Most patients often want to complete a task before on their farms either before seeking treatment or before taking their wards to hospital for treatment. Most patients who worked on cocoa farms as labourers admitted that during the peak seasons they would not find time to attend a hospital for care since they do not want to lose income.

42

Table 4.6: Patient health insurance status as at first visit

Insurance status	Percentage
Insured	48.95
Not insured	51.05

Source: Field survey, 2013

Out of the total number of people that were used for the study, 48.95 per cent of respondents as shown in table 4.6 were insured under the national health insurance as at their first visit to the facility for treatment. Majority of them however were either not insured or their insurance had expired. It was therefore not surprising that most patients cited high medical cost of treatment as an obstacle to seeking early care. This could be explained by the generally low-income level of most patients, since they will have to use a high percentage of their earnings to subscribe to the insurance or renew their insurance to enable them seek affordable treatment.

4.2 Quantitative Analysis

As indicated earlier in chapter three, a logistic regression was used to quantitatively analyse data gathered from the field. An estimated positive sign coefficient implies that increases in that particular variable tend to increase the likelihood of the outcome of the dependent variable in question and a negative coefficient predicts otherwise. The significance of a parameter estimate is however determined by the p – value of that particular parameter. The p – value should be 0.05 or below 0.05 to ensure significance of a particular parameter at 5% error level. The overall test of significance for the model is based on the Likelihood Ratio (LR) whose p – value should also be 0.05 or below 0.05 for a particular model to be significant at 5% error level.

The Odds Ratios (OR) tells how many times a particular variable influences the outcome of the dependent variable given the sign of the z- values.

43

The results of the logistic regression with treatment seeking behaviour (early and late treatment) as the dependent variable with late treatment as the controlled group are presented in tables 6a and 6b below.

4.3 Logistic regression estimates: Treatment seeking behaviour as dependent variable

Number of observation = 190

LR chi2(20)   = 139.63

Prob> chi2   = 0.0000

Pseudo R^2 = 0.6060

Table 4.7a: logistic regression results for treatment seeking behaviour of BU patients'

Explanatory Variable	Coefficient	Standard error	P- value	OR	95% CI (OR)
Constant	1.532135	1.952354	0.433	-	
Age	-.0404596	.0196751	0.040*	.960348	.9240196-.9981047 .
Income	.0066116	.0023012	0.004*	1.006633	1.002104- 1.011184
Transport cost	-.1302394	.0617781	0.035*	.8778852	.7777716-.9908853
Travel time	-.0449859	.0219769	0.041*	.9560109	.9157061-.9980898

The overall test of significance of all variables in the model are statistically significant since the the Likelihood Ratio of the model is 0.000<0.05. The implication of LR< 0.05 is that the variables collectively have a statistical significant impact on the treatment seeking behaviour of

44

BU patients at 0.05 level of significance though some are not statistically significant individually.

The coefficient of age is negative and is statistically significant at 5% error level because its p-value is 0.040. This implies that as a person advances in age, the probability that he/she will seek early treatment when affected with BU is less. Thus, from the findings, the aged are less likely to seek early treatment. The odds ratio confirms the above and provides the extent to which advancement in age reduces the probability of seeking early treatment. As a person advances in age, he/she is approximately .960 times less (z-value= −2.06) likely to seek early treatment for their cases.

The coefficient of income is positive and this was expected. Hence, income and early treatment are positively related. The income parameter is statistically significant with a p- value of 0.004 at 0.05 significance level. An increase in a patient income, all other variables held constant, increases the likelihood of a BU patient seeking early treatment. Given that most patients reported late for treatment, this finding confirms the fact that BU patients mostly affects poor people living in rural areas (Liese et. Al, 2010; WHO, 2012). The odds ratio for income, 1.00633 from the table indicates that an increase in an individual income increases (z-value=2.87) the odds by approximately one times since the z-value is positive.

From the results shown in the table above, the coefficient of transportation cost and travel time to the facility are negative. Transport cost and travel time are both inversely related with the qualitative dependent variable (treatment seeking behaviour) and these were expected. With a p-value of 0.035, transport cost is statistically significant at 5 per cent error level. All other things being equal, a rise in transportation cost reduces the likelihood of a BU patient seeking early treatment. A rise in transportation cost reduces the odds (-2.11) by .878 times since the z-value is negative. Thus, a rise in cost of transportation to the facility makes patients 0.878 times less likely to seek early treatment at the facility. Travel time is also statistically significant with

a p-value of 0.041 also at 5 per cent error level. This result tells us that patients who spend longer time to reach the facility are likely not to seek early treatment. The odds ratio for travel time as also shown on the table is 0.956 with a z-value of -2.05. This means that patients who live farther away from the health facility or spend longer time to get to the health facility are approximately 0.956 times less likely to seek early treatment.

It must be noted that though all the above variables have a significant impact on early treatment, in terms of their magnitude, income has a greater impact based on the odds ratios.

Table 4.7b showing logistic regression results for treatment seeking behaviour of BU patients' dependent variable; treatment seeking behaviour (see next page for continuation)

Explanatory variable	Coefficient	Standard Error	P-Value	OR	95% CI (OR)
Gender					
Male	Ref	--	--	--	--
Female	.3034814	.6323336	0.631	1.354566	.3922446 -4.677821
Educational Level					
Uneducated	Ref	--	--	--	--
Basic	-.6530669	.8297904	0.431	.5204472	.1023429 -2.646644
SHS	1.279881	.9541901	1.180	3.596213	.5541628-23.33746
Tertiary	.3961467	1.525789	0.795	1.486087	.0746948-29.56639
Occupation					
Others	Ref	--	--	--	--
Farmer	-.5135264	.921217	0.577	.5983817	.0983642-3.640153
Trading	-.6472085	1.157339	0.576	.5235051	.0541742-5.058822

Students	-.3175423	1.066238	0.766	.7279359	.0900554-5.884053
Knowledge about BU					
No	Ref	--	--	--	--
Yes	2.228294	.6748431	0.001*	9.284016	2.47348 34.84684
Reasons for non-early treatment					
High medical cost					
No	Ref	--	--	--	--
Yes	-.0753471	.7024757	0.915	.9274215	.2340608 -3.674731
Non-severity					
No	Ref	--	--	--	--
Yes	.7876921	.6231473	0.206	2.198317	.6481364-7.456144
Long Distance					
No	Ref	--	--	--	--
Yes	-2.224248	.6923068	0.001*	.1081487	.0278438-.4200627
Loss of income					
No	Ref	--	--	--	--
Yes	.5468774	.634516	0.389	1.727849	.498201 - 5.992487
Perceived Cause of BU					
Do not know	Ref				
Natural	.0108683	.6599115	0.987	1.010928	.2773335-3.685002
Spiritual	-.9883225	1.04286	0.343	.3722005	.0482051-2.873832
NHIS status of patient					
No	Ref	--	--	--	--

Yes	.2162875	.5900478	0.714	1.241459	.3905556- 3.946227
Use of traditional medicine					
No	Ref	--	--	--	--
Yes	-1.625004	.6370009	0.011*	.196911	.0565007-.6862558

NB: Variables which are significant in table 4.7a and 4.7b are marked with *

From table 4.2a above, only three variables; BU knowledge, long distance and the use of traditional medicine are statistically significant at 5 per cent error level. The other variables are not significant because their p-values are greater than 0.05. Their signs and odds ratios would give meaning interpretation and hence important policy guidelines.

The coefficient for female is positive and it is not statistically significant meaning there is no difference males and females treatment seeking behaviour. The likelihood that a BU patient would seek early treatment being a female is positive. It can be concluded that females are more The odds ratio value of 1.355 for females implies that the likelihood of a BU patient seeking early treatment at a health facility is approximately 1.355 times if patient is a female. Thus being a female increases the odds by 1.355 times since the z-value is positive (0.48).

On the educational level of patients, the sign of the coefficient for basic education is negative while that of Senior High education and tertiary are both positive but none of the coefficients is statistically significant at the 5 per cent error level. A patient with basic level of education reduces the odds by approximately 0.520, a patient with senior high education increases the odds by approximately 3.596 times and a patient with tertiary level of education increases the likelihood of early treatment by 1.486. None of the occupation group positively predicts the dependent variable.

48

A key variable in this study, knowledge about BU has a positive coefficient as expected and it is statistically significant with a p-value of 0.001 at 5 per cent error level. This means that patients' prior knowledge about the debilitating effects of BU is very crucial for early treatment. One's fear of being deformed with the disease will increase the likelihood of early treatment by a wider margin. The odds ratio as shown in the table further harnesses this point. The odds ratio of 9.284 for knowledge about BU implies that if one has knowledge on the effects of delayed treatment prior to being affected, it would increase the likelihood of early and timely treatment by approximately 9.284 times than someone without prior knowledge of the disease.

The coefficient for high medical cost is negative as expected but not statistically significant at 5 per cent error level. The odds ratio for high medical cost is 0.927 as shown on the table and this implies that high medical cost to the patient or household reduces the odds by approximately 0.927 times. The coefficients for non-severity and loss of income are both positively related to the outcome variable but both are not statistically significant.

Another key variable, long distance had a negative coefficient and this in line with the a priori expectation. The coefficient is also highly significant with a p-value of 0.001 at 5 per cent error level. It can be implied that patients who live very far away by either distance or accessibility to the health facility may not seek treatment early. An important point must be noted; travel time and long distance are both significant and there exist no multicollineraity because the quality of the road affects travel time and hence distance.

On patients' perception on the cause of the illness, the coefficient for those who perceive it to be caused naturally is positive while the coefficient for those who eluded it to spiritual causes is negative. Both signs meet the a priori expectation but none is statistically significant at 5 per cent error level. The odds ratios for natural and spiritual causes are 1.01 and 0.372 respectively. The implication of these results is that patients who perceive the disease to be caused naturally

49

increases the odds by approximately 1.01 times while patients who perceive it as a spiritual disease decreases the odds by approximately 0.343 times.

The coefficient for patients with health insurance is positive as expected but it is statistically insignificant with a p-value of 0.714, which is greater than 0.005 at 5 per cent error level. The odds ratio is 1.241, implying that an insured patient increases the likelihood of seeking early treatment by approximately 1.241 times.

The coefficient for the use of traditional/herbal medicine by patients, its coefficient is negative as it was expected and it is statistically significant at 5 per cent error level. Thus, use of traditional medicine by BU patients is a major cause of delay in seeking treatment at the health facility as compared to the control group. Patients seek treatment at health facilities after traditional medicine fails to cure their ailments by which time their condition might have deteriorated. This result concurs with the findings of Ackumey et al., 2012, Rezaho et al., 2007 and Mulder et al., 2008.

CHAPTER FIVE

SUMMARY OF MAJOR FINDINGS AND POLICY RECOMMENDATION

5.0 Introduction

This study was primarily carried out to find the main determinants of the likelihood of BU patients seeking early treatment which when incorporated into public policy will to a large extend reduce the morbidity caused by the disease. This chapter therefore consists of the major findings of the study, policy recommendations based on findings and conclusion.

5.1 Summary of major findings

The study revealed that 70.53% of the sampled BU patients sought late treatment while 29.47% sought early treatment at the health facility and more than half of them used herbal medicine/balms before seeking care at the facility. The study revealed that the disease affects both gender and all age groups; including toddlers as young as one year and aged as old as 86 years. It was also revealed that farming, mostly cocoa and foodstuff farming is the major economic activity that sampled patients were employed.

The study also found the average cost of transportation to be as high as high 9 cedis on a visit to the facility and the average travel time to the health facility is about 50 minutes. Given the average income of patients/guardians to be about 252 cedis, the cost of transport is highly unaffordable for most patients since treatment is complete after several visits.

Concerning the perception of patients on the cause of the disease, most patients (51.05%) associated it to natural causes such as drinking unclean water and bites from aquatic insects while 17.37% associated it to spiritual causes such as a curse or evil eye. However, most patients were well abreast with the possible source and causes of the disease, most of them did not have knowledge on the debilitating effects of the disease if treatment is delayed. Thus, the

study revealed that 56.84% of the sampled population did not have knowledge on the effects of late treatment.

The study provided no statistical evidence to prove that gender (i.e. female) and the educational levels of patients (Basic, SHS and tertiary) and the type of occupation of patients (farmer, trader and student/pupil) had a significant impact on the variable of outcome. The insignificance of education on timely or early treatment of BU concurs with the findings of an earlier study by Ackumey et al, 2012. Interestingly, treatment-seeking behaviour did not differ significantly between females and the control group (males). There was no difference between patients who were insured and those uninsured.It can be inferred from this result that the elimination of fee for service on the treatment of the disease is not a guarantee that BU patients will seek timely treatment at the health facility. This finding concurs with the findings of Grundy and Annear, 2010).

Patients BU knowledge prior to infection, significantly influences their treat behaviour. This means that patients' prior knowledge about the debilitating effects of BU is very crucial for early treatment. It was however revealed that patients perception on the cause of the disease have little or no impact on the outcome variable since both natural and spiritual causes were not statistically different from the control group.

Among patients' reasons for non-early treatment, it was revealed that only long distance to the facility was statistically significant. Thus, how far patients live away from the facility has an impact on treatment-seeking behaviour of BU patients. The findings of the study also revealed that use of traditional medicine or home remedy had a significant impact on the variable of outcome. This implies that BU patients who used herbal medicine or home remedy are more likely to seek late treatment at the health facility.

This study has demonstrated that all the economic determinants or factors of treatment seeking behaviour per the categorisation of McKain, 2003 had a phenomenal effect on the variable of outcome with all their expected signs met. As revealed by the study income had a positive significant effect on the variable of outcome which is early treatment implying that if income levels of patients or parents improves, early treatment will be sought for the disease. Cost of transportation and travel time inversely affects the likelihood of a BU patient seeking early treatment. Patients with high opportunity cost of seeking care and high monetary cost are more likely to delay seeking treatment at the facility. An increase in travel time and travel cost may not be due to long distance; sometimes the poor or bad road infrastructure causes delays in travel.

5.2 Conclusion

Models on the factors of health care/treatment seeking behaviour are dynamic and complex. These determinants differ according to who is affected, the disease, and the location. Thus, one cannot make a generalisation of these factors to every disease based on a single model within a particular setting. This study found out the determinants of seeking early treatment for a neglected tropical disease i.e. BU that affects the world's poorest population especially in West Africa to help reduce or minimise the morbidity associated with the disease.

From the findings of the study, it can be concluded economic and geographic (physical access and distance) factors per McKain, 2003 categorisation are the main factors that determines whether a BU patient seeks early or late treatment or care. The decision of BU patients/guardians to seek either early or late treatment is mainly mediated by income and the opportunity cost of seeking care that is caused by cost of transportation and travel time. This is explained by the fact that key economic variables such as income, travel time and travel cost were all significant and all their signs were as expected. These factors are however not isolated to the patient/individual but are embedded in a broader household or societal capacity.

53

The use of herbal/home remedy and long distance to the health facility are non-economic but crucial factors that cause delayed treatment of BU at health facility. The readily availability of herbal medicine to most patients who live in the rural areas makes it affordable such that patients resort to that first and only seek treatment at the facility when they situation worsen. It is therefore imperative that these factors that influence treatment seeking of BU patients should be factored into public health programmes to enhance early treatment and hence reduce morbidity.

5.3 Policy recommendation

Education and awareness creation on the benefits of early treatment and debilitating effects of late treatment should be increased/carried out in endemic areas and areas that are not yet affected by BU since there is a striking association between early treatment and prior knowledge of the disease before one is affected. BU former patients should be motivated and encouraged to be ambassadors. Public awareness and education on BU should not be centred in only endemic districts, as it is currently the practice since the disease seems to be fast spreading with increase in the number of endemic districts in the country. This study therefore recommends nationwide awareness of the disease to help reduce its morbidity to the barest minimum since prior knowledge will scare affected people not to delay treatment.

BU mostly affects poor rural population who live near water bodies. The low-income levels of most patients buttress this point. To prevent further impoverishment of these communities, government should therefore give priority to endemic areas when designing and implementing pro-poor programmes such as the Livelihood Empowerment Programme (LEAP). This can assist patients financially and hence their ability to pay transport cost to BU treatment centres for timely treatment. Such a measure will also contribute to Ghana's achievement of the first Millennium Development Goal (MDG) of eradicating poverty by 2015.

The Ghana Buruli Ulcer Control Programme should liaise and corporate with traditional healers or herbalists and teachers in endemic areas in developing strategies for early treatment of cases. Since patients use of herbal medicine as a first therapy choice of treatment, herbalists and traditional healers should be encouraged and motivated to make referrals' to specialised health facilities for treatment.

There should be effective monitoring and supervision of Village Health Workers (VHW) who have been given mobile transport to embark on education and awareness creation in endemic districts and some instances aid in transporting patients to treatment centres by district health management teams to ensure that motorcycles and vehicles are used for their intended purpose. The current measure is a step in the right direction as motorcycle ambulances have been used in Malawi to reduce maternal deaths (Hofman et. al, 2008). The aim of providing motorcycles to VHW is not achievable without effective monitoring.

Investment and improvement in road infrastructure linking endemic communities and treatment centres will reduce travel time, distance and cost of transportation to the health facility and hence reduce the opportunity cost of seeking treatment at the facility.

Once it takes a hospital with well-equipped laboratory to treat the disease, there is the need for government to establish more of such centres, which will reduce waiting and travel time as well.

5.4 Limitation of the study

The study was limited by the small sample size. The researcher was constraint by time since it was not possible to obtain a larger sample size given the period specified for the study. However, the logistic model employed by the study use Maximum Likelihood Estimation (MLE) requires a larger sample size for the efficiency and significance of the estimated parameters. The non-significance of variables such as education can be attributed to the small

55

sample. The study did not include organisational factors of treatment seeking behaviour such as quality and effectiveness of care and attitude of health workers or providers.

REFERENCE

Ackumey MM, Gyapong M, Pappoe M, Maclean CK and Weiss MG (2012) Socio-cultural determinants of timely and delayed treatment of Buruli Ulcer: Implications for disease control. Infectious Diseases of Poverty 16. Available at http://www.idpjournal.com/content/1/1/6

Ackumey MM, Kwakye-Maclean C, Ampadu EO, de Savigny D, Weiss MG (2011) Health Services for Buruli Ulcer Control: Lessons from a Field Study in Ghana. PLoS Negl Trop Dis 5(6): e1187. doi:10.1371/journal.pntd.0001187

Agbenorku P., Agbernorku M., Amankwa A., Tuuli L. and Saunderson P.(2011) Factors enhancing the control of Buruli Ulcer in Bomfa sub- district, Ashanti,Transactions of the Royal Society of Medicine and Hygiene Vol.105, Issue 8,pp 459-465

Agresti, A. (2007). An Introduction to Categorical Data Analysis, Second Ed., Published by John Wiley & Sons, Inc., Hoboken, New Jersey. ISBN 978-0-471-22618-5

Ahmed, S Adams, A Chowdhury, M and Bhuiya, A (2000) Gender, socio-economic development and health-seeking behaviour in Bangladesh *Social Science and Medicine* 51(3). 361-371

Ahmed, S., Sobhan, F. I. A and Barkat-e-Khuda (2001) Neonatal morbidity and care-seeking behaviour in rural Bangladesh, Journal *of Tropical Paediatrics* 1 April 47(2). 98-105

Alvar J, Yactayo S, Bern C. (2006) Leishmaniasis and poverty. Trends Parasitol ; 22:552-7.

Amofah G. Bonsu F., Tetteh ., Okrah J, asamoa K, Asiedu K and Addy J(2002) Buruli Ulcer in Ghana: Results of a National case Search, Emerging Infectious Diseases. Vol.8, p 167-170

Asbroek, A.H., M.W. Bijlsma, P. Malla, B. Shrestha and D.M. Delnoij. 2008. The road to tuberculosis treatment in rural Nepal: A qualitative assessment of 26 journeys BMC. *Health Service Research* 8:7.

Asiedu K. and Etuaful S.(1998) Socioeconomic Implication of Buruli Ulcer in Ghana- A three year Review; Am. J. Trop. Med. Hyg., 59(6), pp. 1015–1022

Bill and Melinda Gates Foundation (2009) Bill and Melinda Gates Urge Global Leaders to Maintain Foreign Aid. www.gatesfoundation.org

Bournne, P.A.(2009) Socio-demographic determinants of Health care-seeking behaviour, self-reported illness and self-evaluated Health status in Jamaica, International Journal of Collaborative Research on Internal Medicine and Public Health Vol. 1 No. 4, pp. 101-130

Brita M. de Jong, Cornelis K. van der Ent, Nienke van Putte Katier, Marieke M.van der Zalm, Theo J. M. Verheij, Jan L. L. Kimpen, Mattijs E. Numans and Cuno S. P. M. (2007) Determinants of Health Care Utilization for Respiratory Symptoms in the First Year of Life, Medical Care, Vol. 45, No. 8 (Aug., 2007), pp. 746-752

Conner, M and Norman, P (1996b) The Role of Social Cognition in Health Behaviours. In M Conner and P Norman (eds) *Predicting Health Behaviours: research and practice with social cognition models* Open University Press, Buckingham. 1-22

Conner, M and Norman, P (eds) (1996a) *Predicting Health Behaviours: research and practice with social cognition models* Open University Press, Buckingham

Conteh L., Engels T., Molyneux D.H. Socioeconomic aspects of neglected tropical diseases Lancet 2010; 375: 239–47

Coton, X., S. Poly, P. Hoyois, C. Sophal and V. Dubois. 2008. The healthcare-seeking behaviour of schizophrenic patients in Cambodia. *International Journal of Social Psychiatry.* 54(4): 328-337

Debacker M, Portaels F, Aguiar J. (2006)., "Risk factors for buruli ulcer, Benin," *Emerging Infectious Diseases*, vol. 12, no. 9, pp. 1325–1331

Fabrega, H. Disease and Social Behaviour: An Interdisciplinary Perspective Cambridge, MIT Press. 1974

Foster, G.M. and Anderson, B.G. Medical Anthropology. John Wiley and sons Inc. USA. Kleinman, A. Patients and Healers in the context of culture. Berkeley: University of62 East African Medical Journal February 2003, California Press, 1980

Franckel, A., Arcens,F., Lalou, R., and Kneipp, R. (2002) Village Context and Health-Seeking Behaviour in the Fatick Region of Senegal, Population (English Edition, 2002-), Vol. 63, No. 3 (Jul. - Sep., 2008), pp. 469-490

Ghana Statistical Service (2012) 2010 Population and Housing Census, Summary of results. Greene H. W. (2002) Econometric Analysis, Prentice Hall. ISBN 0-13-066189-9.

Greene, W. H., and Hensher, D. A. (2009) "Modeling Ordered Choices" Department of Economics, Stern School of Business, New York University, New York.

Grietens KP, Boock AU, Peeters H, Hausmann-Muela S, Toomer E and Ribera JM (2008) "It Is Me Who Endures but My Family That Suffers": Social Isolation as a Consequence of the Household Cost Burden of Buruli Ulcer Free of Charge Hospital Treatment. PLoS Negl Trop Dis 2(10): e321. doi:10.1371/journal.pntd.0000321

Grossman, M. (1972) On the Concept of Health Capital and the Demand for Health. The Journal of Political Economy, 80, 223-255.

Grundy J. (2010) Health-seeking behaviour studies: a literature review of study design and methods with a focus on Cambodia, Health Policy and Health Finance Knowledge HUB, Working Paper Series

Hailpern SM and Visintainer PF (2003). Odds ratios and logistic regression: further examples of their use and interpretation. The Stata Journal 3, No.3, pp.213-225

Harrell F. (2001). Regression modelling strategies, New York: Springer

Hausmann-Muela, S., Muela J. R., and Nyamongo, I. (2003) Health-seeking behaviour and the health system response, DCPP Working Paper No. 14

Heggenhougen H.K., Hacketal V., Vlvek P. (2003) The behavioural and social aspects of malaria and its controls: an introduction and annotated bibliography, Special Programme for Research & Training in Tropical Diseases (TDR), Geneva, UNCP/World Bank/WHO, 226 p, http://www.who.int/tdr/publications/publications/pdf/seb_malaria.pdf

Hofman JJ, Dzimadzi C, Lungu K, Ratsma EY, Hussein J (2008): Motorcycle ambulances for referral of obstetric emergencies in rural Malawi: do they reduce delay and what do they cost? Int J Gynaecol Obstet 2008, 102:191–197.

Hotez P, Stoever K, Fenwick A, Molyneux D, Savioli L. *The Lancet*'s chronic diseases series. *Lancet* 2006; 367: 563–64.

Hotez, P. J. (2008a) Forgotten people, forgotten diseases; the neglected tropical diseases and their impact on global health and development, Washington ASM Press.

Hotez, P. J., Fenwick, A., Savioli, L. & Molyneux, D. H. (2009) Rescuing the bottom billion through control of neglected tropical diseases. The Lancet, 373, 1570-1575.

Hotez, P. J., Molyneux, D. H., Fenwick, A., Kumaresan, J., Sachs, S. E., Sachs, J. D. & Savioli, L. (2007) Control of Neglected Tropical Diseases. N Engl J Med, 357, 1018-1027.

Kariuki T, Phillips R, Njenga S, Olesen OF, Klatser PR, et al. (2011) Research and Capacity Building for Control of Neglected Tropical Diseases: The Need for a Different pproach. PLoS Negl Trop Dis 5(5): e1020. doi:10.1371/journal.pntd.0001020

Liese B, Rosenberg M. and Schratz A. (2010) Programmes, Partnerships, and governace for elimination and control of neglected diseases. Lancet, 375:67-76

MacKian, S. 2003. *A review of health seeking behaviour: problems and prospects.* HSD/WP/05/03. Manchester: University of Manchester Health Systems Development Programme

Manderson, L., Aagaard-hansen, J., Allotey, P., Gyapong, M. & Sommerfeld, J. (2009) Social Research on Neglected Diseases of Poverty: Continuing and Emerging Themes. PLoS Negl Trop Dis, 3, e332

Marsollier L, Robert R, Aubrey J, Saint Andre JP, Kouakou H, Legras P, Manceau AL, Mahaza C,Carbonnelle B, Aquatic insects as a vector of Mycobacterium ulcereans. Appl Environ Microbiol 2002, 68:4623-4628

Ministry of Food and Agriculture (MoFA), 2011

Molyneux DH. (2004) "Neglected" diseases but unrecognized successes — challenges and opportunities for infectious disease control. Lancet, 364:380-3.

Mulder A.A., Boerma R.P. Stienstra Y., Zinsour C.,van der Werf T.S, Bovi C. and Johnson R.C(2008) Healthcare seeking behaviour of Buruli ulcer in Benin: a model to capture therapy choice of patients and healthy community members

Neglected Tropical Diseases Coalition (19/12/09) http://www.neglectedtropicaldiseases.org/.

Nicoletti, N. P. (2011) Introduction to STATA 11, Getting Started with Stata Programming, Department of Political Science, University at Buffalo (SUNY)

Nkawie District Health Directorate (2005)

Okereke, C. I. (2010) Unmet Reproductive Health Needs and Health-Seeking Behaviour of Adolescents in Owerri, Nigeria, African Journal of Reproductive Health Vol. 14, No. 1 (March 2010), pp. 43-54

Olenja, J. (2003) Health Seeking Behaviour in Context, Editorial, East African Medical Journal

Pouillot R., Matias, G. C. Wondje M. et al.,(2007) "Risk factors for Buruli ulcer: a case control study in Cameroon," PLoS Neglected Tropical Diseases, vol. 1, no. 3, article e101

Raghunathan P.L, E. A. S. Whitney, K. Asamoa et al., "Risk factors for Buruli ulcer disease (Mycobacterium ulcerans infection): results from a case-control study in Ghana," Clinical Infectious Diseases, vol. 40, no. 10, pp. 1445–1453, 2005.

Raghupathy, S. (1997) Unwanted Pregnancies and Preventive Health Care Use in Thailand, Population Research and Policy Review, Vol. 16, No. 6 (Dec., 1997), pp. 579-595

Rahman, SA (2000) *Utilization of Primary Health Care Services in Rural Bangladesh: the population and provider perspectives* Unpublished PhD Thesis, London School of Hygiene and Tropical Medicine, University of London

Summary report of Final Result for 2010 Population and Housing Census, Ghana Statistical Service, May 2012

T. S. van derWerf,W. T. A. van der Graaf, J.W. Tappero, andK. Asiedu, (2006) "*Mycobacterium ulcerans* infection," *The Lancet*, vol. 354, no.

The Ghanaian Times, Available at http://newtimes.com.gh/story/govt-allocates-1million-to fight-neglected-tropical-diseases

Tipping, G and Segall, M (1995) *Health Care Seeking Behaviour in Developing Countries: an annotated bibliography and literature review* Development Bibliography 12. Institute of Development Studies, Sussex University

UN website: http://www.un.org/millenniumgoals/poverty.shtml

Uzma, A Underwood, P Atkinson, D and Thackrah, R (1999) Postpartum health in a Dhaka slum *Social Science and Medicine* 48(3). 313-320

Van der Werf TS, Stienstra Y, Johnson RC, Phillips R, Adjei O, Fleischer B, Wansbrough-Jones MH, Johnson PD, Portaels F, van der Graaf WT, Asiedu K. Mycobacterium ulcerans disease.*Bull World Health Organ* 2005, 83: 785-791

Ward, H., Mertens, T. and Thomas, C. Health seeking behaviour and the control of sexually transmitted disease in Health Policy and planning. 1997; 12:19-28.

WHO (2004) Buruli ulcer disease. *Mycobacterium ulcerans* infection: an overview of reported cases globally. *Wkly Epidemiol Rec 79*: 194–200

WHO (2007) A turning Point: Report of the Global Partners Meeting on Neglected Tropical Diseases.Geneva, Witserland; Available from http//whoqlibdoc.who.int/hq/2007/WHO_CDS_NTD_2007.4-eng-pdf

WHO (2010) Working to overcome the global impact of Neglected tropical diseases; First WHO Report on Neglected tropical diseases; Geneva, Switzerland

WHO, (2000). *Buruli Ulcer-Mycobacterium ulcerans Infection.* Asiedu K, Scherpbier R, Raviglione M, eds. Geneva: World Health Organization. *WHO/CDS/CPE/GUI/2001.1.*

World Health Organization: Buruli ulcer: progress report, 2004–2008.Wkly Epidemiol Rec 2008, 83:145–154.

www.who.int/**buruli**/research/en/

www.who.int/mediacentre/factsheets/fs199/

Xu K, Evans DB, Kawabata K, Zeramdini R, Klavus J, Murray CJL. Household catastrophic health expenditure: a multicountry analysis. *Lancet* 2003; 362: 111–17.

64

APPENDIX

Logistic regression results

```
logit  TREATMENTBEHAVIOR age INCOME TRANSPORTATIONCOST TRAVELTIME FEMALE BASIC
SECONDA
> RY TERTIARY FARMER TRADER STUDENT HASBUK HIGHMEDCOSTYES NONSEVERITYYES
LOSSOFINCOMEYES
>  USEOFTRADMEDYES LONGDISTANCEYES NHIS2 NATURALCAUSE SPIRITUAL

Iteration 0:    log likelihood = -115.20435
Iteration 1:    log likelihood = -56.312714
Iteration 2:    log likelihood = -46.955988
Iteration 3:    log likelihood = -45.412882
Iteration 4:    log likelihood = -45.389805
Iteration 5:    log likelihood = -45.389791
Iteration 6:    log likelihood = -45.389791
```

Logistic regression

Log likelihood = -45.389791

	Number of obs	=	190
	LR chi2(20)	=	139.63
	Prob > chi2	=	0.0000
	Pseudo R2	=	0.6060

TREATMENTB~R	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
age	-.0404596	.0196751	-2.06	0.040	-.079022	-.0018971
INCOME	.0066116	.0023012	2.87	0.004	.0021013	.0111219
TRANSPORTA~T	-.1302394	.0617781	-2.11	0.035	-.2513223	-.0091565
TRAVELTIME	-.0449859	.0219769	-2.05	0.041	-.0880598	-.0019121
FEMALE	.3034814	.6323336	0.48	0.631	-.9358696	1.542832
BASIC	-.6530669	.8297904	-0.79	0.431	-2.279426	.9732924
SECONDARY	1.279881	.9541901	1.34	0.180	-.5902968	3.15006
TERTIARY	.3961467	1.525789	0.26	0.795	-2.594345	3.386638
FARMER	-.5135264	.921217	-0.56	0.577	-2.319078	1.292026
TRADER	-.6472085	1.157339	-0.56	0.576	-2.915551	1.621134
STUDENT	-.3175423	1.066238	-0.30	0.766	-2.40733	1.772246
HASBUK	2.228294	.6748431	3.30	0.001	.9056261	3.550962
HIGHMEDCOS~S	-.0753471	.7024757	-0.11	0.915	-1.452174	1.30148
NONSEVERIT~S	.7876921	.6231473	1.26	0.206	-.4336541	2.009038
LOSSOFINCO~S	.5468774	.6345163	0.86	0.389	-.6967517	1.790507
USEOFTRADM~S	-1.625004	.6370009	-2.55	0.011	-2.873503	-.3765048
LONGDISTAN~S	-2.224248	.6923068	-3.21	0.001	-3.581144	-.8673513
NHIS2	.2162875	.5900478	0.37	0.714	-.9401849	1.37276
NATURALCAUSE	.0108683	.6599115	0.02	0.987	-1.282534	1.304271
SPIRITUAL	-.9883225	1.04286	-0.95	0.343	-3.032291	1.055646
_cons	1.532135	1.952354	0.78	0.433	-2.294409	5.358678

Results for odds ratios

```
. logit TREATMENTBEHAVIOR  FEMALE BASIC SECONDARY TERTIARY FARMER TRADER STUDENT  age
INCOME TRANSPORTATIONCOST
> TRAVELTIME HASBUK  HIGHMEDCOSTYES NONSEVERITYYES LOSSOFINCOMEYES USEOFTRADMEDYES
LONGDISTANCEYES NHIS2 NATURAL
> CAUSE SPIRITUAL, or

Iteration 0:    log likelihood = -115.20435
Iteration 1:    log likelihood = -56.312714
Iteration 2:    log likelihood = -46.955988
Iteration 3:    log likelihood = -45.412882
Iteration 4:    log likelihood = -45.389805
Iteration 5:    log likelihood = -45.389791
Iteration 6:    log likelihood = -45.389791
```

Logistic regression

		Number of obs	=	190
		LR chi2(20)	=	139.63
		Prob > chi2	=	0.0000
Log likelihood = -45.389791		Pseudo R2	=	0.6060

TREATMENTB~R	Odds Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
FEMALE	1.354566	.8565378	0.48	0.631	.3922446	4.677821
BASIC	.5204472	.4318621	-0.79	0.431	.1023429	2.646644
SECONDARY	3.596213	3.431471	1.34	0.180	.5541628	23.33746
TERTIARY	1.486087	2.267456	0.26	0.795	.0746948	29.56639
FARMER	.5983817	.5512394	-0.56	0.577	.0983642	3.640153
TRADER	.5235051	.6058727	-0.56	0.576	.0541742	5.058822
STUDENT	.7279359	.7761529	-0.30	0.766	.0900554	5.884053
age	.960348	.0188949	-2.06	0.040	.9240196	.9981047
INCOME	1.006633	.0023165	2.87	0.004	1.002104	1.011184
TRANSPORTA~T	.8778852	.0542341	-2.11	0.035	.7777716	.9908853
TRAVELTIME	.9560109	.0210101	-2.05	0.041	.9157061	.9980898
HASBUK	9.284016	6.265254	3.30	0.001	2.47348	34.84684
HIGHMEDCOS~S	.9274215	.6514911	-0.11	0.915	.2340608	3.674731
NONSEVERIT~S	2.198317	1.369875	1.26	0.206	.6481364	7.456144
LOSSOFINCO~S	1.727849	1.096349	0.86	0.389	.498201	5.992487
USEOFTRADM~S	.196911	.1254325	-2.55	0.011	.0565007	.6862558
LONGDISTAN~S	.1081487	.0748721	-3.21	0.001	.0278438	.4200627
NHIS2	1.241459	.7325203	0.37	0.714	.3905556	3.946227
NATURALCAUSE	1.010928	.6671227	0.02	0.987	.2773335	3.685002
SPIRITUAL	.3722005	.3881532	-0.95	0.343	.0482051	2.873832

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY
COLLEGE OF ARTS AND SOCIAL SCIENCES
DEPARTMENT OF ECONOMICS

Topic: Factors determining treatment-seeking behaviour of BU patients'
Questionnaire

This questionnaire is designed to aid in collection of data to enable conduct a study on the

above topic as a partial fulfilment of the requirement of the award of a Master of Arts degree in

Economics. All information received would be used solely for academic purposes.

Please tick the appropriate answer where options are provided.

Stage of treatment   early [   ]   late [   ] *Indicated on patient clinical form*

1. Age: [   ]

2. Sex: male [   ] female [   ]

3. Educational level: basic [   ] senior high [   ] tertiary [   ] uneducated [   ]

4. Occupation: Farmer [   ] Civil/ public service [   ] Trader [   ] Teacher [   ] Pupil/student [

] other [   ] specify

5. Monthly income: [GHS   ]

6. Did you have prior knowledge about the symptoms and the effects of delayed treatment of

BU before you were affected?   Yes [   ]   No [   ]

7 .What is your perceived cause of BU?

Natural cause [   ]   Spiritual/curse [   ] Have no idea [   ]

8. How long did it take you before you sought for treatment at a conventional health facility? [

] weeks

9. Did you use traditional/herbal medicine before coming to the health facility for treatment?

Yes [   ]   No [   ]

10. Were you accompanied by someone to the hospital? Yes [   ] No [   ]

11. If the answer to 13 is yes, what is the occupation/profession of the caretaker?

Farmer [ ] Civil/ public service [ ] Trader [ ] Teacher [ ] Pupil/student [ ] other [   ] specify

12. Did you have insurance on your first visit?   Yes   [   ]   No [   ]

113. What is the cost of transport from your community to the facility? [   ] pesewas   [   ]

Gh. cedis

14. How long do you take to travel to the facility?   [   ] minutes   [   ] hour(s)

15. How often do you visit the provider for reviews?   Once a week [   ]   other (specify) -

_____

Which of the following are challenges for seeking care at the facility or reasons for delayed

treatment/

High medical cost   Yes   [ ]   No [ ]

16. Long distance   Yes   [ ]   No [ ]

17. Loss of income   Yes   [ ]   No [ ]

18. Non-severity   Yes   [ ]   No [ ]

Thank you