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FACTORS INFLUENCING THE HEALTH SEEKING BEHAVIOUR OF BURULI ULCER
PATIENTS IN TWO BURULI ULCER ENDEMIC DISTRICTS IN THE BRONG-AHAFO
REGION

BY

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DECLARATION

I declare that this work is the result of my own effort, and it has not been submitted either in part or whole for any other degree elsewhere. Except for the specific references which have been duly acknowledged

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DEDICATION

I dedicate this dissertation to my late father, Mr. J.H. Amponsah-Kusi Kakabo, my adorable wife, Mrs. Angelina Owusu-Amponsah and my children, Nana Kwadwo Amponsah-Kusi Kakabo, Chief Kwabena Acheampong-Amponsah, Kwabena Opoku-Amponsah Mensah and Obaapa Yaa Owusuaa-Amponsah Aseda.

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ABSTRACT

Background: Buruli ulcer (BU) is commonly found in waterlogged areas, and its prevalence is high among farmers, especially rice farmers, illegal miners (galamsey) and children who engage in fishing activities (Huygen et al., 2013). Public health interventions for all diseases including Buruli ulcer, seek to persuade cases to report to the health facility early, as this will potentially reduce the cost of treatment and prevent disabilities. Unfortunately, most BU affected individuals tend to seek treatment at the late stages of the disease, which leaves them incapacitated and with disability. The study seeks to determine factors influencing the health seeking behaviour of Buruli ulcer patients in Dormaa Municipality and Asutifi South District Health Directorate in the Brong Ahafo region.

Method: A community- based cross-sectional study involving 222 BU patients was conducted in Asutifi south district and Dormaa municipal. Study participants were purposively recruited into the study. A structured questionnaire was used to collect data over a 6-week period from May to June 2018. Stata version 15.0 software was used for data analysis. Descriptive statistics were used to summarize data. Pearson's chi-square test was performed to determine the association between the health system factors, socio-cultural factors and demographic factors and the health-seeking behaviour where significantly associated variables were put into logistic regression models and analysis to determine the strength of the associations at 95% confidence interval with p -value of <0.05 considered to be significant.

Results: All the study participants were laboratory confirmed BU cases with 150 (67.6%) having high-level knowledge in BU, this culminated in the association between knowledge of BU and the hospital care ($p=<0.001$). None of the socio-demographic factors was significantly associated ($p<0.05$) with the use of hospital care. The odds of seeking treatment from health

facility was 12.7 times higher among respondents who mentioned drug availability compared to respondents who said drug not available (COR=12.71, 95% CI=6.66-24.67, $p < 0.001$).

None of the socio-cultural factors (traditional belief towards BU, kind of belief, why or not herbalist treatment site motivated by, family support, support provider and BU patient socialization) was associated with the use of hospital care ($p > 0.05$).

Conclusion: The choice of hospital care among the study participants was high. However, knowledge of BU was the only variable which was statistically associated with the choice of hospital care.

TABLE OF CONTENTS

DECLARATION	i
DEDICATION.....	ii
ACKNOWLEDGEMENT	iii
ABSTRACT.....	iv
LIST OF TABLES	ix
LIST OF FIGURES	ix
LIST OF ACRONYMS	xi
DEFINITION OF TERMS	xii
CHAPTER ONE	1
1.0 INTRODUCTION	1
1.1 Background	1
1.2 Problem statement.....	2
1.3 Justification	3
1.5 Narrative on factors that influence people’s health-seeking a conceptual framework	4
1.6 Research questions	5
1.7 General Objective.....	5
1.7.1 Specific objectives.....	5
CHAPTER TWO	7
2.0 LITERATURE REVIEW	7
2.1 Epidemiology of Buruli Ulcer.....	7
2.2 Demographic factors	8
2.3 Health system- Access	8
2.4 Alternative source of care	9
2.5 Socio-cultural factors	10
CHAPTER THREE	12
3.0 METHODS.....	12
3.1 Study type/Design	12
3.2 Study location/area.....	12
3.3.0 Background of Dormaa Municipal	13
3.3.1 Background of Asutifi South District.....	14
3.4 Variables of the Study	15
3.4.0 Dependent Variable	15

3.4.1 Independent Variables	15
3.5 Sampling.....	18
3.5.0 Study population.....	18
3.5.1 Inclusion and exclusion criteria.....	18
3.5.2 Sample Size Determination	18
3.6 Sampling method.....	19
3.7 Data collection methods and tools	20
3.8 Quality Control.....	20
3.9 Data Processing and Analysis	20
3.10 Pre-test.....	21
3.11 Ethical Consideration	21
3.12 Training of interviewers	22
CHAPTER FOUR.....	23
RESULTS	23
4.1 Study participants' socio-demographic characteristics	23
4.2 Knowledge of study participants on Buruli ulcer.....	24
4.3 Health service-related factors influencing health seeking behaviour.....	25
4.4 Socio-cultural related factors influencing the health seeking behaviour of Buruli ulcer patients	27
4.5. Bivariate analysis of Socio-demographic factors and health seeking behaviour	28
4.6 Relationship between Respondent's Knowledge and health-seeking behaviour	29
4.7 Health service-related factors influencing health seeking behaviour.....	31
4.8 Socio-cultural factors and health seeking behaviour of Buruli ulcer patients.....	32
4.9 Relationship between Healthservice related factors, Client knowledge & Socio-cultural factors and Health seeking behaviour	34
4.10 Effect of Health facility-related and client knowledge associated with Health seeking behaviour of Buruli ulcer patient	36
5.0 DISCUSSION	38
5.1 Limitations of the study.....	38
5.2 Buruli ulcer patients' knowledge level on Buruli ulcer	38
5.3 Demographic factors influencing Buruli ulcer patients' health seeking behaviour.....	39
5.4 Health service-related factors that influence Buruli ulcer patient's choice of care.	40
5.5 Sociocultural factors that affect the health seeking behaviour of Buruli ulcer patients...	42

CONCLUSION AND RECOMMENDATIONS	45
6.1 Conclusion.....	45
6.2 Recommendation.....	46
6.2.1 Public health /clinical care practice	46
6.2.2 Policy	46
6.2.3 Research.....	46
REFERENCES	47
APPENDIX A.....	57
APPENDIX B	61

LIST OF TABLES

Table 1: Independent variables that influence Health seeking behaviour	16
Table 2: Variables on socio-cultural/ perception related factors and how they are measured ..	16
Table 3: Variables on individual factors influencing health seeking behaviour	17
Table 4: Socio-demographic characteristics of study participants	23
Table 5: Knowledge of study participants on Buruli ulcer	24
Table 6: Health service-related factors influencing health seeking behaviour	26
Table 7: Socio-cultural factors that and health-seeking behaviour of Buruli ulcer patients.....	27
Table 8: Bivariate analysis of Socio-demographic factors and health seeking behaviour	28
Table 9: Bivariate analysis of Respondent’s Knowledge and health-seeking behaviour	30
Table 10: Bivariate analysis of health service-related factors influencing health seeking behaviour.....	31
Table 11: Bivariate analysis of Socio-cultural factors and health seeking behaviour of Buruli ulcer patients	32
Table 12: Univariate analysis of Health facility & Client knowledge and Health seeking behaviour.....	35
Table 13: Multivariate analysis of Health facility-related and client knowledge associated with Health seeking behaviour of Buruli ulcer patient	36

LIST OF FIGURES

Figure 1. A conceptual framework describing factors influencing the health seeking behaviour of Buruli ulcer patients in endemic communities. 3

Figure 2 Background of the study areas 13

LIST OF ACRONYMS

BU	Buruli ulcer
BUD.....	Buruli Ulcer Disease
CBSVs.....	Community-Based Surveillance Volunteers
CHAG.....	Christian Health Association of Ghana
CHPS.....	Community Health Planning Services
DHMT.....	District Health Management Teams
DMTS.....	Dormaa Municipal Midwifery Training School
NHIS.....	National Health Insurance Scheme
NTDs.....	Neglected Tropical Diseases
WHO.....	World Health Organization

DEFINITION OF TERMS

Modern healthcare: A healthcare that has been transformed by advances in technology.

Technology is used to provide a better patient experience and run a more efficient practice, it requires the adoption of new ways of working and liaising with patients and the provision of standard care.

Alternative healthcare: Healthcare practices that are not typically practised in traditional medical communities and offer treatment that differs from standard medical practice.

Category I: A single lesion <5cm in diameter. Most category I lesions may be completely healed with antibiotic treatment.

Category II: A single lesion between 5 and 15cm in diameter. Some category II lesions may completely heal with antibiotic treatment.

Category III: A single lesion >15cm in diameter, multiple lesions, lesions at critical sites (eye, breast, genital) and osteomyelitis. In addition to antibiotics, most category III lesions require surgery (excision, skin grafting or amputation).

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

Buruli ulcer, one of the neglected tropical diseases (NTDs), is a devastating infectious disease caused by *Mycobacterium ulcerans*, it is neglected due to many factors. For instance, it does not have a direct source of funding and most health staff do not have adequate knowledge about the causes, mode of transmission, categorization and treatment regime. Also, most people in endemic communities don't have adequate knowledge and treatment options (Koka, 2018).

According to Yotsu et al. (2015) "Buruli Ulcer (BU) affects every age and gender, but most patients are children under the age of 15". About 90% of the infections, however, are on the limbs, with nearly 60% of all lesions on the lower limbs (Affolabi et al., 2008). After tuberculosis and leprosy, Buruli ulcer is the third most common mycobacterial disease in humans (Aujoulat et al., 2003). The early stages of Buruli ulcer are often painless and non-specific (nodule, plaque or edema), resulting in a large ulcer without early medical treatment (Pius Agbenorku, Donwi, Kuadzi, & Saunderson, 2012).

In Australia, Buruli ulcer patients present for treatment earlier, this helps to reduce the burden and the duration of disease and treatment (Converse et al., 2011). In African and for that matter Ghana, most cases occur in remote villages where people do not pay attention to the disease at the initial stages because the disease seems not to be painful like bump and sore (Moe et al., 2012).

In Dormaa municipal and Asutifi south district, most BU infected people associate the cause of BU to witchcraft and other primitive causes, hence, prefer to seek treatment from herbalists or spiritualist rather than hospital health care.

1.2 Problem statement

In 2015, the World Health Organization reported a total of 2037 new cases in thirteen countries (“WHO | Buruli Ulcer”, 2017). After Cote d'Ivoire, Ghana has been ranked second endemic country in Africa (Siegmond et al., 2007). More of the cases are under-reported in Ghana, averagely, over 1,000 cases are recorded annually(Koka, 2015).

In Ghana, about 18 districts report Buruli ulcer cases (Bretzel et al., 2007). In the Brong Ahafo region, 10 districts report Buruli ulcer cases(BRONG AHAFO REGION, 2016). A total of forty-one and fifty-seven (41 and 57) cases of BU were reported in the Brong Ahafo Region in the year 2014 and 2015 respectively. Asutifi South District reported 12 of BU in the year 2015 while in 2016, Dormaa Municipal reported a total of 14 BU cases. In the absence of strategies to prevent infection, control of Buruli ulcer will continue to rely on efficient health services to prevent the progression of the pre-ulcerative condition. (Mercy Ackumey et al., 2011).

Most of these BU cases were reported at category II and III, the late stages of the infection. Reasons for the late reporting to the health facility were that they visited herbalists and spiritualist due to the nature and the onset of the disease. Others mentioned lack of health services in their catchment areas, lack of drugs and other case management logistics in areas with access to healthcare. In the endemic districts in Brong Ahafo Region, despite free medical treatment, many infected persons prefer other treatment sources to hospital treatment. If this phenomenon is not redressed, cases will be reported at late stages (category II and III) and this could lead to disfigurement, permanent disability and amputation.

The study, therefore, explored factors influencing the health seeking behaviour of people living in Asutifi South District and Dormaa Municipal.

1.3 Justification

There is the need to identify the alternative source and factors influencing the choice of health care among the people with Buruli ulcer living in Buruli ulcer endemic communities. It is hoped that this study will help to identify the various source of treatment and provide factors that prevent people from seeking the modern source of health care services.

Figure 1. A conceptual framework describing factors influencing the health seeking behaviour of Buruli ulcer patients in endemic communities.

Health service

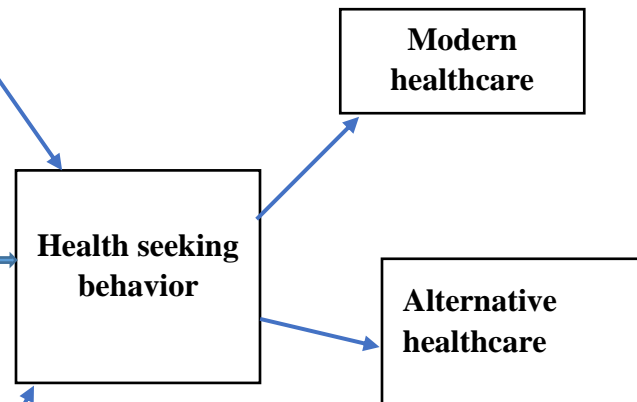
- Availability of health facility
- Staff availability
- Staff attitude
- Availability of drugs and logistics

Demographic characteristics

- Age
- Sex
- Marital status
- Educational background

Socio cultural factors

- Norms
- Beliefs
- Perception



1.5 Narrative on factors that influence people's health seeking a conceptual framework

Health care utilization mostly depends on perceptions held by the people on the need for the service. Other factors such as service availability and accessibility may be favourable but if the individual does not see the service to be relevant, he/she may be less likely to utilize it. Staff attitude is determined by the availability of health staff. These staff who are sent to work in deprived communities perhaps look down upon the community members, due to this, patients may not have the urge to attend the facility, and this can influence their choice of care to either use of an alternative source of care or modern health care. Possibly, if the attitude of the staff is good, it will motivate patients to utilize the facility.

Worldwide, socio-demographic characteristics have been recognized to influence health care use in developed and developing countries (Kabene et al., 2006). The conceptual framework demonstrates how factors such as age, sex, marital status and educational background can influence the choice of care (alternative and modern health care). The influence of age on the use of health facilities can be argued in two directions. The choice of health care as against alternative health is determined by the mother or the father as the disease mostly affects children under 15 years, and in Ghana, children cannot decide on where to seek for health. Secondly, older people whose age-long experience may be deeply rooted in traditional beliefs may be likely to utilize alternative health care (Gyapong and Weiss, 2012). In most homes, the husband influences the choice of health care, in that regard, wives irrespective of the severity of the condition will opt for whatever care the husband decides (Cassels et al., 2005). People's educational background can influence their perception (knowledge about the disease), educated people can read about the disease and this can influence their choice, on the other hand, people

with the low educational background will join the folk's definitions and seek for alternative care (Vincent et al., 2014).

Socio-cultural factors, such as norms and beliefs affect health seeking and the determination of choice of healthcare. People attribute the cause of Buruli ulcer to many factors, including witchcraft, and this has an influence on their perception, hence their choice of care (Agbenorku; Adhikari et al.; 2015 Gyapong and Weiss, 2012). Generally, people's knowledge about the aetiology and mode of spread of Buruli ulcer is low, so they resort to the traditional (alternative) means of curing the diseases (Merritt et al.,2010). All these factors will affect the health-seeking behaviour of the people to either use modern health care or use alternative health care.

1.6 Research questions

1. What demographic factors influence the health-seeking behaviour of Buruli ulcer patients?
2. What socio-cultural factors influence the choice of care among Buruli ulcer patients?
3. What health service-related factors affect Buruli ulcer patients' health-seeking behaviour?

1.7 General Objective

To identify factors influencing the health seeking behaviour of Buruli ulcer patients in Buruli ulcer endemic Districts in the Brong Ahafo Region.

1.7.1 Specific objectives

- ❖ Determine demographic related factors that influence Buruli ulcer patients ' health seeking behaviour.

- ❖ To examine socio-cultural related factors influencing health seeking behaviour among Buruli ulcer patients.
- ❖ To determine health service-related factors that influence Buruli ulcer patient's choice of care.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Epidemiology of Buruli Ulcer

Buruli ulcer is a neglected disease caused by the ulceration of mycobacterium. One of the bacterial family that causes leprosy and tuberculosis is the causative agent (*Mycobacterium ulcerans*). Buruli ulcer is named after the first large cases were reported in 1961 in Buruli County, now known as Nakasongola District, which is located near the Nile River in Uganda (Kargbo-labour, 2010).

In Australia, *Mycobacterium ulcerans* is referred to as Bairnsdale ulcer, Bairnsdale is a town where a group of people were found to have gotten the Buruli ulcer disease in the late 1930s (Ackumey, 2013). Among the people in the Daintree river catchment area in North Queensland, Australia, the disease is called Daintree ulcer, which was named after the river (Steffen & McBride, 2010). In 1971, the first case of Buruli ulcer was reported in Ghana (Ahorlu et al., 2013), and public attention was given to the disease in 1993 (Asare & Aikins, 2014). Ghana is the second most endemic country in Buruli ulcer with 17% of cases worldwide (Asare & Aikins, 2014). The burden of Buruli ulcer is not known but the epidemiologic pattern of the disease determined by the presence or absence of Buruli ulcer foci (Pouillot et al., 2007). More than 20,000 cases of Buruli ulcer cases were reported between 1994- 2003 in Ghana, outbreaks were reported in at least 90 administrative districts in the country (Kwayer and Ampadu, 2006), with Amansie West as the most endemic district with a point prevalence estimate of 150-280/100,000 population (Raghunathan et al., 2005). The occurrence of BU is not seasonal, it is transmitted throughout the year. The disease is prevalent among people who live and work close to water bodies, children who fish in water bodies, rice farmers among others (Koka, 2015).

2.2 Demographic factors

The choice of seeking hospital care mostly do not depend on the age of the patient(Kumordzi, et al., 2013). In most traditional settings, specific age groups (mostly elderly, sometimes children) prefer the consultation of traditional practitioners to modern health care.

Sex-specific health utilization patterns may be expected particularly in societies where sex roles are strictly defined (Davies et al., 2016). The interaction between people in large families affect people perception about the disease and the resulting choice of health care resources usually differ between ethnic and religious groups respectively(Lowth, 2015). Cultural adaptation and individual adaptation to a particular culture are found to influence the choice of treatment(Mulder et al., 2008). Formal education is one of the severest exposures to ‘Western culture’ and therefore has an influence on the health behaviour of an individual (Spencer-oatey, 2012). In most cultural setting, the welfare of the child is the primary responsibility of the caregivers, and so in an event of Buruli ulcer infection, the choice and timeliness of treatment of children are determined by their parents or caregivers (Peeters Grietens et al.,2012). Prolong absence from school and eventual drop out are some of the social consequences if treatment is delayed for children (Grietens et al.,2008).

2.3 Health system- Access

Morbidity, disfigurement and disability associated with Buruli ulcer can be prevented if treatment is initiated at the early stage of the disease, several reasons have been given for the delay in seeking early treatment. The reasons vary and all revolve around economics, such as cost of treatment and socio-cultural factors such as reliance on traditional medicine(Mulder et al., 2008). Buruli ulcer is known to occur primarily in satellite areas where people lack basic health

care facilities, cases are either underreported or reported at a critical stage of the disease (Mercy M. Ackumey et al., 2011). At the early stage of the disease (the cat I), there is no need for surgery and it is responsive to treatment and when presented early it comes with good treatment outcomes (Abass et al., 2015). However, about 90% of patients seek late medical attention when surgery is needed (WHO, 2009). Nearly 50% of the people infected are children under the age of 15 years who live in rural areas and have little or no access to health services. Availability of health services in endemic communities will help to detect and treat cases promptly. In most Buruli ulcer endemic communities, due to lack of health services, patients walk for many miles to access health (Velink et al., 2016). It is essential to remove all impediments that limit access to early effective treatment by implementing social intervention such as the provision of transportation to and from treatment centres on a daily basis. Staff shortage was reported to result in a significant number of the clients missing the desired service or the patients concerned having to wait long times for the services (A.M.N. et al., 2007). If Buruli ulcer cases are reported early to the health facility, it is estimated more than 80% of people could be treated without the need for hospitalization, surgery and without any disability (WHO, 2012).

2.4 Alternative source of care

The decision by Buruli ulcer patient to seek any other form of treatment has been attributed to many factors such as culture, stigma and lack of modern form of health care (Lowth, 2015). The decision to either self-medicate or seek the services of traditional healers and spiritualists is due to lack of knowledge of a strange disease (Gyapong and Weiss, 2012).

According to Tabuti, (2013), the traditional system accounts for up to 80% of the world's population. as the first point of call when it comes to skin problems. It has been found that

traditional health practitioners are useful and will continue to be used by many in the developing countries for skin diseases because they are accessible, available and affordable as well as cultural imperative to consult them (Kasilo and Trapsida, 2013). Herbal treatment is also found to be culturally appropriate and holistic. Herbal treatment offers a form of family counselling and most of them serve as opinion leaders with credibility and often knowledgeable than village health workers so they will be there for the foreseeable future (Ryan et al.,2011).

Traditional medicine is the total sum of knowledge, skills and practices based on indigenous theories, beliefs and experiences of different cultures used to preserve health and to prevent, diagnose, improve or treat physical and mental illness (Tabuti, 2013). Traditional medicine is usually handed down from generations in the form of written or orally, hence people's over-reliance. Other studies have found the reliance on traditional healers for Buruli ulcer treatment(Mulder et al., 2008). Studies have also found that many of the Buruli ulcer patients depended hugely on over-the-counter drugs in addition to seeking help from traditionalists and spiritualists (Ryan, 2011)

2.5 Socio-cultural factors

Generally, ideas of witchcraft and other superstitious attributes, perceived seriousness, perceived effectiveness of treatment, fear of re-occurrence, surgery and amputation constitute socio-cultural features of Buruli ulcer that affect preference for herbal treatment compare to medical treatment. (Kofie et al.,2008).Buruli ulcer disease has a social and economic impact on the individuals, the family and the health system (Gyapong and Weiss, 2012). Some families are unable to cope with the burden of care and therefore abandon their wards (Peeters Grietens et al., 2012).

Other researchers have attributed the decision to either self-medicate or seek the services of traditional healers and spiritualists to lack of knowledge of a strange disease (P. V. Woods et al., 2007a). In instances where patients' wounds were dressed in the hospital by clinicians and the patients observed that the condition, age or sex of the clinician contradict their belief, they often redressed the wounds later at home for fear of the wound not healing (Koka et al., 2016). Effect of BU on caregivers especially women include long periods of absence from home and the combined pressure of providing care for hospitalized children and wards and securing a livelihood. Young female children are often absent from school to provide care for family members at home and at the hospital, this has serious implications on their future development (M. Ackumey,2013).

Several studies have shown that socio-cultural factors and lack of adequate knowledge about the aetiology of Buruli ulcer impact negatively on their health-seeking behaviour (Renzaho, P. V Woods, et al., 2007b).

CHAPTER THREE

3.0 METHODS

3.1 Study type/Design

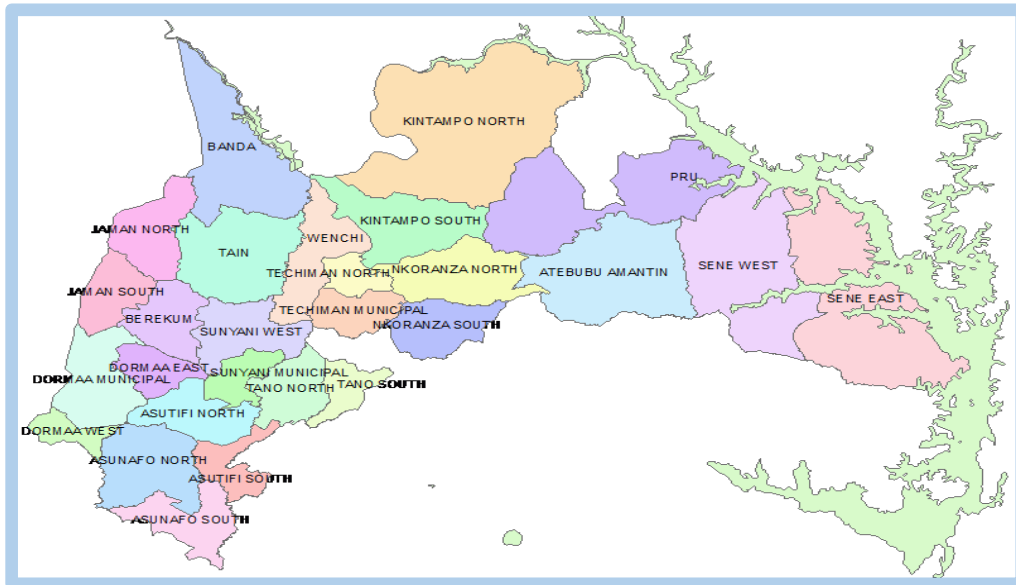
A community-based cross-sectional study involving Buruli ulcer patients who used either modern health care (hospital, clinic or health centre) or the alternative health care (herbalist, spiritualist) and factors that contribute the choice of health care in the Dormaa municipality and Asutifi south district in the Brong Ahafo Region was conducted.

Study participants were patients whose names have been entered into the Buruli ulcer register at the health directorate. They were purposively selected into the study over a 6-week period from May to June 2018 until the predetermined sample size was obtained.

Data on the demographic characteristics of the participants, health service related factors and socio-cultural factors that influence the health seeking behaviour of Buruli ulcer patients were collected directly from participants onto the data collection form developed specifically for this study. The BU registers at the municipal/district health directorates were reviewed, BU cases from 2011 to 2017 were selected and recruited into the study.

3.2 Study location/area

The study was conducted in two Buruli ulcer endemic Districts (Dormaa municipal and Asutifi South) in the Brong Ahafo Region. Brong Ahafo Region has 27 administrative municipal/district administrative capitals, 10 districts have been identified as Buruli ulcer endemic. The research was conducted in only two districts due to the high incidence of cases and also limited time and financial constraints.

Figure 2 Background of the study areas

3.3.0 Background of Dormaa Municipal

Dormaa District Health Directorate was established in 1975. In 2008, the district was upgraded to the status of a municipality. At first, its catchment area included the now Dormaa East and West Districts before they were carved out in 2008 and 2012 respectively. The municipality lies in Ghana's forest belt and in the Brong Ahafo region's western end. It shares borders with northern Jaman District and northeastern Dormaa East District. The entire western boundary is shared with Cote d'Ivoire while Dormaa West and Asunafo Districts border it on the south and southeast respectively. Dormaa Municipal is the sixth most populous district in the Brong Ahafo region. The 2010 population and housing census estimated the municipality's population at that time to be 112,111, representing 4.9% of the total population of the region. The current population is estimated to be 133,699 and a growth rate of 2.3% per annum. Females account for 52.2% of the population and about 61% of the population resides in rural areas. The municipal health directorate provides public health services to inhabitants in 68 communities and over 20

settlements scattered along with semi-deciduous forests and low lying arable lands. There are 18 health facilities in the municipality; 1 hospital, 6 health centres, 6 CHPS compounds, 4 clinics and 1 maternity home. Dormaa municipal has 31 demarcated CHPS zones and 31 functional CHPS zones.

Most of the communities lie around the Bia river, there are other streams and rivers in many parts of the municipality. People who live along the river engage in farming activities such as rice farming, vegetable and fish farming. Children in these communities hunt for crabs and fishes. A lot of the inhabitants engage in galamsey and sand winning activities. Before 2010, the then Dormaa District was not reporting BU cases, most cases suspected were clinically diagnosed as cellulitis. Endemicity of BU was established in 2010 after a thorough laboratory investigations were done on several suspected cases. In 2010, out of 29 cases suspected, 26 were laboratory confirmed as BU cases. Since then, the municipality has reported several cases of BU, most of these cases are reported at category II and III.

3.3.1 Background of Asutifi South District

The Asutifi South District is one of the twenty- seven (27) Municipal/Districts in the Brong Ahafo Region. The District was created when the Asutifi District Assembly was divided into two in 2012. The Legislative Instrument that established the District Assembly is L.I. 2054 of 2012.

Asutifi south District shares boundaries with Asutifi North District to the north, Asunafo North District to the southeast, Ahafo Ano North District to the northwest and Atwima Mponua to the North. There are about ninety-nine (99) communities in the District with two traditional paramountcies, namely Hwidiem and Acherensua.

With more than 57 per cent of the settlement in the district being rural, the situation poses a problem for the distribution of higher order services and functions in the district.

From the National Population and Housing Census of 2010, the district has a population of 60,688 with a growth rate of 2.3% per annum. The District has about ninety-nine (99) communities with ten (10) health facilities distributed in the four sub-districts. The outreach points, as well as functional CHPS zones, increased from 39 and 16 in 2015 to 47 and 20 in 2016 respectively. Two CHPS Compounds were inaugurated to add up to the existing ones.

The District can be described as typical rural, most of the communities lie in marshy areas, hence. Most of the inhabitants engage in rice farming. The district is found along the Tano river basin, there are other rivers such as konkotreso, subri, and worom. These provide an opportunity for the inhabitants to engage in rice, vegetable and fishing activities. There are pockets of galamsey activities in many parts of the district. There are a BU treatment and management centre at Dadiesoaba.

3.4 Variables of the Study

3.4.0 Dependent Variable

The dependent variable of interest is health seeking behaviour of Buruli ulcer patients.

3.4.1 Independent Variables

The independent variables of interest to be collected are varied and grouped into three categories included in Table 1

Table 1: Independent variables that influence Health seeking behaviour

Health system factors	Socio-cultural/perception factors	demographic factors
Availability of health facility Staff availability Service availability. Staff attitude	knowledge about BU norms, beliefs	Religion Educational level Marital status, Ethnicity Sex, Age, Occupation

Table 2: Variables on socio-cultural/ perception related factors and how they are measured

Variable	Operational Definition	Scale of Measurement	Source of data
Socio-cultural factors:			
Social	Perception	Discrete	Face to face interview
Cultural	Beliefs	Discrete	Face to face interview

Table 3: Variables on individual factors influencing health seeking behaviour

Variable	Operational Definition	Scale of Measurement	Source of data
Age	Age of respondent at last birthday	Continuous-discrete in years	Face to face Interview
Sex	Biological make-up	Nominal	Interview/observation
Educational background	Formal highest education attained	Categorical	Face to face Interview
Occupation	Employment status at the time of the study	Categorical	Face to face Interview
Marital Status	Respondent's legal marital status	Nominal	Face to face Interview

3.5 Sampling

3.5.0 Study population

The study population comprised of all individuals who have reported any case of Buruli ulcer (laboratory confirmed) and whose names were recorded into the BU register and have consented to take part in the study.

3.5.1 Inclusion and exclusion criteria

The inclusion criteria were individuals who have reported a case of Buruli ulcer (laboratory confirmed) and whose names were recorded into the BU register from 2011 to 2017.

The exclusion criteria were individuals who had reported ulcers and are laboratory confirmed negative and whose names are not in the BU register.

3.5.2 Sample Size Determination

The sample size was calculated using the Cochran's formula ($n = \frac{z^2 p(1-p)}{d^2}$)

Where:

n = sample size,

Z = Z statistic for a level of confidence: 1.96

P = expected prevalence or proportion: 20.7 (21%)

d = precision: 5% margin of error (d=0.05)

A 10% non-response rate will be projected because some respondents may not be willing to participate.

According to the national case search for Buruli ulcer conducted by Amofa et al., (2002), "the overall crude national prevalence rate of active lesions was 20.7% (21.0%) / per 100,000

persons”. Considering these assumptions, the actual sample size for the study was calculated using the formula:

$$n = \frac{1.96^2 \times 0.21(1-0.21)}{0.05^2} = 255$$

Accounting for 10% non-response rate, the total sample was estimated to be 281 (255 + 26=281).

3.6 Sampling method

A total of two hundred and twenty-two (222) respondents was chosen for this study with the disease at various stages. This consisted of 142 eligible respondents from Asutifi South and 80 eligible respondents from Dormaa Municipal. The selection of the (222) respondents was based on the total number confirmed cases available in the BU register at the time of the study.

In the selection of the sample for the study, the Purposive sampling was employed to select the infected persons. This is large because of the need to target those infected. The researcher went to the district health directorates, where the infected persons have their personal information captured in the BU register and thus go for their treatment. To identify many BU infected persons, respondents were selected from each district based on the number of positive cases available in the BU register. Participants were consecutively recruited into the study over a 6-week period from May to June 2018 until the predetermined sample size was obtained.

Respondents were visited with the assistance of Diseases control Officers and Community-Based Surveillance Volunteers (CBSVs) who also kept registers of all infected persons, all the households were given a unique identification number. After the first household had been identified and entered, the rest of the households were entered according to the list constructed.

3.7 Data collection methods and tools

Structured questionnaires and checklist or data extraction form were used to collect data from respondents. Data on the socio-demographic characteristics, knowledge of respondents, health service related factors, and socio-cultural related factors were collected directly from respondents onto the data collection form developed specifically for this study.

Twelve research assistants were trained to assist in the data collection and they were selected based on their fluency in the English language as well as the local language (Bono and Twi) mostly used in the study area.

3.8 Quality Control

Twelve research assistants were trained for three days to ensure they understood the application of the data collection tools as well as the appropriate data to be collected. Data collected were validated for completeness and accuracy and gaps identified were addressed appropriately.

3.9 Data Processing and Analysis

The collected data was coded and entered manually into Microsoft excel, validated for completeness and accuracy, and thereafter exported into Stata version 15.0 software for data analysis.

Descriptive statistics such as frequencies, means, ranges and standard deviation were used to summarize data. Socio-demographic characteristics will be analysed grouped as continuous and discrete variables. The variables will be analysed by the various related factors (health system operation related factors, demographic related factors and socio-cultural related factors). A Chi-

square/Fisher (bivariate) exact test analysis was performed to determine the association between the independent variables and the outcome variable.

In order to determine the strength of these associations, significant independent variables found to be associated with the outcome were put into univariate and multivariate logistic regression analysis, after which crude and adjusted odds ratios were reported respectively. All analyses were conducted at a confidence interval of 95% and a statistically significant p-value of < 0.05 .

3.10 Pre-test

The data collection tool was pre-tested in Kyeremasu in Dormaa East district and Kwadwodwomokrom located in Asutifi North district which was not part of the study area. The pre-test, using two days, was conducted on 25 Outcome of the pre-test helped in the correction, rearrangement and rephrasing questions for data collection.

3.11 Ethical Consideration

Before conducting the research work, ethical approval was obtained from the Ghana Health Service Ethics and Review Committee. Clearance obtained was used before conducting the study to obtain permission from the Brong Ahafo Regional Health Directorate and the Dormaa Municipal and Asutifi South Health Directorates. A copy of the proposal was submitted to the Brong Ahafo Regional Director of Health Services. Written consent was obtained from participants in the study and recruited into the study those who voluntarily agreed to be part of the study. Participants had the protocols of the study explained as well as confidentiality for any information provided. The time to complete the interview was made known to participants and privacy for participants was ensured during the entire duration of the interview. Participants were

assured the study would not affect their access to health services and that they have the right to stop the interview at any time they wish to.

3.12 Training of interviewers

Twelve (12) people were recruited as data collectors and supervisors for the two districts. Two of them were Supervisors and the rest were trained as a data collector.

CHAPTER FOUR

RESULTS

4.1 Study participants' socio-demographic characteristics

A total of 222 respondents participated in the study. The majority (32.0%) of them were in the age group 20-29 years with males being the highest (56.8%). Most (44.1%) of the respondents were single, 85 (38.3%) had at least basic level education whilst 50 (22.5%) did not have any formal education. The majority of respondents (60.4 %) were farmers whilst 156 (70.3%) were Christians (Table 4).

Table 4: Socio-demographic characteristics of study participants

Characteristics	Frequency(n)	Percentage (%)
Age category (years)		
0 – 9	9	4.0
10 – 19	64	28.8
20 – 29	71	32.0
30 – 39	35	15.8
40 – 49	25	11.3
50 – 59	10	4.5
60+	8	3.6
Sex/Gender		
Male	126	56.8
Female	96	43.2
Marital status		
Married	97	43.7
Single	98	44.1
Divorced	18	8.1
Widowed	9	4.1
Educational level		
No formal education	50	22.5
Basic education	85	38.3
Secondary education	74	33.3
Tertiary education	13	5.9

Characteristics	Frequency(n)	Percentage (%)
Occupation		
Farming	134	60.4
Trading	32	14.4
Civil/gov't worker	4	1.8
Other	52	23.4
Religion		
Christian	156	70.3
Muslim	58	26.1
Traditional	8	3.6

4.2 Knowledge of study participants on Buruli ulcer

Majority of the respondents (67.6%) reported that they know Buruli ulcer with a higher proportion (58.6%) indicating that BU is caused by micro-organism, 114 (51.3%) mentioned 'Kuro' as the local name, most of the respondents 142 (63.9%) stated the reason for local name as germs. Most 144 (64.9%) of the respondents mentioned that the disease is a bacterial infection, 147 (66.2%) stated that BU starts as a nodule. 152 (68.5%) mentioned that BU is transmissible from one person to the other, 128 (64.9%) of the respondents stated the disease is treatable, while (57.2%) of the respondents mentioned health facility as their source of treatment. (Table 5).

Table 5: Knowledge of study participants on Buruli ulcer

Characteristics	Frequency(n)	Percentage (%)
Know Buruli Ulcer		
Know	150	67.6
Don't know	72	32.4
Cause of BU		
Witchcraft	57	25.7
Micro-organism	130	58.6
Curse	35	15.8
BU local name		
Nkudaa	33	14.9

Characteristics	Frequency(n)	Percentage (%)
Abayikuro	40	18.0
Duabo	35	15.8
Kuro	114	51.3
Local name reason		
Curse	33	14.9
Witches/Wizards	47	21.2
Germ (mmoawa)	142	63.9
BU Transmission mode		
Bacteria infection	144	64.9
Witchcraft attack	78	35.1
Onset of BU		
Nodule	147	66.2
Ulcer	27	12.2
Oedema	48	21.6
BU Transmissible?		
Transmissible	152	68.5
Not Transmissible	70	31.5
BU Treatable?		
Treatable	128	57.7
Not treatable	94	42.3
Source of BU treatment		
Herbalist/spiritualist	95	42.8
Health facility	127	57.2

4.3 Health service-related factors influencing health seeking behaviour

The third objective was to determine the health service related factors influencing BU patient's choice of care. Majority of the respondents (81.1%) said that there is facility health facility in their communities, 128 (57.6%) of the respondents mentioned that, the distance to the nearest health facility is between 4-6km. Majority of the respondents, (90.5%) stated that it was not expensive to seek treatment from the health facility/ hospital, 161 (72.5%) of the respondents mentioned that health staff is always available to dress ulcers and give medication. Most of the respondents, (59.0%) said the attitude of health staff motivated them to seek treatment at the

health facility, while (59.9.1%) stated that drugs were always available for BU patients. Most of the respondents, (44.6%) indicated that they spend up to one hour at the health facility. (Table 6)

Table 6: Health service-related factors influencing health seeking behaviour

Characteristics	Frequency(n)	Percentage (%)
Availability of health facility		
Available	180	81.1
Not available	42	18.9
Distance to a health facility		
1 - 3km	46	20.7
4 - 6km	128	57.6
7 - 9km	21	9.5
10km & above	27	12.2
Cost of hospital treatment		
Expensive	22	9.9
Not expensive	200	90.1
Staff availability for service		
Always available	161	72.5
Not always available	61	27.5
Motivated by Staff attitude		
Motivated	131	59.0
Not motivated	91	41.0
Drug availability		
Always available	133	59.9
Not always available	89	40.1
Time spent at the facility		
20mins	5	2.2
30mins	43	19.4
1hour	99	44.6
Above 1hour	75	33.8

4.4 Socio-cultural related factors influencing the health seeking behaviour of Buruli ulcer patients

Majority of the respondents (52.7%) said they do not have traditional belief towards BU, out of the 105 respondents who said they have traditional belief, (46.7%) said people who get BU are witches. 86 (38.9%) of the respondents said they considered BU as a medical condition but not herbalist or spiritualist, 80 (36.0%) of the respondents mentioned that their spouses motivated their choice of care. Majority of the respondents (53.2%) stated that they receive support from their family members, 91 (41.2%) of the respondent mentioned that their spouses provided support whiles they were on treatment, while 159 (71.6%) of the respondents indicated that they (BU patients) can go to school and other public places. (Table 7)

Table 7: Socio-cultural factors that and health-seeking behaviour of Buruli ulcer patients

Characteristics	Frequency(n)	Percentage (%)
Traditional belief towards BU		
Have Belief	105	47.3
No belief	117	52.7
Kind of belief (n=105)		
Cursed	37	35.2
Possessed	19	18.1
Witchcraft	49	46.7
Why/Not Herbalist		
Culturally accepted	33	14.9
Spiritual condition	22	10.0
Unreliable	71	32.1
Medical condition	86	38.9
Proximity	9	4.1
Treatment source motivated by		
Parents	38	17.1
Spouse	80	36.0
Self	78	35.1
Other relatives	26	11.7

Characteristics	Frequency(n)	Percentage (%)
Family support		
Get support	118	53.2
No support	104	46.8
Support Provider		
Children/Child	40	18.1
Spouse	91	41.2
Father/Mother	57	25.8
Other family members	33	14.9
BU patient socialized?		
Should socialize	159	71.6
Shouldn't socialize	63	28.4

4.5. Bivariate analysis of Socio-demographic factors and health seeking behaviour

Pearson's chi-square and Fisher's exact tests were performed to determine the association between the independent variables (socio-demographic characteristics, knowledge of respondents, health service related factors, and socio-cultural related factors) and the outcome variables (modern health care and alternative health care). It was identified that none of the demographic factors was significantly associated ($p > 0.05$) with the use of modern care. (Table 8)

Table 8: Bivariate analysis of Socio-demographic factors and health seeking behaviour

Characteristics	Frequency n=222(%)	Health seeking behaviour		Chi-square	P value
		Modern n=127(%)	Alternate n=95(%)		
Age category (years)					
0 – 9	9(4.0)	6(66.7)	3(33.3)		
10 - 19	64(28.8)	41(64.1)	23(35.9)		
20 - 29	71(32.0)	41(57.7)	30(42.3)		
30 - 39	35 (15.8)	17(48.6)	18(51.4)		
40 - 49	25(11.3)	14(56.0)	11(44.0)		
50 - 59	10(4.5)	5(50.0)	5(50.0)		
60+	8(3.6)	3(37.5)	5(62.5)		0.662*
Sex/Gender					
Male	126(56.8)	77(61.1)	49(38.9)		

Characteristics	Frequency n=222(%)	Health behaviour n=127(%)	seeking Alternate n=95(%)	Chi- square	P value
Female	96(43.2)	50(52.1)	46(47.9)	1.814	0.218
Marital status					
Married	97(43.7)	57(58.7)	40(41.2)		
Single	98(44.1)	53(54.1)	45(45.9)		
Divorced	18(8.1)	12(66.7)	6(33.3)		
Widowed	9(4.1)	5(55.6)	4(44.4)		0.775*
Educational level					
No formal education	50(22.5)	28(56.0)	22(44.0)		
Basic education	85(38.3)	45(52.9)	40(47.1)		
Secondary education	74(33.3)	46(62.2)	28(37.8)		
Tertiary education	13(5.9)	8(61.5)	5(38.5)		0.684*
Occupation					
Farming	134(60.4)	80(59.7)	54(40.3)		
Trading	32(14.4)	14(43.7)	18(56.3)		
Civil/gov't worker	4(1.8)	1(25.0)	3(75.0)		
Other	52(23.4)	32(61.5)	20(38.5)		0.190*
Religion					
Christian	156(70.3)	90(57.7)	66(42.3)		
Muslim	58(26.1)	31(53.5)	27(46.5)		
Traditional	8(3.6)	6(75.0)	2(25.0)		0.573*

*=Fisher's exact values

4.6 Relationship between Respondent's Knowledge and health-seeking behaviour

Pearson's chi-square and Fisher's exact tests were performed to determine the association between the participants knowledge level and their health-seeking behaviour (outcome variable) and it was identified that variables such as know BU, cause of BU, BU local name, reason for local name, BU transmission mode, BU transmissible from one person to the other and BU treatable were significantly associated ($p < 0.05$) with use of modern care. However, BU onset was not significantly associated with the use of modern care ($p > 0.05$). (Table 9).

Table 9: Bivariate analysis of Respondent's Knowledge and health-seeking behaviour

Characteristics	Frequency n=222(%)	Health seeking behaviour		Chi-square	P value
		Modern n=127(%)	Alternate n=95(%)		
Know BU					
Know	150(67.6)	93(62.0)	57(38.1)	4.340	0.037
Don't know	72(32.4)	34(47.2)	38(52.9)		
Cause of BU					
Witchcraft	57(25.7)	17(29.8)	40(70.2)	39.307	<0.001
Micro-organism	130(58.6)	97(74.6)	33(25.4)		
Curse	35(15.8)	13(37.1)	22(62.9)		
BU local name					
Nkudaa	33(14.9)	20(60.6)	13(39.4)	<0.001*	
Abayikuro	40(18.0)	6(15.0)	34(85.0)		
Duabo	35(15.8)	14(40.0)	21(60.0)		
Kuro	114(51.3)	87(76.3)	27(23.7)		
Local name reason					
Curse	33(14.9)	6(18.2)	27(81.8)	<0.001*	
Witches/Wizards	47(21.2)	9(19.2)	38(80.5)		
Germs	142(63.9)	112(78.9)	30(21.1)		
BU Transmission mode					
Worms in ponds	21(9.5)	14(66.7)	7(33.3)	65.967	<0.001
Bacteria infection	103(46.4)	82(79.6)	21(20.4)		
Witchcraft attack	63(28.4)	10(15.9)	53(84.1)		
Insect bite	35(15.8)	21(60.0)	14(40.0)		
Onset of BU					
Nodule	147(66.2)	83(56.5)	64(43.5)	0.417	0.812
Ulcer	27(12.2)	17(63.0)	10(37.0)		
Oedema	48(21.6)	27(56.3)	21(43.7)		
BU Transmissible?					
Transmissible	152(68.5)	115(75.7)	37(24.3)	67.035	<0.001
Not Transmissible	70(31.5)	12(17.1)	58(82.9)		
BU Treatable?					
Treatable	128(57.7)	101(78.9)	27(21.1)	58.143	<0.001
Not treatable	94(42.3)	26(27.7)	68(72.3)		

* = Fisher's exact values

4.7 Health service-related factors influencing health seeking behaviour

Pearson’s chi-square and Fisher’s exact tests were performed to determine the association between health service related factors and the health-seeking behaviour (outcome variable) and it was identified that health staff attitude and drug availability were significantly associated ($p < 0.05$) with use of modern care. However, availability of health facility, distance to the health facility, cost of health facility treatment, time spent at facility and staff availability for health service was not significantly associated with the use of modern care ($p > 0.05$). (Table 10).

Table 10: Bivariate analysis of health service-related factors influencing health seeking behaviour

Characteristics	Frequency n=222(%)	Health seeking behaviour		Chi-square	P value
		Modern n=167(%)	Alternate n=55(%)		
Availability of health facility					
Available	180(81.1)	100(55.6)	80(44.4)	1.060	0.303
Not available	42(18.9)	27(64.3)	15(35.7)		
Distance to a health facility					
1 - 3km	46(20.7)	28(60.9)	18(39.1)	2.933	0.402
4 - 6km	128(57.6)	69(53.9)	59(46.1)		
7 - 9km	21(9.5)	11(52.4)	10(47.6)		
10km & above	27(12.2)	19(70.4)	8(29.6)		
Cost of hospital treatment					
Expensive	21(9.5)	12(57.1)	9(42.9)	0.0002	0.990
Not expensive	200(90.5)	114(57)	86(43.0)		
Staff availability for service					
Always available	161(72.5)	92(57.1)	69(42.9)	0.001	0.975
Not always available	61(27.5)	35(57.4)	26(42.6)		
Motivated by Staff attitude					

Characteristics	Frequency	Health behaviour	seeking	Chi- square	P value
	n=222(%)	Modern n=167(%)	Alternate n=55(%)		
Motivated	131(59.0)	103(78.6)	28(21.4)	59.889	<0.001
Not motivated	91(41.0)	24(26.4)	67(73.6)		
Drug availability					
Always available	133(59.9)	106(79.7)	27(20.3)	68.557	<0.001
Not always available	89(40.1)	21(23.6)	68(76.4)		
Time spent at the facility					
20mins	5(2.2)	2(40.0)	3(60.0)	0.203	
30mins	43(19.4)	19(44.2)	24(55.8)		
1hour	99(44.6)	61(61.6)	38(38.4)		
Above 1hour	75(33.8)	45(60.0)	30(40.0)		

*=Fisher's exact value

4.8 Socio-cultural factors and health seeking behaviour of Buruli ulcer patients

Pearson's chi-square and Fisher's exact tests were performed to determine the association between socio-cultural related factors and the health-seeking behaviour (outcome variable) and it was identified that none of the factors (traditional belief towards BU, kind of belief, why or not herbalist treatment site motivated by, family support, support provider and BU patient socialization) were significantly associated with the use of modern care ($p>0.05$). (Table 11).

Table 11: Bivariate analysis of Socio-cultural factors and health seeking behaviour of Buruli ulcer patients

Characteristics	Frequency	Health behaviour	seeking	Chi- square	P value
	n=222(%)	Modern n=167(%)	Alternate n=55(%)		
Traditional belief towards BU					
Have Belief	105(47.3)	71(60.7)	46(39.3)	1.221	0.269
No belief	117(52.7)	56(53.3)	49(46.7)		
Kind of belief					

Characteristics	Frequency n=222(%)	Health behaviour n=167(%)	seeking Alternate n=55(%)	Chi- square	P value
(n=105)					
Cursed	37(35.2)	19(51.4)	18(48.6)	0.124	0.940
Possessed	19(18.1)	10(52.6)	9(47.4)		
Witchcraft	49(46.7)	27(55.1)	22(44.9)		
Why/Not Herbalist					
Culturally accepted	33(14.9)	15(45.5)	18(54.5)	0.112	
Spiritual condition	22(10.0)	16(72.7)	6(27.3)		
Unreliable	71(32.1)	35(49.3)	36(50.7)		
Medical condition	86(38.9)	55(63.9)	31(36.1)		
Proximity	9(4.1)	5(55.6)	4(44.4)		
Treatment site motivated by					
Parents	38(17.1)	23(60.5)	15(39.5)	1.826	0.609
Spouse	80(36.0)	49(61.3)	31(34.7)		
Self	78(35.1)	40(51.3)	38(48.7)		
Other relatives	26(11.7)	15(57.7)	11(42.3)		
Family support					
Get support	118(53.2)	68(57.6)	50(42.4)	0.018	0.893
No support	104(46.8)	59(56.7)	45(43.3)		
Support Provider					
Children/Child	40(18.1)	19(47.5)	21(52.5)	4.072	0.254
Spouse	91(41.2)	57(62.6)	34(37.4)		
Father/Mother	57(25.8)	35(61.4)	22(38.6)		
Other family members	33(14.9)	16(48.5)	17(51.5)		
BU patient socialized?					
Should socialize	159(71.6)	85(53.5)	74(46.5)	3.215	0.073
Shouldn't socialize	63(28.4)	42(66.7)	21(33.3)		

4.9 Relationship between Health service related factors, Client knowledge & Socio-cultural factors and Health seeking behaviour

Univariate analysis conducted identified that seeking modern health care was 1.8 times among those who said they know Buruli ulcer compared to those who said they don't know what Buruli ulcer is (COR=1.82, 95% CI=1.03-3.22, p=0.038). Cause BU, respondents who said micro-organism 1.03 times compared to those who mentioned the choice of modern health care was due to witchcraft COR=1.03, 95% CI=0.78-1.37, p=<0.001). Seeking modern health care is 5.48 times among those who mentioned BU local name as Kuro compared to those who said Nkudaa/Abayikro/Duabo (COR=5.48, 95% CI=3.06-9.81, p=<0.001). Respondents who mentioned germs as a reason for the local name was 16.2 times compared to respondents who mentioned Curse/witchcraft (COR=16.18, 95% CI=8.11-32.29, P=<0.001). BU mode of transmission, respondents who mentioned bacterial infection as the mode of transmission was 6.42 times compared to those who other modes (COR=6.42, 95% CI=3.50-11.77, P=<0.001). Respondents who said BU is transmissible was 15.02 times compared to those who said not transmissible (COR=15.02, 95% CI=7.28-30.97, P=<0.001). Treatment of BU, respondents who said it is treatable was 9.8 times compared to respondents who said not treatable (COR=9.78, 95% CI=5.26-18.19, P=<0.001). Respondents who mentioned that staff attitude motivated them to seek treatment from health facility was 10.3 times compared to those who said they were not motivated by staff attitude (COR=10.03, 95% CI=5.49-19.21, P=<0.001).. The odds of seeking treating from health facility was 12.7 times higher among respondents who mentioned drug availability compared to respondents who said drugs not available. (COR=12.71, 95% CI=6.66-24.67, p=<0.001). (Table. 12)

Table 12: Univariate analysis of Health facility & Client knowledge and Health seeking behaviour

Characteristics	Health seeking behaviour		COR (95%CI)	p-value
	Modern n=127(%)	Alternate n=95(%)		
Know BU				
Don't know	34(47.2)	38(52.9)	<i>Ref</i>	
Know	93(62.0)	57(38.1)	1.82(1.03-3.22)	0.038
Cause of BU				
Witchcraft	17(29.8)	40(70.2)	<i>Ref</i>	
Micro-organism	97(74.6)	33(25.4)	1.03(0.78-1.37)	0.822
Curse	13(37.1)	22(62.9)	2.77(1.96-3.91)	<0.001
BU local name				
Nkudaa/Abayikuro/ Duabo	40(37.0)	68(63.0)	<i>Ref</i>	
Kuro	87(76.3)	27(23.7)	5.48(3.06-9.81)	<0.001
Local name reason				
Curse/Witchcraft	15(18.7)	65(81.3)	<i>Ref</i>	
Germs	112(78.9)	30(21.1)	16.18(8.11-32.29)	<0.001
BU Transmission mode				
Other modes	45(37.8)	74(62.2)	<i>Ref</i>	
Bacteria infection	82(79.6)	21(20.4)	6.42(3.50-11.77)	<0.001
BU Transmissible?				
Not Transmissible	12(17.1)	58(82.9)	<i>Ref</i>	
Transmissible	115(75.7)	37(24.3)	15.02(7.28-30.97)	<0.001
BU Treatable?				
Not treatable	26(27.7)	68(72.3)	<i>Ref</i>	
Treatable	101(78.9)	27(21.1)	9.78(5.26-18.19)	<0.001
Motivated by Staff attitude				
Not motivated	24(26.4)	67(73.6)	<i>Ref</i>	
Motivated	103(78.6)	28(21.4)	10.27(5.49-19.21)	<0.001
Drug availability				
Not always available	21(23.6)	68(76.4)	<i>Ref</i>	
Always available	106(79.7)	27(20.3)	12.71(6.66-24.67)	<0.001

BU=Buruli ulcer COR=crude odds ratio CI= confidence interval

4.10 Effect of Health facility-related and client knowledge associated with Health seeking behaviour of Buruli ulcer patient

After controlling for confounders using multivariate analysis to determine the association between health facility-related factors and client knowledge and health-seeking behaviour of respondents, it identified that, none of the variables (know BU, cause of BU, BU local name, reason for BU local name, BU mode of transmission, BU transmissible, BU treatable, motivated by staff attitude and drug availability) was significantly associated with the outcome variable. (Table 13.).

Table 13: Multivariate analysis of Health facility-related and client knowledge associated with Health seeking behaviour of Buruli ulcer patient

Characteristics	Health seeking behaviour		COR (95%CI)	p-value	AOR (95%CI)	p-value
	Modern n=167(%)	Alternate n=55(%)				
Know BU						
Don't know	34(47.2)	38(52.9)	<i>Ref</i>		<i>Ref</i>	
Know	93(62.0)	57(38.1)	1.82(1.03-3.22)	0.038	1.02(0.44-2.36)	0.971
Cause of BU						
Witchcraft	17(29.8)	40(70.2)	<i>Ref</i>		<i>Ref</i>	
Micro-organism	97(74.6)	33(25.4)				
Curse	13(37.1)	22(62.9)	2.77(1.96-3.91)	<0.001	1.66(0.82-3.34)	0.157
BU local name						
Nkudaa/Abayikuro/Duabo	40(37.0)	68(63.0)	<i>Ref</i>		<i>Ref</i>	
Kuro	87(76.3)	27(23.7)	5.48(3.06-9.81)	<0.001	0.22(0.05-1.03)	0.054
Local name reason						
Curse/Witchcraft	15(18.7)	65(81.3)	<i>Ref</i>		<i>Ref</i>	
Germ	112(78.9)	30(21.1)	16.18(8.11-31.41)	<0.001	7.54(0.88-64.41)	0.065

Characteristics	Health seeking behaviour		COR (95%CI)	p-value	AOR (95%CI)	p-value
	Modern n=167(%)	Alternate n=55(%)				
BU Transmission mode			32.29)		64.38	
Other modes	45(37.8)	74(62.2)	<i>Ref</i>		<i>Ref</i>	
Bacterial infection	82(79.6)	21(20.4)	6.42(3.50-11.77)	<0.001	1.13(0.45-2.79)	0.798
BU Transmissible?						
Not Transmissible	12(17.1)	58(82.9)	<i>Ref</i>		<i>Ref</i>	
Transmissible	115(75.7)	37(24.3)	15.02(7.28-30.97)	<0.001	1.45(0.27-7.89)	0.665
BU Treatable?						
Not treatable	26(27.7)	68(72.3)	<i>Ref</i>			
Treatable	101(78.9)	27(21.1)	9.78(5.26-18.19)	<0.001	1.15(0.32-4.06)	0.828
Motivated by Staff attitude						
Not motivated	24(26.4)	67(73.6)	<i>Ref</i>		<i>Ref</i>	
Motivated	103(78.6)	28(21.4)	10.27(5.49-19.21)	<0.001	1.51(0.51--4.51)	0.456
Drug availability						
Not always available	21(23.6)	68(76.4)	<i>Ref</i>		<i>Ref</i>	
Always available	106(79.7)	27(20.3)	12.71(6.66-24.67)	<0.001	2.47(0.79-7.70)	0.119

BU=Buruli ulcer COR=crude odds ratio CI= confidence interval

CHAPTER FIVE

5.0 DISCUSSION

This study was conducted in two Buruli ulcer endemic districts, Dormaa municipality and Asutifi south district in the Brong Ahafo Region to determine factors that influence the health seeking behaviour of Buruli ulcer patients. Over the years, public health interventions for Buruli ulcer has targeted early reporting to health facility early, this will reduce the cost and prevent disabilities, delay in treatment leads to deformity and disability. Most affected people seek treatment at the late stages (categories II& III) of the disease, which leaves them incapacitated and with cosmetic problems (Boleira et al. 2010).

5.1 Limitations of the study

Cross-sectional study design was used for the study due to limited time and financial constraints, this study was not able to establish factors that influence the health-seeking behaviour compared to a study design like a prospective cohort. In addition, associations found were influenced by recall bias. Moreover, Brong Ahafo Region has 27 municipal/district administrative capitals, 10 districts have been identified as Buruli ulcer endemic. The research was conducted in only two districts, hence generalization of the study results will not give the true reflection of the health seeking behaviour of Buruli ulcer patients in the Brong Ahafo Region.

5.2 Buruli ulcer patients' knowledge on Buruli ulcer

This study showed a high level of knowledge of Buruli ulcer in the selected endemic districts and this knowledge influenced their choice of modern care (hospital) instead of alternative care (herbalist/spiritualist). Variables such as Know BU, Cause of BU, BU local name, Local name

reason, BU transmission mode, BU transmission mode, BU transmissible and BU treatable are statistically associated with the choice of health service. This high level of knowledge of Buruli ulcer was confirmed in an earlier study by Ackumey (2013), where more than two-thirds of adults in Ga West had an awareness of BUD and consider it a major health problem.

5.3 Demographic factors influencing Buruli ulcer patients' health seeking behaviour

Buruli ulcer is prevalent in children under the age of 15, in many traditional settings specific age groups (mostly elderly, sometimes children) prefer traditional practitioner consultation, but age in this current study has not been found to be significantly associated with health-seeking behaviour. This confirms an earlier study that found that age and sex often have a discriminatory function in choosing between traditional and modern health care and that the choice of modern services appears to be less dependent on the age of the people affected (PEOPLE & DISTRICT, 2014). Sex and age often play a discriminatory role in choosing either modern or traditional health care in our rural setting, where sex roles are strictly defined. This current study identified that sex is not associated with modern health care use statistically. This means that there was no sex-dependent choice of health service, both modern and alternative. On the other hand, another study found that patterns of utilization of sex-specific health can be expected especially in societies where sex roles are strictly defined (Davies et al., 2016). People with higher education are expected to have increased knowledge in BU and thus influence the use of modern health care, but this study has identified that. Respondents with basic education attended health facility compared to people with higher education. This is in contrast to a related study which stated that the level of education determines the knowledge level and hence, the treatment option for respondents on Buruli ulcer (Anokye, Acheampong, Mprah, & Sarpong, 2018).

Respondents in the current study engaged in different forms of occupation; most of them were farmers. However, it was observed that there was no significant association between the occupation of respondents and their health-seeking behaviour ($p=0.19$). Buruli ulcer tends to be economic perspective, and it is a consequence of poverty in most of the affected communities, occupation of respondents in most cases determines the incomes level. The cost of care for patients with BU is heavy especially patients who live far distance away from health care (cost of travelling), this is in contrast in a study found that the cost of treatment and management of BU inflicted a very heavy financial burden on poor households than the rich (Ga & Eas, 2004).

It was anticipated that Christians and Muslims, based on their religious beliefs, religion should have a positive association with the choice of care, however, this study found that religion was not statistically associated with the health-seeking behaviour of the participants. Another study corroborated the findings in this study and identified that although the majority of respondents stated the hospital as the place for appropriate treatment, some BU victims preferred witchdoctors/herbalists and prayers, and considered the hospital as the last option(Akoachere, Nsai, & Ndip, 2016).

5.4 Health service-related factors that influence Buruli ulcer patient's choice of care.

The third objective was to determine the health service related factors influencing BU patient's choice of care. It didn't matter whether the source of BU treatment was herbalist/ spiritualist of the health facility. For a Buruli ulcer patient to decide to seek any form of treatment depends on the availability of the services. In this study, it was identified that the availability of health facility is statistically associated with the health seeking behaviour of participants ($p=0.03$). This has been confirmed in a study which found that access to health services encouraged timely treatment of BU patients (Ackumey, Gyapong, Pappoe, Maclean, & Weiss, 2012). Distance to

the nearest treatment site is a major determinant of care choice, but in this study, it was found that the distance to the nearest health facility was not associated statistically significantly with the choice of modern health care. A similar study found, however, that living near a health facility increases the likelihood of seeking care (Anselmi, Lagarde, & Hanson, 2015). The entire treatment of BU is free, however, there are other costs which includes transport, feeding and the purchase of other drugs to treat other underlining infections, and therefore this makes the cost of treatment a major determinant of the choice of treatment. This study found that high treatment costs were not associated statistically with choosing modern health care, which meant that participants would choose modern health care regardless of cost. This contrasts with a study that stated that factors causing delay in hospital treatment were the use of traditional medicine prior to presentation at the treatment center, the cost and duration of admission; disease considered not to be sufficiently serious; witchcraft perceived as the cause of disease; and fear of treatment that patients expected to be amputated (Mulder et al., 2008). This study found that the availability of staff was not statistically linked to the choice of modern healthcare ($p=0.975$). This meant that participants' choice of modern health care was not influenced by the availability of health staff. This is in contrast to a study which stated that greater availability of referral health services in the locality has no significant effect on the decision to seek care, while greater availability of staff and equipment increases the probability of seeking care when ill.(Anselmi et al., 2015). The attitude of health is one major determinant which influences the health seeking behaviour of Buruli ulcer patients. In this study, it was recognized that staff attitude motivated participants to seek modern health care ($p=<0.001$). This is a confirmation of a study which stated that to make health service acceptable, providers were encouraged and motivated to develop attitudes and atmospheres that make BU patients feel at home and willing to come to the

clinic on daily basis for 56 days or more(Ahorlu, Koka, Yeboah-Manu, Lamptey, & Ampadu, 2013). For BU patients to choose hospital treatment and successfully complete treatment course, availability of drugs and dressing materials is important. This study identified that drug availability was significantly associated with the choice of modern health care, participants opted for modern health due to the fact that drugs and other logistics were constantly available for successful completion of treatment. In a related study, it was emphasized that as biomedical treatment has become more available with improved rate of successful treatment outcomes and coupled with the willingness of family members and friends to support biomedical treatments(Ahorlu, Koka, Kumordzi, et al., 2013). Waiting time is one major determinant that influence the health seeking behaviour of participants. It was identified in this study that, waiting time was not statistically significant with the choice of modern care. In contrast to this current study, findings from a study identified that medical treatment was often considered as a last alternative. Reasons for delayed medical treatment included fear of prolonged hospitalization, delays in treatment at the hospital, difficulty in obtaining transport for medical treatment, high transport costs and loss of income because of time spent in seeking medical treatment(M. Ackumey, 2013).

5.5 Sociocultural factors that affect the health seeking behaviour of Buruli ulcer patients

Behaviour seeking health is greatly influenced in this part of the world by the socio-cultural and belief system. The traditional belief is a major determinant when it comes to the health seeking behaviour of participants, in this study, traditional belief towards BU was not statistically associated with the health-seeking behaviour of the participants. This contrasts with a similar study where some of the interviewees held the belief that the disease is caused by their

adversaries, including witches. More than half of the respondents, however, did not have any idea about the disease and thought it is just the work of God (Owusu, 2012). The kind of belief held by participants influenced their option for treatment, kind of belief in this current study is not statistically associated with the modern use of health care ($p=0.94$). In contrast to this, it was seen in another study that it was usually believed that wounds were caused by charms or spirits and, therefore, required the attention of a native healer (Koka et al., 2016). The reason to either seek herbal/traditional treatment or not depends on many other factors, this study found that the reason given to the choice of herbal/spiritual treatment was not statistically associated with the health-seeking behaviour of the participants. In contrast to this finding, an earlier study had stated that spiritualists and herbalists were frequently used however because they were easily accessible and provided home-based care which minimized absenteeism from home for medical treatment (Gyapong & Weiss, 2012).

The decision to seek treatment from any source enormously depends on the influence of other people, parents, spouse or other relatives. In this study, treatment site motivation was not statistically associated with the choice of health service, either modern or alternative care. This finding contrasts a study which reported that choices for outside-help were influenced by the perceived effectiveness of the treatment, the closeness of the provider to residences, and family and friends (Koka, 2018).

The role of significant others is important throughout the course of the treatment period, (56 days), the nature of the treatment regimen requires that someone closer to the patient must be brought in to serve as a treatment supporter to support and encourage the patient. Additionally, patients are most of the times neglected due to the belief that has been attributed to the disease. However, no significant association between the support provider and care choice was found in

this current study. Unlike this finding, an earlier study found that a significant relationship existed between family involvement in decision making on treatment ($p = 0.0434$) (Ahorlu, Koka, Kumordzi, et al., 2013).

Buruli ulcer patients also suffer huge stigma and social exclusion due to the perceived cause of the disease, this has a huge impact on the choice of health service, and patients suffer from such stigma in our health care setting, social gathering and in schools. In this study, it was identified that there was no significant association between BU patient socialization and the choice of care. In contrast, a related study used focused group discussions (FGD), to study stigma among Buruli Ulcer patients and shared the following extract: “We do not discriminate against them, we live normally with BU victims. We do not prevent them from attending social functions” (Renzaho et al., 2007a). This suggests that BU patients are generally accepted as part of society and do not need to live in isolation from everyone.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

This study found the knowledge of BU in the selected endemic districts and this knowledge influenced respondents' choice of modern care (hospital) instead of alternative care (herbalist/spiritualist). All the variables (know BU, cause of BU, local name, Bu local name reason, BU transmission mode, BU transmissible) with exception of know BU were significantly associated with the health seeking behaviour of participants.

It was found that none of the socio-demographic factors was significantly associated with the health seeking behaviour of the study participants ($p > 0.05$).

The study found that, with exception of staff attitude, drug availability, none of the health service related factors were found to be statistically associated with the health-seeking behaviour of the participants ($p > 0.05$)

The study identified that none of the socio-cultural related factors (Traditional belief towards BU, Kind of belief, Why/Not Herbalist, Treatment site motivated, Family support, and Support Provider BU patient socialized) was found to be statistically associated with the health-seeking behaviour of the study participants.

6.2 Recommendation

6.2.1 Public health /clinical care practice

1. Regional Health Directorate and District health directorate must intermittently organize training and refresher courses for health officers and community-based surveillance volunteers to increase their knowledge on Buruli ulcer.
2. Public health officials in the various health facilities and CHPS zones must intensify health education in their catchment areas to demystify Buruli ulcer.

6.2.2 Policy

1. Buruli ulcer program manager should consider the inclusion of herbal medicine in the health system due to its prominence in the management of Buruli ulcer.

6.2.3 Research

2. Further studies into other factors that influence the health seeking behaviour of Buruli ulcer patients.

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APPENDIX A

Consent Form for Participation in the study

Background

My name is Owusu-Amponsah Daniel, a student at the School of Public Health, University of Ghana, Legon. I am conducting research on the topic: Factors influencing the health seeking behaviour of Buruli ulcer patients in two Buruli ulcer endemic Districts in the Brong Ahafo Region.

Purpose of the Study

The purpose of the study was to determine factors that influence patients' choice of care, alternative or modern health care in Dormaa Municipality and Asutifi south district in the Brong Ahafo region. I am conducting this study as academic research in partial fulfilment for the award of Masters of Public Health degree.

Participants Role

The study involves administering questionnaire which requires answering some questions or having some discussions Factors influencing the health seeking behaviour of Buruli ulcer patients in two Buruli ulcer endemic Districts in the Brong Ahafo Region. Your selection to participate in this research is as a result of you falling within this category of study participants.

Compensation

Your participation in this study comes with no compensation or remuneration. However, we will appreciate your participation in the study and also help us with information on factors that influence the choice of care among Buruli ulcer patients.

Confidentiality

Any information you provide in this interview will strictly be kept confidential and will be used only for this study's data analysis. Your responses will be anonymous and only the investigators will have access to the information you provide. No connection will be made between your identity and the responses given in the discussions.

Potential Risks

There is no possibility of risks related to your participation in this study. However, the only inconvenience may be that some of your time (about 30minutes) will be taken in administering the questionnaire.

Potential Benefits

There are no direct benefits related to your participation in this study. However, the outcome of this study will help identify various ways to improve upon the factors that will best influence Buruli ulcer patients choice of care, health service factors, socio-cultural and demographic factors. Additionally, findings at the end of the study will add to knowledge and also inform policymakers and stakeholders in planning interventions that are applicable at all level of care.

Voluntary Participation and Withdrawal

Your right to refuse to participate in this study is completely voluntary. If you wish to withdraw your participation at any time, you are free to do so. If you feel uncomfortable by any question asked, you have the right not to answer. Please feel free to ask any question at any point. However, as your responses or opinions are necessary for helping us determine Factors

influencing the health seeking behaviour of Buruli ulcer patients in two Buruli ulcer endemic Districts in the Brong Ahafo Region, I will encourage you to fully participate in the study.

Data Storage and Usage

The data collected from participants will be kept safe, under lock and key and accessible only to the research team. A password will be created for the electronic copy of the data collected. At the end of the study, the findings will be shared with Ghana Health Service and the School of Public Health, University of Ghana, Legon. Also, findings shared with the Brong Ahafo Regional Health Directorate, Dormaa Municipal Health Directorate and Asutifi South District Health Directorate, this will enable them to address the challenges and sensitize health facilities and community members which will lead to an improvement in the health-seeking behaviour of the Buruli ulcer patients in the Region.

If you agree to participate in this study, I would like you to read this consent form and sign,

Respondents / participants only:

On my own accord, based on my understanding of what the study entails, hereby consent to be part of the study.

Sign/Thumbprint..... Witness's Sign.....

Date..... Date.....

Name of Researcher:

Researcher's signature..... Date.....

Contact for Additional Information

In case you later have any questions, you may contact

1. Principal Investigator: Owusu-Amponsah Daniel

Department of Epidemiology and Disease Control, School of Public Health,

University of Ghana, Legon, Accra

Telephone: 0504404900, E-mail: danisoman1979@gmail.com,

or

2. The Academic Supervisor: Dr Adolphina Addo-Lartey,

Department Of Epidemiology and Disease Control, School of Public

E-mail: aaddo.lartey@gmail.com Tel: 0261458790

Your rights as a Participant

If you have any question about your right as a research participant or need further clarification, you can contact the Administrator of the Ghana Health Service Ethical Review Committee using the address below;

Ms. Hannah Frimpong

Administrative Secretary

Ghana Health Service Ethics Review Committee

Research and Development Division

P. O. Box 190, Accra

Office: 0302681109, Mobile: 0507041223

APPENDIX B

FACTORS INFLUENCING THE HEALTH SEEKING BEHAVIOR OF BURULI ULCER PATIENTS IN TWO BURULI ULCER ENDEMIC DISTRICTS IN BRONG AHAFO REGION.

Questionnaire for Community members with Buruli ulcer

To obtain the required information, a questionnaire has been designed for you to complete. Your voluntary participation in the study is very vital as information provided will contribute to better management of Buruli Ulcer cases. You are kindly requested to be honest in your responses and rest assured that information you will give is going to be treated with the strictest confidentiality.

Thank you very much for your kind response.

Personal Information

Study ID : _____

Today's date: _____

Village of Residence : _____

Tel : _____

AGE (in years) : () 0- 9 () 10 – 19 () 20- 29 () 30- 39 () 40-49 () 50- 59 () 60+

Sex : (a) Male (b) Female

Instructions: please tick (√) the letter that corresponds to the appropriate response

Background

1. What is your highest level of education?

(a) Primary (b) Secondary and High School (c) University (d) No education

2. What is your marital status?

(a) Married (b) Single (c) Divorced (d) Widowed

3. What is your occupation?

(a) Farming (b) Trading (c) Professional (d) Other

4. What is your religion?

(a) Christian (b) Muslim (c) Traditional (d) Other

Knowledge about Buruli Ulcer (BU)

5. Do you know what BU is?

(a) Yes (b) No

6. What causes BU?

(a) Witchcraft (b) germ (c) curse

7. Do you have a local name for BU?

(a) Nkudaa (b) Abayikro (c) Duabo (d) Kuro

8. Reason for the local name

(a) People who get it are cursed

(b) People who get it are witched/wizards

(c) People get it from germs

9. Indicate a means by which this disease can be transmitted or how one can get infected

(a) Worms in ponds (b) Bacterial infection (c) Witchcraft (d) Bite of an insect

10. How did the disease start? (a) Nodule (b) ulcer (c) Oedema

11. Do you believe BU can be transmitted from one person to another?

(a) Yes (b) No

12. Do you think BU can be treated?

(a) Yes (b) No

13. Where did you seek treatment?

From the herbalist/from the spiritualist

From the Hospital

Health service-related factors influencing health seeking behaviour

14. Is there a health facility in this community/ CHPS zone?

() Yes () No

15. What is the distance to the nearest health facility?

() 1-3 km () 4-6km () 7-9km () 10+km

16. Is it expensive to seek treatment from the hospital?

() Yes () No

17. Are health staff always available at the health facility to dress your ulcer and give medication?

() Yes () No

18. Do you think staff attitude motivated you to seek treatment at a health facility?

Yes No

19. Are drugs and dressing materials always available?

() Yes () No

20. What is the minimum length of time did you spend at the health centre?

(a) 20 minutes (b) 30 minutes (c) one hour (d) above one hour.

Socio-cultural factors influencing health seeking behaviour

21. Are there any traditional beliefs attributed to your illness in this community?

(a) Yes (b) No

22. If yes what kind of beliefs?

(a) Cursed (b) Possessed (c) witch/wizard

23. Why will you seek or not seek treatment from the herbalist/spiritualist?

(a) It is cheap (b) culturally acceptable (c) it is closer

24. Who took you or suggested the herbalist/spiritualist to you?

(a) mother/father (b) wife/husband (c) self (d) other family members

25. Do you receive any form of support from you family while on treatment?

(a) Yes (b) No

26. Who provides the support?

(a) children/child (b) husband/wife (c) mother/father (d) other family members

27. Are you allowed to go to school or to public places?

(a) Yes (b) No

THE END