EXPERIENCES OF INDIVIDUALS LIVING WITH DIABETIC FOOT ULCERS AT THE KORLE- BU TEACHING HOSPITAL

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Declaration

I, Veronica Ofosua Adjei Salia certify that this thesis is the result of research undertaken towards the award of the Master of Philosophy in Nursing Degree in the Department of Adult Health, School of Nursing, University of Ghana, Legon. The research has been undertaken under the guidance and supervision of Mr Kwadwo Ameyaw Korsah, School of Nursing University of Ghana, Legon and Dr. Jonathan C. B. Dakubo, University of Ghana Medical School. The Undersigned supervisors certify that they have read the thesis and attest that it is the student's own work.

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Abstract

Globally, 382 million people live with Diabetic Mellitus (DM). Diabetic foot ulcer is a major complication of diabetes characterized by the triad of neuropathy, infection and ischaemia. It affects 15-20% of the people diagnosed with diabetes in their live time. The disease accounts for up to 10% of non-traumatic limb amputation. Using an exploratory descriptive design, the purpose of this study was to explore the experiences of diabetic patients living with foot ulcers. Purposive sampling was used to recruit 12 participants from Korle-Bu Teaching Hospital in Accra, Ghana (KBTH). In-depth interviews were conducted using a semi structured interview guide. Data was analysed using Miles and Huberman content analysis. Four major themes being participants' knowledge regarding diabetic foot ulcer, challenges of managing diabetic foot ulcers, coping strategies in managing diabetic foot ulcers, and support systems in managing diabetic foot ulcers emerged from the study. In conclusion, education on foot care practices must be intensified by healthcare professionals to enable patients self- manage the ulcer. Provision of emotional, social and psychological support to patients managing diabetic foot ulcers must be made a priority to help them cope with the effects of the foot ulcers. Further research in assessing foot care practices among diabetic patients and identifying determinants of these practises is vital in improving patients' quality of life. Additionally, it may be imperative to conduct this study at multiple sites for generalization of findings.

Dedication

I dedicate this research work to my husband Albert and our children, Numbo and Mwini Eeebu. Thank you all for the understanding and support during the times of my continous absence from home.

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List of Abbreviations

ADA:	American Diabetes Association
DFU:	Diabetic foot ulcer
DM:	Diabetes Mellitus
ED:	Erectile Dysfunction
IDF:	International Diabetes Federation
MOH:	Ministry of Health
NHIA:	National Health Insurance Authority
NHIS	National Health Insurance Scheme
OPD:	Out Patients Department
WHO:	World Health Organization
USA:	United States of America
UK:	United Kingdom

Chapter One

Background to the Study

This chapter provides a background to the study from which the problem statement was developed. The session outlines the problem statement, the purpose and the significance of the study. In addition, the chapter provides sections on the research objectives, research questions and operational definition of terms used in the study.

1.1 Diabetic Foot Ulcer

Diabetes Mellitus (diabetes) is a chronic metabolic disease characterized by high levels of glucose in the blood, which occurs as a result of insulin deficiency, impaired effectiveness of insulin action, or both (International Diabetes Federation [IDF], 2006). Worldwide, the number of people diagnosed with diabetes is estimated to be 382 million with a prevalence level of 8.3%. The number is projected to reach 552 million by 2030 if steps are not taken to address the problem (IDF, 2013). In Africa, over 19 million people have been diagnosed with the disease and it is projected to reach 41.5 million by the year 2035 (IDF Ghana, 2013). It is said that about (80%) of people diagnosed with diabetes live in low and middle-income countries (IDF, 2006). In Ghana, the majority of people diagnosed with diabetes are within the ages of 40 -79 years, with about 440,000 people living with diabetes mellitus in the year 2013 (IDF Ghana, 2013). The most common types of diabetes seen in Sub-Saharan Africa are type 1 and type 2 diabetes mellitus (WHO, 1999).

According to the IDF (2013) diabetes is classified into three main types: type 1 diabetes (previously known as insulin-dependent, juvenile or childhood onset diabetes);

type 2 diabetes (formally called non insulin-dependent or adult onset diabetes) and Gestational diabetes mellitus (GDM). Type 1 usually develops in children and young adults as a result of deficient insulin production that requires daily insulin use. It has no known cause, though autoimmune reaction in which the body's defence system attacks the pancreas has been linked to the disease. Type 2 accounts for appropriately 90% of all cases of diabetes. It is associated with insulin resistance and relative insulin deficiency occurring at any age and may be associated with overweight or obesity. Gestational diabetes mellitus develops in one in 25 pregnancies worldwide. This type normally disappears after pregnancy but may result in type 2 diabetes later in life. Other specific types of diabetes, sometimes referred to as the fourth type of diabetes, which is said to be relatively uncommon has been identified as being caused by genetic disorders, infections, diseases of the exocrine pancreas, endocrinopathies and drugs (Mbanya and Ramiaya, 2006). Diabetes is one of the causes of premature illness and death in most countries as a result of complications associated with the diseases (IDF, 2013). The disease has long-term consequences on many organs including the foot (Singh, Pai and Yuhhui, 2013).

Diabetic foot ulcer (DFU) is one of the complications associated with diabetes mellitus characterized by the triad of neuropathy, infection and ischaemia (Pendsey, 2010). The ulcer results from complex physiological processes of the triad with neuropathy playing the central role in addition to disturbances of sensory, motor, and autonomic functions. More than 60% of diabetic feet ulcers are as a result of underlying neuropathy caused by hyperglycaemic induced metabolic disorders. Accumulation of intracellular glucose (fructose and sorbitol) results in decreased nerve cell myoinositol

needed for normal neurone conduction. This results in oxidation stress on nerve cells in the skin increasing vasoconstriction leading to ischaemia, promoting nerve cell injury and death (Clayton and Elasy, 2009). Neuropathy damages the innervations of intrinsic foot muscles and motor nerves leading to imbalance between flexion and extension of affected foot. Consequently, there is deformity which gradually breaks down the skin leading to ulceration (Boike, Maier and Logan, 2010). Long-term hyperglycemia due to peripheral vascular disease causes endothelial and smooth muscle cell dysfunctions in peripheral arteries, as a result there is breakdown in glucose increasing oxidative stress and vasoconstriction which promotes poor healing, ischaemia followed by cell death in the presence of low oxygen (Kolluru, Bir and Kevil, 2012).

Diagnostic measures including radiographs and other advanced imaging techniques have proved useful in the diagnosis and treatment progress of diabetic foot ulcers. When clinical infection is suspected, culture taken from the wound can be useful in determing the appropriate antibiotic therapy (Doupis and Veves, 2008). In other instances, undertaking other tests such as clinical laboratory tests, such as random blood test, fasting blood glucose, blood chemistry blood cultures, urinalysis, imagery studies, non invasive studies such as Doppler, plantar foot pressure assessment have been useful diagnostic procedures in classifying diabetic foot ulcers (Fryberg et al., 2006; Kruse and Edelma, 2006). Studies have shown that successful treatment of diabetic foot ulcers demands multidisciplinary techniques such as diet control, appropriate wound care, debridement, and offloading and infection control. Other management options described as “add-on” include hyperbaric oxygen therapy and negative pressure wound therapy (Alexiadou and Doupis, 2012). Complications commonly associated with diabetic foot

ulcer have been identified as surrounding bone infections, tissue infections and osteomyletis, necrosis of surrounding tissue due to inadequate supply of oxygen and non-traumatic loss of lower extremity limb (Bader, 2008).

Diabetic foot ulcer accounts for up to 10% of non-traumatic limb amputations 3 undertaken in hospitals (Dunn, 2007; Elusoji, 2014). In the United States of America, it has been reported that one in five patients who develop diabetic foot ulcers will eventually have to undergo amputation (Fitzgerald, 2005). The condition is associated with long periods of hospitalization of the affected persons (Kinmond, McGee, Gough and Ashford, 2003). It is considered as one of the expensive complications of diabetes mellitus to treat. The International Diabetes Federation (IDF, 2006) reported that, about two-thirds of people with diabetic foot ulcers live in middle-income countries, such as Ghana, and in sub-Saharan Africa.

The challenges of patients managing diabetic foot ulcers are enormous (Tewary, Pandya and Cook, 2013; Al-Wahbi, 2006). According to Mazlina, Shamsul, and Saini Jeffery (2011), a significantly lower quality of life due to pain, cost of treatment, altered activities of daily living, sleep deprivation and emotional turbulence is associated with diabetics with foot ulcer. Care givers (family members) of patients with diabetic foot ulcers have also reported a reduction in social activities, increased family tension, lost time from work and negative effects on the general health of family members and patients (Goodridge, Trepman, Embil, and Doughty, 2005). Viswanathan and Narayan Rao (2013) in a study asserted that diabetic foot ulcer is a challenge in middle -income countries where sociocultural factors have been associated with the disease. According to the researchers, sociocultural practices including walking barefooted, wearing of

inappropriate shoes, poor knowledge on foot care practices, inadequate resources and lack of specialists care are risk factors associated with the diabetic foot ulcers.

Sundresh, Narendran, Ramesh, Kesavjagadeesan and Reddy (2013) observed that participants lacked of knowledge about the cause of diabetic foot ulcer and life style modifications in their study among diabetics with foot ulcers. The researchers illuminated that, inspite of the continuous counseling by physicians about the need for life style modifications, participants lacked adequate knowledge on the disease as a result of illiteracy and low socioeconomic factors. Waters and Holloway (2013) indicated that, "restricted mobility", "pain" and "change" were major themes that emerged from their study on personal perception of the impact of diabetic foot disease on employment. The study indicated that, participants raised concerns about treatment schedules, footwear, and wound care in their responses during the interview. Inspite of the challenges associated with diabetic foot ulcers, it is said that the disease can be prevented when adequate diabetes education is provided to the public, in addition to counseling, frequent screening of the population and provision of adequate resources for the management of diabetes.

It seems that enough research has not been conducted into the experiences of diabetic patients with foot ulcers in Ghana. Existing data reflects the need for research that will enhance a deeper understanding of the experiences of in individuals with diabetic foot ulcers in Ghana**.** The costs of treating diabetic foot ulcers have been found to be expensive. An average of 1,500 patients are seen weekly at the diabetes clinic at the Korle Bu Teaching Hospital (Gwen, 2012) out of this, 4-5% who develop foot ulcers and are referred to the Out Patients Department (OPD) of the general surgery unit

of the hospital for various forms of treatments including dressing of the ulcers, debridement of the wounds and sometimes surgical amputation. Usually, averages of six patients with diabetic foot ulcers are admitted at the second floor of the surgical unit every month for treatment.

My observations at the second floor of the general surgery unit of the Korle Bu Teaching Hospital revealed that, sometimes patients are unable to pay for the cost of their prescribed medications and requested laboratory tests. Also, most patients experienced intense pain from the ulcer which sometimes persisted for a long time. At the surgical OPD, it is common to see some people abandoning their seats in order to avoid diabetic patients who have bandages around their feet.

Nevertheless, diabetic foot ulcers can be prevented when diabetes mellitus is managed well and education on foot ulcer prevention is presented to individuals at the level of their understanding (Singh, Pai and Yuhhui, 2013). The education may be presented using simple language to facilitate patients' understanding and compliance with the treatment. This can help prevent and reduce the incidence of diabetic foot ulcers among diabetic patients. The effects of foot ulcers on individuals have been the focus of many researchers in other countries but the same may not be said for Ghana. There is a yearning desire to explore the experiences of individuals living with diabetic foot ulcers and its prevention. Filling this gap in research is therefore important, given the problems that have been observed in managing diabetic foot ulcers. It can be deduced that, cases of are DFUs are increasing in Ghana corresponding to the rate of incidence in other parts of the world. This has resulted in some challenges being similar to what has been reported by the world literature. There is therefore a need for this

study to explore the diabetics' experiences with foot ulcers from the Ghanaian perspective. The researcher hopes to use the findings of the study to generate knowledge based on the experiences of individuals with diabetic foot ulcers in Ghana.

1.2 Statement of the Problem

In Ghana, studies on the experiences of individuals living with diabetic foot ulcers seem to be limited. A few studies on diabetic foot ulcer in Ghana centered on the cost of treatment and knowledge and practice of foot care among people diagnosed with the disease. It has been realized that, research is needed to investigate the experiences of individuals with diabetic foot ulcers at Korle–Bu Teaching Hospital. Reading through the available literature it was noted that patients living with diabetic foot ulcers sometimes have inadequate knowledge about the disease, fear of recurrence of the ulcers, pain, immobility and financial constraints (Gilpin and Lagan, 2008; Price, 2004). In addition it has also been observed through clinical practices that patients with diabetes are at risk of slow and non-healing ulcers and once an ulcer is diagnosed, the possibility of amputation becomes unavoidable.

Available records at the hospital's accounts department estimates that, the cost of treating a diabetic foot ulcer with minimal debridement runs into hundreds and thousands of Ghana cedis depending on the number of days a patient spends on admission, the state of the ulcer and the response of the individual to treatment. The cost may be higher when complications set in. The financial demand for treatment of diabetic foot ulcer evokes psychological fear that puts the individual into a state of confusion and disappointment. Presently in Ghana, the National Health Insurance Scheme (NHIS) covers aspects of the financial cost of treating diabetic foot ulcer in

Korle-Bu Teaching Hospital with the remaining cost being borne by the patient. The researcher believes that if patients receive and utilize diabetic foot information presented to them correctly, they will be able to live meaningfully with diabetes without developing the ulcer moreover, through appropriate medical interventions, effective counselling and good social support systems, individuals with the foot ulcers will be able to live positively with the disease and recover on time.

Table 1: Reported Cases of Diabetic Foot Ulcers at second Floor of the Surgery Unit of the Korle - Bu Teaching Hospital between January 2009 and December 2013.

YEAR	NUMBER OF CASES
2009	65
2012	69
2011	68
2012	69
2013	71

Source: Biostatistics Unit of the Korle- Bu Teaching Hospital

Given the enormous challenges of diabetic foot ulcer and the number of people who report yearly to the Korle-Bu Teaching Hospital for treatment, it can be deduced that many people go through challenges while managing the disease. There is therefore the

need for this study to be conducted purposely to explore the experiences of diabetic patients managing foot ulcers at the Korle-Bu Teaching Hospital.

1.3 Purpose of the Study

The purpose of this study was to explore individuals' knowledge and experiences of living with DFUs at the Korle-Bu Teaching Hospital.

1.4 Specific Objectives

The objectives of the study were to:

1. Explore patients' knowledge regarding DFUs.
2. Identify challenges of diabetic patients managing foot ulcers.
3. Explore coping strategies of individuals managing diabetic foot ulcers.
4. Describe the support systems available for diabetic patients living with foot ulcers.

1.5 Research Questions

- What is a person diagnosed with type 1 or 2 diabetes understanding of a foot ulcer?
- What are the challenges of diabetic patients with foot ulcers?
- What are the coping strategies of patients with foot ulcers?
- What support systems are available for diabetic patients with foot ulcers?

1.6 Significance of the Study

The results from this study will serve as a tool for educating healthcare professionals about the living experiences of individuals with diabetic foot ulcers. The findings will also unearth other areas for future research work relating to nursing practice, education and policy formulation in the management of diabetic foot ulcers. It will also be used in making recommendations for improving support for individuals with DFUs at the Korle-Bu Teaching Hospital.

1.7 Operational Definitions

Diabetic Foot Ulcers (DFUs): These are ulcers that occur on the feet of individuals who have type 1 and type 2 diabetes mellitus.

Healthcare Professionals/Health Care Staff/Health Care Workers: Medical doctors, nurses and other paramedics in charge of patients' care in healthcare settings.

Experiences: Personal happenings undergone, lived or come face to face with.

Individuals/Patients/Participants: Persons on treatment for DFUs.

Chapter Two

Literature Review

The previous chapter described the background of the study, the purpose, significance and the objectives of the study. Also, the research questions for the study were stated and the definition of terms outlined. This chapter reviews the literature as it relates to the topic. Literature review was undertaken by accessing databases such as Google Scholar, Hinari, Pubmed and Biomed Central, ScienceDirect and Sage Publications. Key as well as mesh words, sentences and phrases such as, diabetic foot ulcers, knowledge on diabetes, and challenges of diabetic foot ulcers, coping strategies and support systems in diabetic foot ulcers were typed into the search engines.

The literature review is organized under four main headings. These are patients' knowledge on DFU, challenges of managing DFUs, coping strategies in managing DFUs and the need for support in managing diabetic foot ulcers. Literature search was limited to works published between 2003 and 2014.

2.1 Patients' Knowledge Regarding Diabetic Foot Ulcer

The Royal College of General Practitioners (UK), states that educating diabetic patients on foot care is an exemplary principle geared towards effective collaboration between healthcare professionals and the patient (Royal College of General Practitioners UK, 2004). The institute indicated that patients' information and education needs must be managed to meet each person's needs and expectations. This is because some individuals may need an increased level of education, care and support depending on their circumstances. Studies on knowledge of diabetics on the disease and diabetic

foot ulcers have revealed that most participants had inadequate knowledge on the causes of diabetes and diabetic foot ulcers. Lack of access to information on diabetes and its complications have been reported to be a major challenge for diabetic patients (Ekore, Ajayi, Arije and Okore, 2010). Similarly, a study by Kratzer (2012) on the "experiences of diabetic youth and their families on diabetes" revealed that, participants could not access information on diabetes and its related complications since they were not readily available to them. Some of the participants reported borrowing books from the doctor's office, receiving small pamphlets after the diagnosis of the disease while others mentioned the internet and friends abroad as their source of information on the management of the disease. Provision of adequate learning materials in diabetes management and comprehensive foot ulcer education in Ghana may equip patients with the necessary knowledge to self-manage the ulcers in order to reduce complications associated with diabetic foot ulcer.

According to some studies, participants' inadequate knowledge on foot ulcers was attributed to poor communication between healthcare team members and patients, absence of counselling, busy schedules of healthcare professional and poor understanding of diabetes due to low literacy levels of the participants (Desalu et al., 2011; Ekore, Ajayi, Arije and Okore, 2010). However, other studies have also revealed participants' comprehensive knowledge on various aspects of diabetes including the causes of the disease, signs and symptoms, skin and foot care practices, exercise, diet control, and medications, which they believed, were important for the management of the disease. The sources of participants' knowledge were mentioned as the internet, books, pamphlets and verbal communications from healthcare professionals. These

studies indicated that participants' knowledge about the causes of foot ulcers, foot care practices and the risk of foot amputations were adequate (Ekore et al., 2010; Lamchahabet al., 2011; Perera et al., 2013).

A cross sectional study to assess dietary knowledge, practices and control of type 2 diabetes in a Nigerian Teaching Hospital among 33 type 2 diabetic attendants of the hospital was conducted after three months of hospital attendance (Abioye-Kuteyi, Ojofeitimi, Ijadunola and Fasanu, 2005). According to the researcher, participants were assessed on percentage of perceived knowledge, correct and accurate knowledge and practices on diet therapy. The participants were moderately obese who needed to reduce their weight. Results from the study revealed that 52% of the participants who received dietary advice had significantly high mean dietary knowledge score than those without dietary advice. It further indicated that, significantly high mean knowledge score was associated with better dietary practice and better glyceamic control (Abioye-Kuteyi et al., 2005). In all, dietary knowledge and practice were found to have improved significantly following diagnosis and counselling. A recommendation on the need to intensify education and increase dietary control in type 2 diabetes by healthcare professionals was made (Abioye-Kuteyi et al., 2005). These studies imply that, educating patients on their condition may equip them with knowledge to self-manage the condition, which may also enhance their timely recovery. In Ghana, there is the need to intensify patients' education in diabetes and foot ulcers to equip them to self-manage the condition to ensure timely recovery and prevention of complications

Mufunda, Wikby, Bjorn and Hjelm (2012) conducted a study on the level and determinants of diabetes knowledge among 58 adult members of diabetic Association (a

non- governmental Organization) using a self- report questionnaire on the Diabetic Knowledge Test (DKT) adopted from the University of Michigan Diabetes Research and Training Centre. The study found that most of the participants correctly answered items on the DKT with comparable score on general knowledge including insulin use and diet as "good" on the DKT. A limitation of the study was that participants were solely selected from the Diabetes Patients Association in the hospital without involving patients who were not members of the diabetes association resulting in sampling bias. In conclusion, the study suggested a look at areas of knowledge gap in diabetes prevention to prevent further complications of the disease. The study finding has implications for Ghana. Healthcare professionals must ensure continuous education at all levels of health care on all aspects of diabetes to equip patients with the right knowledge to self-manage the disease and prevent complications associated with the diabetes and diabetic foot ulcer.

Okoro and Ngong (2012) in a study among 80 diabetics who were also hypertensive revealed that nearly half of the participants did not know the names of the anti- diabetic and anti-hypertensive drugs they were using in treating their diabetes and hypertension. The study aimed to assess participants' anti-diabetic medication adherence levels among non-comorbid diabetes mellitus in a tertiary health care setting in Nigeria. The researchers also cited participants' lack of knowledge on the side effects of their medication as well as the duration of the drug therapy. This study reported that participants had been on the medications between two to five years. On the other hand, participants' knowledge on the purpose of the medications, dosage and frequency of using the medicines were good. Recommendations of the study stressed on the need for

healthcare workers, especially pharmacists to improve patients' medication counselling and the need to communicate in native languages to patients about their medication use. This may help to increase their knowledge on their medications. It is worth mentioning that 51% of the participants were not formally educated, a situation that might have resulted in inadequate knowledge recorded by the study. Invariably, the overall aim of the study, which was to describe participants' knowledge on medication therapy in diabetes, was achieved because the researchers established participants' adequate knowledge on their medication. In Ghana, there is the need to intensify diabetic patients' education on their medications to encourage them to adhere to their treatment to ensure quick recovery.

An interventional study was conducted among 122 rural diabetic patients. Participants were randomly selected to participate in the study aimed to measure patients' knowledge on different aspects of diabetes. Aspects of diabetes of interest to the researchers included symptoms of hypoglycaemia, prevention of diabetic foot infection and effects of the disease on the eye. It was reported that nearly half of the participants had some level of knowledge on their diabetic medications. As part of the study, three different educational information were presented to the participants after which they were made to respond to same questionnaires. An increase in participants' knowledge on the therapeutic use of diabetic medications and the frequency of the medications was observed. Other related scores were found to be low such as scores on the knowledge of symptoms of hypoglycaemia. The study findings indicated that participants' knowledge on their medications was related to factors such as level of education, their residence, work and class of the person in society (Abdo and Mohamed,

2010). It was also reported that unemployment, low social class and living in a rural area were common among those with lower knowledge compared to those with high knowledge who were literate, employed, belonging to the high social class and living in urban areas (Abdo and Mohamed, 2010). Based on the study's findings, a recommendation was made about the need to intensify educational programmes for diabetics especially at the OPD level. In Ghana, it seems that intensifying education on all aspects of diabetes may be necessary since a large number of the population is illiterate.

A qualitative study on diabetic patients' experiences and knowledge about their medication was undertaken in Malaysia by Al-Qazaz**,** Hassali**,** Shafie, Syed Sulaiman and Sundram (2011) using twelve participants. It was reported that none of the 12 participants knew about the adverse effects of their medications. The results revealed that financial barriers, forgetfulness, self- medication and quality of relationship with doctors and family members appeared to be the factors that challenged adherence to the medications by the participants. The researchers suggested that efforts must be made to enhance the awareness, knowledge, adherence and attitude of participants and to intensify education on medication. In Ghana, the need to intensify diabetes education in all aspect of the disease must be re-echoed.

Alkatheri and Albekairy (2013) undertook a study to evaluate the effect of patients' educational level and previous counselling on medication knowledge among some diabetics in Saudi Arabia. Results of the study showed that the participants' educational level had influence on their knowledge on medications. Participants with high educational levels exhibited good to excellent recognition of the indication, dosage

and side effects of their medications compared to their non-educated counterparts. The study also reported that patients who received previous counselling showed good to excellent knowledge on the medication indications, dosage and side effects as compared to those who did not have any previous counselling. The study concluded that the educational level of patients and previous counselling were positively linked to medication knowledge among the participants. It could be noted that the findings could be generalized to other populations if a quantitative approach was used. In Ghana, it may be implied that when people are presented with adequate diabetes education in the language they understand, they may likely translate the knowledge into practice to reduce and prevent complications associated with the disease.

A study by Begum (2010) and another one by Matwa, Chabe, Muller and Levitte (2003) on the prevention of diabetic foot ulcers among diabetic patients reported that the total knowledge and practice scores on foot ulcer prevention, after answering a questionnaire was found to be high. However, knowledge on foot care practice score was low indicating a significant correlation between the total knowledge and total practice. According to the researchers, the participants indicated their source of knowledge on diabetic foot ulcer prevention to diabetic guide booklets which provided comprehensive information on diabetes, and the mass media, including television and newspapers. The studies revealed that the participants' knowledge on the disease was found to be inadequate. The main conclusions of the studies were that participants' knowledge on diabetes and foot ulcer could be a basis for the control of the disease.

Hjelm and Beebwa (2013) reported limited knowledge on the causes, management and prevention of diabetic foot ulcers as well as the factors that affect self-

care and care seeking behaviours. The study aimed at exploring the beliefs about health and illness among participants with diabetic foot ulcers. The researchers recruited 14 participants as the sample size. Findings from the study indicated the need for a well-organized education, targeted at raising awareness on the prevention of diabetic foot ulcers. The current study anticipates that the need to intensifying education on diabetes and diabetic foot ulcer prevention in Ghana may be highlighted to reduce the rate of diabetes and foot ulcer occurrence.

In a cross-sectional study by Desalu et al. (2011) on "self -reported knowledge among diabetics with foot ulcers", it was found that the majority of participants had information need pertaining to diabetic foot ulcers and foot care practices. Information need was reported to be as a result of participants not receiving education from healthcare professionals on self foot care practices. The study however revealed that 30.1% of participants had good knowledge on DFUs with only 10% having knowledge about foot care practices. In conclusion, the study illuminated gap in participants' knowledge on foot care practices while it underscored the need for educational strategies in providing comprehensive knowledge for diabetics with foot ulcers. Jinadasa and Jeewantha (2011) carried out a related study to determine the knowledge and practice of foot care in patients with diabetic foot ulcer using 107 participants. The study revealed that about 50% of the study sample had knowledge on the causes of their ulcers with the knowledge on foot care practices being poor. Participants who had knowledge on diabetic foot ulcer attributed it to their ability to read and understand healthcare teachings presented by healthcare professionals. However, it was mentioned that 51% of the participants had not received education on foot care management prior

to the occurrence of the ulcers. The study's main limitation was that the questionnaire used in collecting the data was not validated by a test–retest method. The researchers recommended the need to establish specialized wound care centres at various places in Sri Lanka and involve family members in foot care management. In Ghana, it seems intensifying diabetic ulcer education with the involvement of the family is an area that must be recommended.

However, a few studies have reported that diabetic patients possessed good knowledge on foot care practices though the knowledge did not translate into practices most of the time (Rocha, Zanetti and dos Santos, 2009; Saleh, Mumu, Ara, Begum Ali, 2012). In Hellenberg and Thunberg (2013) it was revealed that 50 -70% of the participants had good to satisfactory knowledge on DFU after an educational intervention was presented to them. The study demonstrated that education was the predictor of participants' good knowledge because most participants obtained higher knowledge scores after receiving education prior to taking assessment test. The study concluded that, enrolling in the pre-educational session improved participants' self-foot care knowledge. Recommendation of the study was on the need to intensify educational programmes to improve foot care knowledge among diabetic patients. In Ghana, the need to emphasize foot care education especially among diabetic patients is important because it may help improve foot care knowledge thereby preventing foot- related complications.

The next section of the literature review considers challenges faced by diabetic patients in the management of foot ulcers.

2.2 Challenges of Individuals Managing Diabetic Foot Ulcers

Diabetic foot ulcer pose a challenge to individual patients and the healthcare system of nations as it results in increase need for specialized healthcare (Singh, Armstrong and Lipsky, 2005). The rapid increase of people with diabetes globally requires having a solid epidemiological knowledge base about the disease and developing high quality health-care services geared towards assisting individuals deal effectively with challenges that comes along with managing the disease (Formosa and Vella, 2012). A number of studies undertaken on challenges faced by diabetics with foot ulcers reveal varying experiences on the disease.

The cost of treating diabetes and its related foot ulcers have been shown to be a challenge. The WHO (2014) stated that, the cost of treating diabetes in low-income families is 25% of the income of the people and 10% in the United States of America (USA). It is said that the cost of treating diabetes affects everyone everywhere. The disease has not only financial burden but also intangible cost such as pain, inconveniences and low quality of life. The disease has great impact on the individual patient and their family member (WHO, 2014). Direct cost of the ulcers involve hospital bills such as payment for physician services, laboratory tests and cost of managing the disease using oral medications, insulin and syringes. It also involves daily blood testing, surgical interventions, cost of transportation to hospitals and clinics for daily dressing and the period of rehabilitation (Meyers, Parasuraman, Bell, Graham and Candrilli, 2014). Indirect cost involves loss of working hours, premature retirements and loss of productivity (Ogunlesi, 2004; Ogbera, Fasanmade and Ohwovoriol, 2006; WHO, 2014).

Other studies have revealed that the cost of treating diabetic foot ulcers become higher when the duration of hospital stay prolongs due to complications associated with the disease (Ali et al., 2008). In these studies, it has been asserted that the cost of treating a diabetic foot ulcer may be about five times higher than the cost of treating diabetes without foot ulcers. About 25% of the total cost of treating diabetes goes into the cost of treating a foot ulcer (Driver, Fabbi, Mawrence, Lavery and Gibbons, 2010; Ogbera et al., 2006; Rezende et al., 2009). The cost may range from low cost of hospital items to high cost of bills from prolonged hospital stay. This is witnessed more in the elderly, who often have other medical conditions as compared to younger people being managed for only diabetic foot ulcers. It is also said that the cost of treating diabetic foot ulcers may differ from country to country depending on treatment options and health resources available in the country (WHO, 2014; Firth, Nelson, Briggs and Gorecki, 2011). In most middle-income countries, the cost of treating diabetic foot ulcers are borne by the individuals themselves and their families with increased cost when complications set in (Ogbera et al., 2006).

A study by Gwen (2012) revealed that in Korle-Bu Teaching hospital, treating diabetic foot ulcer was financially unbearable for the majority of people especially because the NHIS did not cover most of the cost of treatment in the facility. The study quoted cost of prescribed drugs, diagnostic tests and other charges related to diabetic foot ulcer treatment as expensive. According to the researcher, this sometimes made patients seek treatment for the foot ulcers from traditional medical practitioners who sold cheaper herbal drugs to them, making their ulcers worse. Gwen (2012) revealed that patients sometimes could not afford to do daily dressings at the hospital due to lack

of finances. She concluded that advanced strategies aimed at identifying at- risk feet must be put in place for early treatment. Also, diabetes education must be intensified to prevent foot complications among diabetics. It is worth noting that the study adopted a qualitative enquiry hence the findings may not represent the views of a generalized large population. Inspite of this, the findings are very relevant. These findings have implications for Ghana since it is a middle-income country and most of the cost of treatment is born by the patients, there is the need for the NHIS to increase capitation allocated to the management of diabetes.

Job loss has been cited as a major challenge for diabetics managing foot ulcers (Kinmond, McGee, Gough and Ashford, 2003). A few studies have established that loss of jobs as a consequence of diabetic foot ulcers were due to prolonged hospital admissions, pain and immobility. The studies revealed that, admission for treatment of diabetic foot ulcers progressed into weeks and months and by the time patients were discharged from the hospital, they would have been replaced at their place of work resulting in loss of pension grants in some cases because they could not work (Kengne, Mchiza, Amoah and Mbanya, 2013; Tunceli et al., 2005). Other studies have revealed a loss of productivity at the work place among people in formal employment and unemployment for those looking for jobs after college as well as those who were self-employed. The studies reported indicated that the inability of participants to work for sometime forced them to take early retirement from work to depend on social welfare as a result of chronicity of the ulcers. The social welfare benefits were available in the countries where most of these studies were conducted making it easily accessible whereas in third world countries, such individuals have to depend on family members

and friends, becoming a burden and a source of worry to most patients (Ali et al., 2008; Fox, 2005; Herbert, Schnepp and Rieger, 2007; WHO, 2014). In Korle-Bu Teaching Hospital the NHIS pays for the cost of some aspects of diabetes care. The family in most cases provides support to its members in diabetes care in terms of financial, physical and emotional support.

Study by Aliasgharpour and Nayeri (2012) demonstrated that participants living with the ulcers saw it as burdensome, inconvenient and worrying due to its long healing duration. The researchers added that living with the ulcers caused emotional disturbances such as fear, depression, isolation, loss of motivation due to the severe pain that accompanied the ulcers. Contributing to the discussion on the psychological effects of the ulcers, a quantitative study to examine the psychological health and social support among patients with chronic diabetic foot ulcers was undertaken in the United Kingdom (UK) by Moffat, Franks, Doherty, Smithdale and Steptoee (2009). Results of the study revealed that all participants in the study group had significantly poor health-related quality of life with the level of depression being greater in the study group with significantly less perceived social support in the study participants than in the control. It was also realized that participants in the study group experienced poor psychological health with risk of depression, less social support and isolation compared to those in the control group. Suggestion from the study highlighted the important role of healthcare authorities in providing environment that reduces isolation and increase support to patients with diabetic foot related problems. It seems in Ghana, providing support to diabetic patients may be helpful in helping them cope with the stress of managing

diabetic foot ulcers since the diseases results in psychological disturbances and altered social lives.

Other studies have shown that diabetics encounter challenges when managing the disease using insulin injections. These studies reported that participants experienced sadness and anger while managing their diabetes with insulin injections especially before meals, every day and carrying the injections along to work and other places. Furthermore, the injections evoke a sense of torture, fear of the needle and weight gain. It was also reported that participants experienced social stigma, inconveniences and fear of hypoglycaemia in the continous use of insulin (Peyrot, Barnett, Meneghini and Schumm-Draeger, 2012; Scholes et al., 2013). It has also been established that sometimes, diabetics do not adhere to their treatment regimen as a result of pain at the injection site with the explanation that the insulin injection might increase the disease permanence and restrictions with the insulin use (Khan, Al-Abdul Lateef, Bu-Khamseen, Al Ibrahim and Khan, 2012). Suggestions by Khan et al. (2012) included provision of a comprehensive diabetes education and rendering of quality care by healthcare professionals to address the concerns of patients about insulin use.

In addition, Meece (2006) advocated for the need to dispel the myths and remove the barriers on insulin use since insulin therapy is a valuable therapeutic tool for ensuring good glucose control in diabetes management. The conclusion of these studies centred on the need to improve health education and training for diabetics and their families to enable them manage the ulcers. In Ghana, encouraging diabetic patients and providing them with the necessary education and support in their care especially on

medications is important as it may assist them to adhere to the treatment and reduce or avoid complications associated with noncompliance to treatments.

Similar to the challenges faced by diabetics in the use of insulin therapy, studies have established that using oral hypoglyceamic agents in diabetes management has its difficulties. Medications may be taken with diet at the same time in a situation where the control of blood sugar cannot be achieved by insulin injections alone (Siddiqui, Gul, Ahmedani, Masood and Miyan, 2010). The challenges associated with the daily use of the oral hypoglycaemic agents have been described as the most difficult aspect of diabetes management. The demand for the medications to be taken regularly made participants not comply with schedules and timing of the medications. In addition, non-adherence was said to worsen when diabetes medications were combined with other drugs (Soderstrom, Murray, Daly and Little, 2006; Suchard and Grotsky, 2008). According to Suchard and Grotsky (2008), most patients are reluctant to take their medications. Those who do not stick to the correct time of administration may forget to take the drugs leading to a potential drug overdose. It is said that even in studies where compliance had been achieved, patients do not stick to the correct doses and time of the medication. Suggestions from the study were that healthcare professionals must ensure that patients understand the regimen on medications and that comprehensive drug education aimed at preventing complications related to insulin use should be intensified. Intensifying education on medication in diabetes care in Ghana must continue to receive the needed attention to equip patients to self-manage the condition and improve their glycaemic control.

Physical immobility imposed on patients by diabetic foot ulcers have been found to be a major challenge in managing the disease. Studies have reported that treatment for diabetic foot ulcers require participants to have their feet hanged for days as a way to avoid weight bearing (Firth, Nelson, Briggs and Gorecki, 2011; Fox, 2005). According to the studies, treatment periods in the view of most participants were too lengthy, often involving months of immobility which rendered once active people less active, restricted and isolated from friends and community (Firth et al., 2011; Fox, 2005). In most instances inactivity and lack of exercise made it difficult for patients to control their weight which in turn delayed the healing process, adding to their already stressful situation. The studies showed that diabetic foot ulcerations interfered with the freedoms enjoyed by individuals before the ulcers because of the physical restriction (Gilpin and Lagan, 2008; Ragnarson Tennvall and Apelqvist 2004; Snyder, Jason and Hanft, 2009). Similar to previous studies, it was anticipated that initial physical immobility and lack of exercise would emerge as challenges in managing diabetic foot ulcers in Ghana. It calls for support by healthcare professionals and family members in all aspects of their care especially during movement to reduce the stress associated with movement when the ulcer develops.

Living with persistent pain and burning sensations have been reported by diabetics with foot ulcers to be a major challenge they grapple with. Previous studies have labelled living with pain as a key issue in managing a diabetic foot ulcer. The pain has been described as hot, burning and excruciating (Boulton, 2004; Upton, Richardson, Van Acker, Andrews and Springett, 2013). It increases in intensity at night during sleep thus interfering with sleep. The intensities have been described differently by different

people depending on how they perceived the pain which most said were severe when walking due to bleeding from the wound (Ribu et al., 2006). The pain sensations according to the researchers, lead to loss of interest in participants' lives and other people and instances of home falls, which demanded walking devices (Yoo, Shama, Pasnor and Kuding, 2013). Looking at the issue of pain and burning sensations as reported by other studies, it is anticipated that the current study may unearth pain as a challenge for individuals managing diabetic foot ulcers at the Korle-Bu Teaching hospital.

Hallas (2007) in his study to explore issues of health related quality of life of patients with diabetic foot ulcers asserted that, a few participants experienced less severe pain related to the ulcers. The study demonstrated that pain experiences were not reported among the study participants and the reason given was that the pains were not severe. In his conclusion, the researcher mentioned the need to embrace a holistic approach to care for diabetic foot ulcer patients. There is therefore need for healthcare workers to intensify education and support to patients with diabetic foot ulcers in Ghana. In so doing, a closer look at a study that examines the effects of pain on diabetic foot ulcers on a larger scale in Ghana is pivotal.

As shown by Ramakant (2014) stigmatization is an attribute that harms individuals, denying them of social acceptance and other related problems as shame, fear, rejection, denial and discrimination. The researcher in his study on "Bringing Diabetes to Light" recommended highly specialized counselling for people with diabetes and their family members. This he believed would improve their adjustment behaviours in managing diabetes and its related complications in the face of their

unwillingness to disclose their condition to others. As part of the celebration of the 2008 World diabetes day, the IDF suggested the creation of an enabling environment for diabetics through the intensification of education on the need to avoid stigmatization against diabetics and people who lived with other complications of diabetes. The need for diabetic patients with foot ulcers to be supported while managing the wound and educating the general public on the need to avoid stigmatizing patients with the ulcers is an area that needs to be looked at as part of diabetes managing in Ghana.

Marital conflicts have been cited in a few studies as a source of challenge to diabetics managing foot ulcers. According to the researchers, conflicts normally begin as little misunderstandings between spouses or partners and often results in negative psychological and social functioning (Triefet al., 2003). Diabetics living with foot ulcers have reported persistent psychological and social problems including tension and lack of cooperation in their marriage as their ulcers start (Bajaj, Jawad and Verma, 2013). The situation accounted for distress and worst adjustments in the management of diabetes in general and foot ulcers to be specific. Marital conflicts were reported to have resulted in more negative social interaction and communication. The report indicated that the situation made couples sometimes hesitant to contribute to conversations amongst themselves, resulting in misunderstandings. Some couples indicated that due to the misunderstanding, they preferred talking to their friends and other people outside their home in order to avoid tension in their marriages (Goodridge, Trepman, Embil and Doughty, 2005; Ribu and Wahl, 2004). Recommendations of the studies were that healthcare professionals should identify marital conflict as an issue among diabetics diagnosed with foot ulcers so that the necessary steps are taken to address the challenge.

A remarkable feature of the study was the use of the triangulation method, which made the findings representative of the general view of participants' interpretation of foot ulcers effect on marriage. In Ghana, providing support for diabetic patients with foot ulcers and stressing the need and benefits of partners support for patients must be recognized as an important aspect of diabetes care that contributes to the well-being and coping with the stress related to the management of diabetic foot ulcers.

A phenomenological study by Watson-Miller (2006) among married couples revealed that, the period of managing a diabetic ulcer was a time in which partners drew close to each other. From the study, the majority of participants reported having experienced greater levels of togetherness that never existed before the ulcers. Moreover, they witnessed an increased level of patience and tolerance in their spouses. It must be noted that the aim of the study, which was to assess participant's social and psychological well-being about their quality of life and its role in managing diabetic foot ulcers were achieved according to the study. However, at the methodology chapter, the researcher indicated destroying the audio-tape recordings of participants' interviews immediately after the study though no mention was made of the time frame. In qualitative studies, destruction of audiotape –recordings are usually undertaken after the study, but may not be necessarily done immediately. The destruction may be done at least one year after successful completion of the study in according with the Data protection Act (2003). The need to intensify education for continuous support for married couple where a partner develops the ulcer is recommended in Ghana to encourage individuals to adjust positively with the effects of the ulcers.

Diet control is one of the mainstays of managing diabetes mellitus in addition to exercises, drugs and other means. However, it has been found that diet restrictions is a major challenge in diabetes management (Shaw, Brown, Khan, and Dillard, 2013). Studies have shown that, diabetic patients have difficulties in complying with diets prescribed for them as part of their management. According to the studies, these difficulties have been identified to be the result of lack of knowledge on the choice of the right foods to be taken in diabetes management, financial constraints, pressure from family members and friends, eating out of the house and lack of energy to prepare meals. Also, the "new diet" recommended were too expensive to buy. Fruits and vegetables were not available in their localities coupled with difficulties with transportation (Frosch, 2013; Ganiyu, Mabuza, Malete, Govender and Ogunbanjo, 2013**)**. Irrespective of these challenges, a study by Shrivastava, Shrivastava and Ramasamy (2013**)** indicated that, these challenges were not peculiar to most of the participants in his study. This made him conclude that participants' compliance with dietary regimen was the result of will power, knowledge and good support systems. Recommendations by these studies included the need to intensify dietary education as part of diabetes care, the need for health promotion to address the lack of information on diet and the need for support from family members, friends and healthcare professionals to ensure good glycemic control (Frosch, 2013; Ganiyu et al., 2013; Shrivastava et al., 2013**)**. It seems dietary education in diabetes encourages adherence which eventually affects individuals glycaemic control. The need to intensify continuous dietary education at the Korle-Bu Teaching Hospital as part of diabetes care must be emphasized.

The next section of the literature review looked at the coping strategies the participants adopted while managing diabetic foot ulcers.

2.3 Coping Strategies in Diabetic Foot Ulcer Management

Research indicates that, individuals managing diabetic foot ulcers usually experience frustration in coping with their restricted life and in dealing with the ulcers (Ribu and Wahl, 2004). In these instances, individuals adopt significant psychosocial adjustments in coping with the ulcers in their domestic and social lives (Mudul, Ansar, Panda and Behera, 2013). Studies have reported that participants adopted coping skills such as entertaining themselves by watching specific television programs like comedy, reading and listening to radio programs while others resorted to baking, writing poetry or music, organizing daily prayer sessions, whiles others tried multiple medications and treatment regimens before visiting healthcare service providers (Vileikyte, 2005; Hallas, 2007; Gale et al., 2008).

Coping with the effects of diabetic foot ulcers through family members' assistance has been shown to be beneficial in dealing with the daily challenges of the disease (Figueira, Gomes Villas Boas, Foss de Freitas, Foss and Pace, 2012). It has been revealed that, kind gestures from family members made participants cope positively with the disease, though they felt somehow that the pressure put on them by the family members to accept their instructions without complaining sometimes brought misunderstanding which soured their relationship at times (Moffat et al., 2009). It could be recognized that these expressions represents views of most patients diagnosed with chronic disease, with diabetic foot ulcers not being an exception.

Regular sugar control and achieving normal blood glucose levels has been cited as a means of coping with DFUs (Fox, 2005). The belief has been established that working hard to ensure normal blood glucose levels and sticking to the education given by healthcare professionals using diet therapy, medications and exercises have been helpful in effective coping with the disease ([American Diabetes Association], ADA, 2007;Vadhara et al., 2010). It is worth mentioning that living with DFUs can be a difficult situation to deal with. It is therefore important that efforts are made by patients' family members and healthcare professionals to support individuals with the disease to improve their management.

Studies have identified that, patients managing diabetic foot ulcers cope with the psychological disturbance associated with diabetic foot ulcers (Iwasaki and Bartlett, 2006; Selvarajah, 2014). A study was conducted by Harvey and Cook (2009), aimed at examining the issue of spirituality in self- management practices among older African-American and Hispanic white women in chronic conditions. The study, which employed the qualitative approach used a sample of 414. It was revealed that participants' interviews produced four main themes that described their adjustments. They were "God's involvement in illness management, prayer as a mediator, spirituality as a coping mechanism and using a combination of conventional and spiritual practices". The study found that participants depended on the faith they had in God at the time of managing the ulcers to cope with the psychological stress of the illness. It also came to light that, these spiritual activities provided psychological relief and means of adjusting to the stress of the ulcer management. A suggestion by the study was for the need to adopt the concept of spirituality by gerontologist and healthcare

professionals as a tool in patients care for diabetes. The study was limited to only older African- American and Hispanic white women who spoke mainly English without capturing the views of their male counterparts. The current study however interviewed men and women using English, "Twi and Ga" (Local Ghanaian languages) to capture participants' views on coping with the effects of diabetic foot ulcer in Ghana. It was obvious participant used spiritual coping to manage the psychological distress associated with the disease. Thus, it helped them to live with the ulcers without complications. In Ghana, conducting a study to explore the effects of psychological coping on glycaemic control in diabetes is needed to establish the actual effects of spiritual coping on glycemic control in diabetic patients.

Cordova's (2011) study on "the lived experience of spirituality among Type 2 diabetes mellitus patients with macrovascular and/or microvascular complications" reported that, spirituality helped in explaining the "why me" question among the participants. The researcher revealed that participants' relationship with God supported them in living with the macrovascular and microvascular complications associated with type 2 diabetes mellitus. Moreover, it promoted their self- efficacy and encouraged their optimism about the disease. The study also showed that, participants' spirituality remained unchanged whiles components of their spirituality supplemented and assisted them to adapt and cope with the disease. The conclusion of the study was that spirituality expanded the awareness of the participants to meet the challenges of managing the disease. The study recommended that, holistic health, encompassing patients' spirituality be enhanced to ensure quality care for patients with diabetes and its related complications. In Ghana, emphasis on the holistic care of patients involving

physical, social and psychological in diabetes and foot ulcer management must be stressed to assist patients recover on time and avoid further complications of their conditions.

A study recruited 34 multicultural residents of West Side of Buffalo, New York to explore the multiethnic perception, attitude and beliefs of participants about living with diabetes. Kahn et al. (2013) conducted the study. The aim of the study was to describe the multiethnic participant explanation of how their diabetes began, their understanding of the illness, description of symptoms, as well as physical and emotional reactions to the diagnosis. The researcher found that diagnosis of diabetes was an unexpected event, and that emotional responses to the diagnosis of diabetes followed the grief and griefing process described by Kubler –Ross and Kessler (2005) as denial, anger, bargaining, depression and acceptance. Denial represents the belief people have that their loved ones have died, but they cannot believe that their friend or family member will not be calling to say hello or I am coming home. Anger describes the situation where a person's anger is directed at the person who died or at oneself for being unable to prevent his loved one's death. Bargaining represents "what if" and "if only" where the individual believes that, they may have been able to control or prevent the loss of a family member or friend. Kubler Ross and Kessler (2005) talked about depression as representing normalcy of feeling depressed and affirm the idea that such feelings are necessary for the healing process to begin. Acceptance describes the stage where the individual gets to the point where he recognizes the current state of their lives, without their loved ones, as the reality and can live with that understanding. Healthcare professional in Ghana must acknowledge the use of these responses by

patients in dealing with difficult situations they face sometimes, in managing diseases especially chronic diseases such as diabetes, so that they are supported in their treatments.

The last section of the literature review looks at the works on social support in managing diabetic foot ulcers.

2.4 The Need for Social Support in the Management of Diabetic Foot Ulcers

Diabetic foot ulcer management creates a need for increased social support as the treatment period is characterised by challenges that need critical attention by those involved in the management of diabetic foot ulcers. In de Vera's (2003) qualitative study on "perspectives on healing foot ulcers by Yaquis with diabetes", three main domains of support were outlined by the study. These were spiritual support, family support and professional support. In addition to these themes, de Vera also found participants' experiences in living with the ulcers as a period of having faith and strength, undertaking self-care needs, engaging in ceremonies, living with difficulties of the diabetes and a period characterized by constant preventive practices aimed at healing of the ulcers. The researcher suggested that having knowledge about patients' cultural beliefs, perceptions and healing practices of diabetic foot ulcers may equip healthcare providers with a broader scope for providing culturally competent care to patients. In Ghana, the cultural system operates in a way that involves family members and friends in healthcare of patients through their contributions. It is important that healthcare professionals recognize these people as sources of support in healthcare and involve them in the care of patients.

Studies on family support in diabetes and foot ulcer management highlight a number of support participants receive from their family members when managing diabetic foot ulcers. Support have been reported to be in the form of general support for the diabetes such as financial assistance, emotional support, provision of means of transportation to treatment sites for dressing of the ulcers, provision of information by family members who already have diabetes and teachings on foot care practices (Mayberry and Osborn, 2012). Also, family support has been said to be in the form of provision of food items such as fruits and vegetables, helping participants with glucose monitoring and motivating them to keep up the treatment regimen. The studies demonstrated that most patients acknowledge that family members played their supportive roles well, to their admiration, which helped them to comply with the treatments (Scholes, Mandleco, Roper, Dearing, Dyches and Freeborn, 2013; Yamakawa and Makimoto, 2008). On the other hand, Beryl Pilkington (2010) in a qualitative inquiry on "the experiences of living with diabetes for low-income Canadians" found that a sizable number of the participants in his study out of 40 participants interviewed reported not being able to mention the support they received from their family members and friends. Most of them asserted that they lived in shelters and social homes, which was a difficult situation. It was observed that studies on family support among diabetics and related foot ulcers have been extensively described as an important tool in diabetic foot care. Researchers believe that this area must receive the needed attention when attending to patients with diabetes and its related comorbidities. It must be highlighted that the above studies were conducted in various locations of the world including Africa, Asia and Canada bringing out the perceptions as expressed by

partipants across these continents without restricting it to just one geographical location. In Ghana due to the strong family tides, patients who manage diseases especially chronic diseases often receive support from their family members and friends in the form of financial, psychological, physical and social which contribute significantly to their care.

Healthcare professionals have been cited by studies to be a support group who influence the well-being of diabetics in the management of their foot ulcers. The support they provide has been mentioned mainly to be emotional support including caring for patients, showing of love and trust, providing information on diet, exercise, blood glucose monitoring as well as education on diabetes and related comorbidities. This type of support has been said to be an effective tool for individuals in coping with the disease (University of Michigan, 2012). Support services have been said to be accessible, easily understood and reassuring in easing the burden of diabetic patients. The studies revealed that the support offered by the health team members (comprising doctors, physiotherapists, nurses, dieticians, podiatrists and others), made participants respect the professional judgments of the health care team which also contributed to the glycemic control among the participants (Kratzer, 2012; McCaughan, Cullum and Dumville, 2013). On the other hand, a study by Aliasgharpour and Nayeri (2012) on "the care process of diabetic foot ulcer patients" cited lack of attention from healthcare professional in the management of foot ulcers by the participants. The study indicated that, the majority of the participants did not receive support and care about the skills they needed to adopt in managing their ulcers. The study further reported a lack of cooperation and care by specialists engaged in their care. They acknowledged this as a

major problem in the ulcer treatment. It was therefore suggested, that emphasis must be placed on adopting strategies to intensify education and formal support for patients with diabetes and related comorbidities. In Ghana, advocating for continuous health professionals support for patients managing diabetes and diabetic foot ulcers may be important since the interaction has been proved to be an effective strategy in patients' coping with the stress of managing their diseases.

A study by Delvin, Roberts, Okaya and Xiong (2006) described church support as another form of support system available to individuals living with diabetic foot ulcers. Findings from their focus group study revealed that the participants coped with the challenges that confronted them while managing their diabetic foot ulcers due to the strong support they received from their church in the form of frequent telephone calls from church members, visits and prayers. They indicated that as a result of the bonding between them and their church, their moods were lifted throughout the period of the ulcer treatments which resulted in their adjusting and control of their blood glucose levels. The study proposed improvement in healthcare for diabetic patients, diabetes foot education, social support and community action to help individuals managing diabetes. The need for social support in all spheres of life must be encouraged by healthcare professional in Ghana to ensure holistic care.

A qualitative study among 14 Thai old women on self-management of type 2 diabetes mellitus revealed community voluntary support as key in the management of diabetes among the older women. The study reported that during the ulcer management the participants received support in the form of frequent visits by the group, supply of food items, financial support which they testified as helpful in the management of their

diabetes. The study recommended the need to intensify patients teaching on the various diseases they presented to the hospital to help support them to develop self-management skills that can improve their well-being (Siriwatanamethanon and Buatee, 2012). It is assumed that with the strong social support systems available in Ghana and the fact that the average Ghanaian is predominantly religious, there is the probability that the current study may reveal church support as an aspect of social support in diabetic foot ulcer management.

2.5 Conclusion on the Literature Review

The literature review centered on studies and articles published on the experiences of individuals managing diabetic foot ulcers. Focus of the review was on patient's knowledge regarding diabetes and diabetic foot ulcers, challenges in managing diabetic foot ulcers, coping strategies in managing diabetic foot ulcers and the need for social support in managing diabetic foot ulcers. The review revealed varied views about knowledge regarding diabetic foot ulcer and aspects of diabetes on the causes of diabetic foot ulcer. The challenges patients face in managing diabetic foot ulcers such as the cost of treatment, stigmatization, pain and limited mobility were highlighted by the studies. The review showed that patients usually adopted coping strategies such as spiritual coping, diet coping and medical coping in managing the effects of the ulcers. Through the numerous supports patients received from family members and friends, the church and health care professionals, most of them managed their ulcers without having complications. The review served as a guide with which comparison was made with the current study in chapter five.

Chapter Three

Methods

The previous chapter dealt with the literature review. This chapter includes description of the research methodology used for the study which is organized into sections that provide a framework within which to answer the research questions. The chapter describes the research design, the setting, target population and the sample size. It also outlines the data gathering tool, data gathering procedure, data management procedure and the procedure for establishing the trustworthiness of the research undertaken. The chapter ends with a summary, which provides a link to the main sections, which were presented as the research design for the study.

3.1 Study Design

An exploratory descriptive approach to a qualitative research was the study design used. An exploratory descriptive design is used to investigate the full nature of a phenomenon and other facts related to it. The design provides a picture of a situation, as it naturally appears (Burns and Grove, 2003:356). The use of this design sought to enable the researcher address the research question, “what are the experiences of the diabetic with foot ulcer?” The method paved way for the researcher to explore participants’ views deeper to ascertain a better understanding of what their experiences with FDUs. This approach was necessary because the need existed to fill in the gap in literature that seemed none existing on the experiences of diabetic patients with foot ulcers.

3. 2 Research Setting

The study was conducted on the second floor of the General surgery unit of the Korle-Bu Teaching Hospital. Patients are usually admitted to the floor through the surgical OPD for various surgical treatments. Korle-Bu Teaching Hospital is a national referral hospital as well as a teaching hospital for the College of Health Sciences, University of Ghana. It is located in Accra in the Ablekuma sub-metro district, about 0.5km from the Korle Lagoon. It is the first and arguably the best-equipped hospital in the country – Ghana. The hospital has a total bed capacity of 2000 including 220 Cots. Daily average admission is about 140 patients with daily average deaths of 11. The outpatient departments (OPD) manage about 1,500 cases daily. Patients come from all parts of the country mostly from greater Accra region and neighbouring countries. Other health institutions including private hospitals and clinics use the hospital as a final referral facility.

The hospital has a number of clinical departments, which consist of Obstetrics and Gynaecology, Surgery (with Allied Surgery), Internal Medicine, Child Health, Polyclinic, Dentistry, Microbiology, Pathology, Haematology, Radiology, Pharmacy and Radiotherapy. The main divisions of the Surgery department are the General Surgery, Maxillo-facial surgery, Reconstructive Plastic Surgery and Burn Center, Cardio-thoracic unit, Neuro-surgery, Uro-genital surgery, Trauma and orthopaedics, Ophthalmology, and Ear nose and throat (ENT).

The general surgery unit of the hospital attends to all manner of patients who are referred with surgical conditions from all over Ghana. The unit is housed in a six-floor storey building and the ground floor serves as the OPD and offices for specialists and

doctors as well as housing the main Intensive care unit (ICU) of the hospital. The OPD records an average attendance of 200 patients daily. Surgical conditions such as hernia, abdominal conditions, cancers, and ulcers among others are reported daily at the unit. Patients who reports to the unit are usually first time patients visiting the OPD as well as those coming on appointment for reviews. At the unit, patients undergo routine check of their blood sugar, weight monitoring, blood pressure, temperature and pulse before the doctor's review.

3.3 Target Population

Lo Biondo-Wood and Haber (2010) defined target population as "the entire aggregation of respondents that meet the designated set of criteria". The target population for this study comprised all discharged patients with DFUs (type 1 and type 2 diabetes mellitus) who reported to the second floor of the surgery unit for dressing between December 2013 and March 2014. The researcher chose these people as the target population for the study because it was anticipated that they will have rich experience to share after managing the ulcer for more than three months

3.4 Inclusion criteria

Inclusion criteria "is a way of specifying the characteristics that people in a population must possess to be considered for inclusion in a study" (Polit, Beck and Hungler, 2006). Participants for the study were both type 1 and type 2 diabetics, 20 years and above who had superficial and deep foot ulcers. Participants' ulcers were more than three months and they were reporting for dressing and other treatments at the second floor of the general surgery unit of the Hospital after discharge. Participants who

were 20 years and older were included because it was anticipated that they would have rich experiences to share in the study.

3.5 Exclusion criteria

Exclusion criteria are specific characteristics that are not relevant to the study to be undertaken (Polit and Beck, 2008:338). In this study, patients who were type 1 and 2 diabetics with foot ulcers less than three months and those below the age of 20 years were not included in the study as the researcher anticipated that their ulcers were diagnosed in less than three months and so they may not have enough experiences to share.

3.6 Sample Size and Sampling Technique

Polit, Beck and Hungler (2006) defined sampling as a process of selecting a small number of people to represent the population. The purposive sampling procedure was used in selecting eligible participants into this study based on the inclusion criteria and purpose of the study (Miles and Huberman, 1994). The use of purposive sampling method was intended to provide information about diabetic's experiences with foot ulcers from individuals who could deeply articulate it.

The criteria for selection into the study were explained to participants as being a diabetic living with foot ulcer. Participants who willingly accepted to be part of the study were contacted through the assistance of an administrator on the ward. Their folders were identified and contact numbers were taken for follow up. Later, the researcher spoke to them personally on one-on one. The purpose of the study, benefit and the fact that the study was for academic purpose was explained to them. Participant recruitment continued until saturation was achieved with the 12th participant where no

new significant information was obtained (Parahoo, 2006). Recruitment of the participants took place over six weeks. One participant was introduced into the study through snowballing sampling where a participant who had already been interviewed by the researcher introduced the next participant.

3.7 Data Gathering Tool

Data gathering process involved the use of interview guide (Appendix D) in collecting information about the participants. The interview guide consisted of two main sections. The first part consisted of questions that were used to obtain the demographic profile of the participants. The section was also designed to establish rapport and make participants relaxed before the main interviews proceeded. The second part contained the main guiding questions for the interviews. The tool was used to elicite and probe detail expressions of participants' experiences on living with diabetic foot ulcers.

3.8 Data Gathering Procedure

Data gathering is a precise and systematic method of gathering information relevant to the research sub-problems, using a specific method of choice (Burns and Grove, 2003). In this study, the focus of data collection was diabetic patients with foot ulcers who were willing to share their experiences. Participants were recruited from the second floor of the general surgery unit after they had been spoken to through an administrator on the ward. Prior to the interviews, the researcher personally spoke to the participants one-on-one about the study. The purpose, benefits and the fact that no risks were associated with the study were explained to them. The participants were assured that the information they provided would be kept confidential. Interviews were conducted at convenient times and places for the participants, such as a quite location in

the hospital. Prior to the interviews, the participants were informed that the interviews will be tape-recorded and that an interview may last for 45-60 minutes and if it becomes necessary, a second interview may be conducted for clarification. On days of interview, participants who could read signed the consent form while those who could not thumb printed. Participants were identified by pseudonym to conceal their identity. Data for the study was collected face-to- face through in-depth interviews to maximize data collection. The interviews were conducted using interview guide (Appendix D) which consisted of two sections. The first part was used to obtain demographic information on the participants. This was followed by the interviews, which were audio taped and later transcribed verbatim by the researcher. After asking each question the participants were allowed to express themselves without interrupting them except when it was necessary to do so. Each participant was interviewed once lasting approximately one hour.

The researcher used open-ended questions to explore participants' experiences on living with diabetic foot ulcers and these encouraged them to share their experiences. Probing questions followed to bring out the needed information. The participants provided exhaustive answers following probing so there was no need for all the twelve participants to go through a second interview. The researcher listened attentively and encouraged the participants to elaborate more when the need arose. In the course of the interviews, the researcher observed, recorded and noted down all non-verbal actions, moods, gestures and attitude of the participants in the field diary as field notes. Participants were informed before the study that they had the right to withdraw from the study or terminate the interview at any time and that withdrawing from the study or failure to participate would not affect their treatment in the hospital. Interviews took

place within flexible time frames to allow the researcher reflect and make adjustments when necessary. In all twelve (12) participants were interviewed.

3.9 Pilot Study

After obtaining permission from the Institutional Review Board of the Noguchi Memorial Institute for Medical Research (Appendix B) and informed consent from participants (Appendix E), the researcher conducted a pilot study at the Achimota Hospital using two participants on the bases of inclusion criteria. Feedback received from the pilot study enabled the researcher to insert a question item on participants' experiences with stigmatization (Appendix D) which was not captured in the initial question.

3.10 Data Analysis

Data analysis is the systematic organization and synthesis of the research data and the testing of research hypothesis using those data (Polit and Beck, 2004). According to Parahoo (2006) a significant characteristic of qualitative data analysis is that data collection and analysis are conducted simultaneously and after data collection is completed. For this study, data were analyzed using content analysis because it was identified as appropriate for the analysis of the interview scripts. The analysis of the interview data was guided by the three elements of qualitative data analysis by Miles and Huberman (1994) which include data reduction, data display, conclusion drawning and verification. For data reduction, the researcher ensured that at the end of each day of interview, the audiotape recorder was carefully listened to several times and typed out the words of the participants into written words into a personal computer for a closer look at participants' expressions. Audiotape data were listened to and transcribed

verbatim. Audiotape recordings in "Twi and Ga" were translated into English and later transcribed. Line by line interpretation and understanding of participants' words (transcription) were identified to make meaning of the data received. The typed out words were compared with field notes to obtain insight and in-depth meaning of words to build up themes and sub-themes. Each transcript was read repeatedly, line by line, to identify common words, which were differentiated by assigning codes to them. Open coding led to identification of concept, ideas, words, and phrases. These were copied and pasted into labelled files and saved into the computer with a password. Phrases were coded by typing them in the margins of the coded data. This was done on the same day of the interviews. In displaying the data, common and similar phrases were copied, pasted in different files, and labelled according to codes and related themes. In the course of the analysis, specific quotes and words expressed by the participants were reported verbatim. Themes, sub-themes and categories were named from the various files created and labelled as table 2. In all, four themes were identified (after categories were put together), with 16 sub-themes and 19 categories from the data analysis. In concluding and verifying the data obtained, the researcher occasionally revisited the objectives of the study and the research questions to ensure the appropriateness of the data collected. Member checking of the audio-tape recordings and interview transcripts was undertaken to ensure that they were the exact statements the participants made to ensure credibility of the study results. A few participants who could not be contacted in person were called on the telephone for clarification. The findings of the data were made available to other colleagues to peer review in order to confirm what participants

meant by their statements. As part of the process, copies of the comprehensive write up phrases and statements were submitted to the researcher's supervisors for proof reading.

3.11 Discussion of Findings

Findings were compared with relevant existing research. In this current study, the analysis of the experiences of Ghanaian patients with diabetic foot ulcers was used to build on ideas from existing literature.

3.12 Procedural Rigour/Trustworthiness of the Study

According to Holloway and Wheeler (2006) trustworthiness is the truth-value of a piece of research. The research demonstrates trustworthiness when the experiences of the participants were accurately represented (Streubert Speziale and Carpenter 2003:38). The aim of trustworthiness in explorative descriptive qualitative inquiry is to ensure findings are worth "paying attention to" (Mayan, 2009). Trustworthiness in this study was achieved as the researcher laid aside her preconceived ideas about the phenomenon under investigation and went to participants to ascertain whether descriptions documented were true reflection of their experiences. Elo et al. (2014) stated that trustworthiness involves the following elements: credibility, dependability, conformability and transferability.

Credibility is the truth and value relating to the findings of a study. Credibility works as the "internal validity" in qualitative research (Schwandt, 2007). Credibility occurs when the research findings reflect the views of the participants. Through the use of semi-structured interviewing techniques, tape recordings of the interviews and verbatim transcriptions of data, accuracy was ensured in the descriptions of participants' experiences. Participants were given adequate time to narrate their experiences and

express their in-depth understanding of their experiences. Persistent observation of the phenomenon under study, peer debriefing, that is, subjecting the research analysis and conclusion to a colleague or other peers' view consistently, conducting a pilot study, liaising with the supervisors regarding data analysis helped to increase the credibility of the findings. During the interviews, the researcher repeated certain phrases and words mentioned by the participants so that they could clarify them. Probing questions were asked to clarify ambiguous statements that had been made by participants. Each recorded interview was played back for the participants to listen and confirm the exact information they wanted to convey. In addition, the completed transcripts were sent back to the participants to ensure accuracy of the recorded conversation. The researcher was mindful of her beliefs, values, interests and biases which could influence the study. A field note was thereby kept to record these feelings and ideas which resulted in openness and honesty in the study.

Dependability according to Moretti (2011) refers to the stability of data over time and over conditions. It refers to the ability of a study to allow others to replicate the methods of the researcher and reach the same conclusions (Streubert and Carpenter, 2003). In achieving dependability of the study, the researcher adequately described the methodology used in the data collection and analysis as well as a description of the role of the researcher. Dependability was also ensured by scrutinizing the data and supporting document by the researcher's supervisors. This was to establish whether data collected was a true reflection of the experiences of participants.

Conformability of findings means that the data accurately represent the information that the participants provided and the interpretations of the data is not

invented by the inquirer (Polit and Beck, 2012). In this study, the researcher set aside her prejudices and biases and kept a personal field diary for recording all personal assumptions and biases to achieve confirmability. The researcher was mindful of her own attitude and professional knowledge about the topic since that could influence the findings of the study. The researcher kept an audit trial (detailed recording of the research interview transcript, field notes and how consent was sought for the study) to enable the researcher's supervisors and colleagues peruse the findings of the study. In ensuring confirmability, drafts of the final copy of the study were submitted to the researcher's supervisors to inspect.

According to Merrian (as cited in Shenton, 2004, p. 69) transferability involves the extent to which the findings of a qualitative study can be useful to similar groups or situations. The researcher ensured transferability by providing sufficient descriptive data on selection of participants, characteristic of participants, data collection methods, sampling, sampling procedure and process of data analysis. The findings of the study were discussed in relation to the research questions and the literature reviewed. Careful reading of the transcripts, writing and rewriting of the words, codes and phrases were employed in bringing out the themes, which were embedded in the data. This served as a means of allowing for comparison to other populations and settings with similar characteristics as those in this study. In addition, the researcher ensured transferability by asking herself several questions as to whether the findings of the study were applicable, useful or important to similar groups and settings.

3.13 Ethical Considerations

All research studies present a number of ethical and moral dilemmas, which must be identified and addressed before any research is carried out (Rogers, 2008). Ethical considerations aimed at protecting participants from potential harm. This study commenced after the Institutional Review Board of the Noguchi Memorial Institute for Medical Research, University of Ghana, Legon gave ethical approval. (Appendix B). In addition, an introductory letter from the School of Nursing (Appendix A) was sent to the Director of Nursing at the Korle Bu Teaching Hospital, the Deputy Director of Nursing Services (DDNS) in charge of the department of surgery, head of department of Surgery, and copied to the ward in-charge of the second floor of the surgery ward seeking permission to conduct the study in the Hospital. The following Principles were also followed.

Informed consent is the cornerstone of ethical research. An important aspect of this is the quality of information made available to potential participants (Wiles, Graham, Crow, Charles and Heath, 2007). Inform consent was sought from the participants assuring them of their freedom from exploitation and coercion. Consent forms were locked in a press of which the researcher had sole access to. The researcher incorporated a process of ongoing consent or "process consent" at every phase of the interview session, thus participants' involvements were renegotiated when the need arose. Participants were told that they were free to withdraw from the study at any point and were made to understand that the decision will not affect the treatment they were receiving at the hospital. Participants who decide to take part were also informed that their participation would not affect their treatment at the hospital. The purpose,

objectives of the study, specific expectation concerning participation, the benefits in taking part in the study was explained to the participants. The only people who had access to the recorded information on tape were the researcher and the supervisors. Confidentiality of information and findings of this study has been portrayed in a manner that ensures that no personal or identifiable information was recorded without participant's knowledge. Participants were informed before the study that after interviews had been recorded, transcripts would be made anonymous and copies of transcriptions will be returned to them upon request. They were informed that whatever information they gave during the interview would not be divulged to other people. The only people who may have access to the information would be my two supervisors but that will be done with their authorization. They were informed that findings of this research may be published and presented at conferences without their real identity.

To ensure privacy, participants were given pseudonyms that were used for all documents including audio-files, transcriptions, and computer files. The names and identity of participants were concealed.

There was no obvious harm associated with taking part in this study neither was there any direct benefit to be gained by taking part in the study. The ethical principle of non-malfeasance implies that no harm should come to participants (Halai Anjum, 2006). The researcher was mindful that the interviews could bring up painful and negative memories. In this instance, the researcher constantly assessed the levels of stress, offered participants debriefing sessions as and when they were needed. The benefit of the study however was that, participants had the opportunity or the platform

to share and talk about their experiences with diabetic foot ulcer. The research is aimed at contributing to nursing knowledge and practice.

Participants were informed before the interviews that their responses would remain confidential. In fulfilment of this, the interview materials have been kept under a password, lock and key for accessibility by the researcher. When the need arises for them to be used in future for further studies, ethical clearance would be sought.

3.14 Data Management

The interview materials have been kept locked in the researcher's custody. Only the researcher and her supervisors may have access to them. In addition, biographic data was separated from the interview data to ensure that linkages between them were not made. The transcribed data have been labelled and kept under password and under lock and key for accessibility by the researcher. The research transcripts would be kept for five years following completion of the study and if the need arises for them to be used in future for further studies, ethical clearance would be sought.

The next chapter discusses the findings of the study based on the themes that emerged from the findings. The chapter begins with analysis of the participants' demographic profile and continues with analysis of the finding on the main themes of the study.

Chapter Four

Findings and Analysis

The previous chapter dealt with the study design and methods that were used in answering the research questions. The chapter described the design, the setting, the target population, sampling and sampling technique. Also, descriptions of the sample size, method of data collection, inclusion and exclusion criteria were elaborated. The chapter also outlined the procedure for data analysis and how trustworthiness of the study was ensured. This chapter presents findings from participants' interviews as they relate to the research questions posed for this study in eliciting participants' experiences in managing diabetic foot ulcers (DFUs). The chapter consists of two main sections; the first part, a demographic section shows data collected on participants using a demographic questionnaire. The second part, which consists of descriptive data, obtained using a descriptive tool in the form of an interview guide (Appendix D) which centred on the research questions below:

- What is a person diagnosed with type 1 or 2 diabetes' understanding of a foot ulcer?
- What are the challenges diabetic patients with foot ulcer?
- What are the coping strategies of diabetic patients with foot ulcer?
- What support systems are available for diabetic patients with foot ulcer?

Using the semi structured interview guide, the face -to- face interview were conducted in which participants had the opportunity to share their experiences in living with diabetic foot ulcers. With their consent, the interviews were digitally recorded.

Intelligent probes were used to elicit detailed day-to-day experiences of the participants. Four major themes pertinent to the research objectives were outlined.

4.1 Demographic Characteristics

Participants for this study comprised 12 purposively sampled Ghanaians with diabetic foot ulcers from the Korle Bu Teaching Hospital in Accra. Six participants were interviewed in their own homes according to their preference while six others were interviewed at their own convenience. Participants were between age 32 to 67 years with the mean age of 53 years. The longest duration a participant lived with diabetes was 22 years and the shortest was four months. The longest duration of foot ulcer was six months at the time of writing this report. Five participants were females and seven were males. Nine of them were married and living with their spouses except of one female who was not living with her husband. The remaining three were widows.

Eleven participants had children except one male who had no child. The least number of children participant had was two while the highest number of children was nine by a female participant. Six participants had basic education, four were illiterates, whiles two were secondary school graduates. The majority of them eight, were traders, two were formal sector workers (a prison officer and a teacher) whiles two were a shop attendant and a mason. The majority of participants eight were Christians, while four were Moslems. Four participants were Akans, three were Gas, two ewes. The rest were a Dagomba, a Gurunshi and a Moshi. Nine participants had diabetes before the ulcer, three were diagnosed as having after developing the ulcer. A detailed outline of the demographic information has been recorded in Appendix F.

In analyzing the data obtained from participants using qualitative content analysis described by Miles and Huberman (2013). Four major themes including knowledge regarding diabetic foot ulcer, challenges of managing diabetic foot ulcers, coping strategies in managing diabetic foot ulcers and support systems in managing diabetic foot ulcers were identified. These themes produced 15sub-themes and 19 categories that relate to the themes and answer the research questions. Table 2 provides details about the themes, sub-themes and categories.

Table 2: Major Themes, Corresponding Sub- Themes and Categories

THEMES	SUB- THEMES	CATEGORIES
KNOWLEDGE REGARDING DIABETIC FOOT ULCER	• Knowledge regarding causes of diabetic foot ulcer	
	• Knowledge regarding diet	
	• Patients knowledge regarding medications	
	• Knowledge regarding prevention of diabetic foot ulcer	
	• Knowledge regarding foot care practices	
CHALLENGES OF MANAGING DIABETIC FOOT ULCERS	• Cost of treatment	▪ Cost of medication
		▪ Cost of investigations
		▪ Cost of transportation
		▪ Cost of other treatments
	• Mobility	▪ Limited mobility
		▪ Lack of exercise

	• Effects of Ulcer	▪ Job loss ▪ Marital disturbances ▪ Pain and burning sensation
	• Emotional disturbances	▪ Sadness ▪ Fear and worry ▪ Stigmatization
COPING STRATEGIES IN MANAGING DIABETIC FOOT ULCERS	• Self management	▪ Self wound care ▪ Pharmacological interventions ▪ Diet therapy
	• Religious beliefs	▪ Prayers ▪ Consultation with religious leaders
	• Griefing process	▪ Denial ▪ Isolation ▪ Acceptance
SUPPORT SYSTEMS IN MANAGING DIABETIC FOOT ULCERS	• Support from family members and friends • Support from church • Support from Healthcare professionals (Medical care)	

4.2 Knowledge Regarding Diabetic Foot Ulcer

One major theme that directly addressed the first research question was participants' knowledge regarding diabetic foot ulcer. Five sub-themes emerged out of

this theme which included participants' knowledge on causes of diabetic foot ulcer, diet, medications, foot ulcer prevention and foot care practices. Participants' knowledge regarding diabetic foot ulcer centered on the understanding and skills participants had acquired during the period of managing the diabetic foot ulcers at the Korle-Bu Teaching Hospital regarding the causes, diet, medications, foot ulcer prevention and foot care practices. All the twelve participants expressed varying degrees of knowledge and understanding of what diabetic foot ulcer entails and how to manage the disease.

4.2.1 Participants' Knowledge Regarding Causes of Diabetic Foot Ulcer

Participants' understanding of the causes of diabetic foot ulcer was explored to determine their knowledge about the disease. All the 12 participants gave varying responses to indicate their knowledge about the cause of their foot ulcers, which they stated as being blisters, cuts, burns and heat, trauma, disease conditions and infections. Most participants, nine, gave the cause of their ulcers to be blisters and cuts from sharp metal rods, broken glasses and bottles and also pin pricks. They indicated that these sources led to bleeding episodes, swelling for some days, open wounds which they mostly covered with cotton wool or gauze before seeking medical attention.

A participant who attributed the cause of her ulcer to a sharp instrument said:

> *"I had a cut from a broken glass of a picture frame in my sitting room. When I saw it, I asked my sister to check under my foot where she found a broken bottle stacked under my big toe". (**Bera)***

Another participant who developed the ulcer as a result of a nail prick when he stepped into a gutter also said:

> *"I went out to buy food, on my way, I fell into a small gutter in front of my house. A nail in the gutter pricked my right foot and it became a sore".* **(Kera)**

In addition, another participant echoed how his ulcer started when he had a scratch on his foot by a sharp instrument:

> *"A metal rod scratched my right foot. Three days later, I realized my foot had gotten swollen which later became a sore".* ***(Cera)***

One participant who indicated the source of his ulcer to be as a result of a foot rot narrated:

> *"My sore started as a foot rot under my small left toe. It later became swollen but I kept on saying it was foot rot***".** ***(Fera)***

Only one participant attributed the cause of his ulcer to direct force on his foot as a result of the pressure from his shoes which was later followed by bleeding. He a said:

> *"I have been having burning sensation and pain for some time now. One day at the office, the sensation was so much that I had to remove my boots. Within some few hours, the left foot was swollen and the skin around it had peeled off and bleeding".* ***(Mera)***

It seems to me that participants' knowledge regarding the causes their diabetic foot ulcers were in line with what research has found to be the triad which include peripheral vascular neuropathy, trauma and infections mainly from environmental sources all of which have to be present to cause foot ulcer.

4.2.2 Participants' Knowledge Regarding Diet Therapy

All the participants had adequate knowledge regarding the diet they had to take as diabetics in order to ensure that the disease is controlled and the ulcer heals on time.

They reported taking more local foods like plantain, fruits (apple, pawpaw and banana), green vegetables (kontomire, ayoyo) and Bambara beans. They asserted that healthcare professionals at the diabetic clinic gave them information on their diet. They emphasized that at the clinic, the nurses, doctors, dieticians and other staff teach them. In addition they also receive papers which contain the various foods for diabetics.

A participant narrated with zeal the various foods and quantity she had to take as a diabetic as he said:

> *"At the diabetic clinic, they teach us the foods that we can eat and show us on a paper the sizes of the food we should eat. They told us that we should eat a lot of fruits and vegetable. They said pawpaw, apple, banana and water melon is good. But we have been told not eat sugar, too much meat, oil…, and groundnut soup". (**Kera)***

Another participant who displayed her knowledge on diet therapy mentioned some of the foods she avoids as:

> *"Taking the correct diet, I believe can also make the sore heal on time. Another thing is eating fruits, not those that have too much sugar like pineapple but pawpaw and banana. I was once told by the doctor that they are good and that apple too is good". (**Cera)***

Also, a participant mentioned avoidance and adherence to prescribed diet to display her knowledge on diet as a diabetic as depicted in the statement below:

> *"Well, they have talked to me about what I should eat. Like a lot of fruits, vegetables and brown bread. I do not take foods containing sugar. I do not eat meat and beef, I take fish especially the dry ones. I have a paper containing the types of foods I can eat as a diabetic from the diabetic clinic". (**Dera)***

Participants showed great determination in using the knowledge they had acquired from healthcare professionals as part of management protocol for diabetes at

the hospital. As a result of imbibing the knowledge as part of their diabetes management, most of them had their sugar levels within the normal range and they had no physical symptoms of emaciation or weight loss.

4.2.3 Participants' Knowledge Regarding Drug Therapy

Drug therapy was an area participant demonstrated adequate knowledge in. Most participants stated the various forms of medication they were taking in managing their diabetes and the ulcer. Participants knew that taking the diabetic drugs could reduce the blood sugar level and cause the ulcer to heal quickly. They affirmed that at the initiation of the ulcer treatment, they were put on insulin injection which they were told would help to reduce the blood sugar. In the course of the treatment, they were put on oral hypoglycaemic agents when their blood sugar had reduced. Participants could identify other medications they were taking for the diabetes apart from the insulin, such as Metformin and Daonil. They added that they were given other drugs including antibiotics, painkillers, blood tonic (haematinics), Tetanus injection and vitamin C.

A participant who knew about the medications he was taking said:

> *"I take my diabetes medications; that is Metformin and Daonil. The Metformin is 2 tablets in the morning and 2 in the evening. The Daonil is I in the morning, 1 evening. I also take some other medications for the sore. I take one medicine to give me blood (Feroglobin and Flucloxacilin) ".* ***(Cera)***

The belief a participant had that the medications he was using were effective because his ulcer had reduced in size made him to say:

> *"I can see that the medicine too is working because the sore is reducing in size. Right now, I am on insulin injections and antibiotic (Amoxicillin). They said the*

> *antibiotics will destroy the germs around the sore and the insulin will bring the sugar in the blood down". (**Fera**)*

In another participant who exhibited knowledge on the effect of the medications and diet on his general health status said:

> *"At first I was taking Metformin and Daonil but now I inject insulin. The nurses told me that it is the insulin that will bring the sugar level down and make the sore heal quickly. The doctor said that, when the sore heals, he will let me take the tablet again. I was told that the insulin will also help the food I eat to digest. I have not noticed any problem and I think the insulin has helped me. I know that before I inject the insulin, food should be ready". (**Jera**)*

The comments of most participants in the study revealed that they had knowledge about the various medicines they were taking to manage their diabetes and ulcers.

4.2.4 Participants' Knowledge Regarding Prevention of Diabetic Foot ulcer

Preventing the re-occurrence of future foot ulcers as diabetics was of much concern to all the participants in this study. Participants narrated the period of having an ulcer as so stressful that every effort was made to prevent further re- occurrence. They explained adopting measures such as taking the instructions given them by healthcare professionals seriously and making sure their blood sugar is well controlled. They also asserted that they report to the hospital regularly for follow-up care and notify health professionals early about any problems they encounter in order to prevent further re-occurrence of the ulcers. They also said that they ensure that the ulcers are dressed regularly in addition to the following: regular foot inspection, wearing the correct footwear, which they mentioned as sandals, trimming of the toenails with clips and taking the right diet and medications.

Below is the statement of a participant who narrated how he had put in measures to prevent the re-occurrence of the foot ulcer including the adoption of regular foot care, adhering to the right diet and medications:

> *"I often try to feel the other leg that does not have the sore to see if a sore is developing. I also make sure I use a clipper in trimming my nails. The nurses told us not to use blade because it could cut through the skin and start another sore. I take my medications too and I have learnt that when something happens to me I have to rush to the hospital no matter how small it may be".* (**Gera**)

Another participant who indicated being informed by healthcare professionals about the possibility of developing an ulcer again as a diabetic described the effort he was making to ensure that the ulcer did not affect his other foot through regular foot inspection, diet and medication adherence had this to say:

> *"I have been told by the nurses that the sore can affect the other leg if I do not take good care of my feet. I am doing my best to stick to the education that the doctors and nurses have given me. Like inspecting my foot all the time and wearing only sandals, taking my medications, eating the right food. For the diabetes, too I am taking the instructions well. I always say that once the disease has come, there is nothing I can do but to do what the doctors and nurses have asked me to do".* (**Jera)**

One participant whose comment was that, the ulcer had made him a "doctor" because he had gained experience in observing strict foot care said:

> *"I can say the sickness has made me a doctor of my own. I take good care of myself. I have been checking my feet regularly to make sure that they are protected from developing the sore. I wear only sandals. I know I am responsible for my own self, so I make sure that the sore does not affect the other foot".* (**Fera)**

However, a participant who could not describe the preventive measure she was putting in place to prevent the ulcer from re-occurring blamed her ignorance on healthcare professionals as he said:

> *"I do not know that it (the ulcer) can be transferred to the other foot. The nurses have not told me anything. But sometimes it occurs to me that ah, this sore can be on the right leg too. I even wanted to ask you this question on whether the sore can affect the other leg because sometimes, I get burning sensation in my right leg too".*
> **(Hera)**

It seems that participants were aware that the ulcer could re-occur. Based on that they use the knowledge they had gained in the prevention of future foot infections as depicted by the responses given during the interview.

4.2.5 Participants' Knowledge Regarding Foot Care Practices

Most participants ten demonstrated inadequate knowledge about foot care practices though a handful of them indicated taking good care of their feet. This was done by regularly trimming their nails with clippers and scissors and checking for the agility of the toes by moving them and ensuring that their feet did not hit any object. They added that significant number of them, ten out of twelve could not outline the detailed processes and skills of foot care as part of the foot care practice in diabetes management because they did not have the knowledge. They blamed their lack of knowledge to be absence of foot education by healthcare professional during admission and at the daily dressing sessions. Explaining that rather what they are told by the healthcare staff is to take care of their feet well so that the sore heals on time without the health professionals teaching them specifically what they needed to do concerning foot care.

The statement below highlights the views of a participant who said he was only given verbal instruction by healthcare staff as not using sharp items in cutting his toenails without being told specifically about foot care practices to adopt as a diabetic:

> *"Well the nurses at the ward only said "take good care of your feet and cut your nails with clippers". They did not tell me that I should not wear shoes but I read in the paper given to us at the diabetic clinic that we should not even wear soaks. I was not told the type of footwear to use. Personally, I do not enjoy wearing shoes "*. (**Kera**)

A participant expressed with despair, his inadequate knowledge on foot care which he pointed to inadequate education by healthcare staff as he mentioned that he never received any education on how to manage his feet. He said:

> *"I try to check my toenails everyday to make sure no sore is developing again. The nurses did not tell me that I should not wear shoes. They told me that if I take their instructions carefully, the sore will heal quickly but they never taught me how to be checking my feet. They also told me that when I notice something is happening to the foot, I should quickly report to the hospital".* (**Lera**)

Vividly outlined in a participant's speech was the fact that he did not receive adequate education from healthcare staff to enable her practice good foot care. He said that inspite of that, he tried to inspect his feet every day.

> *"The nurses taught me how I could use the mirror to check under my feet every day to see if a new sore is starting. Something may have cut me which I may not know but the mirror will help me see it. Apart from that, nobody told me what I should do and what I should not do about my feet. The nurses only say take care of your feet. As for the doctors they only look at us, they do not say anything about what we need to do about our feet".*
> (**Fera**)

It seems participants did not receive enough education on foot care practice, which is an important aspect of their care. A few participants who received education from healthcare professionals on foot care testified its importance to their recovery. The various comments by participants pointed to the fact that if they receive the necessary education on foot care in the management of the diabetes, it will go a long way to reduce and prevent foot ulcer infections.

4.3 Challenges of Managing Diabetic Foot Ulcers

The challenges outlined in this study encompassed a set of day-to-day activities, phenomenon and situations that were identified by participants as making demand on them in the management of the disease. These challenges were cost of treatment, effects of the ulcer, emotional disturbances, marital disturbances, stigma and information needs. The second major theme identified after conclusion and verification of data was challenges that addressed the second research question. In answering the question; what are the challenges of the diabetic with foot ulcer? six sub- themes of the challenges were identified to include cost of treatments, immobility, effects of the ulcer, emotional disturbances, information needs and erectile dysfunctions in males (Partial and complete impotence).

4.3.1 Cost of Treatments

Cost of treating diabetic foot ulcer (DFU) emerged as a sub-theme under challenges of managing DFU. This sub-theme had four categories that included cost of medication, cost of investigations, cost of transportation, and cost of other treatments.

4.3.1.1 Cost of Medications

Cost of medication was the first category that featured under cost of treating DFU in the analysis. The expression, "the cost of medication is expensive in this hospital" was echoed by all participants. Participants asserted that paying for their medications was not an easy task since the cost was too high. They indicated that, they spent a substantial amount of their income on medications since the NHIS does not cover the cost of many of the drugs in the hospital. The cost of their medication runs into hundreds of Ghana cedis ranging from GH¢1,000.00 to GH¢2, 500. 00 per month One participant pathetically talked about the expensive cost of treating a diabetic foot in the hospital. He said the cost of medication was so high that it has made him bankrupt:

> *"Hmmm, after four months in this hospital I have spent over Gh¢20, 000. 00 on this sore. I say this because last year, I had a back pay of Gh¢20,000.00 and as at today, I do not even have a cedi of that money in my account. If I am to calculate well, I can say that the medication alone is about 40% of the cost of treatment. I have spent all my money on this sore. The treatment is indeed expensive*". (**Mera**)

Similarly, a participant buttressed the expensive cost of the medications when he said that the cost was so high that he could not even put a figure on it. He also added that he had to borrow money from his family members at times to pay for his medicines since he had no money left and the NHIS did not cover the cost of most medications prescribed for treating diabetic foot ulcer in the hospital.

> *"Hmmm! if I have to add up everything I can say that so far I have spent more than Gh¢2, 500.00 on the medication alone. It may be higher than what I have quoted. When I developed the sore, I had about Gh¢ 1,500.00 in my account but I used all within a month. I pay for the cost of medication myself but there have been*

> *times when I had to borrow money from family members and friends before I was able to buy my medication. It has not been easy".* (**Kera**)

A petty trader who narrated spending almost half of the total cost of treating the foot ulcer on medications echoed:

> *"The cost of treating this sore is so high. So far I have spent more than GH¢1,500. 00 on the sore. Out of the sale of water (income), I pay for the cost of treatment. The medication cost is more than half of the cost I have incurred in treating this sore. The health insurance does not cover most of the medication so we buy them out of our pocket which is difficult to do".* **(Jera**)

It can be deduced from participants' comments that treating diabetic foot ulcer is expensive and the health insurance does not take on much of the cost. In that case, patients have to depend on family members in some instances to pay for the full cost of their medications, which they consider to be expensive. The situation can improve if education on diabetes is intensified to the public and other means of paying for diabetes medications are made available to people managing diabetic foot ulcers to ease the financial burden on them and their family members.

4.3.1.2 Cost of Investigations

Another category under cost of treatments that emerged from participants' comments was cost of investigations. It was found that the cost of some investigations requested by doctors for patients were too expensive to bear. Usually, participants are made to undergo a number of tests as part of treatment for diabetic foot ulcer. These tests include x-Rays, scans, blood tests and other investigations. Participants indicated that, the cost of investigations were expensive for them in that sometimes, they had to

depend on their family members for financial support in order to undertake these tests. Though the NHIS is supposed to cover some aspects of the cost of the investigations, these test are not – frequently available in the hospital. The participants therefore, on these occasions had to do them outside the facility, which was usually very expensive.

A participant who found the cost of laboratory investigations too high to bear and indicated that the NHIS did not pay for expensive tests but rather the less expensive ones said:

> *"As for the lab (laboratory) tests, the NHIS covers just the cheap ones which is sometimes Gh¢ 6.00 or Gh¢ 8.00, not even Gh¢ 12.00. The insurance does not cover the expensive investigations which are rather very essential which the doctor needs sometimes to continue the treatment. That is the problem I have, the cost is high* ". (**Lera**)

A participant who shared a similar opinion on the cost of investigations as being too expensive lamented:

> **"***Ei ! as for the lab tests they are too expensive and the NHIS does not cover them too so I pay for them myself. Some of them are not available in this hospital so I do them outside and they are expensive*". (**Jera**)

Another participant also narrated how she had to spend so much money to carry out some investigations outside the hospital, which were so expensive that, it emptied her financial coffer:

> *"The tests I did were scan of the leg, X-ray, blood, urine and stool. When the doctor saw the results, he made me do other ones which were all very expensive. In all I can say that these tests have cost me about GH¢800.00 and I paid for them myself. It was too much for me because now I have no money left".* (**Cera***)*

A participant narrated her sad story that on a number of occasions she was not able to carry out investigations that had been ordered by the doctor due to financial difficulties. In those instances, she had to wait until a time that she was able to gather enough funds to pay for the investigations before reporting to the doctor. She said:

> "*The insurance does not pay for the lab test and the tests too are expensive. Now the doctor asked me to do some more laboratory tests but I do not have the money. Even money to buy food is a problem, how much more lab tests. I have decided that as soon as I get some money, I will go and have it done so that I can go and show it to the doctor".* (**Hera**)

Another participant who delayed in undertaking the requested investigations because he could not afford the cost narrated how he prayed to God for financial aid to enable him pay for the cost of the tests said:

> *"Right now the doctor has given me a paper to do some lab tests, X-ray and scan but I have not been able to do them because I do not have the money they are asking me to pay. But I am praying to God to help me. Once I get some jobs to do I will be able to pay for these tests the doctor is asking me to do".* (**Dera**)

These responses suggest that the cost of paying for the various investigations for the treatment of diabetic foot ulcers was a challenge that most participants encountered. In overcoming the challenge, some participants had to depend on family members and friends for financial assistance to enable them pay for the cost of investigations. These responses helped in bringing to the fore an aspect of patients challenges in managing diabetic foot ulcers.

4.3.1.3 Cost of Transportation

Cost of transportation also emerged as a category under cost of treatments. Participants described the cost involved in transportation to the hospital to have their wounds dressed as being too expensive. The cost was said to be so much that sometimes participants were not able to go to the hospital for the dressing because they did not have money to pay for their transportation. Some participants could not adhere to the three times weekly wound dressing at the hospital due to lack of finance. They explained that, paying GH¢30. 00 a day for a round trip to the hospital was high.

A participant who could not have regular hospital dressing done due to difficulties in financing his transportation expressed it thus:

> *"Sometimes, dressing of the sore becomes a problem because I may not have the money to pay for the cost of transportation to and from the hospital. From my house to the hospital, the drivers charge me Gh¢30.00 and to pay this three times every week and pay Gh¢3.00 for the dressing too has been a problem".* (**Kera**)

The expression of another participant about the difficult financial challenge in paying for transportation daily to the hospital was captured as:

> *"Ei, hmm 'maame' nurse! Transportation alone from my house to the hospital and back is Gh¢20.00 and I go for the dressing every two days so it is not easy. When I go, I pay Gh¢3.00 too for the dressing. All these need a lot of money"* (**Gera**).

Despite the complaint of expensive cost of paying for transportation to the hospital which prevented some participants from having the wound dressed at times, a participant revealed that she did not encounter financial difficulties in going to the

hospital for dressing as her children provided a means of transportation to and from the hospital every time:

> *"As for transportation, my children pay for a taxi to send me and bring me back every time I go for the dressing. My children also give me money at times when I am going for the dressing or when I need to buy medicine for the sore".* **(Lera)**

It is clear from this participant's comment that cost of treating a diabetic foot ulcer is not only for the individual persons affected but that, family members contribute to their treatment by providing financial and strong social net-work support for individuals. This is important as it confirms the role of family support in diabetic foot management which the current study has identified.

4.3.1.4 Cost of Other Treatments (Surgery)

Cost of other treatments for DFU as a subcategory of cost of treatments emerged during the analysis. In this study, it was revealed that other treatments mainly involved plastic reconstructive surgery. The treatment cost was described as expensive and unaffordable. Three participants indicated that they were referred to plastic surgeons to continue treatment but they could not have the procedure done because they could not afford the cost of the surgery. They asserted that their doctors had explained the importance of the procedure to them. They quoted the cost of the procedure ranged between GH¢1,000.00 and GH¢2,000.00 depending on the state of the ulcer.

Specific quote of an obviously worried participant who could not afford the cost of plastic surgery is found below:

> *"A doctor sent me to the plastic unit to see the doctors there. I met a doctor who said he will do plastic surgery*

> *or whatever they call it. My worry now is the cost, because the insurance does not cover the surgery and since I do not have the money, I am confused. The way the doctor described it, it will help to cover the wound. I do not have the money and I am told it will cost about GH¢1,000.00*". (**Cera**)

A participant confessed his inability to undergo plastic surgery for his ulcer because he had not been able to organize the resources for the operation as he said:

> *"The doctor has referred me to the plastic unit for treatment. The doctor there wants to operate on me but I do not have money for the operation. The NHIS does not cover the treatment cost at the plastic unit. They said I should have about GH¢1, 200.00 so I am yet to have the plastic surgery done because I cannot afford it now".* (**Fera**)

An obviously frustrated participant who needed reconstructive surgery to cover an exposed bone from his ulcer indicated his inability to pay for the surgery saying:

> *"The doctor saw that something was covering the surface of the sore so he removed it. He has even referred me to the plastic surgery department for the doctor to cover my bone that is exposed. He explained to me that at the plastic unit, part of my skin will be used to cover my bone that has been exposed but the amount involved is what I am now looking at. I need about Gh₵ 2,000.00 for this surgery to be done because the NHIS does not cover it but now, I do not have that money for the treatment. I have spent all the money in my accounts".* (**Mera)**

It was clear from participants' responses that, just as the cost of managing diabetic foot ulcer was expensive in other areas, so was the cost of undergoing plastic surgery.

In sum, managing diabetic foot ulcer appeared to be expensive for most participants. Though efforts were made by participants to ensure that they adhere to

treatment regimen, the cost of treatment continued to be a challenge. For this reason, it was obvious that participants needed the support of policy makers to make the treatment of diabetic foot ulcer free. Health care professionals need to intensify health education on diabetes to reduce and/or prevent the ulcers from developing. The family members of patients with diabetic foot ulcers must be encouraged to continue to provide the support needed.

4.3.2 Mobility

The challenge of mobility surfaced during the interviews, which were put under two categories; limited mobility and lack of exercises.

4.3.2.1 Limited Mobility

Most participants reported limited mobility as an initial difficulty associated with managing a diabetic foot ulcer. Ten participants were of the view that, as the ulcer developed and they were put on treatments, they battled with episodes of walking difficulties that made it difficult for them to follow appointments with their doctors at the hospital. Family members sometimes had to carry them to places that they had to go. Attempt to walk caused pain, which made walking difficult. They narrated that distances that they used to walk when they were not having the ulcer now took them about three to four times to walk. This discouraged them from going out to social places and hence they preferred being at home. The Christians amongst them said they sometimes went to church using clutches. Walking aid was something that most participants refused to use because of the sadness it brought to them anytime they held one. They asserted that as time went on, the pain subsided and their walking improved

so they were able to walk. A look at the comment of a participant who had to abandon most social gatherings initially as a result of pain during walking is illustrated here:

> *"The sore has prevented me from going wherever I want to go. At first I used to have a lot of pain when walking but now I am Okey. I can move about anywhere. I do not go out for social programs. I prefer being at home. I think I have to rest until the sore is healed then I can go out for programmes like weddings, funerals and parties. I do not walk too much on the foot. Every morning I walk to the mosque and that is all, but most of the time I prefer being at home".* (**Fera)**

As indicated by an emotionally disturbed participant, there were moments of walking difficulties but the sad feeling associated with the use of walking aid did not make him use one as he said:

> *"I do not go out often these days because I have pains when I walk on my leg for too long. Sometimes if I have to walk to the road side, it takes a while because I stop for about three to four times. I do not want to use a walking stick too because that will make me very sad. (Her eyes appear teary)".* (**Hera**)

Another participant who experienced difficult mobility at the initial stage of the ulcer and had to use clutches to aid in walking had this to say:

> *"Initially I could not walk because of the swelling and pain. I even complained to the doctor who told me it was because of the sore, so I used clutches for sometime. Now I walk to everywhere I want to. I do not have any problem with walking". (**Nera**)*

However, a participant indicated she did not encounter any problem with walking as she could go anywhere she wanted to go. Her response is stated below:

> *"I go anywhere I want to without any problem. I do not use a walking stick as you can witness because I do not*

> *need one. I walk alright just that my walking is slow but I try to walk without using a stick or anything".* (**Bera**)

Another participant indicated he was able to move freely without any difficulty and never experienced any walking challenges when managing the ulcer said:

> *"The sore has not restricted my movement at all. The only thing is that I have decided to reduce the walking on the leg to aid early healing. I go to Church regularly, and I do not use a walking aid because I believe I do not need one. I am able to walk without any problem".* (**Cera**)

It was clear that initial walking difficulties permeated treatment periods for most participants but personal efforts were made to overcome the challenge. Though some refused to use walking aids because of the emotions associated, their responses indicated that they coped by avoiding going out whiles the treatment was ongoing.

4.3.2.2 Lack of Exercise

Lack of exercise was reported by most participants to be a challenge whilst managing diabetic foot ulcer. They indicated exercising regularly as part of managing their diabetes but they had to abandon it when the ulcer developed because of the pain it brought. They feared that the sore could bleed and delay in healing when they exercised and this was the reason participants gave for not exercising. The participants knew exercise reduces the blood sugar as they had been told at the diabetic clinic by healthcare staff but in their condition, they could not do so because of pain. They asserted that as soon as the ulcers healed, they would start exercising by running, jogging and doing brisk walking.

A statement from a participant who had embraced regular exercise as a way of managing her diabetes disclosed how she was

anxiously waiting for the ulcer to heal so that she could start exercising again as she said:

> *"They told us at the diabetic clinic that exercise is good for diabetes because it helps to control the blood sugar. I am not exercising now because I experience pains in my leg when I do it. I am now waiting for the sore to heal so that I can exercise".* (**Hera**)

Another participant who indicated not exercising anymore as a result of the pain he experienced when he exercise said:

> *"Right now, I do not do serious exercise. Every time I try, I get a lot of pain then I will stop, so I do not do it. When the sore heals I will start exercising again".* (**Dera)**

Another participant who indicated that he had suspended exercising due to fear of the ulcer bleeding stated:

> *"Before the sore started, I was going for jogging everyday but when I developed the sore I could not jog again and that made my sugar go up because I was not exercising. My sugar level suddenly went up and I was not happy. Now, I do not jog because I am not sure whether it could make the sore bleed".* (**Jera)**

It was quite evident that most participants could not exercise because of the pain associated with exercising. Though it was the wish of most of them to exercise, they were restricted by pain and fear of impending bleeding from the ulcer. On the whole, it could be seen that participants had embraced exercise as a form of managing their diabetes, but the challenge brought by the ulcer became a hindrance which they were trying hard to overcome.

4.3.3 Effects of the Ulcer

Another sub-theme under challenges of managing a diabetic foot ulcer was the effects of the ulcer on individuals. The sub-theme had three categories that included Job loss, marital disturbances and pain/burning sensations.

4.3.3.1 Job Loss

Job loss characterized treatment periods for most of the participants. Nine out of the 12 participants in this study reported a reduction in working hours and inability to work well when the ulcer developed in comparison to their state before the ulcers. Job loss and inability to work were attributed to pain associated with the ulcer which physically prevented them from being active at work. Most participants spent their business capitals in treating the ulcer at the hospital and became impoverished them, and made them close down their shops. Nine of the 12 participants were self-employed (petty traders) operating in kiosks with small business capitals. Their trading activities collapsed resulting in loss of livelihood because they had to manage the ulcers and care for their families from the merger income. They expressed hope that once the ulcer heals, they will look for money from family members, friends and other sources to start their trading activities again. Two participants who were public servants; a teacher and a prison officer indicated they had not lost their job but then they had not reported to work for sometime because of the ulcer.

A statement from a participant who lost all her income in treating the ulcer and also had to abandon her trading activity due to lack of funds was:

> *"Right now I am not working, all my income is gone. I am now thinking of starting my petty trading business. Once I get the money, my son will go and buy me the items I need*

> *in the kiosk so that I can start selling. I have closed the kiosk now because there is nothing in it".* (**Hera**)

A similar pathetic comment by another participant who had spent all his working capital in treating his ulcer and not having any capital to start a new business was:

> *"In fact right now I am not working. Water selling was my main business. I do not have money to go and bring in more water since I owe the water company that brings me water to sell. My wife provides for our home".* (**Jera**)

On the contrary, a public servant who did not lose his job had this to say:

> *"I have not reported to work for almost one year now. My boss visited me and upon seeing my condition, he told me I should concentrate on the treatment and take care of myself and report to work when the doctor declares me fit. He has ensured that my salary comes every month. I do not know what I would have done without that man".* (**Mera**)

It seemed that, job loss was common among participants. It was noted that managing diabetic foot ulcer is a period that diabetic patients spend a lot of money and become bankrupt. It is therefore challenging if participants have to lose their jobs at a time when they had dire need for money to treat their ulcers. The situation leaves them to the mercy of their friends and family members.

4.3.3.2 Marital Disturbances

Marital disturbances featured as a category under effects of the ulcer on individuals managing the condition. Four female participants expressed deep emotions about their marital relationships. The participants said they were not happy in their marital relationships due to lack of proper communication between them and their

spouses, lack of attention and no intimacy adding that they lived a life of betrayal and rejection, and there was lack of respect from their spouses during the period of managing the ulcer. They indicated that before the ulcers, they enjoyed their marriage and worked hard to ensure that it lasted. A realization they made was that their spouses distanced themselves from them simply because of the ulcers which affected the cordial relationship that existed between them prior to the ulcers.

A statement from a participant who was obviously not happy with her marriage as a result of lack of attention from her husband is:

> *"I am in my husband's house but I am not happy. Being a Moslem, I cannot also say that I will leave his house until he himself sends me away. My husband has two wives, my rival and I. Since I had this sore, all his attention has been on the other woman. I live in a separate apartment in our house. He has stopped having sex with me with the explanation that, I am not well. Now what I am doing is praying to Allah for the sore to heal".* (**Bera**)

Another obviously angry participant who complained about her husband's separation from her and the children said:

> *"I am married but it looks like I am not married. My husband is withdrawing from me just because of the sore. We used to be close but of late, I do not regard him as somebody who has interest in the marriage. He now lives in Kumasi. I do call him most often and when I complain he thinks I talk too much. So I have kept quiet".* (**Vera)**

Another emotionally upset participant whose husband left home since she developed the ulcer said:

> *"My husband left me and my children when I had this sore four months ago. He does not care about what happens to us here. This is somebody I followed during the nineteen years he worked outside Accra. He told me*

> *he was going to live in his father's house somewhere in town. (Eyes looked teary)* ". (**Hera)**

Despite these sentiments that were expressed about disturbed marital relationship by some participants, others (Mostly men) revealed that they had peaceful marital relationships. They reported that they were happy with their spouses who understood their plight. A participant who reported having a nice marriage and enjoying the cooperation of his wife despite the absence of sexual intimacy said:

> "*I live with my wife. She does everything for me but the only thing is that we do not have sex because I do not have an erection. She understands my problem and she does not complain. What she told me was that "we should look up to God". I can say that my marriage is fine because we understand ourselves".* (**Mera)**

Another participant who testified to a peaceful marital relationship with his understanding wife stated:

> *"For three years now I have not had any erections. My wife knows I am not having erection but she has not complained. Look at our age, she is 63 and she tells me "what do we need sex for?" We have our children".* (**Nera)**

It was clear from some participants' expressions that they experienced disturbances in their marriage during the period of the ulcers. These were sad moments for them but they did their best to stay focused to ensure that their ulcers healed which was their major priority. Other participants however expressed satisfaction with their marriage as a result of having understanding partners. It is clear that providing support and marital counseling for diabetic patients managing foot ulcers may go a long way to help them cope with the treatment and manage their challenges.

4.3.3.3 Pain and Burning Sensations

Pain and burning sensations represented effects that accompanied the ulcer treatments. The physical symptoms were reported by the participants as existing at the initial stages when the ulcers developed. The pain was described as being severe and lasting for several weeks to months. The burning sensations were "hot" and "pepperish". Participants scored the pain from zero to eight on a numerical pain scale of 0-10 with zero being no pain and 10 the worse bearable pain. The majority of participants said they felt the pain throughout the course of the treatment indicating that, there were times that the pain did not let them sleep well at night. Some of them explained that though that period of managing the ulcer was the first time they were told that they will be sent to the theatre, the information did not scare them because of the pain they were experiencing. They chose to occasionally ignore the pain to enable them go about life activities.

A look at the comment of a participant who said she used to experience so much pain and burning sensations at the onset of the ulcer:

> *"I have never been to the theatre before. But when the doctor mentioned it to me, I was not scared because the pain I was having and the burning sensations were too much. I also knew that when the doctor sends me there to work on the sore, the burning sensation and the pain will cease". (***Cera**)

Similarly a participant who could not compare the pain he was having to anything else said:

> *"Having this sore comes with pain; there is nothing that can be compared with it. It is not easy. Initially, I could not sleep because of the pain from the sore but my*

> *children spoke to me that I will be fine so I should take it easy. Even pain killers could not stop the pain". (**Nera**)*

Another participant who indicated his readiness to undergo any kind of treatment that could reduce his pain said:

> *"I was having pains in my foot. If I have to measure the pain I will say 8 over 10". The day after I was admitted at the ward, the doctor came and told me that he will send me to the theatre and remove my small toes so that I will be free. I told the doctor I will be alright with whatever he decides for me. (***Fera**)

Another participant whose experience with pain was as a result of the ulcer treatment remarked:

> *"I remember the first time the doctor did debridement for me, he told me why he was going to do it. He said it was for the sore to be cleaned and to allow it to heal. But the day he did the operation he did not give me any medicine to reduce the pain. In fact for some days, I was in pain and in the night I will be sitting up whilst everybody was asleep".* (**Mera**)

It seems another challenge of managing a diabetic foot ulcer that appeared in the participants' responses was "pain and burning sensations". This was reported as a challenge that most participants complained about. However, they used measures such as prayers to help endure the pain and burning sensations.

4.3.4 Emotional Disturbances

The issue of emotional disturbance represented a sub-theme under challenges for participants managing diabetic foot ulcers. Three sub- categories which are sadness fear/worry and stigmatization emerged from the sub-theme.

4.3.4.1 Sadness

Seven out of the 12 participants reported experiencing sadness at some point in the treatment of the foot ulcers. Sad moments characterized the initial stages of the treatment due to the awareness of the diagnosis and the realization that the ulcers were as a result of the diabetes. This was worse with participants who became aware of their diabetes status when they were being treated for the foot ulcers. The issue of having the sore and not being physically active, using a walking aid and the presence of the pain were also identified as the causes of the sadness for most participants. It was reported that sad feelings sometimes resulted in shivering attacks and crying. In their sadness, participants indicated that their children and family members consoled them.

A comment from a participant whose sadness upon becoming aware that he had diabetic foot ulcer was:

> *"When I finally realized that it was a sore, I was so sad that nothing could comfort me. I could not eat for three days, I was taking only water. Being a diabetic, I lost weight drastically".* (**Vera**)

Another participant exhibited sadness as a result of becoming financially handicap said:

> *"I am supposed to provide for my family but if I am always asking for money from my wife and this makes me sad. I go and hide somewhere to cry. I do not let my wife see me cry. I am not a happy person at all".* (**Cera**)

Another participant who experienced sadness as a result of his diagnosis of diabetes and foot ulcer at the same time said:

> *"What came to my mind when the doctor said it was a sore due to the diabetes was ei God! I have this sore that never heals? Then I became sad that this sore will be on my foot anytime I walked around".* (**Gera**)

A participant also narrated how seeing the wound opened every time brought him sad feeling said:

> "*Anytime I go to do the dressing and the nurse takes off the bandage and I see how the sore looks like, I become sad".* (**Hera**)

4.3.4.2 Fear and Worry

Another category under emotional disturbances that emerged from the responses of some participants' was fear and worry. Participants attributed fear to the mention of the word "theatre". The mention of the word "theatre" the by doctors; a place for the ulcer treatment stirred fear. This is because they claimed they had never been to the theatre and they had no idea what will happen to them when they are sent there. They asserted that stories of patients dying in the theatre made them worried and lived in fear. These experiences made them lost appetite resulting in weight lose for days. Additionally, the knowledge that the ulcer could result in amputation of the limb made them worried:

An obviously worried participant who feared that his ulcer might take a long time to heal expressed it thus:

> *"When I saw the blisters the day after the scratches, I became worried because I knew this sore takes a long time to heal. I started thinking because I had ever had this sore on my left leg three years ago. I was afraid and asked myself "where is this coming from".* **(Nera)**

Another participant who was worried and feared that she was not seeing improvement in his ulcer, which could lead to amputation, also said:

> *"As time went by, I became worried that the sore was not healing. I was also worried because I started hearing that*

> *if the ulcer is not well managed it could lead to having my leg amputated".* **(Jera)**

A comment from a participant who was worried and had fear of going to the theatre for treatment but later had to consent is:

> *"I was afraid initially when the doctor told me he was sending me to the theatre because I have heard that people die there. Later on, I realized that if I do not listen to the doctor, the harm that will befall me may be too much to bear and so it was better to have the rotten toe removed". **(Fera)***

It was obvious that some participants experienced fear and they were worried about the presence of the ulcer and its future effect, however through support and determination they made all efforts to overcome their difficulties in order to have the ulcers adequately treated.

4.3.4.3 Stigmatization

Stigma is the co-occurrence of labelling, stereotyping, separation, status loss, and discrimination against (Bruce & Phelan, 2001). Stigmatization was the last category under emotional disturbances that emerged from the study. A few participants (three out of twelve) reported having been stigmatized because of having the ulcer. They indicated the source of stigmatization to be family members, neighbours and church members. Stigmatization took the form of insinuations, insults and the gradual withdrawal of the stigmatized persons. Stigmatization occurred at home and at church leading to participants, withdrawing from the people who stigmatized them.

The comments of a participant who experienced stigmatization in his community as a result of his ulcer was:

> *"A boy once came to buy water from my shop. Immediately he saw the bandage on my foot he said he was not buying the water again. Later, a neighbour of mine told me that the boy told them I had a sore on my leg so they should not buy anything from my shop. In fact, I realized that certain individuals who used to buy from my shop stopped coming to buy from me". (***Jera)**

Another participant who also experienced stigmatization at church where a church member quickly moved away from her when she realized that she had a bandage on his foot said the following:

> *"I was sitting down at church when a lady came to join me. Immediately she saw my leg with the bandage, she abandoned the seat. Since then anytime I go to church, I sit on the last seat at the back, far away from the people".* (**Hera)**

A woman who felt stigmatized by her rival in their home had this to say:

> *"Hmmm my sister! it is not easy. I live in the same house with my rival. She and her friends cast insinuations at me and their body language tells me that they do not want to see me in the house. You know they are doing that because of you but there is nothing you can do".* (**Bera**)

Only a few of the participants actually experienced stigmatization. These unreceptive behaviours however did not deter the participants from seeking treatment and managing their ulcers. This might have been due to the support they received from concerned people in their community.

4.4 Coping Strategies

Coping is defined as the subjective judgment of the situation that is appraised as threatening, harmful, or taxing of available resources (Lazarus & Folkman, 1984). In the current study, coping strategies represented the resources, efforts and activities participants used in managing the challenges that accompanied diabetic foot ulcers. In answering the research question, "what are the coping strategies of the diabetic managing foot ulcers?" three main sub-themes of coping were identified: self-management, religious beliefs and aspects of the griefing process.

4.4.1 Self-Management

Self-management involves active personal application of behaviour change tactics that produces a desired change in behaviour (Cooper, Heron & Heward, 2008). In the current study, self-management represented the activities diabetic patients used in managing the ulcers and diabetes respectively.

Self-management was the first sub-theme identified under coping strategies. Three categories of self-management identified were self-wound care, pharmacological interventions and diet therapy.

4.4.1.1 Self-Wound Care

Self- wound care was one of the categories under self-management, which was a strategy participants used in managing the ulcer themselves at home. Self -wound dressing was used by some participants alongside the hospital dressing with the aim of ensuring that the ulcers did not smell and to prevent their bandages from soaking. Others attributed their self-wound management to financial constraints that made it difficult for them to have the ulcer dressed on time at the hospital. Participants did home

self-dressing using vinegar solution and Drez (an antimicrobial solution) bought from the hospital. Six of the twelve participants confessed dressing the wound on alternate days at home alongside the hospital dressing.

A participant who undertook home wound dressing to prevent bad odour emphatically said:

> *"A doctor once told me to dip the sore in Dettol solution at home when I realize that the dressing gets wet quickly. I do this to prevent any bad odour from coming from the sore. I can see that it has worked because my sore does not smell and I can see that it is healing. I try to go every two days to dress it too".* **(Vera)**

Another participant narrated how she personally dressed her wound nicely at home that healthcare professionals hardly notice it expressed:

> *"There are days that I do not get money to go and dress the sore. What I do then is that, I have bought some of the medicine they use in dressing the sore at the hospital. I use it to dress the sore at home myself. Before I start, I wash my hands with soap and water and dry them with towel. I then pick a cotton wool and pour the medicine for cleaning the sore and clean the wound many times. I pour a different medicine on a bandage and cover the sore. I do that and even the nurses do not see the difference between what they do and what I do though I like the hospital treatment".* **(Dera**)

A participant gave financial reason to be the cause of dressing his wound at home emphasized:

> *"Every time I have money, I go to the hospital for the dressing, but there have been times that things were difficult financially when I am not able to go to the hospital to dress the sore. I did not want the sore to smell and be there without being dressed. I dress the sore at home. Though I am not able to do the dressing like the*

> *nurses do, at the end of the day, I manage to bandage the sore".* (**Hera**)

It was obvious that dressing the wound at home was a strategy participants used in coping with the ulcer. Home dressings were obviously undertaken due to participants inability to pay for the cost of dressing the wound at the hospital and their perception of preventing odour. These interventions were coping strategies participants used in dealing with the challenge of cost of treatment but its effect on the ulcer could result in infected wounds, which could prolong healing. A comprehensive education on diabetic foot management with emphasis on hospital dressing must be provided to diabetics by healthcare professionals to equip, motivate and emphasize on the choice of hospital treatment as the best way that could guarantee effective wound healing.

4.4.1.2 Pharmacological Intervention

Pharmacological interventions emerged as a category under self-management. Using medications as part of managing the pain resulting from the ulcer was an area that participants coped with the ulcer. Medication types that participants coped with were mainly insulin, oral hypoglycaemic medications, and other medications that were prescribed by the doctors. Participants narrated that injecting insulin everyday and taking other medications was not a pleasant situation but the fact that it helped in controlling their blood sugar and reduced their pain was what made them use it continuously. Some indicated that they took their medications serious because they did not want to encounter any complications associated with the diabetes such as going into coma and having their foot amputated. Though there were complains of numbness of the tongue as a result of the continuous use of the oral anti- diabetic medications by

participants, a few said that did not deter them from taking their diabetic drugs because of the healing effect it had.

A statement from a participant who said she depended on insulin always because it ensured a good control of her bold sugar said:

> *"I am on insulin. I also take vitamin C tablets. The doctor told me that the insulin will help to control the sugar in my blood, so that the sore can heal on time. I inject it every day so that the sugar can be controlled. I think the insulin has helped in controlling the sugar. I do not have any problem with injecting the insulin".* (**Bera)**

Another participant who indicated that taking insulin injection and other oral medications as part of his treatment was not something that came easy but he needed to take them in order to have his sugar control said:

> *"Oh I inject insulin every day, morning and evening. I inject 12 in the morning and 8 in the evening. Then the doctor gave me antibiotics, cipro (Ciprofloxacin tablet), that one is even finished. Injecting the insulin is not something that makes me happy but they have told me at the hospital that, that is what will help me. So I try to take it with the hope that it will control the sugar".* (**Dera)**

Also, a participant who acknowledged not having it easy with taking the oral medications and insulin injections but concluded that it was the only way to have his ulcer healed said:

> *"Injecting the insulin every day is not easy but if I do not inject it, the sore will not heal. I cannot inject myself because I am afraid to do that so a friend's daughter who is a nurse comes to inject me every morning and evening. I want to be free, I want the sore to heal so that I will stop going to the hospital all the time. I also take some tablets, I do not feel happy that every day I have to take medicine but if that is what will help me, then I do not have much to say". (***Kera**)

It appeared taking oral medications and insulin injection regularly to manage diabetes was difficult for most participants. But the desire to have their ulcer healed, their sugar controlled and pain subsided made them cope with taking the medications which is vital in ensuring total recovery.

4.4.1.3 Diet Therapy

Diet therapy was the third category that emerged under self-management. Participants described this category by saying that they take good care of their diet in order that they can have their ulcers healed on time. They indicated that, the dietician taught them the types of foods that they could eat as diabetics. Some indicated they were given papers that prescribed the foods they could eat. Participants mentioned eating more fruits and vegetables, less carbohydrate, avoiding sugar, meat, less fats and oil and groundnut soup as some of the dietary advice they had been practicing in managing the diabetes and ulcer.

A participant who indicated taking foods that he did not like but had to take them to manage the disease said:

> *"Sometimes, there are some foods that you do not like but, because of the diabetes you have to eat to have the treatment work for you. Example is eating a lot of vegetables and fruits".* **(Jera**)

A participant who said he had to stop eating foods that he was told was not good for him and stick to the ones that had been recommended by the dietician said:

> *"I eat a lot of leaves and green foods, kontomire, apem, a little yam sometimes Bambara beans. I bought a diet chart at the diabetic clinic on which it is stated all the food that I can eat and those that I cannot eat. They said if I have to eat yam it has to be two or three slices.*

> *Plantain too is the same. I am ok with the food that I eat; it is because of the sore so I am happy, I am not sad at all"*. (**Fera)**

Echoing that she had no problem eating these "new foods" a participant who said it was not an easy experience to change one's diet just to manage a condition said:

> *"I eat a lot of fruits and vegetables. The nurses told me that is what is good for me. I avoid foods containing sugar, too much starch and fats. I concentrate on the food that the dietician asked me to take. I know I need to stick to these diets to have the ulcers healed. I do not have any problem with it if that is what will help me"*. (**Bera)**

It is clear that participants were ready to adhere to the various foods recommended by healthcare professionals in managing their ulcers. Though some participants reported that they had to stop taking their favourite foods to have their ulcers healed, sticking to the new diet recommended by the dietician in managing foot ulcer was not something that bothered them at all.

4.4.2 Religious Beliefs

Religious belief was a key sub-theme that emerged under coping strategies. It comprised of two categories that included prayers and consultations with religious leaders.

4.4.2.1 Prayers

Prayer was identified to be a major religious practice that was used by participants in coping with the challenges associated with diabetic foot ulcer. Participants talked to God to heal them because they believed he was the one who created them. They backed their prayers with the belief that God knew about the condition and gradually he would heal them. During prayers, they lifted up the ulcers to

God as a way of showing it to him because they believed he had the power to heal them. The prayers according to some participants made them alert and focused. Most prayers were backed by Bible readings, recitals and reading of the Quran and other motivational books.

A look at the statement of a participant who said God knew about his sickness and that he was always praying to God for complete cure is found below:

> *"I always believe that God knows about this sore and that he is healing me gradually. Had it not been for God, I would not know what would have happened to me. All that I always do is to pray to God to heal me completely so that, this burden will be off my head. I know God listens to me".* ***(Cera)***

Similarly, a participant also narrated that he prayed to God everyday especially at night until he no longer experienced the pain as he said

> *"I do not sleep at night, there are times that I sit up throughout the night without sleeping. I will recite the Lord's Prayer throughout those nights. There are times that after saying these prayers, I fall asleep and wake up the next morning. I can say that God listens to me a lot ".* ***(*Nera)**

A participant narrated how he used reading of the Quoran and religious recitals to cope daily with the ulcer:

> *"I pray about this sore every time. As a Moslem, I pray five times a day, so after every prayer I will just sit down and talk to God about it. I sit down and recite the Quran. I can see he has healed me. Now I do not have the pains I used to have anymore".* ***(Mera)***

4.4.2.2 Consultation with Religious Leaders

A few participants reported that as a way of coping with the ulcer, they consulted with their religious leaders to pray with them about the wound. They requested for prayers to help them deal with the stress associated with the ulcer. The religious leaders prayed for them and encouraged them to be strong.

A look at the statement of a participant who sought the help of his pastor in order to cope with her diabetic foot ulcer treatment emphasized this:

> *"As soon as I realized it was a sore I called my pastor and he told me to be calm and take it easy because God was in control, nothing will happen to me. Since then my pastor calls me every day to pray for me and when I have time I go to him and he prays for me".* ***(Vera)***

Another participant who said her frequent visits to her pastor brought her encouragement in managing the ulcer indicated:

> *"At the beginning, I used to see this pastor friend of mine who would pray with me, share the word of God with me and encourage me. He stood by me day and night. Once awhile, I go to him and he prays with me".* ***(Hera)***

Also a participant who believed that her ulcer could heal after he consulted with pastors said

> *"In this situation I have prayed all kinds of prayers to God to heal me. I have also sought the help of pastors who have helped me in praying. Every time, they tell me that it will be well and so I become happy and it tells me that God is on my side".* **(Lera)**

It seems participants adopted a strategy of involving religious leaders in managing the effects of diabetic foot ulcers. Through prayers and consultation with religious leaders, participants saw God as the source of hope, redemption, mediation,

that reliance on him was safe. It appeared religious leaders provided the necessary assistance that helped participants to cope with managing the diabetic foot ulcers.

4.4.3 Griefing Process

According to Kubler-Ross and Kessler (2005) "Grief is the healing process that Ultimately brings us comfort in our pain." (p. 203). In this study, aspects of the griefing process was used as a coping strategy by most participants in managing the stress that accompanied diabetic foot ulcer

Griefing was the third sub-theme under coping strategies. Participant in this study used some aspects of the grieving process in managing the challenges that accompanied the ulcer effects. Three categories of the griefing process emerged as denial, isolation and acceptance.

4.4.3.1 Denial

Denial is described as a natural defence to accept fact, information and reality of a situation (Smith & Segal, 2012). Denial was a strategy participants used in coping with the distress that presented alongside the ulcer treatments. Participants in this study denied being sick because they believed that the ulcer was not a disease. They indicated that there were times that people showed them sympathy and wanted to do things for them but they refused those assistances insisting that they were not sick.

A participant who believed she was not sick just because she had a sore and that she was happy said

> *"Because of this sore, people want to sympathize with me always which I am not happy about. If other people are being treated that way I do not want that. This is because*

> *I believe I am not sick. It is only a sore, which I have and I am taking care of like a baby. That is all, so I try to live a cheerful life"* (**Vera**).

Another participant who said living with a diabetic foot ulcer was not a sickness narrated:

> *"Anytime I dress nicely, I feel happy about my body. I always say that but for the sore I would not say I am sick. Personally I always tell people that I am not sick and that it is only a sore that I have so life must go on". (***Bera**)

Another participant who also said he refused to consider himself as a sick person simply because he had an ulcer said:

> *"Immediately I had this sore, I started thinking how I was going to manage it. I told myself that the sore has come so I will take it easy and see what will happen to me. I started asking questions like, is this me today? Then, I made up my mind and refused that I had a sore. I do not see this sore as a sickness". (***Kera**)

It is clear that most did not see themselves as sick people because they had diabetic foot ulcers. They rather saw the ulcers as a challenge that had occurred in their lives within a time frame and which they were using the available resources and strategies to manage.

4.4.3.2 Isolation

According to Steptoe, Shankar, Demakakos and Wardle (2013) isolation is a coping mechanism where a person detaches himself or herself to "guarantee peace". In this study, isolation was used as coping mechanism in managing the effects of diabetic foot ulcer. Participants stated that they used "Intentional isolation" in avoiding social,

family and other programmes outside their home. This was to prevent people from stepping on their wounds and to avoid unpleasant comments from people around them.

One participant who isolated himself from friends and family members in order to concentrate on his treatment stated:

> *"Whenever I get around people and I realize that they want to make fun of me because of the sore, I quickly withdraw from them before it is too late. I do not attend social programmes. I did not want people to be asking me what happened to you and things like that".* (**Dera)**

Another participant who indicated isolating herself in order to undergo treatment mentioned fear of people stepping on the ulcer as the main reason for isolating himself:

> *"I do not go out for social programmes like parties and funerals. My reason is that in the event of some people becoming excited, they may step on my sore and worsen my condition making the sore reverse to its old state of bleeding and pain. As for church, because it is a solemn place nobody will step on the sore so I go once a while".* **(Jera)**

A participant who isolated himself by being indoors most of the time to avoid his ulcer from being stepped on had this to say:

> *"Because of this ulcer, I try to be indoors when I do not go to work or the mosque. I do that because when people see you, they want to sympathize with you and I do not like that so to avoid their sympathy, I stay in door".* ***(Kera)***

Using intentional isolation, participants managed to cope with the ulcer by avoiding social gathering with the excuse that, they did not want people to step on their ulcers to cause more pain and bleeding.

4.4.3.3 Acceptance

Acceptance describes the stage where the individual is able to process the internal emotions and accept the loss and plan for the future to re- engage in daily life (Kubler-Ross & Kessler, 2005). Acceptance was the last category under the griefing process in this study. Participants accepted that the ulcer had occurred already and they were determined to continue dressing the ulcer with the aim that the ulcer healed. Their responses to how they were managing the ulcer brought into light comments, which indicated that, they had accepted every challenge associated with the ulcer and were prepared to see the ulcer healed through regular dressing and adhering to medical instructions. Though they knew that the healing process takes a long time, they were ready to cope with the long time it will take the ulcer to heal noting that one day, it will bring them relief.

A participant metaphorically described how he had personally resolved to take care of the ulcer as a child in order to cope with the treatment based on his acceptance to live with the ulcer:

> *"Determination, commitment and accepting to dress the sore all the time is important in the healing of the sore. This type of sore is like burning a candle. As the candle burns the size diminishes. Once you accept the ulcer as a challenge and you are ready to see it healed, you are Okey. That was my determination otherwise it will not have worked".* ***(Vera)***

Another participant who confessed initial emotional challenges said he had to accept to live with the ulcer and continue with his treatment as he said:

> *"Initially when I come for dressing I would cry all day not because of pain but because I could not believe that I had the sore and had to come to the hospital every day.*

> *Then one day, a patient who had one of his legs amputated as a result of the sore asked me that "if I am crying what should he do?" He who had only one leg left... Those words rung in my ears the whole day. Then I told myself that I would gather the courage, accept the situation, put myself together and make sure that I do my best to ensure that the sore heals".* ***(Cera)***

A participant also narrated how he accepted to put himself together to manage his ulcer after his diagnosis had been made known to him. He said:

> *"Immediately the doctor told me I had the sore because of diabetes, I started thinking how I was going to manage it. I knew this sore takes a long time to heal. I told myself that the sore had developed already so I will pray to God about it. I took the dressings serious; I was coming all the time to dress it. Now, I do not even think about it, I live with it like a friend so I can see that I am looking fine".* **(Kera)**

4.5 Support Systems

These were a group of activities and measures in the form of money, comfort, words of encouragement, counseling, advice and education that were provided by family members and friends, the church and healthcare professionals. Support was meant to assist participants in managing DFUs. The fourth major theme that was identified during analysis of the interview transcripts was support systems in diabetics with foot ulcers. This addressed the research question "what support systems are available for individuals managing diabetic foot ulcers?" The theme "support systems" identified three sub-themes as support from family members and friends, support from church and support from healthcare professionals.

4.5.1 Support from Family Members and Friends

All the participants indicated the various forms of support they enjoyed from their family members and friends, their church and healthcare professionals. Support were mainly financial that is, paying for the medical services for participants, helping with household chores and provision of other needs, education and counseling. These support activities contributed tremendously to the management of diabetic foot ulcers and coping by participants.

One participant who received financial and other kinds of support from family members had this to say:

> *"I am fortunate to have family members who support me financially in the dressing of this sore. My family members do not allow me to touch anything at home. They cook for me all the time. I do my own bathing though, but they send the necessary items into the bathroom for me and I do the bathing myself. All I do is to rest. Ha ha ha…. If I were to allow them, they would bath me ".* (**Vera)**

Another participant who said his family members demonstrated support by calling him on telephone to inquire about his health always said:

> *"My children have helped me a lot; they are nine. They all call to talk to me, telling me I should not give up and that God will heal me. I also have cousins who come to visit me. All my siblings are dead but other family members come to visit me often. They bring me fruits sometimes, but not money and they also pray for me and sing for me, they know I love singing*". (**Lera**)

A participant who talked about the support he had from his children said:

> *"I am not able to walk to the toilet so my daughter gets me a potty to use. She has been very helpful to me. Two of my children too have been encouraging me. They always*

> *call to ask if I have gone to do the dressing. They always tell me that I should not give up. I should have hope and that I will be fine".* (**Kera**)

It could be clearly seen that family support played a vital role in the lives of participant during the treatment of the ulcers as they indicated that, it brought them emotional relief that helped them to undergo the treatment. This signifies the importance of family support in managing diabetic foot ulcer.

4.5.2 Support from Church

Some participants received support from their church in the form of financial, psychological and spiritual support. Participants received support in the form of provision of food items, prayers, visitations and words of encouragement. They said the church through its members "offered their shoulders for them to rest on" This they noted was helpful to them as it helped them to cope with the management of the ulcer.

A participant indicated that church members provided support in the form of visitations, words of encouragement and food items as he said:

> *"My church supports me financially, occasionally; they bring me food items and encourage me a lot. They offer their shoulders for me to rest on".* (**Cera**)

Another participant also indicated that, though his church was a small community, they provided financial and emotional support.

> *"My church is a small one but we love ourselves, we help ourselves in times of need. Any time I go to church, I come home with money in my hands. Even if I do not go, they will send me money through my children. I can say they have been supportive".* (**Jera)**

A participant who received food items from his church said:

> *"My church has also encouraged me. At times, they bring me fruits. I appreciate it no matter how small it may be".* ***(Gera)***

It is clear that support from the church also played a vital role in the way some participants coped with the management of their ulcers as the church provided great support which they indicated was emotionally and financial helpful.

4.5.3 Supports from Healthcare Professionals (Medical Care)

Healthcare professionals provided tremendous support to participants in this study. Participants described healthcare professionals support as something that helped them in coping with the disease. Support was said to be in the form of education, counselling, and words of encouragement, emotional support, and provision of feedback report on the state of their ulcers and diabetes.

A participant's experience of the support he received from healthcare professionals is presented as:

> *"The nurses are trying very hard. Last time when the nurse opened my sore she said Fera, you are lucky the sore is healing. She told me that I have done well by coming regularly to dress the sore and that I should keep it up. As for the nurses, they always want me to feel like I am in my own home. One doctor told me that anytime I have a problem I should not sit at home. I should come to the hospital because they are there for me. I can say their encouragement and the support too have helped me".* (**Fera)**

Similarly, a participant who could not hide her joy about the support she received from healthcare professionals said:

> *"I am happy with the way the nurses talk to us, they are polite. Sometimes after dressing, when you are in pain they will give you a place to sit to relax for a while before you leave for home. The doctors too have patience. They*

> *told us that anytime something bothers us about the sore, we should ask them".* (**Gera)**

Also, another participant said healthcare professionals took him as a member of their family and supported him narrated:

> *"The doctors and nurses are nice to us. When they find something wrong about the sore, they tell us and make us see our doctors. They treat us as if we are their family member. They told us that taking good care of us is the best way they can support us. I have seen great improvement in the sore since the first time I came to the hospital". (**Mera)***

It could be seen that healthcare professionals provided tremendous support to patients in the management of their ulcers, which lead to improved patients outcomes.

In conclusion, the analysis yielded four major themes, 15 sub-themes and 20 categories from the data. The major themes were participants' knowledge on diabetic foot ulcer, challenges living with diabetic foot ulcers, coping strategies and support in managing diabetic foot ulcers. Data revealed that participant had adequate knowledge on all aspects of diabetic foot ulcer except knowledge on foot care practices. They all found the cost of treating diabetic foot ulcer to be expensive in terms of the investigations, medications, transportation and cost of other treatments including plastic reconstructive surgery. Because of the high cost of treatment, some participants skipped dressing sessions at the hospital and were unable to undertake certain investigations requested by their doctors.

Mobility challenges were also the expressions of most participants. The analysis also revealed marital challenges, and sexual dysfunctions among some male participants. In addition, all the participants reported pain and burning sensations from the ulcer. The majority of participants reported that, the period of managing the ulcer

was one in which they live with sadness, fear and worry due to pain and impending amputations. A few also reported being stigmatized by family members, church members and friends because of the ulcer.

The analysis showed that participants used religious beliefs, self-management and aspects of the griefing process in coping with the challenges that arose daily while managing diabetic foot ulcers. It was also revealed that participants received enormous support in the form of financial, emotional and physical support from family members including their spouses, siblings, children, friends, the church and healthcare professionals which they considered helpful in the management of the foot ulcers.

These findings are discussed in comparisons with existing literature in the next chapter.

Chapter Five

Discussion of Findings

The previous chapter dealt with the analysis of data from the participants, which were used to define the themes supported by verbatim quotes in outlining participants's understanding of living with diabetic foot ulcers. This chapter builds on the findings from the analysis in relation to the literature and research questions. The study aimed at exploring the experiences of individuals living with diabetic foot ulcers at the Korle Bu Teaching Hospital with the specific objectives to:

1. Explore patients' knowledge regarding diabetic foot ulcers.
2. Identify challenges of diabetics managing foot ulcers.
3. Explore coping strategies of individuals managing diabetic foot ulcers.
4. Describe the support systems available for diabetics managing diabetic foot ulcers.

The detailed discussion of the findings of this study are presented after the socio-demographic profile according to the themes that emerged from the findings which were; participants' knowledge regarding diabetic foot ulcer, challenges of managing diabetic foot ulcers, coping strategies in managing diabetic foot ulcers and the need for support in managing diabetic foot ulcers. The findings of the study have been used to build on what researchers have found, while some findings have been refuted by the current study. The current study considered implications for nursing practice and administration, nursing research, education and policy.

5.1 Participants' Socio-demographic Profile

Seven (58%) participants in this study were males while five (42%) were females. This is consistent with studies which showed that, diabetic foot ulcer is male dominated (Desalu et al., 2011; Ribu & Wahl, 2004). These findings show that males reported health needs compared to their female counterparts. The majority of participants nine (75%) had basic education, while two (16%) participants had secondary education in addition to a tertiary education by one of the two participants. This helped them to understand diabetes education presented to them at the hospital, which they applied in the management of their diabetes and foot ulcers. This is in line with studies that asserted that education is likely to predict health care knowledge and practices that are likely to prevent foot infections in diabetes patients. Thus, the educational background of participants in this study might have accounted for their knowledge on diabetic foot ulcers in general (Hellenberg and Thunberg, 2013; Jinadasa and Jeewantha, 2011). Almost all participants had children except one, with the highest number of children by a participant being nine (75%) and the least being two (16%). This might have explained the support participants received from family members especially children, which helped in coping with the effects of the ulcer. Nine (75%) participants were married, whiles three (35%) were widows. The high number of married individuals involved in the study might have accounted for the support they received from their spouses in managing the ulcer but at the same time, contributing to the marital disturbances that the study recorded. These disturbances were largely blamed on the husbands of female participants in the study. Ten (83%) participants were self- employed and engaged in petty trading while two (16%) were civil servants;

that is a prison officer and teacher. The limited income levels of participants in the current study manifested in difficulties they faced in raising money for treatment especially those needing plastic surgery, raising money for treatment especially for some participants who needed to undergo plastic reconstructive surgery. In other studies, it was reported that the cost of diabetes treatment was unbearable for participants since most of the people affected were in the low-income groups (Ogbera et al., 2006). Eight (67%) of the participants were Christians while the remaining four (36%) were Moslems, meaning all participants had some religious affiliations or relationship with a "supreme being" that helped them to cope effectively with the psychological effects of the ulcers using religious practices such as prayers and reading religious books (Cordova, 2011; Harvey and Cook, 2009). Participants were in the age range of 32-67 years with a mean age of 53 years, which is in line with IDF's 2011 report that the age range of type 2 diabetes ranged between 20-79 years. The duration of ulcers were recorded as being between three months and six months, which was of significance to the study in that, participants had enough knowledge to contribute to the study after having the ulcers within that period of time. The study participants were made up of four Akans, two Ewes, three Gas and three others: a Dagomba, a Gurushi, and a Moshi which gave the study a wide range of ethnic profile of participants though the study did not capture any theme on ethnicity and diabetic foot ulcers. The next section of the discussion described the participants' knowledge on diabetic foot ulcer.

5.2 Participants' Knowledge Regarding Diabetic Foot Ulcers

During the data collection and analysis, participants expressed varying degrees of knowledge on their understanding of diabetic foot ulcer. The sub-themes were

participants' knowledge regarding the cause of diabetic foot ulcer, participants' knowledge on diet, participants' knowledge regarding medications, participants Knowledge regarding prevention of diabetic foot ulcers and participants' knowledge regarding foot care practices.

In this study, nine out of the twelve participants had adequate knowledge regarding the cause of their foot ulcers. These included blisters, cuts, burns, heat, direct force, infections of the toenails and disease condition (Diabetes). Three others did not know the cause of their foot ulcers but did not attribute it to supernatural causes. Participants who had knowledge about the condition indicated that, the presence of the ulcer preceded bleeding, swelling and open wounds which they covered with cotton wool and gauze before reporting to the hospital. Two participants who attributed the cause of their ulcers to diabetes indicated that, the ulcers started suddenly, accompanied by bleeding, pain and burning sensations. Knowledge exhibited by participants in this study is consistent with a cross sectional study by Jinadasa and Joewantha (2011) in Sri Lanka to determine the knowledge about the causes and practice of foot care in patients with diabetic foot ulcers using a sample size of 107. The results of the study indicated that, more than 50% of the study sample had knowledge about the cause of their ulcers. According to the study, the source of participants' knowledge was attributed to their ability to read and understand literature on diabetes and also education by healthcare professionals. In this current study, participants attributed their knowledge on causes of diabetic foot ulcers to health teachings they received from health professionals. It was deduced that, their literacy status had a relationship with their knowledge on diabetic

foot ulcers since most of them had basic education and could comprehend easily, the information given on diabetes and foot ulcers by health care professionals.

Similarly, other studies have also revealed participant's comprehensive knowledge regarding various aspects of diabetic foot ulcers including the causes of the disease, signs and symptoms, skin and foot care, exercise, diet control, and medication which they expressed as important for the management of the disease. The sources of participants' knowledge according to the studies, were the Internet, books, pamphlets and verbally from healthcare professionals (Ekore et al., 2010; Lamchahab et al, 2011; Perera et al., 2013). The findings of this current study are in contrast with that of Gale, Vadhara and Searle (2008) who explored diabetic's beliefs about foot complications and everyday foot care practices among type 2 diabetic patients in Horfield, Bristol. The researchers found that the majority of participants had no clear awareness of the cause of their foot ulcers. The study indicated that the researchers observed a level of confusion in participants' speech during the interview as a result of difficulty in understanding health professionals' explanation and advice on foot ulcers. In the current study, participants' source of knowledge was mainly health teachings by healthcare professionals and because they were literates, they could easily understood health teachings that were made available to them. The need to intensify diabetes education in culturally specific situations using simple English and local languages by health care professionals may be beneficial to patients' education because in doing so, patients easily get to understand information that is made available to them.

Knowledge regarding diet therapy has been found to be a key factor in controlling diabetes. It is an important aspect of diabetes management as it has been

found to be effective in lowering the blood sugar thereby reducing the cost that would have been associated with treating diabetes. It is suggested that since diabetic patients have a major role in their diabetes management, educating them on their diet can assist them to adopt dietary behaviours that can assist them to control the disease. In the current study, the majority of participants had adequate knowledge on diet, which they received from healthcare professionals. They reported taking more local foods that contained less carbohydrate, more fruits and vegetables. They also took cereals, low fat diets while they avoided sugar, oily foods and meat as those foods could increase their blood sugar levels which they were making efforts to reduce. It was observed during the interviews that dietary knowledge helped them to achieve blood sugar control that reflected in their normal blood glucose levels coupled with good physical appearance without signs of emaciation. The findings of this study are consistent with the findings of Abioye-Kuteyi et al. (2005) who assessed dietary knowledge, practice and control between two groups of type 2 diabetes patients in Nigeria. The results of the study revealed that half of the participants received dietary advice leading to significantly high mean dietary knowledge score than those without dietary advice. It further indicated that, significantly high mean knowledge score was associated with better dietary practice and better glyceamic control. In all, dietary knowledge improved significantly following diagnosis and counselling. The participants' knowledge and practice of the correct diet might have been informed by the education they received from healthcare professionals. This indicates that, education by health care professionals was well understood and practiced. It means that, educational programmes must be sustained and improved to encourage diet compliance among diabetic patients.

The findings of the study agree with that of Padma, Bele, Bodhare and Valsangkar (2012). They evaluated knowledge and self-care practices in diabetes management. The researchers reported that the majority of the participants belonged to the lower class and had one to five years diabetes duration. The study added that the participants were aware of the importance of exercise in diabetes control and they had knowledge that diet modification was important in the control of diabetes. It was found that participants had glycaemic control, which was significantly associated with their medication compliance. In the current study participant had knowledge on the effect of diet on their diabetes. It therefore improved their glycaemic controls and the absence of complications such as hypoglycaemia. This study however contrasts the findings of the study by Mfadum et al. (2011) who reported that major knowledge gap existed in participants' dietary knowledge. The researchers attributed participants' poor knowledge to lack of knowledge on diabetes education and possibly a poor understanding about diabetes, which the researchers found difficult to understand. In the current study, diabetics had adequate dietary knowledge, which was demonstrated during the interview. They attributed the source of their knowledge to the health teachings they received from healthcare professionals. It is recommended that continuous diabetes education must be intensified since it has been shown that diabetic patients learn when they are provided with the right information by healthcare staff. It may be realized that diabetes education has the likelihood of influencing diabetes and foot ulcer prevention. It is therefore recommended that diabetic patients be equipped with adequate information in all aspects of the disease to enable them self- manage it.

Participants' knowledge regarding medication was extensively explored. In this study, participants expressed adequate knowledge on the various medications they used to manage their diabetes and foot ulcers. Participants mentioned insulin injections, Daonil and Metformin tablets as the main medications they were taking in addition to some haematenics. They asserted that at the initial stages of the ulcers, they were put on insulin injections and after a while they were given Metformin tablet and Daonil when their blood sugar reduced. Most participants had knowledge about the pharmacological effects of the various medications they were taking. According to them, they were given treatments such as Tetanus injections to prevent Tetanus, antibiotics to control the growth of microorganisms in the wound, Vitamin C tablets to help in the healing of the ulcers, painkillers (analgesics) to reduce the pain and haematinics to boost the formation of red blood cells and their immune system. Almost all the participants attributed their knowledge on medications to health education they received from healthcare professionals during clinical reviews and on one –on-one interaction with their doctors on appointment days at the diabetic clinic. Most of them reported seeing signs of healing of their ulcers after using the medication for some time. Participants' knowledge on medication is in tune with findings of a study by Abdo and Mohamed (2010) among 122 rural diabetic patients who were randomly selected to participate in a study that measured participants' knowledge on different aspects of diabetes including, symptoms of hypoglycaemia, prevention of diabetic foot infection and effects of the diseases on the eye. It was reported that nearly half of the participants had some level of knowledge on their diabetic medications. The study revealed an increase in participants' knowledge regarding the therapeutic use and frequency of diabetic medications after

taking part in an initial educational programme in diabetes control. The study findings indicated that, knowledge of participants regarding their medication was related to factors such as level of education, one's residence, work and class of the person in society. The non-working class, the low class and those living in rural areas were those with lower knowledge compared to high knowledge among literate, working class, belonging to a high class and those living in urban areas. Findings of this study are also in agreement with those of Alkatheri and Albekairy (2013) whose study found that participants educational level and previous counselling affected their knowledge on their medications. The study was undertaken to evaluate the effect of patients' educational level and previous counselling on medication knowledge among diabetics in Saudi Arabia. The results of the study found that, participant's educational level influenced their medication knowledge. The study reported that, participants with high educational levels exhibited good to excellent recognition of the indications, dosage and side effects of their medications compared to non-educated participants in the study. It was also identified that participants who received previous counselling showed good to excellent knowledge on the medication in terms of its indications, dosage and side effects compared to those who did not receive previous counselling. The current study however contrasts the findings of a study conducted by Jasper, Opara, PyikI and Akinrolie (2014). According to the study, participants exhibited poor knowledge on insulin use in the area of the dosage in relation to diet, exercise and diseases. The study showed that the participants had no knowledge on how to modify insulin dosage in relation to diet, exercise and infection. They were also not conversant with complications associated with insulin use such as low blood sugar and insulin reaction.

The study indicated that diabetics' inadequate knowledge on medication was linked to age, employment status, level of duration attained, exposure to literature on insulin use and access to education. In the current study, the participants were in the low economic class, with basic level of education. They did not receive any education on medication prior to the interview yet, their knowledge on medication was found to be adequate. This may probably be due to the way diabetes education especially on medication is presented to patients at the diabetic clinic. For instance, most diabetes education at the Korle-Bu Teaching Hospital is done in the English language, Twi, Ga and Hausa. Twi, Ga and Hausa are local languages that are understood and spoken by most diabetic patients hence it made it easier for patients to understand the education given on the medications. It can be observed that education on medications in diabetes management encourages knowledge and adherence as depicted in the current study.

The participants demonstrated adequate knowledge regarding prevention of diabetic foot ulcer in their responses to questions asked. Participants were preoccupied with preventing future occurrence of the ulcer as diabetics. They described the period of ulcer treatment to be stressful and for that matter, efforts were made to prevent further occurrence of the disease. According to the participants, they took the education by healthcare professionals as an important tool. They made sure that their sugar levels were controlled; reported to the hospital regularly when they had a problem with their feet, had the wound dressed regularly, trimmed their toenails with clippers, took the right diet, adhered to their medications regimes; exercised regularly and wore sandals to prevent further ulcer formation. Participants' knowledge regarding diabetic foot ulcer prevention is supported by findings of a study conducted in Bangladesh in (2010) by

Prince of Songkla University. It was reported that, participants' total knowledge and practice score was found to be adequate on foot ulcer prevention. According to the study, participants indicated their source of knowledge regarding foot ulcer prevention to be from diabetic guide booklets, the mass media including television and news papers. It is worth mentioning that, having a good knowledge about foot ulcer prevention is important in the management and prevention of complications associated with the disease hence the need to intensify the awareness of diabetes and its related complications by healthcare providers. It is therefore emphasized that, once individuals are diagnosed with diabetes, they must be equipped with knowledge and skills to self-manage the disease in order to avoid complications including foot ulcers. It was realized that participants acted as "doctors" in observing constant practices to prevent further foot ulcer infections based on the knowledge they had acquired. Again the current study supports the findings of the study by Manimala (2006) on knowledge regarding diabetes and prevention of foot ulcer. Results of the study showed that most participants had knowledge regarding prevention of foot ulcer. According to the researcher, knowledge on foot ulcer prevention was associated with the educational background of the participants. The study showed that almost half of the participants had more than secondary education which must have contributed to their knowledge background. The study however contrasts with the findings of Hjelm and Beebwa (2012) who reported that knowledge was limited about the causes, management and prevention of diabetic foot ulcers in their study. The authors commented on the need for education that is well organized and targeted to raise awareness about the prevention of diabetic foot ulcers. The aim of the study was to explore beliefs about health and illness among Ugandans

with diabetic foot ulcers that might affect self-care and care seeking behaviours among 14 African women and men. The current study showed that the majority of participants had adequate knowledge on foot ulcer prevention and most of them had basic education to comprehend diabetes education. Thus they were able to identify ways of preventing further ulcer occurrence. It is recommended that continuous education on foot ulcer prevention must be intensified and sustained at the Korle Bu Teaching Hospital.

A large number of participants demonstrated inadequate knowledge regarding foot care practices in the current study. A number of them indicated taking care of their feet by embarking on regular trimming of their nails with clippers and scissors, moving their toes frequently to ensure sensation and ensuring that the feet did not hit any object. Most participants could not outline specific steps in foot care as diabetics which is an important aspect of their care. They attributed their lack of comprehensive knowledge regarding foot care to the absence of foot care education by healthcare professionals who only told them to "take care of their feet well so that the ulcers heal on time" without teaching them specifically, what they needed to do apart from trimming their toenails with scissors, inspecting their feet and wearing sandals. The ADA (2013) outlined the following foot care steps for diabetic patients: Inspection of the feet daily to ensure that there are no injuries, regular washing of the feet with warm water and mild soap. The need to examine the top and bottom of the feet personally or with assistance of a family member using mirror to check for blisters, cuts, redness, tenderness in-growing toes and corns. Trimming the toenails using clippers straight across, wearing sandals or customized shoes. Exercising and walking with care, avoiding wearing of high heels and pointed shoes, wearing natural cotton socks and having feet checked by a

specialist at least once a year. The findings of this study corroborates with the findings of a study by Hasnain and Sheikh (2009) which reported that, about two-thirds of their participants had poor knowledge about foot care practices with very few participants having knowledge on what goes into foot care practices. The study found participants inadequate knowledge regarding foot care practices to be associated with their low level of formal education because these participants were attendants at the diabetic clinic were education is provided. Though education was presented to the participants, it may be that the information was provided using technical language which made it difficult for the participants to comprehend and apply. The findings of this study also support a study by Deribe, Woldemichael and Nemera (2014) which showed that most participants employed poor diabetic foot-self care practices though their knowledge on diabetes was adequate. The study reported that 80% of the participant had secondary school education while all of them had more than ten years of diabetes history. The researchers found that rural residence, absence of co-morbidity and having the ulcer for more than ten years were independent factors associated with DFU. The study recommended that diabetes education on self-care practices and regular foot evaluation must be emphasized. This current study is however in contrast with the findings of a study by Hellenberg and Thunberg (2013) who reported that their participants possessed adequate knowledge on foot care practices that translated into practice. Some of these studies took participants through pre and post educational sessions that assessed their knowledge on foot care and practices before answering the questionnaires. The study recorded differences in knowledge and practice before and after the educational sessions. It was revealed that 50 % -70% of participants had adequate knowledge after

the studies. The study's conclusions were that, enrolling in the pre education session improved participants self-foot care knowledge scores. The need to intensify education and practice of foot care was emphasized. Managing diabetic foot ulcers must include detailed educational interventions by health care professionals, geared towards equipping patients with the requisite knowledge and skills that can help them manage their condition and live meaningful lives. Irrespective of their educational, social or religious affiliations, these educational interventions must be made available to them with love and care. It is believed that when diabetic foot care education is intensified at the Korle-Bu Teaching Hospital, it will enhance diabetic knowledge and skills in foot care practices.

In the next section, the challenges faced by the participants in managing the ulcers are discussed in comparison with existing literature.

5.3 Challenges of Living with Diabetic Foot Ulcers

The findings of this study reveal a number of challenges faced by participants when managing diabetic foot ulcers at the Korle Bu Teaching hospital. These challenges included cost of treatments, limited mobility and lack of exercise. In addition, job loss, stigmatization, pain and burning sensations, emotional disturbances such as sadness, fear and worry and marital disturbances. Statements made by the participants indicated that, though these problems existed and caused psychological distress, they were determined to have the ulcers treated as family members, friends, church members and health care professionals supported them in their treatment.

The financial cost involved in treating diabetic foot ulcers was a major challenge to most participants in the study. The cost of diabetic medications especially, insulin

and oral anti-diabetic medications were financially unbearable, as the NHIS did not cover most of the cost of treating diabetes at the Korle Bu Teaching Hospital. The costs of investigations were also expensive for most participants as some of them could not undertake some investigations, which were ordered by their doctors. The expensive cost of transportation for daily wound dressing made some participants forgo treatment schedules at the hospital thus resorting to home dressing of the wound to make up for their inability to do the dressing at the hospital. In addition, the cost of other treatments, especially plastic reconstructive surgery was too much for some participants as they struggled to raise money to undertake the treatment while some never had the procedure done due to the cost involved. It is said that the cost of treating diabetes in low-income families is high and this has influence on everyone whose family member is affected by the disease. Results from different studies have shown that, the direct cost of treating diabetic foot ulcer involves high cost of drugs especially insulin and oral hypoglycaemic agents and other charges. This is the case in most middle-income countries where insurance does not reimburse healthcare cost and other medical care (Meyers, Parasuraman, Bell, Graham and Candrilli, 2014). Direct cost of the ulcer involves hospital services, physician services, laboratory tests, lost of working hours, premature retirement, loss of productivity and indirect cost of daily management of the disease and other hospital items such as payment of consultation (WHO, 2014). The findings of this study corroborates with the findings of the study by Gwen (2012) on challenges in foot care for people with diabetes at the Korle-Bu Teaching Hospital. The findings revealed that, treating a diabetic foot ulcer in Korle Bu Teaching Hospital was financially unbearable for the majority of patients in health facilities especially where

the National Health Insurance Scheme (NHIS) does not cover most of the cost of treatment. The study reported the cost of prescribed drugs, diagnostic tests and other charges related to the ulcer treatment to be expensive which sometimes made participants seek treatment for their ulcers from traditional medical practitioners who sell cheaper herbal drugs to them. Gwen (2012) revealed that participants sometimes could not afford to do daily dressing at the hospital due to limited finances. The cost involved in treating the ulcers prevented some participants from undergoing reconstructive surgery on the ulcers, which forms an important aspect of the treatment process of the diabetic foot ulcers. Findings from the current study are consistent with the findings of Habib, Biswas, Akter, Saha and Ali (2010). The researcher reported that the total cost of treating diabetic foot ulcer varied significantly among patients with diabetic foot ulcer depending on the duration, the state of the ulcer during diagnosis and complications associated with the ulcer. The cost was said to be high for the average patient and even more expensive when complications set in. The study aimed at investigating the cost-effectiveness analysis of medical intervention in 200 patients with early detection of diabetic foot ulcers. The study is also consistent with the findings of a study carried out by Girod et al. (2003). The researchers reported that the average monthly cost of treating a diabetic foot ulcer was expensive. The cost of monthly treatment involved out patients and cost involved in loss of man-hours when admission was not demanded. The cost of treatment during hospitalization made up to approximately 70% of the total cost of treatment. The study concluded that a look at the cost of diabetic foot ulcer in larger population of diabetics is necessary. The findings of the current study however contrast the findings of Bell et al. (2005). The study aimed to

assess the level of foot self-care performed in rural triethnic population of diabetics. Findings of this study showed that foot-care practices including regular foot inspection and not soaking the feet in water were adequate. The participants' knowledge was attributed to gender, which is female, having education on foot care, having a doctor check the feet previously, and absence of foot care support. Conclusion of the study was that education on self-foot care among diabetics might encourage self-foot care. It is recommended that intensive education on foot care and prevention of diabetic foot ulcer by healthcare workers at all levels of diabetic care must be sustained in order to reduce the burden of cost and psychological distress related to diabetic foot ulcer. In line with this, it is recommended that the expression of cost of diabetic foot ulcer should assist health care authorities to intensify public education on Diabetes and its related consequences.

Initial immobility and lack of exercise dominated participants' comments in the current study. Almost all participants narrated their inability to walk well and exercise at the initial stages of the ulcer. Movements caused pain to the extent that, it prevented some participants from walking for some time. In those instances, family members especially children, were responsible for carrying their parents wherever they went. Available literature cited lack of exercise by participants managing diabetic foot ulcers (Firth et al., 2011; Fox, 2005). The lack of exercise was attributed to pain and bleeding from the ulcers while exercising. Though the participants knew about the effect of exercise in blood sugar control, they could not exercise because of the pain. These findings suggest that participants only knew about the effects of active exercise in diabetes control, whereas passive exercise can also be beneficial in the management of

diabetes, which they did not know of. This gives room for education and counselling on the importance of adopting other less active ways of exercising to ensure good sugar control which is the ultimate aim in diabetes management, and it eventual effects in the healing of diabetic foot ulcers. The current study is consistent with findings of the study by Zimny, Schatz and Pfohl (2004) which aimed at assessing the role of limited joint mobility in diabetic patients with at risk feet between a study group and a controlled group. The researchers reported that, mobility at the joint of the ankle and metacarpals were reduced and painful in the –at-risk group compared with the diabetic control group. The study added that the -at risk-feet group experience a general reduced mobility and elevated pressure in their feet in an attempt to walk. In addition, the study agrees with the report of a study by the Center for Disease Control and Prevention ([CDC], 2005) from a number of research reports that mobility impairment increases in people with prolonged diabetes mellitus. The findings showed that, the rate of immobility is higher in people with diabetes. The report suggested the intensification of efforts in preventing diabetes and associated risk to reduce the burden of the disease on individuals. It seems that assisting and encouraging diabetics in managing the mobility challenges that presents in the course of treating the ulcers must be a priority to health care professionals. This is because of the physical and psychological effects the immobility pose to diabetics while managing foot ulcers.

The participants reported pain and burning sensations from the foot ulcers especially at the initial stages. All the twelve participants reported the presence of pain at the initial stages of the diagnosis, which continued for some time. The pain and burning sensations led to reduce working hours, loss of job, disturbed night sleep and

crying sometimes even though participants were on pain medications. The pain and burning sensations persisted most of the time, but participants overlooked them so they could go about their daily activities, which indicated their preparedness to live with the challenge. In the current study, all the participants experienced varying intensities of pain, which were ranked from zero to ten with eight being the highest score of pain reported by two participants. Findings of this study supports the findings of Upton et al. (2013) who reported living with pain as a key issue in managing diabetic foot ulcers. In the study, participants described their pain as hot, burning and excruciating which was said to increase in intensity at night during sleep thus interfering with their sleep. The intensity was described differently by different people depending on how they perceived the pain as being very severe during walking (Ribu et al., 2006). In the current study, the experience of pain reported by all participants indicates that pain may be a major challenge in diabetic foot ulcer treatment. Participants' experiences with pain are also consistent with a study by Bradbury and Price (2011) that approximately 86% of their participants reported pain whiles managing their diabetic foot ulcers. The pain was described to be "aching", resulting in tiredness and exhaustion. The qualitative aspect of the study revealed four themes, which described participants' experiences of pain as physical effects of the ulcer, coping and supporting, social impact of the ulcer and psychological impact of the ulcer. The study concluded that since DFU occures as a result of diabetes and results in psychological and physical consequences, health care professionals must provide holistic care and intensive foot care education to equip patients to self-manage the diseases to avoid foot complications if possible. It is worth noting that, in view of the fact that patients rarely experience complete pain relief from

diabetic foot ulcers, health care professionals providing care to diabetics with foot ulcers should assist in relieving them from the pain by supporting them psychologically and encouraging them to adhere to their medication. Undertaking comprehensive pain assessment with the aim of reducing the effects of the pain on the individuals, their work, family members and the psychological distress associated with the pain is necessary. Thus investigating the effects of diabetic foot pain on individuals' daily life is an area for further research.

It was revealed that the participants experienced emotional disturbances such as sadness, fear and worry at the initial stages of the ulcer development. These emotional states were because of the diagnosis with diabetes for those who were identified after the ulcers had developed and foot ulcers for those who were already diabetics. Other reasons for the participants' emotional turbulence were pain from the ulcer, walking difficulties, anxiety about the long period of healing of diabetic foot ulcers and fear of amputation based on their observations of other diabetic patients. It was the belief that, since participants had knowledge on the disease it could help them deal with these emotions, yet that was not the situation. These emotions brought about weight loss and withdrawal from social activities in a few participants. The findings of this current study are consistent with two studies (Hjelm and Beebwa, 2013; Watson-Miller, 2006). They reported that their study participants expressed sadness, fear and worry in anticipation of the long healing duration of the foot ulcers and fear of amputation, which made them, live in isolation and became de-motivated about life around them. The study also supports the findings of the study by Herbert**,** Schnepp and Rieger (2007) whose findings showed that participants displayed emotional distress such as fear and sadness

because of their ulcers. They were unhappy about their dependence on family members and friends for social support. It was also shown that the participants were unhappy about their restricted lives with feeling of disappointment about the care provided by healthcare professionals and discomfort with the dressing bandages they wore and were pessimistic about healing of the ulcers. It must be stressed that emotional sentiments expressed by participants in the current study must be a wakeup call to healthcare professionals to identify these as challenges that confront patients managing diabetic foot ulcers in their day to day life activities and response to treatments. Thus, assessing patients' emotions and coping strategies and helping them to deal with these challenges may go a long way to improve their care. It will also help in adopting positive attitude towards managing diabetic foot ulcers.

Job loss was reported as being due to the inability of participants to work efficiently as a result of the ulcer pain and frequent hospital visits. They experienced reduced work hours and an inability to work at times resulting in loss of income while they spent all their income in treating the ulcers at the hospital. This made the majority, who were self employed, to close down their shops. The situation impoverished most of them especially those who managed their own businesses. Those who were public servants absented themselves from work for some time. Some participants indicated that in those moments, they depended on their family members and friends for financial support to foot the cost of dressing the ulcers. The current study agrees with studies carried out by (Ali et al., 2008; Fox, 2005; Kengne et al., 2013) who cited job loss, loss of productivity, and early retirement due to diabetic foot ulcer treatments. According to the researchers, these occasions resulted in financial hardships that made the

participants dependent on their family members and friends adding to their already distressed state. Loss of pension grants and early pension was recorded by these studies especially among government workers forcing them to live on social welfare benefits (Ogbera et al., 2006; Ragnarson Tennvall and Alpeqvist, 2004). The study is also consistent with a study on perception of the impact of diabetic foot diseases on employment by Waters and Holloway (2013). Waters and Holloway reported a reduction in the working lives of their participants as a result of the diabetic foot ulcer. They indicated that the majority of the participants were engaged in active work before the ulcers developed, but they were not able to work in their normal capacity when the ulcers worsened with intense pain. A few participants changed their jobs to enable them adjust financially whiles treating the ulcers. This led to a reduction in the income of some participants especially those who had dependants. Apart from the job difficulties, the researchers also reported that the participants experienced restricted mobility and pain with their related reported difficult financial conditions as a result of the limited support they received from the participants. Conclusion of the study emphasized the need for healthcare professionals to continue to provide support to diabetics and intensify education on the effect of the ulcer on productivity. It could be realized that DFU impacts negatively on individuals, affecting their daily quality of life. With this challenge in mind, it must be realized that treatment options for diabetes in Ghana must be geared towards equipping diabetics with knowledge and skills to enable them identify potential problems of the foot and report early to the hospital to prevent complications.

Marital disturbance was identified to be another challenge that confronted most female participants in the current study. Participants attributed the disturbances in their marriage to the presence of the ulcers. Most participants experienced estranged behaviours and uncooperative relationships from their partners, as most of them did not care about their wives' well- being. Some participants narrated how they were abandoned in the course of the illness by their partners because of the ulcers, leaving them disappointment and sad. Nonetheless, they were determined and moved on with their lives. These findings are consistent with two studies; Goodridge et al. (2005) and Ribu and Wahl (2004) which reported that diabetic patients with foot ulcers reported persistent psychological and social problems including tension and a lack of cooperation in their marriages especially at the beginning of their ulcers. According to the studies, the conflicts began as little misunderstanding from their spouses which often resulted in negative psychological and social functioning. The situation accounted for distress and worse adjustments in the management of diabetes in general, and foot ulcers specifically. Marital conflicts were reported to have resulted in more negative social interactions. The studies added that this made couples sometimes hesitant in contributing to conversations resulting in misunderstanding. Based on that, some affected participants preferred talking to their friends and other people outside their home in order to avoid tension in their marriage. The studies observed loss of confidence among couples because of the social withdrawal. This implies that the period of living with an ulcer is a time that most married women have trouble in living with their partners. These may be stressful times for the women because these were moments that they needed to be shown love and care but it turn out that, they did not

experience happiness in their marriages. Again, findings of the current study are in conformity with the findings of Henry, Rook, Stephens and Franks (2013). The study investigated spousal undermining of older diabetic patients disease management. In this study it was reported that the spouses of participants forced restricted foods on their partners and looked down on their prescribed diet, bringing about tension in the marriage sometimes. The study reported that forcing foods on the participants made them to adopt wrong dietary habits and non-dietary adherence, which did not contribute to the participants' well-being. The study however contrasts the findings of a study by Beverly and Wray (2008). The study explored the relationship between couples in the management of diabetes by a spouse. The findings indicated that partners of participants provided care, love and support; they discussed the welfare of the affected spouse and motivated their partners to continue their treatment. The study reported that these gestures contributed to the adoption of healthy practices such as dietary control, exercise and medication adherence, which improved their lives. Health care professional must recognize marital disturbance as an issue among diabetic couples so that patients can receive counselling when managing the condition. It is recommended that spouses of patients who have diabetes must continue to receive education so that they can assist their partners in managing the disease.

Some participants reported stigmatization by family members, church members and community members. This was because of the presence of the ulcer. People living with them experienced it in the form of insinuations, insults and unpleasant facial expressions. The situation led to gradual withdrawal from the sources of the stigma to enable participants concentrate on their treatments. It must be noted that, the expression

of stigmatization by participants in the current study is in line with studies by (Raman Kant, 2014) who found stigma experiences among participants in their studies on diabetic foot ulcers. According to the study, participants attributed the stigmatization to having the ulcers and as a result, ending up in job loss and psychological distress. Stigmatization made participants play the blame game as they blamed themselves as being the cause of the ulcers. It was realized that, educating the public about diabetes and its complications and supporting diabetics with foot ulcers could go a long way in minimizing stigma and the myths surrounding diabetic foot ulcers. Education must be intensified in homes, churches and in healthcare facilities as recommended by Finucane and McMullen (2008). In addition, the study corroborates with findings of a study by Schbert, Brown, Mosley and Speight (2013) on social stigma in diabetes. The researchers reported that their participants mentioned stigma as a major problem to them. Stigmatization was experienced at work and among relationships such as spouse and family relations. According to the researchers, stigma encounter lead to psychological distress. The study recommended putting in place strategies such as education on the effects of stigmatization in diabetes and enforcement of social norms to prevent people from stigmatizing against people with diabetes. In Korle Bu Teaching Hospital, looking at the report of patients experiences with stigmatization, the area of stigma effect on diabetics with foot ulcer is an urgent research priority.

At the Korle-Bu Teaching Hospital, foot ulcer education is presented as part of diabetes education during diabetes clinic sessions. It may be that the education given to patients on foot care may be technical such that, patients do not understand the information well or healthcare professionals do not educate them well on foot care. It

seems education on foot care at the hospital must be intensified to prevent foot infections among diabetic at the facility. Educating individuals equip them with knowledge and skills to self-manage their feet in order to avoid further complications and the cost associated with treating the ulcers. Healthcare professionals must update their knowledge on foot care in order to provide the right educational interventions to diabetics in general.

The next section of this discussion brings to the fore the coping strategies the participants used in dealing with the challenges they encountered in managing the foot ulcers.

5.4 Coping Strategies in Diabetic Foot Ulcer Management

Evidence suggests that coping with diabetes helps to significantly achieve good glycemic control in diabetes management as individual use coping strategies in managing diabetes and its related complications (Vadhara et al., 2010). Lazarus and Folkman (1984) defined coping as "consisting of constantly changing cognitive and behavioural efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of a person". In this study, coping strategies were identified to be the resources, efforts and activities participants used in managing the day-to-day challenges that accompanied diabetic foot ulcers. In answering the research question; what are the coping strategies of the diabetic with foot ulcer? Three main sub-themes of coping strategies were identified to include self-management, religious beliefs and the griefing process.

Self -management of diabetic foot ulcer using home dressing, diet and pharmacological interventions appeared to be strategies most participants used in

managing the ulcers. Home dressing was done with the intention to prevent bad odour and also cut down on cost involved in dressing the wound at the hospital. Six participants dressed their ulcers at home on alternate days using dressing materials and solutions bought from the hospital. Participants used vinegar solution to clean the wound and antimicrobial agents in dressing the wound. With this, they felt happy and hoped that their ulcers will heal with time. Professional nurses who use aseptic methods usually undertake wound dressing at the Korle Bu Teaching Hospital. The NHIS pays for aspects of the treatment. The wound is usually dressed with antimicrobial agents prescribed by the surgeon. Patients are usually given schedules to come for the dressing depending on the state of their ulcers. Usually, the states of the ulcers are communicated to the patients and their doctors and they are encouraged to continue with the dressings. It has been observed at the hospital that, patients who follow up with the dressings regularly usually have improvement in their ulcers and eventually they heal. The current study is consistent with the findings of a study by Hjelm and Atwine (2011), who reported that some of their study participants reported that the hospital was their first point of call in times of illness because they believed that the health care professionals had the knowledge and skills to treat them. Others who felt the health care system could not provide them with the treatments they required as diabetics resorted to traditional forms of treatment in addition to the hospital care. They consulted herbalist who gave them herbs to use for their diabetes and others for their foot ulcers. The researcher reported that participants expressed happiness in using the medications because they saw signs of healing such as reduction in the size of the wound, which brought psychological relief to them. It must be realized that the study was conducted in a

region where the majority of the people accepts the practice of herbal medication. The study also agrees with a study conducted by Matwa, Chabeli, Muller and Levitt, (2003) which aimed to explore the experiences and guidelines for foot care of patients with diabetic foot ulcers. It was reported that most participants undertook wound care practice that was not acceptable to health standards. The report added that participants used other locally prepared herbs and ointment in dressing the wound, which they claimed, was given to them by herbal practioners. According the researchers, participants' reason for seeking herbal care together with the hospital treatment was to help facilitate the healing of the wound. Recommendation of the study was on the need for nurses to equip diabetic patients with knowledge on foot care to enable them adopt the appropriate practices to self-mange their wounds. It seems that intensive education on appropriate wound care in diabetes is needed to encourage diabetics with foot ulcers to realize the need to have their ulcers dressed in the hospital since it has proven to be the best way of ensuring early healing of the ulcers and preventing complications. If participants are dressing their ulcers at home themselves alongside the hospital treatment, it can cause repeated wound infections resulting in amputations which is something participants fear might happen to them one day. The need for clinicians and educators to intensify education on foot and wound care in diabetes has to be emphasized to prevent wound infection and further complications.

Participants also used pharmacological and dietary therapy in coping with the effects of the diabetic foot ulcer. Medications in the form of insulin injections, antibiotics, haematinics, oral hypoglycaemic agents and other medications administered to participants served as coping agents. The reasons given by participants were that

since these medications were helpful in the control of the blood sugar and eventually lead to the healing of the ulcers, they adhered to the medications religiously without reservations. Though they acknowledged that injecting insulin was an unpleasant feeling and taking the oral medications was difficult, they continued taking the medications because they knew it would help in controlling their blood sugar level and ensure early healing of their ulcers. Participant used diet in coping with the challenges of living with diabetes and ulcers. They mentioned some of the dietary therapy they were using as low carbohydrates diet, fruits and vegetables, avoiding foods like refined sugar, excess oil, red meat, groundnut soup and other restricted foods prescribed by the dietician. However, most of these foods happened to be the favourite of most participants, but they had to avoid them to prevent complications. The ADA (2007) recommended that, diabetes management should canter on the use of diet therapy that consists of more fruits and vegetables, lean meat, poultry and fish among others. It also suggested that engaging in aerobic exercises at least 30 minutes every day, taking medications including insulin and other oral medications depending on the type of diabetes can help in ensuring good glycemic control and enhanced quality of life for diabetics. The current study conforms to studies done by (Fox, 2005; Vadhara et al., 2010) who found that, diabetics coped with the management of the disease as they adhered to the education given by healthcare professionals on diet, medications and exercise which proved to be effective. The study is also consistent with the findings of Abioye-Kuteyi et al. (2005) who found in their study that 33 participants (52%) who were type 2 diabetics received dietary advice as part of diabetes education, there by contributing to their knowledge on diet compared to those without dietary advice. The

study indicated that significantly high mean knowledge score was associated with better dietary practices and better glyceamic control due to dietary education. In all it was found that dietary knowledge and practice improved significantly following diagnosis and counseling after the participants had put their knowledge into practice. The participants in the current study are attendants at the diabetes clinic at the Korle Bu Teaching Hospital. They received education on diet as part of diabetes education at the diabetes clinic hence they used the knowledge they acquired to manage their dietary intake. This helped them to achieve glycaemic control which manifested in the absence of further complications of diabetes such as hypoglyaecemia contributing to their coping with the diabetic foot ulcers. It is worth mentioning that, living with a DFU can be a difficult situation to deal with. It is therefore clear that participants in the current study were hoping that their ulcers would heal on time hence adopting these coping strategies to enable them endure the stressors that accompanied the ulcers. The need to intensify diabetes education in Ghana is worth mentioning.

Religion is an integral component of the life of Africans in their daily struggles with life (Assimeng, 2006). Many Africans rely on religious beliefs and practices to manage the various diseases that affect them (Iwasaki and Bartlett, 2006). Religious belief was another coping strategy participants used in dealing with stress that accompanied diabetic foot ulcers. Religious practices in the form of prayers and consultations with religious leaders were strategies participants used in coping. Praying to God everyday backed by faith and lifting of the affected leg to the sky was a sign of reverence to God, so also were the recitation of religious passages, reading the bible or Quoran and other religious literature were some of the coping strategies participants

employed. The participants felt at peace with themselves and through that, they coped with the challenges of the ulcers daily. Religious leaders offered prayers and words of encouragement to participants which provided psychological relief especially at the initial stages of the ulcer. The female participants used religion as coping strategy so well that they exhibited better coping skills than their male counterparts did. The current study supports the findings of a study by Harvey and Cook (2009) who examined the issue of spirituality in self-management practices among older African- American and Hispanic white women in chronic conditions. The study found that, participants depended on the faith they had in God at the time of managing the ulcer to cope with the stress of the illness, which brought them psychological relief. Coupled with the taking of their medications, they recorded glycemic controls and psychological well being which enhanced their coping. Participants engaged in spiritual activities such as prayers, singing and bible readings, which helped in providing psychological relief and a means of coping with the ulcers. The study also corroborates with that of Cordova (2011) on the lived experiences of spirituality among Type 2 diabetes mellitus patients with macrovascular and/or microvascular complications. The study reported that spirituality helped in explaining the "why me" question among participants. According to the study, the participants acknowledged that their interactions with God helped them cope with the sad feelings, distress and the pain of the ulcers. It was reported that spirituality expanded the awareness of the participants to meet the challenges of living with complications of diabetes as they looked up to God for strength. The findings of the current study are in support of the findings of a study by Alzahrani and Sehlo (2013) on the impact of religious connectedness on health-related quality of life in patients

with diabetic foot ulcers. Findings of the study asserted that participants with foot ulcers (study group), showed positive correlation between religious connectedness and health-related quality of life in mental and physical functioning compared to the participants without foot ulcers (control group) who showed negative connectedness to mental and physical functioning. According to the study, religious connectedness was attributed to participants' spiritual activities such as prayers and reading of religious literature. The study however contrasts the findings of the study by Salehi, Ghodousi and Ojaghloo (2012). The study compared the participants' views on the effect of their belief in God on their health in living with a diabetes related amputation using two groups. One of the groups indicated that their view about God in managing the ulcer was that of disappointment in God, hopelessness, quilt feeling and withdrawal from God. The other group found the healing process to be a time that brought them closer to God making them adjust, knowing that God would finally heal them. It seems participants used religious beliefs and practices such as prayers and spiritual recitals to manage the psychological stress related to the management of diabetic foot ulcers. Though religious coping seemed to have helped the participant deal with the psychological effects of the disease, thereby improving their quality of life, the actual effect of religious beliefs on glycaemic control is not clearly understood. This may need a future study to establish the exact relationship between religious beliefs and blood sugar control in diabetes. It is worth noting that in maintaining the holistic care for patients with diabetic foot ulcer, that is spiritual, physical, social and psychological well-being of the patients, would be appropriate in improving their care.

Another measure participants used in coping with the effects of the diabetic foot ulcers was aspects of the griefing process. Participants denied that the ulcer was a disease, insisting that they were just wounds that were being managed and that with time, it will heal. They also isolated themselves from social events and family gatherings to avoid comments of sympathizers and the ulcers from being stepped on. They accepted the fact that they were living with the ulcers but because they were being managed by healthcare professionals, they took up the challenge to live positively with the stress that accompanied the ulcers with the hope that the ulcers will heal. This study agrees with the finding of a study by Kahn et al. (2013) who found that, participants' emotional responses to the diagnosis of diabetes followed the five stages of grief and griefing process described by Kubler-Ross and Kessler in (2005) namely; denial, anger, bargaining, depression and acceptance. According to the authors, denial is the first stage of the griefing process. At this stage, the individual consciously and unconsciously refuses to accept the fact and reality of a situation. At the anger stage, the individual develops strong feeling and gets 'mad "at the person or situation that is associated with the loss or death. During the bargaining stage, the individual begs their "higher power" to undo the loss or death or bring back what they have lost. The stage of depression is the stage where the individuals confront the inevitability and reality of the loss, withdraw, and shut themselves out from the people around them. At the acceptance stage, people process their initial grief emotions and accept their normal life. At this stage the individual comes to terms with the situation and is able to cope with it better.

In the current study, participants used aspects of Kubler-Ross and Kessler's (2005) five stages of griefing including denial, isolation and acceptance. Through these

three processes, participants took up the challenge and managed their diabetes and foot ulcers which resulted in their blood sugar being controlled without any complications as most participants' wounds showed signs of healing by appearing pink without sloughs. The study is also consistent with the findings of two studies conducted by Searle, Campbell, Tallon, Fitzgerald and Vedhara (2005) which sought to determine how patients with DFUs and podiatrists perceived and understood foot ulcerations and to address the gap in knowledge in both studies. The researchers reported that in both studies, the participants indicated that the presence of the ulcers affected their social life, mobility and independence as it prevented them from going to places they used to go before the ulcer developed and it restricted their mobility making them sad. These instances resulted in anger; feeling of helplessness; fear; depression; boredom and loss of self-esteem which the participants struggled to overcome daily. The study also revealed that podiatrists indicated patients managing diabetic foot ulcers experienced negative emotional consequences because of the ulcers and the continuous use of medications in treating the diabetes. The need to address the issue of psychosocial effects of DFUs was recommended by the study. The study also agrees with the findings of the study by de Jesus Pereira et al. (2014) which aimed to assess the feeling of powerlessness in patients with DFUs. The researchers reported that the ulcers affected the emotional being of the participants as they expressed the feeling of frustration, anger, worthlessness, discouragement and a sense of loss as they felt that they did not have that sense of belongingness due to the effect of the ulcers on their daily lives. Though these problems existed, the researchers indicated that the participants persevered and ensured that they continued with their treatment. It was

recommended that patients with DFUs must be assessed continuously in their care to provide care interventions that could reduce the emotional impact of the disease on them. It is obvious that the psychosocial challenges and the emotional stress associated with diabetic foot ulcers may be overwhelming. This calls for health education in culturally appropriate programmes using English and local languages, with the support of health care professionals, family members and friends to enable people with diabetic foot ulcers adjust positively to the disease while undergoing treatment in order to ensure glycaemic control, which is the ultimate aim in diabetes management.

The next section of the discussion elaborated the support systems that were made available to the participants in managing the diabetic foot ulcer

5.5 Support Systems in Managing Diabetic Foot Ulcers

Almost all participants interviewed indicated numerous forms of support they received while managing their diabetic foot ulcers. These supports came from family members, friends, the church, community members and healthcare professionals. It was mainly financial; emotional that is by providing encouragement in the form of helping participants with their daily chores, visitations, prayers, health education and counseling in the case of health professionals. The various support systems as mentioned by the participants enabled them to pay their medical bills and also cope daily with the challenges that confronted them.

The WHO (2014) outlined a number of principles for the effective management of diabetes. These include comprehensive evidence-based care, coordinated accurate care, counseling, education and support for diabetics in managing their own conditions among others. These principles call for education on the need for comprehensive

support in diabetic care by all and sundry due to the challenges that individuals with diabetes and foot ulcers experience. Education must involve not only healthcare professionals but also family members, community members and churches. Support for diabetics during foot ulcer management was highlighted in the findings of the studies of (de Vera, 2003; Kratzer, 2012). Their studies reported that, healthcare professionals provided support that influenced the well-being of diabetics in the management of their foot ulcers. According to the authors, participants received emotional support in the form of care, a show of love and affection and provision of information on diet and exercises. The studies indicated that, healthcare support services were accessible, easily understood and reassuring in easing the burdens of the participants. Also, a study by Delvin et al. (2006) described church support to be another form of support that was made available for individuals managing diabetic foot ulcers. Findings of the study indicated that, participants coped effectively with the challenges of diabetic foot ulcers as a result of the strong support they received from their church. According to them, the bonding between them and the church lifted their moods all the time and helped them to maintain a positive attitude towards the treatment. They reported receiving frequent telephone calls from church members, visitations and prayers, which brought psychological relief to the participants. The current study findings support the findings of (Scholes et al., 2013; Yamakawa and Makimoto, 2008) who noted that, managing diabetes and related foot ulcers is an occasion that participants receive support from their family members and friends. Their studies reported that, participants received support in the form of financial assistance, emotional, provision of vehicles and food items. According to the study, most participants acknowledged support from family

members as helpful in their compliance with the treatment. However, this study contrasts with findings of Beryl Pilkington (2010) who found that, the majority of his study participants reported not being able to identify any support they received from their family members and friends. According to the participants, since they lived in shelters and social homes provided for refugees and other settlers by the state at the time of the interviews while family members look unconcerned, they could not identify any support they received from their family members and friends. In this study, living in shelter camps and nursing homes in the US where the study was conducted may be considered as established institutions that provide social support to people in need. The only problem might be that, family members of the participants did not provide the needed support to the participants. In Ghana, a few private homes and organizational shelter camps provide all kinds of support including support for medical care to individuals and families in need but in many occasions, family members, friends and the church come in to provide various forms of support to people in need. The situation calls for the creation of awareness and the need for total support of all stakeholders in diabetes management. It can be deduced that the concept of social support in diabetes and foot ulcer care is an important tool for achieving patients' compliance and total recovery. It is therefore important for health care professionals to take note of this important aspect of patients care when managing patients with diabetes and related foot ulcers since it has been found to impact positively on patients' response to treatment.

The next chapter presents the concluding part of this study in which a summary of the study and the nursing implications have been outlined. In addition, recommendations from the study findings and the limitations have been presented

Chapter six

Conclusions

The previous chapter dealt with the discussion of findings from participants' interviews in relation to the literature and the research questions. The aim was to compare the similarities and differences with previous works to help situate the study. This chapter highlights the summary and conclusion of this research work, taking into account key findings and their implications for nursing practice, administration, education, research and policy. In addition, recommendations based on the findings and the limitations that confronted the study are presented.

6.1 Summary

In this study, the researcher sought to explore the experiences of individuals living with diabetic foot ulcers. The research questions posed demanded a qualitative descriptive approach to this study. The design paved way for the researcher to probe deeply and thus obtain in-depth and rich descriptions of the participants' experiences of living with diabetic foot ulcers.

The research questions posed for the study were:

- What is a person diagnosed with type 1 or 2 diabetes' understanding of a foot ulcer?
- What are the challenges of diabetic patients with foot ulcers?
- What are coping strategies of diabetic patients with foot ulcers?
- What support systems are available for the diabetic patients with foot ulcers?

The study was conducted at the second floor of the General Surgery unit of the Korle Bu Teaching Hospital. The analysis of participants' data produced four major

themes, 16 sub-themes and 20 categories related to the theme, which answered the research questions posed in chapters one, two, three, four and five of this study. The major themes were participants' knowledge regarding diabetic foot ulcer, challenges of living with diabetic foot ulcers, coping strategies in managing diabetic foot ulcers and support systems in managing diabetic foot ulcers.

Participants' knowledge regarding diabetic foot ulcers uncovered their knowledge regarding specific areas of the disease. The 12 participants displayed adequate knowledge on all aspects of diabetic foot ulcer except knowledge about foot care where they displayed inadequate knowledge. Participants attributed the cause of their foot ulcers to cuts, blisters, trauma, direct force, burns and disease condition (diabetes mellitus). They had knowledge that eating a lot of fruits, vegetables, fish, and cereals and avoiding meat, oils, alcohol and sugar while exercising are beneficial in diabetes managements. The participants knew of their medications, the therapeutic effects and the side effects as well. They knew about ways of preventing further foot ulcers through wearing prescribed footwear and trimming of the nails with clips and scissors. However, inspite of their adequate knowledge on causes and prevention of reoccurrence, their knowledge on foot care was found to be inadequate.

Participants cited cost of managing diabetic foot ulcers as a challenge they had to deal with. The cost of diabetes and the DFUs management involved cost of medications, cost of investigations, cost of transportation and cost of other treatments which was identified to be plastic reconstructive surgery. The participants narrated that, the cost of treating the ulcers had made them bankrupt and there were times when they could not have hospital dressings done because they could not afford to pay for the cost

of transportation to the hospital. Participants expressed disappointment about not being able to pay for the cost of some investigations requested by their doctors. The initial stage of the ulcer diagnosis was characterized by pain and burning sensations, immobility and lack of exercises. The diagnosis of the ulcers accompanied sadness, fear and worry about the possibility of future amputation. Job loss, marital disturbances, pain and burning sensations, stigmatization, and lack of information on foot care practices were some of the challenges identified by participants.

Coping was another theme that emerged from the data analysis. According to the participants, diabetic foot ulcer treatments represented difficult times in their lives. Inspite of the challenges, participants made efforts by using coping strategies to overcome the challenges faced while managing the disease. Participants used self-wound care, diet therapy and medications as coping strategies. They also made use of their religion in the form of praying and consultation with religious leaders also; some aspects of the griefing process including denial, isolation and acceptance were employed in coping with the disease.

Support systems emerged as a theme in the study. According to the participants, they received support in the form of financial, emotional, psychological and social support from their spouses, children, family members and friends, the church, community members and health care professionals.

6.2 Conclusion of the Study

Interacting with diabetics with foot ulcers has been an interesting learning experience for the researcher. The researcher was interested in gaining in-depth knowledge of the experiences of diabetic patients living with foot ulcers. The findings

of this research revealed patients' lack of knowledge regarding foot care practices though their knowledge about other aspects of the disease was adequate. It was realized that, participants faced enormous challenges from expensive cost of treating diabetic foot ulcers to lack of information on foot care practices. It was obvious participants adopted strategies to cope with the challenges along with the numerous supports that were made available to them by family members, friends, church and health care professionals. The findings of this study must be given the needed attention to help make the treatment of diabetes free to help people receive adequate treatment in order to reduce the incidence of foot ulcer occurrence among diabetic patients. It is suggested that more strategic, practical and easily comprehensible diabetes and foot ulcer educational programmes, be provided by healthcare professionals to help reduce and prevent the rate and incidence of foot ulcer occurrences among diabetics. These programmes may be beneficial to diabetics personally by leading to the compliance of individual diabetics to their treatments. Healthcare professionals must be seen at the forefront providing emotional and psychological support to diabetics with foot ulcers since the study has identified them to be a major resource group that influence patients' ability to cope with the disease. The need for further research especially on foot care practices and among diabetics with foot ulcers is proposed so that effective guidelines are developed at the Korle-Bu Teaching Hospital to enhance the quality of patients care in diabetic foot ulcers.

6.3 Implication for Nursing

The findings of this study have revealed the important roles nurses play in their day-to-day interactions with diabetics living with foot ulcers. Thus, the study has

implications for nursing practice, nursing administration, research, education and policy. In addition, recommendations based on the findings and limitations have been presented ending with the researcher's reflections of the study.

6.3.1 Nursing Practice

The findings of the study revealed that patients managing diabetic foot ulcers face challenges that plight their sense of living. If the findings of this study are made available to nurses, who are at the disposal of patients with diabetes and foot ulcers it will inform them about the need to provide continuous comprehensive diabetes education using simple locally comprehensible language. It anticipated that the education especially on foot care practices will reduce and prevent foot infections and relief them of the cost they bear in treating foot ulcers. Nurses at diabetes clinics and the various Out Patients Departments (OPDs) should intensify physical assessments of diabetics to help identify those with at risk feet in order to educate and monitor them to prevent them from developing the ulcers. Patients who have the ulcers already must continue to receive education and encouragement to join the Ghana Diabetic Association in order to benefit from their programmes while undergoing treatment. Nurses must advocate for the free treatment of diabetic foot ulcers in order to ensure equitable access to healthcare services aimed at improving their quality of life. Patients' family must be involved in the care provided to ensure that their needs are comprehensively catered for. Nurses must ensure holistic nursing care in managing diabetic patients with foot ulcers to ensure that their health needs are met. Nurses working at the OPDs and surgery unit of the hospital must remind patients about the

need to comply with treatments in order to avoid foot complications and the challenges associated with managing the disease.

Comprehensive documented protocols on diabetes and diabetic foot ulcer education especially on the prevention of foot ulcers must be available to patients at the diabetic clinic

6.3.2 Nursing Administration

The need for nurse managers to have more nurses trained as diabetes nurses provide professional care aimed at encouraging early identification of at risk foot and healing of diabetic foot ulcers. There is need to ensure continuous professional development for nurses working at OPDs and Diabetic clinic to enhance quality care to patients. Developing handbooks for all categories of nurses on diabetic foot care in all health facilities can enhance nurses' knowledge. Nurse Managers must create the favourable physical and managerial environment for nurses to work. In addition, the welfare of nurses must be the prority of nurse managers to motivate them to give out their best in terms of work. Lastly, counselling rooms and specialized offices must be provided for the purpose of ensuring a quite environment for patients to interact with doctors and nurses on issues bothering them. The use of this research findings will be beneficial to create awareness among healthcare professionals especially nurses about diabetics' experiences of living with foot ulcers. It must be the priority of nurse managers to keep nurses informed about what patients expect from them.

6.3.3 Nursing Education

This study revealed participants inadequate knowledge on foot care practices, which is an important area in diabetic foot ulcer prevention. Based on that, nursing

curriculum must prepare nurses to conduct comprehensive physical assessment on diabetic patients especially those with at risk feet so that proper care is given to prevent foot ulcer development. Also in view of the fact that living with diabetic foot ulcer affect the general quality of life of individuals, nursing education must focus on preparing nurses to provide care that address the challenges

6.3.4 Nursing Research

This study has revealed that individuals managing diabetic foot ulcers have inadequate knowledge on foot care practice. Conducting a study on the determinants of education on foot care practices may be an area to consider in establishing the actual effect of education on foot care practice. It has been realized from this study that family members of patients with diabetic foot ulcers go through challenges in assisting with their care. It is suggested, that further studies aimed at exploring the experiences of family members of diabetics with foot ulcers be conducted to establish the actual effect of diabetic foot ulcers on family members. Studies on foot care practices among diabetic patients would be an important area to research since the area seems to be scarcely researched into in Ghana. The study identified the church as a major support system in diabetic foot ulcer management. The need to investigate church as a means of support in diabetic foot ulcer management on a larger scale to establish its actual effects on diabetes care in Ghana may be considered.

6.3.5 For policy Development

The Ministry of Health in collaboration with the diabetes clinic at the Korle Bu Teaching Hospital needs to put in place a comprehensive programme to educate patients who receive diabetes care at the hospital on foot ulcers and how they can be reduced

and prevented. This calls for the training of diabetes nurses who will be able to screen and identify at risk feet and offer the necessary education and counselling in order to reduce complications associated with the disease. The Korle Bu Teaching Hospital currently has a limited number of podiatrists who attend to patients with diabetic foot ulcers. It can be realized that with the increasing incidence of diabetes and diabetic foot ulcers, more of these specialists are needed to help bridge the gap between health needs and access to diabetic foot care. The cost of treating diabetes and diabetic foot ulcers at the Korle Bu Teaching Hospital has been found to be expensive and the NHIS covers aspects of the treatment. It would be helpful if the NHIS covers the full cost of treating diabetes and diabetic foot ulcers in the hospital to alleviate the economic hardships on patients. The need for the Ministry of Health and the NHIA to make the treatment of diabetes and foot ulcer free and easily accessible in Ghana cannot be over emphasized.

6. 4 Recommendations

The following recommendations are made based on the findings of the study.

- **Psychological Counseling:** There is the need to set up a unit to counsel diabetics with foot ulcers to provide them with support to enable them cope with the stress associated with managing the disease.

- **Foot Care Education:** Intensive foot care education must be provided to diabetic patients as soon as they are diagnosed to equip them with knowledge to self-manage disease.
- **Self -care Practices:** Diabetic patients must be encouraged to actively undertake appropriate foot care practices through interactive teaching and demonstrations to prevent foot ulcerations.

- **Infrastructural Development:** There is the need to provide permanent offices that can cater for the increasing numbers of patients with diabetic foot ulcers who need to interact with healthcare professionals on a one-on- one basis.
- **Human Resource Development:** Managing diabetic foot ulcers needs the attention of professionals with specialized training including surgeons, physicians, dialectologists, podiatrists, dieticians and counsellors. It is evident from the Korle Bu Teaching Hospital that most of these specialists are not available. It is recommended that the Hospital and the Ministry of Health through its development partners collaborate to train some of these specialists to help provide the needed care for patients who seek diabetic foot ulcer care at the hospital. Also, the hospital must liaises with the Ministry of Local Government and other Non-Governmental Organizations (NGOs) with interest in health to provide vehicles and other logistics to enable Community Health Nurses (CHNs) and Public Health Nurses (PHNs) undertake intensive public education on diabetes and its complications including foot ulcers for families, individuals, churches and organizations. There is the need for public/community health nurses to intensify home visits during which individuals with at risk feet can be identified and referred for specialist care.
- **Protocol:** A simplified documented protocol for guiding health teaching and education on diabetes and foot ulcers in the form of booklets and leaflets can be developed and given to patients at the diabetes clinic to provide information on foot care practices.

- **Public Education:** Since some people get to know about their diabetes status after the ulcers have developed, there is the need for continuous public health education by the public health unit of the Ghana Health Service on diabetes and its related complications through the mass media to enable people identify and report the disease on time when they develop it.
- **Diabetes /Diabetic Foot Ulcer Support Groups:** There is the need for a diabetic foot support group to be formed aside the Ghana Diabetes Association in the hospital with the support of doctors and nurses where those with foot ulcers can come together and talk about issues affecting their welfare. These individuals can be encouraged in order to cope with the challenges they face in managing the diabetes and foot ulcers.

6.5 Limitations of the Study

- Even though the study will contribute meaningfully to nursing practice, it has some limitations. The exploratory descriptive approach usually does not permit the use of large sample size and this is likely to affect the findings in terms of generalization. The need to replicate the study in multiple sites for possible generalization may be considered.
- Another limitation was that, some of the participants could not speak the English language therefore, some of the interviews were conducted in “Twi and Ga” (Local Ghanaian Languages) and later translated into English by the researcher. It is therefore likely that the true meaning of certain statements made by the participants might have changed. To minimize this, credibility was ensured throughout the study.

- The study was conducted solely on the second floor of the surgery unit of the Korle-Bu Teaching Hospital resulting in sampling only one department of the hospital hence the findings may not be generalized to other populations.

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Appendices

Appendix A: Letter for Ethical Approval

SCHOOL OF NURSING
COLLEGE OF HEALTH SCIENCES
UNIVERSITY OF GHANA
LEGON

Telephone: 021-513255 (Dean)
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E-mail: nursing@ug.edu.gh

P. O. Box LG 43
LEGON, GHANA

Our Ref: SON/A.12
Your Ref:

October 9, 2013

The Executive Secretary
NMIMR - IRB
P.O. Box LG 581
Univ. of Ghana
Legon.

Dear Sir/Madam,

DEPARTMENTAL APPROVAL LETTER
VERONICA SALIA

This is to introduce to you Veronica Salia, an M.Phil student of the above School and to inform the Institutional Review Board of the approval of the thesis topic: **"Experiences of Individuals Living with Diabetic Foot Ulcer at the Korle-Bu Teaching Hospital"** by the department of Adult Health, School of Nursing.

I look forward to your usual co-operation.

Thank you.

Yours faithfully,

(Mr. K .A. Korsah)
SUPERVISOR

Appendix B: Ethical Clearance

NOGUCHI MEMORIAL INSTITUTE FOR MEDICAL RESEARCH
Established 1979
A Constituent of the College of Health Sciences
University of Ghana

INSTITUTIONAL REVIEW BOARD

Phone: +233-302-916438 (Direct)
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E-mail: nirb@noguchi.mimcom.org
Telex No: 2556 UGL GH

Post Office Box LG 581
Legon, Accra
Ghana

My Ref. No: DF.22
Your Ref. No:

6th November, 2013

ETHICAL CLEARANCE

FEDERALWIDE ASSURANCE FWA 00001824 **IRB 00001276**

NMIMR-IRB CPN 037/13-14 **IORG 0000908**

On 6th November 2013, the Noguchi Memorial Institute for Medical Research (NMIMR) Institutional Review Board (IRB) at a full board meeting reviewed and approved your protocol titled:

TITLE OF PROTOCOL : **Experiences of individuals living with Diabetic Foot Ulcers (DFUs) at the Korle-Bu Teaching Hospital**

PRINCIPAL INVESTIGATOR : **Veronica Salia, Mphil Cand.**

Please note that a final review report must be submitted to the Board at the completion of the study. Your research records may be audited at any time during or after the implementation.

Any modification of this research project must be submitted to the IRB for review and approval prior to implementation.

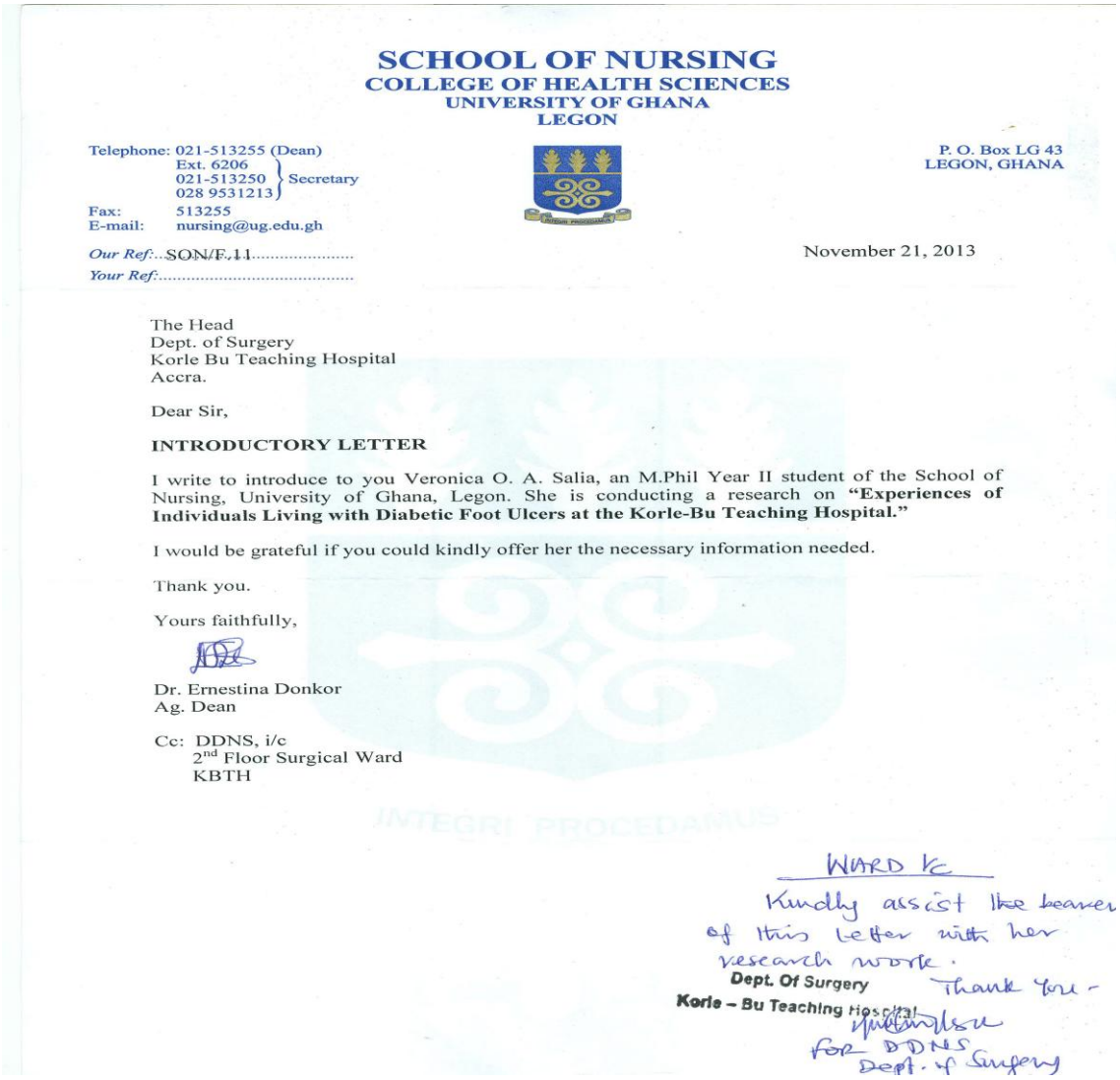
Please report all serious adverse events related to this study to NMIMR-IRB within seven days verbally and fourteen days in writing.

This certificate is valid till 5th November, 2014. You are to submit annual reports for continuing review.

Signature of Chair: .....
Mrs. Chris Dadzie
(NMIMR – IRB, Chair)

cc: Professor Kwadwo Koram
Director, Noguchi Memorial Institute
for Medical Research, University of Ghana, Legon

Appendix C: Site Approval Letter



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P. O. Box LG 43
LEGON, GHANA

Our Ref: SON/F.11
Your Ref:

November 21, 2013

The Head
Dept. of Surgery
Korle Bu Teaching Hospital
Accra.

Dear Sir,

INTRODUCTORY LETTER

I write to introduce to you Veronica O. A. Salia, an M.Phil Year II student of the School of Nursing, University of Ghana, Legon. She is conducting a research on **"Experiences of Individuals Living with Diabetic Foot Ulcers at the Korle-Bu Teaching Hospital."**

I would be grateful if you could kindly offer her the necessary information needed.

Thank you.

Yours faithfully,

Dr. Ernestina Donkor
Ag. Dean

Cc: DDNS, i/c
2nd Floor Surgical Ward
KBTH

WARD K
Kindly assist the bearer of this letter with her research work.
Thank you -
Dept. Of Surgery
Korle – Bu Teaching Hospital
FOR DDNS
Dept. of Surgery

Appendix D: Interview Guide

-Appendix D

Demographic Profile

Participant Code: _____

Title of Research: Experiences of Individuals Living with Diabetic Foot Ulcers at the Korle-Bu Teaching Hospital

A. Informal Interaction

B. Personal Data:

1. Age: _____
2. Sex: _____
3. Occupation: _____
4. Marital Status: _____
5. Number of children: _____
6. Educational background: _____
7. Religion: _____
8. Ethnicity: _____
9. Number of years of living with diabetes: _____
10. Number of years of living with diabetic foot ulcer: _____

Appendix D: Interview Guide

Appendix D

Interview Guide

Participant Code: _____

Guiding Questions: Challenges, Coping Strategies and Knowledge on DFU

1. Please tell me how your sore started?
    a. How did you notice it?
    b. What did you do when you detected it?
    c. How did you feel about the sore?
    d. What did you apply on it?
    e. Where did you go for treatment?
    f. Did you have diabetes before the sore?
2. Please share with me what you think about your sore
    a. What caused it?
    b. What can make it heal
    c. What can make it worse
3. Please share with me what you know about the following
    a. Medications
    b. Any surgery?
    c. Diet
    d. **Pro:** Tell me about your experience about DM and your eating habits
    e. Herbal/traditional therapy
    f. Spiritual

1

4. Tell me how you have been managing your life after you developed the sore
    a. Activity of daily living – bathing-How you manage to bath without getting the sore wet?
    b. Tell me about cooking, washing etc
    c. Cost
    d. Work
    e. Social activities – weddings, funerals and others
    f. Grooming
    g. Tell me how you move/Walking aid?

       Pro: Any difficulty/ easy
    h. Odour management
    i. Family support
    j. Any stigmatization?
5. Tell me about the support you have received from healthcare professionals
    a. Communication
    b. Education/counseling
6. Tell me the future precautions you have adopted in dealing with future occurrence
7. Is there any other comment that you want to add?
    a. Please elaborate

Appendix E: Consent Form

INFORM CONSENT DOCUMENT

Title: Experiences of individuals living with diabetic foot ulcers at Korle-Bu Teaching Hospital.

Principle Investigator: VeronicaOfosuaAdjeiSalia

Address: School of Nursing, College of Health Sciences, University of Ghana, Legon

General Information about the Research:

Objectivesof the Research:

Assess the level of knowledge on foot ulcers among diabetics with foot ulcers.

Assess the coping strategies of diabetics living with foot ulcers.

Explore the experiences of individualslivingwith diabetic foot ulcers

Develop recommendations for improving support for individuals with DFUs.

Purpose of the Research: The purpose of this study is to explore the experiences of individualsliving with DFUs at Korle-Bu Teaching Hospital.

Expected duration of participant's participation: I anticipate that interview schedule with you will last for at most 60 minutes.

Study Procedure: The research will require you to share your experiences in living with diabetic foot ulcer with the researcher through an interview session. You will decide the appropriate time and a suitable venue for convenience.The conversation will be taperecorded and played to your hearing after which it will be transcribed.

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Appendix E: Consent Form

Possible Risk and Discomforts: The researcher does not expect any harm to be caused to the participants during the research; however, in case during the narration of your experiences, you become emotional, you will be assisted to receive the necessary counselling.

Possible Benefits: By participating in this research, you will assist in sharing your experiences with others in getting to understand what you and other people go through when you are diagnosed and undergoing treatment for diabetic foot ulcers. Your participation will also help improve education to individuals with diabetic foot ulcers and help improve nursing care and further research into the lives of individuals living with diabetic foot ulcers.

Confidentiality: Your privacy will be protected. Whatever information you give during the interview will not be divulged to other people. The only people who may have access to this information will be my two supervisors but that will be done with your authorization. Findings of this research may be published and presented at conferences without your real identify.

Compensation: You will be given a snack after an interview session. In addition, the researcher will pay your transportation fair to the interview site.

Voluntary Participation and Right to Leave the Research: Your participation in this study is voluntary and it is your decision whether or not you want to participate, you will be asked to sign a consent form if you agree to be part of this research. Your withdrawal of consent will not result in any penalties or affect medical care you are entitled to get from health care providers.

Contact for Additional Information: In case of any questions or clarifications on this study you can call me on 0244631068. You can also contact the following

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Appendix E: Consent Form

Mr. Kwadwo Ameyaw Korsah, Faculty Member (Adult Health Department, School of Nursing, College of Health Sciences, University of Ghana. Mobile number (0243547317)

OR

Dr. Joseph Dakubo Consultant Surgeon, Department of Surgery Korle-Bu Teaching Hospital and Lecturer University of Ghana Medical School. Mobile number (0244832846)

Your right as a Participant

This research has been approved by the Institutional Review Board of Noguchi Memorial Institute for Medical Research (IRB- NMIMR). If you have any questions about your right as a research participant, you can contact the IRB Office between the hours of 8am- 5pm through 0302916438 or email addresses:

nir@noguchi.mimcom.org or HBaidoo@noguchi.mimcom.org.

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Appendix E: Consent Form

VOLUNTEER AGREEMENT

The above document describing the benefits, risks and procedures for the research title **(Experiences of Individuals living with Diabetic Foot Ulcers)** has been read and explained to me. I have been given an opportunity to have any questions about the research answered to my satisfaction. I agree to participate as a volunteer.

Date _____ Name and signature or mark of volunteer _____

If volunteers cannot read the form themselves, a witness must sign here:

I was present while the benefits, risks and procedures were read to the volunteer. All questions were answered and the volunteer has agreed to take part in the research.

Date _____ Name and signature of witness _____

I certify that the nature and purpose, the potential benefits and possible risks associated with participating in this research have been explained to the above individual.

Date _____ Signature of person who Obtained Consent _____

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Appendix F: Participants Demographic Data

Table 3: Participants Demographic Data

Name	Gender	Age	Level of Education	Occupation	Marital Status	No. of Children	Religion	Ethnicity	No. of years with DM	No. of years with DFU
Vera	F	46	Basic	Trader	Married	6	Christian	Akan	2 Years	6 Months
Bera	F	36	None	Trader	Married	2	Moslem	Gurushi	12 Years	6 Months
Cera	F	52	Basic	Trader	Widow	3	Christian	Ga	4 Years	4 Months
Dera	M	32	Basic	Mason	Married	3	Christian	Akan	12 Years	3 Months
Fera	M	54	Basic	Shop Attendant	Married	None	Moslem	Dagomba	2 Years	4 Months
Gera	F	65	None	Trader	Widow	5	Christian	Akan	5 Months	5 Months
Hera	F	43	Secondary	Teacher	Married	3	Christian	Ewe	12 Years	4 Months
Jera	M	57	Basic	Trader	Married	4	Christian	Akan	22 Months	3 Months
Kera	M	59	None	Trader	Married	8	Moslem	Moshi	4 Months	4 Months
Lera	M	67	Basic	Trader	Widow	9	Christian	Ga	21 Years	3 Months
Mera	M	55	Secondary	Prison Officer	Married	6	Christian	Ewe	6 Years	6 Months
Nera	M	65	None	Trader	Married	4	Moslem	Ga	7 Years	5 Months

Key: F- Female M- Male