

**FOOT CARE PRACTICES AND ASSOCIATED FACTORS AMONG  
DIABETIC OUTPATIENTS AT UNIVERSITY COLLEGE  
HOSPITAL, IBADAN, OYO STATE, NIGERIA**

**BY**

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## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background Of The Study

Diabetes mellitus is a metabolic disorder characterized by disturbances of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action, or both. Diabetes is diagnosed if the (venous) fasting plasma glucose(FPG) value is  $\geq 7.0$  mmol l-1 (126 mg dl-1), or if the casual plasma glucose value is  $\geq 11.1$  mmol l-1 (200 mg dl-1), or if the plasma glucose value 2 hours after a 75g oral load of glucose  $\geq 11.1$  mmol l-1 (200 mg dl-1). In asymptomatic subjects, performing the test on one occasion is not enough to establish the diagnosis (i.e. basis to treat diabetes). This must be confirmed by carrying out at least one further test on a subsequent day (WHO, 2003).

It is a common and potentially disabling chronic disease. The condition is presently affecting 194 million people worldwide and is estimated to rapidly increase to 333 million people in 2025 as a consequence of longer life expectancy, sedentary lifestyle and changing dietary patterns. About 60% of the poorest countries in the world are in sub-Saharan Africa and this region will experience the greatest rise in the prevalence of diabetes in the next 20 year (Dessalu; Salawu; Jimoh; Adekoya and Busari, 2011). The disease currently affects 3, 746.51 persons in Nigeria with 105, 091 deaths resulting from same annually (IDF, 2014).

One of the complications of diabetes is Diabetic neuropathy which causes foot ulceration others include Diabetic nephropathy causing stroke and other cardiovascular risks Diabetic retinopathy (a leading cause of blindness in people with Diabetes Mellitus; Diabetes hypogonadism which causes Erectile dysfunction and usually associated with low testosterone levels amongst others(Ogbera & Ekpebeghi, 2014) Of these complications, the one of interest and focus for this study is foot ulceration caused by Diabetic neuropathy.

Diabetic foot ulcers are significant with considerable morbidity and mortality. Foot ulcer is one of the fatal outcomes hyperglycemia emergencies which accounts for up to 40% of all DM hospital admissions (Chijioke; Adamu; and Makusidi, 2014). Diabetic foot ulcer (DFU) is a full-thickness wound penetrating through the dermis (the deep vascular and collagenous inner layer of the skin) located below the ankle in a diabetes patient. If a foot ulcer goes untreated and does not heal, it may become infected (Armstrong, 2011). People with diabetes are prone to developing foot ulcer, amputation and other lower extremity clinical abnormalities if they do not have good knowledge of foot care practice. Wound healing complications, sepsis and amputation are common among patients with diabetic foot ulcers. However, DM foot ulceration is highly preventable.

## **1.2 Statement Of Problem**

A major stimulus for conducting this study was prospective studies carried out in 2002 which indicated that of the major amputations carried out over a 5-year period in University College Hospital Ibadan Nigeria, " One hundred and one major limb amputations were performed within this period (71 Males, 30 Females, M:F = 2.3:1). Trauma accounted for 48% of the cases followed by diabetes in 26%, soft tissue infection in 13% and tumors also in 13%. The major post-operative complication was wound infection. In accordance with the findings in other centers, a higher proportion of the amputations (69%) were carried out in the lower limbs" (Ogunlade, Alonge, Omololu, Gana and Salawu 2002).

Non-communicable diseases which diabetes is one of them undermine the achievement of the Millennium Development Goals and are contributory to poverty and hunger. In Africa, 21.5 million persons are living with diabetes (5.1% prevalence) with 41.5 million persons are projected to have diabetes by 2035 while in Nigeria, 3, 746.51 persons with 105, 091 deaths resulting from same annually (IDF, 2014). This rise in prevalence of DM is likely to bring an increase in its complications among diabetic patients. One important complication of DM are the foot problems which constitute an increasing public health problem also a leading cause of admission, amputation and mortality in diabetic patients. The International working group on diabetic foot management has it that more than one million people undergo lower-limb amputation as a consequence of diabetes annually.

This according to this team presents a significant economic problem, particularly if amputation results in prolonged hospitalization, rehabilitation and an increased need for home care and social services.

Foot ulcers have been reported to occur after a mean interval of 13 years from the diagnosis of diabetes in a Nigerian population.(Dessalu et al, 2011) Unachukwu .C.; Babatunde .S. and Ihekwa .A.E. in 2007 reported a prevalence of limb ulceration to be between 11.7% and 19.1% among individuals with diabetes in Nigeria while a more recent study by Ikpeme et al, 2010 recorded a rising prevalence of 26% compared with range prevalence between 1.0% and 4.1% in the United States (US), 4.6% in Kenya, and 20.4% in the Netherlands. A study in Calabar in Nigeria reported 25% Foot ulceration in all new cases of DM and associated with an in-hospital mortality rate of 43%(Otu, Umoh, & Essien, Okon Ekwere, Enang, Ofem Egbe Okpa, Henry Ohem and Mbu, 2013). The lifetime risk of a person with diabetes developing a foot ulcer could be as high as 25%, and it is believed that every 30 seconds a lower limb is lost somewhere in the world as a consequence of diabetes (Desaalu e t al, 2011).

Generally, the adverse effects of DFU include high financial burden, foot amputation, physical disability, low quality of life, and a high mortality rate and long term treatment of DFUs is difficult; ulcers often reoccur even after healing; all the above factors insist that prevention of DFU is absolutely essential (Seid & Tsige, 2015). All the above adverse effects are products of poor foot- care preventive practices among diabetes patients.

### **1.3 Justification For The Study**

Studies have revealed that although progress has been made regarding preventive strategies with a focus on patient education on foot care among Diabetes patients, however, the level of adherence to foot care practices has not reflected this. This study will be carried out in University College Hospital Ibadan considering the statistics of lower limb amputation carried out in the last couple of years as a result of Diabetic Foot Ulcer. This study is aimed at researching into the gaps in practice and also reveals key

factors which promotes or inhibits the adherence of diabetic patients to foot care practices. Secondly, the study findings will also provide evidence for planning better adherence intervention programmes for improved foot care among diabetic patients and demonstrate the role of health promotion in clinical care of diabetes in UCH and by extension to other clinics in tertiary level facilities in Nigeria.

#### **1.4 Research questions:**

1. What is the level of knowledge of Diabetes and proper foot care practices among diabetic patients?
2. What are the current foot care practices among the Diabetes patients?
3. What are key factors that promote or inhibit adequate foot care practices among the respondents?
4. What is the additional cost of treating Diabetic foot ulcers among the respondents that already have foot ulcers?

#### **1.5 Broad Objectives**

To investigate foot care preventive practices and associated factors among diabetic outpatients in University College Hospital Ibadan, Nigeria.

#### **1.6 Specific Objectives**

1. To assess the respondents' knowledge of diabetes and proper foot care practices
2. To determine the foot care practices among the respondents and gaps in practice
3. To identify the significant factors that promote or inhibits adequate foot care practices among the respondents
4. To determine the additional cost of treating Diabetic foot ulcers among the respondents that already have foot ulcers

## 1.7 Research Hypothesis

**H<sub>01</sub>:** There is no significant relationship between a patient's knowledge of foot care practices and actual performance of same.

**H<sub>02</sub>:** There is no significant relationship between the availability of resources and materials for the patient and adherence to the preventive foot care practice.

**H<sub>03</sub>:** There is no significant relationship between getting social support from patient's social network and the regular practice of preventive foot care.

**H<sub>04</sub>:** There is no significant relationship between a patient's gender and gaps regular practice of preventive foot care.

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 Diabetes Mellitus

Diabetes is a chronic condition that arises when the pancreas do not produce enough insulin, or when the body cannot effectively use the insulin produced. Insulin is a hormone made by the pancreas that helps 'sugar' (glucose) to leave the blood and enter the cells of the body to be used as 'fuel'. When a person has diabetes, either the pancreas does not produce the insulin it needs (Type 1 diabetes) or the body cannot make effective use of the insulin produced (Type 2 diabetes). According to the IFD, diabetes is the fourth leading cause of death in most developed countries. Each year, three million deaths worldwide are attributable to diabetes-related causes.

Diabetes mellitus is also an important factor in accelerating the hardening and narrowing of the arteries (atherosclerosis), leading to strokes, coronary heart diseases, and other blood vessel diseases. Diabetes mellitus is a chronic medical condition, meaning it can last a lifetime. The three most common forms of diabetes are type 1 diabetes, type 2 diabetes and gestational diabetes. Type 1 diabetes also known as insulin-dependent diabetes mellitus (IDDM), is a severe, chronic form of diabetes caused by insufficient production of insulin and resulting in abnormal metabolism of carbohydrates, fats, and proteins. It appears in childhood or adolescence, is characterized by increased sugar levels in the blood and urine, excessive thirst, frequent urination, acidosis, and wasting. The life expectancy of a child with Type 1 diabetes is as low as seven months in rural African country like Nigeria caused mainly by limited access to insulin and its cost and a lack of infrastructure within the healthcare system. In the USA, ninety-eight per cent of Type 1 patients live six years after diagnosis but only one per cent of children currently survive six years in sub-Saharan Africa. (Chukwu 2013)

Type 2 diabetes (formerly called non-insulin-dependent or adult-onset) usually appears first in adulthood and is exacerbated by obesity and an inactive lifestyle. It results from the body's ineffective use of insulin. It comprises 90% of people with diabetes around the

world. It is largely the result of excess body weight and physical inactivity and is treated with changes in diet and an exercise regime. Symptoms may be similar to those of Type 1 diabetes, but are often less marked. As a result, the disease may be diagnosed several years after onset, once complications have already arisen. It is usually diagnosed by tests that indicate glucose intolerance. Until recently, this type of diabetes was seen only in adults but it is now also occurring in children (WHO, 2015)

Gestational diabetes is a form of glucose intolerance diagnosed during pregnancy. It is common among obese women and women with a family history of diabetes. Gestational diabetes is diagnosed through prenatal screening, rather than reported symptoms. Women with gestational diabetes are at an increased risk of complications during pregnancy and at delivery. After pregnancy, 5 to 10 per cent of women with gestational diabetes are found to have type 2 diabetes. Also, women who had gestational diabetes have a 35 to 60 per cent chance of developing diabetes in the next 10-20 years (National Diabetes Statistics NDS, 2011).

DM can be influenced by socio demographic factors (knowledge of diabetes, diabetes self-support, diabetes self-care management, patient's age, level of education, location of clinics, socio-economic status, gender, occupational type, anthropometric parameters and household wealth) influence management of DMT1 and DMT2 among diabetic patients attending clinics (Chukwu 2013). The authors further added that 50% of people with diabetes die of cardiovascular disease (primarily heart disease and stroke) stressing also that reduced blood flow, neuropathy in the feet increases the chance of foot ulcers and eventual limb amputation. Diabetic retinopathy is an important cause of blindness, and occurs as a result of long-term accumulated damage to the small blood vessels in the retina. After 15 years of diabetes, approximately 2% of people become blind, and about 10% develop severe visual impairment and also that Diabetes is among the leading causes of kidney failure; 10-20% of people with diabetes die of kidney failure. Diabetic neuropathy affects up to 50% of people with diabetes.

According to Oguntibeju et al, 2012, Diabetes is known to have a profound impact on life expectancy and a person diagnosed with Type 2 diabetes during middle age (40-60 years)



stands to lose as much as 10 years of life expectancy. It is also known to affect a patient's general health and well-being in various ways such as a severe dietary restriction and daily self-administration of oral medications or insulin which may adversely affect an individual's health-related quality of life. In addition, the long-term complications of diabetes, such as nephropathy, neuropathy, heart disease and stroke with their considerable impact on health, may as a result also have a negative impact on quality of life.(Oguntibeju et al, 2012).

High blood sugar during a long time can results in a lot of complications for the patient. The acute complications of diabetes mellitus are hyperglycemia, hypoglycemia and ketoacidosis. Chronic complications of diabetes mellitus are angiopathy. This complication can give cerebrovascular, cardiovascular, peripheral vascular disease, retinopathy, blindness, neuropathy and nephropathy. Neuropathy means that the nerves are damaged, which affects the sensitivity in the hands, feet or both, but it can also give the patients tingling, burning and/or tearing in the outer extremity. This can lead to ulcers in the lower extremity (Hellenburg and Thunberg, 2013).

## **2.2 Prevalence and Burden Of Diabetes**

The rise in diabetes around the globe is one of the greatest health challenges affecting the world population. Rates have increased over recent decades; the condition causes heart disease, stroke, amputations, kidney failure, blindness and premature death. The global epidemic, fueled by increasing urbanization and the spread of Western lifestyles, is imposing an immense burden on health systems and national economies (Viswanathan, 2013).

The prevalence of Diabetes is high in Africa. According to IDF diabetes Atlas, 5th edition 2012 report, it was estimated 366 million people were living with diabetes in 2011. The African region is expected to experience the highest increase in coming years with estimated increase in prevalence rates of 98% for sub-Saharan Africa where Nigeria belong, and 94% for North Africa and the Middle East. The report also revealed that in

2011, 14.7 million adults in the Africa Region are estimated to have diabetes, with a regional prevalence of 3.8%. The top six countries with the highest number of people with diabetes make up just over half of the total number in the region with Nigeria topping the list of those six countries. Type 2 diabetes accounts for well over 90% of diabetes in Sub-Saharan Africa. In 2004 three - four million people around the world died in complications of high blood sugar and 80% of the deaths due to diabetes occur in low- and middle-income countries. In the next ten years they are projected to rise about 50 % (WHO, 2013).

Akpan et al reporting from a 2012 survey of DM in Cross River State Nigeria put the prevalence rate for DM at 7.9%. Similarly high DM prevalence rates were reported in Calabar of 6.5% by Enang, Essien, Okpara, Fasanmade, and Ohwovoriole(2012) from a study on Prevalence and risk factors of dysglycaemia in Calabar, and 10.5% in nearby Uyo metropolis (Akwa Ibom State Nigeria) from a study by Ekpenyong, Akpan, Ibu, and Nyebuk 2012. These figures alarmingly contradicts the report of a DM survey in Ibadan in 1971 that put the DM prevalence at 0.4% and a similar survey in 1989 in Lagos metropolis that reported a DM prevalence of 1.6% reported in Ekpenyong 2012. The above study findings suggest a steady upward trend in DM prevalence in Nigeria (Umoh et al, 2013).

Overall the current global, regional and country burden of diabetes is summarized in Table 1 below:

**Table 1: Global, regional and country burden of diabetes**

**GLOBALLY,**

- 387 million people are living with diabetes (8.3% prevalence)
- 592 million people are projected to have diabetes by 2035 (10.1% prevalence and an increase of 53%)
- 1 out of 12 people are living with Diabetes and 1 out 2 of such persons do not know that they have it.
- Every 7 seconds, 1 person dies from diabetes accounting for 4.9 million deaths per year
- 50% of deaths are under 60years of age
- 77% of people with diabetes live in low and middle income countries
- \$612 billion is spent annually on diabetes (11% of worldwide healthcare expenditure) and it is projected to be at \$627.3 billion by 2035

**IN AFRICA,**

- 21.5 million persons are living with diabetes (5.1% prevalence)
- 41.5 million persons are projected to have diabetes by 2035 (5.3% prevalence)
- 1 in every 20 adults has diabetes
- Though we have the lowest prevalence across the regions but has the highest percentage of death under 60 years of age
- Has the lowest diabetes related expenditure (1% of the worldwide total: \$4.5 billion, projected at \$6.4 billion by 2035)

**IN NIGERIA,**

- 3, 746.51 persons has diabetes (4.64% prevalence)
- 105, 091 deaths occurs as a result of diabetes (ages 20-79)
- The average cost of treating diabetes is \$178.29

(Adopted from International Diabetes Federation 2014, 6th edition)

### **2.3 Prevalence Of Diabetic Foot Ulcers**

Statistics for medical complications from diabetes are also increasing. Proportions of patients with diabetic foot ulcer complications in sub Saharan region ranged from, 27-66% for neuropathy. Diabetes is likely to increase the risk of several important infections in the region, including tuberculosis, pneumonia and sepsis. A good number of them report to the hospital with severe complications, like gangrene that may lead to amputation and possible premature death, this might be because of lack of appropriate self management practices (Hall et al, 2011).

Unachukwu .C.; Babatunde .S. and Ihekwa .A.E. in 2007 reported a prevalence of limb ulceration to be between 11.7% and 19.1% among individuals with diabetes in Nigeria while a more recent study by Ikpeme et al, 2010 recorded a rising prevalence of 26%. Compared with a range prevalence between 1.0% and 4.1% in the United States (US), 4.6% in Kenya, and 20.4% in the Netherlands.. A study in Calabar in Nigeria reported 25% Foot ulceration in all new cases of DM and associated with an in-hospital mortality rate of 43% (Umoh et al, 2013).

Foot problems are a common complication in people with diabetes. Fortunately, most of these complications can be prevented with careful foot care. If complications do occur, daily attention will ensure that they are detected before they become serious. It may take time and effort to build good foot care habits, but self-care is essential. In fact, when it comes to foot care, the patient is a vital member of the medical team.

### **2.4 General Complications Of Foot Ulcers**

Diabetes can lead to many different types of foot complications, including athlete's foot (a fungal infection), calluses, bunions and other foot deformities, or ulcers that can range from a surface wound to a deep infection.

The American Diabetes Association (2015) summarized different foot problems and complications among diabetes patients as follows:

- a. Neuropathy: This refers to diabetic nerve damage which can lessen the ability to feel pain, heat or cold. Thus one could have a blister or even hit the foot and nerve feel any pain.
- b. Skin Changes: A times the skin of the diabetic patient may become very dry, peel or crack. This is because the nerves that controls oil and moisture in the foot no longer works. This is why it is recommended that a thin coat of plain petroleum jelly be applied to the foot after bathing. However, it should not be applied in between the toes as extra moisture can lead to infection.
- c. Calluses: Hardening or thickening of the skin in the feet as a result of pressure or friction. If this is not trimmed, breaks down and turns to ulcers. However, the trimming should be done only by health care providers to avoid ulcers and infections. Also the use of pumice stone on a wet skin every day keeps the calluses under control.
- d. Foot Ulcers: This mostly occurs on the bottom of the big toes or the sides of the foot. The latter usually results from poorly fitting shoes. Foot ulcers must be reported to health care providers immediately. Neglecting such could result to infection and consequently loss of a limb.
- e. Poor circulation: Poor blood flow makes the foot less able to fight infections and to heal. This poor blood flow in diabetic patients is usually as a result of the narrowing and hardening of blood vessels of the foot and leg. Avoiding smoking, Keeping blood pressure and Cholesterol level under control can control the cause of this poor blood flow.
- f. Amputation: Studies have revealed that people with diabetes are more likely to have foot ulcers or leg amputation more than other people. This is as a result of Peripheral Arterial disease which reduces blood flow to the feet and nerve disease which reduces sensation. Both predispose the patients to ulcers and infections which could lead to amputation.

McCulloch (2014), in addition to the above listed problems added another one called Deformities — The structure and appearance of the feet and foot joints can indicate diabetic complications. Nerve damage can lead to joint and other foot deformities. The toes may have a peculiar "claw toe" appearance, and the foot arch and other bones may appear collapsed. This destruction of the bones and joints is called Charcot arthropathy.

Additionally, the International Working group on Diabetic Foot Care (2015) reported that Skin Colour changes red, blue or black discoloration, Pain in legs at rest or while walking, non healing wounds, In-growing toe nails, Lack of hair growth on the foot, Swelling of the foot or ankle and very cold feet or legs are part of foot problems among diabetic patients.

Foot complications are the most common cause of hospitalization in the person with diabetes. The development of diabetic foot complications is a multifactorial process. They result from a combination of micro vascular and macro vascular diseases that place the patient at risk for injury and serious infection that may lead to amputation. The most common type of neuropathy affecting persons with diabetes is sensory neuropathy. This can lead to the loss of protective sensation in lower extremities and coupled with other factors, this significantly increases the risk for complication that result in lower limb amputation (Lewis et al., 2011).

Nwankwo et al 2010 revealed that diabetic foot ulcers had the most prolonged duration of admission ranging from 15-122 days. Lancet (2005) in Ikpeme 2010 reported there are an estimated 1 million diabetes-related amputations per year and 50% of amputees will lose the contra lateral leg within 1 year. (Nwankwo, and Bikash, , 2010)

A study carried out to determine causes of death among type 2 Diabetes Mellitus patients in University of Ilorin Teaching Hospital, Ilorin, by Chijioke et al (2014) revealed that foot syndrome accounted for the 3rd highest number of admissions (16.81%) of all admissions, also out of the 132 patients admitted on the account of foot syndrome, 60 of them died bringing the mortality rate to as high as 45.45%. Also the foot syndrome accounted for 23.5% deaths among all the patients in the study. (Chijioke; Adamu and Makusidi, 2014)

Diabetic Foot Ulcer also accounted for 21.2% of all diabetic admissions which confirms the significance of this complication among diabetics as reported from a study in Calabar (Umoh et al, 2013)

According to the authors, Diabetes is the third leading cause of death by disease. People with diabetes are prone to foot problems because the disease can cause damage to the blood vessels and nerves. This in turn, may result in a decreased ability to sense trauma or pressure on the foot. Foot injury may go unnoticed until severe infection develops. Small infection can rapidly progress to the death of the skin and other tissues (necrosis), which may require amputation to the affected limb to save the patient's life.

## **2.5 Risk Factors For Foot Ulcers**

Many factors have been found to be associated with the development of foot ulcers. Patients who have had a previous foot ulcer are more likely to have future foot complications. Nerve damage, poor circulation, and chronically high blood sugar levels also increase the likelihood of foot complications (Kumar and Shahi, 2012). Similar findings have been reported by McCulloch (2014) and Viswanathan, (2013).

Secondly, not wearing fitting shoes that fit such as those that are too tight can predispose to the causation of pressure ulcers. Going barefoot, even in the home, should be avoided as this increases the risk of injury to the foot. Thirdly, Cigarette smoking has been significantly associated with increased risk of foot ulceration. Vijay Viswanathan in a study in India reported that smoking increases risk of foot ulceration by reducing blood circulation in the legs and reducing sensation in the feet (Viswanathan, 2010)

Fourthly, the Seattle diabetic foot study- a prospective study of risk factors for diabetic foot ulcers concluded that certain foot deformities, poor vision, reduced skin oxygenation and foot perfusion, autonomic neuropathy independently influence foot ulcer risk thereby providing support for a multifactorial etiology for diabetic foot ulceration. It however found no association between foot ulcers and race, smoking status and diabetes education. (Boyko, 2011). Finally, Frykberg et al, 2006 added that risk factors identified for foot ulcer include peripheral neuropathy, vascular disease, limited joint mobility, foot deformities, abnormal foot pressures, minor trauma, a history of ulceration or amputation, and impaired visual acuity

## 2.6 Preventing Foot Problems In Diabetes

Preventing foot problems in Diabetic patients is a major way of reducing associated morbidity and mortality. Previous research findings revealed similar strategies which would reduce the development of foot problems among diabetic patients.

Saleh et al 2012 listed some of the strategies as:

Saleh et al, (2012), listed the following strategies for the prevention of foot problems

1. Quit smoking
2. Avoid activities that can injure the feet — Including walking barefoot, using a heating pad or hot water bottle on the feet, and stepping into the bathtub before testing the temperature.
3. Use care when trimming the nails — Trim the toe nails along the shape of the toe and file the nails to remove any sharp edges. Never cut (or allow a manicurist to cut) the cuticles.
4. Wash and check the feet daily — Use lukewarm water and mild soap to clean the feet. Gently pat your feet dry and apply petroleum jelly but not in between toes
5. Check the entire surface of both feet for skin breaks, blisters, swelling, or redness, including between and underneath the toes where damage may be hidden and report to the health care provider in case of any.
6. Choose socks and shoes carefully — Select cotton socks that fit loosely, and change the socks every day. Select shoes that are snug but not tight
7. Ask for foot exams — Screening for foot complications should be a routine part of most medical visits.

In addition to the listed strategies above, the International Working group on Diabetic Foot Care (2015) added that education of patient, family and healthcare providers and Treatment of pre-ulcerative signs are very indispensable strategies for the prevention of diabetic foot ulcers. Also the American Diabetes Association recommended the following in addition to the aforementioned one as preventive strategies:

- Corns or calluses should be trimmed by health care providers can also trim patient's toenails if such cannot do so safely or train a member of his family on how to do so.



- Take care of the diabetes in other to keep the blood sugar under control
- Ask doctor about for special shoes.
- Keep the blood flowing to the feet. Put the feet up when sitting. Wiggle your toes and move your ankles up and down for 5 minutes, two or three times a day. Don't cross legs for long periods of time.

A person with diabetes, irrespective of the presence or absence of symptoms of foot complications, has to be examined at least once a year for potential foot problems. A patient with probable risk factors should be examined every 6 months (Viswanathan 2013). Examination of the feet should be done thoroughly, with the patient's shoes and socks removed and the patient in lying down and standing up positions (Bakker 2011). Controlling blood sugar levels can reduce the blood vessel and nerve damage that often lead to diabetic foot complications. If a foot wound or ulcer does occur, blood sugar control reduces the risk of requiring amputation, thus Foot care is important, although patients should also continue to follow other general guidelines for managing diabetes.

## **2.7 Knowledge Of Diabetes Among Diabetes Patients**

Poor foot care knowledge and practices are important risk factors for foot problems among people with diabetes (Basker, 2014). Several findings from different studies has shown that knowledge of diabetes generally among diabetic patients is very poor (Dikeukwu (2011); Kavanagh et al; (2010); Adeniyi (2014) and Odili and Eke Odili and Eke (2010). Odili and Eke who conducted their study among Registered Nurses in Benin City added that there is a poor correlation between years of experience and knowledge scores, inferring that for our nurses, years of experience do not guarantee greater knowledge in diabetes mellitus. They were of the opinion that this is probably because as these nurses climb up the ladder of the profession their roles majorly become administrative, and have less time for programmes on continuing education because of their busy schedules. Adeniyi 2014, who carried out his own study on women noted that the poor knowledge of diabetes among the participants culminated into poor attitude towards the management of the disease. However, Saurabh etal 2014 and Saleh et al (2012), reported average basic knowledge of diabetes, its complications and management

from the findings of their study. Consequently, the findings also revealed that lower education and lower income are some of the factors that affect the knowledge of the patients (Dikeukwu (2011); Saurabh et al (2014) and Kavanagh et al, (2010).

## **2.8 Knowledge Of Foot Care Practices**

From findings of previous studies reviewed under knowledge of foot care practices among diabetes patients, Dessalu et al 2011, Beiranvand et al 2014 and Dikeukwu 2011 reported poor knowledge of foot care practices among their participants stating that 46.0%, 53.6% and 75.8% of the participants respectively have poor knowledge. These were in agreement with the reports given by Chellan et al 2012 and Kumhar 2014 who from their different studies also recorded poor knowledge among their different study participants. However, Gholap et al 2013, Basker et al 2014 and Seid et al 2015 from their different studies reported moderate level of knowledge of foot care practices among their different participants stating that 58%, 53% and 56.2% of their different study participants have knowledge of foot care practices. On the other hand, Abu-Oamar 2014, Jinadasa et al 2011 and Hellenberg 2013 reported high knowledge of foot care practices among their different participants from their separate studies with Hellenberg et al reporting that 74.0% of their participants has good knowledge of foot care practices.

Irrespective of their different findings, all the authors concluded that poor knowledge of the patients was traceable to low level of education, illiteracy and low level of awareness of what to do to care for their feet. Hellenberg 2013 buttressed this by stating that most of the participants in his study were primary and secondary school leavers and added that their knowledge was also affected by the information they got from the media as none of them has attended any classroom teaching on foot care nor read any hand out. Dessalu et al, 2011 added that low socioeconomic status has been found to be associated with the knowledge of the patients on foot care practices. Dikeukwu 2011 however noted that poor knowledge of patients could be traceable to high level of unemployment among respondents as well be due to the failure of health care professionals to educate the patients about diabetic self-care including proper foot self-care. It has been estimated

that up to 50% of the major amputations in diabetic patients can be prevented with effective education.(Seid& Tsige, 2015)

## **2.9 Adherence to Foot Care Practices**

Foot problems are a common complication in people with diabetes. Fortunately, most of these complications can be prevented with careful foot care. If complications do occur, daily attention will ensure that they are detected before they become serious. It may take time and effort to build good foot care habits, but self-care is essential. In fact, when it comes to foot care, the patient is a vital member of the medical team. The centers for disease control and prevention has determined that "regular foot care can reduce serious foot disease by 50 to 60% affecting the quality of life of our aging population" (CDC, 2015).

Most of the literatures reviewed under adherence to foot care practices reflected poor and substandard adherence to foot care practices by the patients (Jinadasa and Jeewantha, 2011; Saleh, 2012; Basker et al, 2014; Beiranvand S et al, 2014; Berhe, Kahsay, & Gebru, 2012; Saurabh et al 2013; Dikeukwu 2011; Dessalu et al, 2011 and Kumhar 2014 expect for Berhe et al (2012) who reported moderate adherence.

On the level of adherence to regular foot inspection, some findings reported it to be poor among the patients (Saurabh 2014; Gholap and Mohite 2013; Basker et al, 2014 and Dessalu et al, 2011. On the other, Jinadasa and Jeewantha 2011 and Hellenberg 2013 reported this practice to be high while Dikeukwu, 2011 reported this practice to be average among the patients. Also the use of appropriate foot wear among the patients were reported to be low in some studies (Hellenberg, 2013; Gholap and Mohite 2013; Basker et al 2014; Jinadasa and Jeewantha 2011; Dessalu et al 2011 and Kumhar 2014. Basker et al 2014 and Kumhar 2014) from their different studies reported that the use of inappropriate foot wear was higher among females than male. On the other hand, Saurabh 2014 reported high adherence to the use of appropriate foot wear. The practice of receiving advice from health care providers before purchasing foot wear and that of walking barefooted inside the house were found to be poor among all the studies reviewed.

The practice of washing of feet regularly with warm water was reported to be high in some of the studies (Saurabh 2014; Basker et al 2014 and Dikeukwu 2011). However the practice of the use of talcum powder or moisturizer for the feet was found to be low in most of the studies (Dikeukwu 2011; Hellenberg 2013; Saurabh 2014 and Jinadasa and Jeewantha 2011). The practice of not walking barefooted outside the house was found to be high from all the studies reviewed. While the practice of inspecting foot wear before wearing such was found to be averagely poor in all literatures reviewed.

Basker et al, 2014 and Saurabh 2014 reported the practice of healthy nail trimming among the patients from their different studies. Basker et al also reported that the practice of not drying feet in between the toes which is an important risk factor for the development of foot ulcer and infection was almost the lifestyle of the participants in his study. Additionally, Soaking of feet which is a very bad practice for diabetic patients was reported to be a common practice among some patients according to the findings from the study of Dikeukwu in 2011. The patients were doing it in ignorance as some of them were reported doing it as the best they could do to prevent foot ulcers. Also Hellenberg from his studies in 2013 reported the practice of poor sitting posture among the patients as most of the participants in his study reported that they cross their legs while sitting for a long period of time. However, Saurabh from his study in 2014 reported that most of the patients have the good practice of changing their foot wear once it gets spoilt.

## **2.10 Factors Affecting Adherence**

Multiple factors have been found to influence adherence to foot care practices among Diabetes Patients. One of these is cost of purchasing products that could enhance foot care such as suitable and appropriate foot wears, nail cutters, petroleum jelly, talc powder , and even the cost of periodic medical checkup.(Ogbera et al, 2014).

Another factor is related to poor adherence is poor communication between patients and health care providers. A study conducted on Knowledge , Practice , and Barriers of Foot Care among Diabetic Patients Attending FelegeHiwot Referral Hospital , Bahir Dar , Northwest Ethiopia reported the total of 162 respondents, 92 (56.8%) reported poor communication between patients and health care providers, "82 (50.6%) cited "I did not know what to do," and 72 (44.4%) responded "inconveniency for work" (Seid& Tsige,

2015). Dessalu 2011 also reported from his study that poor knowledge, poverty and poor communication between patients and physicians are the major contributing factor for poor practice of foot care.

Thirdly, Poor footwear and foot care knowledge and very unsafe choice of footwear has been reported to be predisposing to condition of diabetic foot like corn, calluses, foot injury, foot deformity, fungal infections., clawing, in growing nails, oedema feet. These predisposing conditions for diabetic foot were found in studies by Kumhar 2014; Dessalu et al, 2011; Hellenberg 2013 and Basker et al, 2014.

Fourthly, Low education level, rural background, low socio-economic status, longer duration of diabetes (>10years), has been reported to be factors that affects adherence to foot care practices(Aziz, 2010; Dessalu et al 2011; Berhe 2012; Gholap and Mohite 2013; Hellenberg, 2013 and Basker et al, 2014). Hellenberg from his study noted that people of high education tend to differ from practice than people of low education.

Fifthly is the patient's ability to cope with multiple self-care behaviours. A study conducted in America on racial/ ethnic differences in multiple self-care behavior in adults with diabetes, concluded that few patients engage in multiple self-care behaviours at recommended levels and there are significant racial/ethnic differences in physical activities, dietary and foot care behaviour among adults with diabetes. The study revealed that the proportion of patients with diabetes who performed self foot examination at least once daily ranged from 66% in Hispanics to 82% in others. Blacks were 1-4 times more likely to do a daily foot examination compared to whites.(Nwasuruba, 2010). Sadly, this was still supporting a study done in 2001 by William et al.

Additionally, Social support including spouse, children, parents, colleagues and friends has been also found to influence adherence to foot care practices among patients. A cross sectional observational study done in Michigan, US examined social support and its relationship to diabetes specific quality of life and self-care behaviours in African Americans found that satisfaction with support was a predictor of improved diabetes-specific quality of life and negative support behavior was a predictor for not taking

medication as recommended. The study concluded that social support plays a role in diabetes specific quality of life and self-management practices.(Tang et al, 2008).

In summary, Most of the literatures reviewed under factors promoting or inhibiting proper foot care practices among diabetic patients revealed that knowledge is a major factor inhibiting proper self care practices. Some other findings revealed that adequate social support is a good pointer for the promotion of these practices among the patients. However, some other findings revealed that Age and Gender also affects adherence stating that older people tend not to practice the self management practices which females tend to adhere more to the practices than males except for the practice of appropriate foot wears (Berhe 2012; Kumhar 2014 and Basker et al 2014. Time availability was also reported to either inhibit or promote proper self care practices. This study therefore will in addition to these factors research into other factors which either promote or inhibit these practices.

### **2.11 Cost Of Treating Diabetic Ulcer**

From the numerous literature search, it was discovered that not many studies has been done on cost of TREATING DIABETIC FOOT ULCER. The different literatures will be reviewed under direct and indirect cost of treating diabetic foot ulcers.

The cost of diabetes care is borne in most instances by individuals and often payment is “out of pocket” this being a sequel of a poorly functional national health insurance scheme. An insulin requiring individual on a minimum wage would spend 29% of his monthly income on insulin.(Ogbera et al, 2014). Out of pocket expenditure remains the major means of funding health care for the vast majority of Nigerians now and in the foreseeable future. In the report by Ogbera et al 2014, well over half of persons on insulin paid for their insulin themselves and the mean costs of procuring insulin per month was determined to be about 37 dollars per month.

According to the American Diabetes Association, the cost of direct healthcare for diabetes and its complications was around 11% of total healthcare costs worldwide in

2014. This is equivalent to \$612 billion, which is greater than the entire GDP of countries such as Nigeria or Sweden. This cost is due both to the high prevalence of diabetes and to the fact that people with diabetes incur higher lifetime healthcare costs than their peers. For example, in the US lifetime healthcare cost are 2.3 times higher for people with diabetes compared to the average population.

"In 2006, Ogbera et al in a study done in Lagos reflecting the high cost of caring for DFU put the mean costs for successfully treating a patient with DFU at ₦180,581.60. The National Bureau of Statistics of Nigeria had in February 2012 released figures that showed that about 112million Nigerians (or 67.1 percent of the country's total population of 167million) lived below poverty level—that is living below US\$1.00–US\$1.25 per day (This Day Newspaper, 2013). This would place the cost of caring for DFU beyond the reach of the average Nigerian. The huge economic cost of DM care is not peculiar to Nigeria as the total cost of direct patient care in the United Kingdom in 2010/11 was estimated at £9.8 billion which was approximately 10% of the National Health Service (NHS) budget. DFU and amputation costs for 2010/11 were the most expensive complication to treat in terms of hospital costs, followed by kidney failure and other renal costs(McInnes, 2012)"(Otu et al., 2013). In a 1999 study over 3 years of observation, the attributable cost for a 40–65 year-old with foot ulcer was 27,987 USD for 2 years after diagnosis of diabetes (Ramsey et al, 1999). Farshchi et al 2014 also reported that the cost of treating diabetic foot ulcer was the second highest among the cost of treating other complications of diabetes.

It was estimated that global health expenditures of diabetes and its complications were about 376 billion US dollar (USD) in 2010, while a rise to 490 billion USD in 2030 is anticipated (Zhang P, Zhang X, Brown JB, Vistisen D, Sicree RA, Shaw J and Nichols GA, 2010). Recently, \$612 billion is spent annually on diabetes (11% of worldwide healthcare expenditure) and it is projected to be at \$627.3 billion by 2035with Nigeria having an average cost of \$178.29 for treating diabetes and its complications.(IDF, 2014).

In addition to causing pain and morbidity, foot lesions in diabetic patients also have substantial economic consequences, beside the direct costs of foot complications, there

are also indirect costs relating to loss of productivity, individual patients' and family costs and loss of health related quality of life.(Seid& Tsige, 2015).

Another indirect of treating diabetic foot ulcer includes lost productivity (costs of productivity lost to this complication among which are poor work performance, low earning's capacity from disabilities, and labor loss due to early mortality), earlier retirement and increased requirements for social support. These indirect cost are often as high as, if not higher than, the direct costs.(Colagiuri, Kent, Kainu, Sutherland, & Vuik, 2015) and Farshchi et al 2014.

Thirdly, Farshchi et al 2014 found disability, the number of days absent from work due to diabetes -related health care, the loss of value because of work absence and mortality to be indirect costs of the complications of diabetes which costs  $1220.4 \pm 63.6$  USD costs yearly in 40-60-year age group with a significant higher expenditure in men. According to the author, mortality costs which they calculated as the lost earnings owing to premature mortality are also indirect costs of diabetic complications including diabetic foot ulcers. They calculated it using the formular: Value loss due to absences from work (USD) = Number of days absent from work  $\times$  Average of daily wage (USD).(Farshchi, Esteghamati, Sari, Kebriaeezadeh, Abdollahi, and Dorkoosh, (2014).

Fourthly, stigmatization, the 50% chance of losing the contra lateral leg by these individuals in their productive years of life and the risk of hunger and denial of access to education for their children and other dependents from inability to source incomes for school fees and other expenditure has been found out to be an indirect cost of diabetic foot ulcer according to a study by Ikpeme et al, 2010. "This fuels the cycle of hunger, poverty, illiteracy and disease in the developing world. The authors concluded this considering the fact that 59% of patients their study who had foot gangrene requiring amputation were in the first five decades of life which has a huge socio-economic impact on the society as most of these individuals are males (67% in this study) and also the breadwinners for their families" (Ikpeme, Udosen, Ngim, Ikpeme, & Amah, 2010).

Furthermore, the extra time spent on foot care, shopping, cooking and exercise due to diabetes has been found out to be an indirect cost of treating diabetic foot ulcer. This is



because productive hours that should have been put into work will be diverted to extra care. This is not only an indirect cost to the patient but even borne more by the members of his social support. (Ethner et al, 2009).

More so, the likely extension of stay in the hospital as a result inability to pay for hospital bills by individuals has been viewed as an indirect cost. The authors said that "The inability to promptly pay for the required services in a country like Nigeria without an effective health insurance scheme may promote longer hospital stay for DMFU patients". (Umoh et al, 2013).

In summary both the direct and indirect cost of treating diabetics complications especially Diabetic Foot ulcers is relatively high. These costs could be greatly avoided by engaging in proper self care practices.

## 2.12 Conceptual Framework

The conceptual framework adopted for this study is the PRECEDE COMPONENT of the PRECEDE-PROCEED model. This model is a very comprehensive model which assists this study to critical look into the predisposing factors, Enabling factors and Reinforcing factors which affects the practice of preventive foot care among diabetic patients.

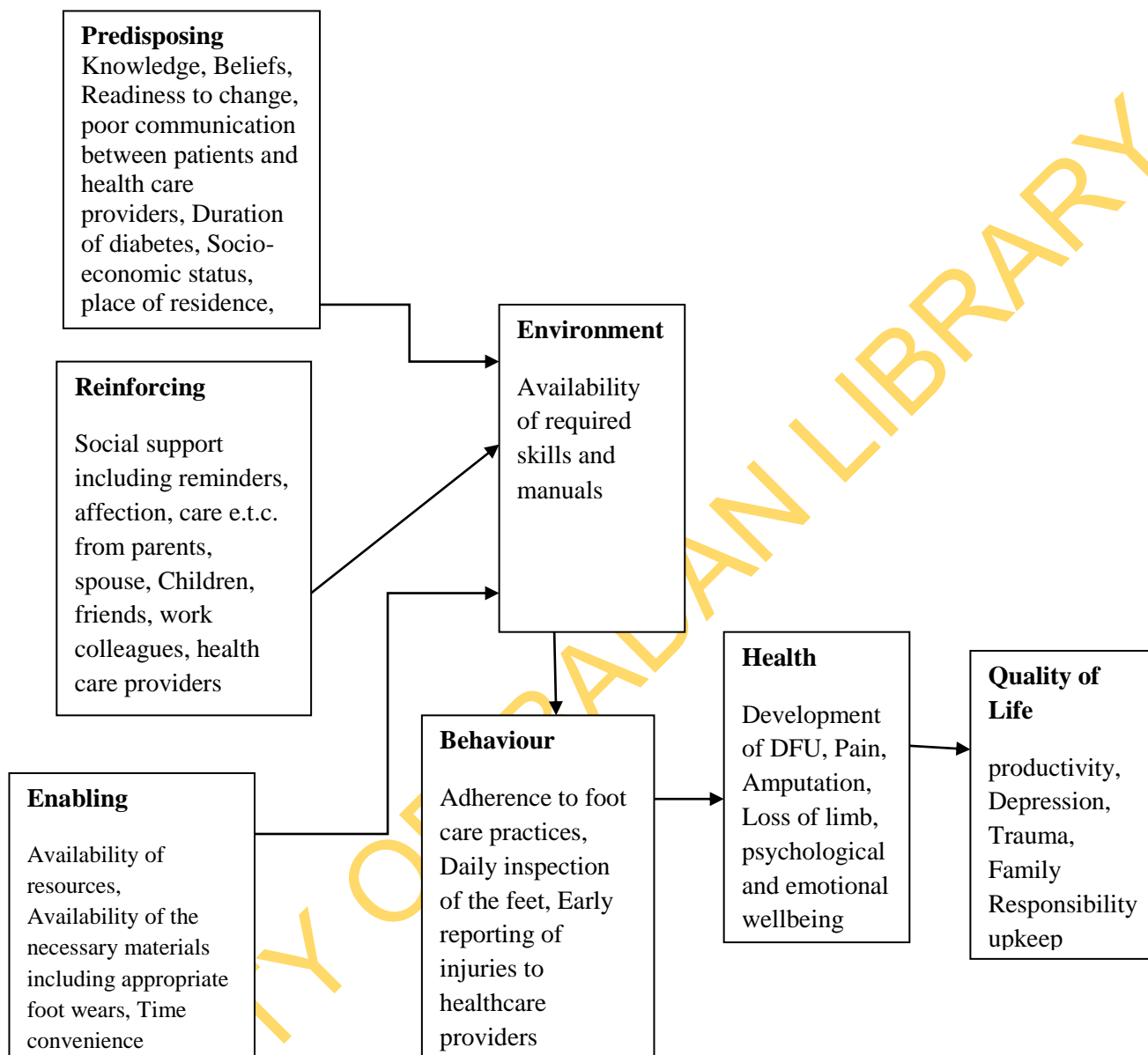
This model is a planning model which was developed by Green, Kreuter and associates. It provides a guide to identifying a mix of strategies to identify desired outcomes. It views that health behaviour is influenced by both individual and environmental factors. It has two distinct parts, the educational diagnosis (PRECEDE) and the ecological diagnosis (PROCEED). The PRECEDE component of this model will be used to determine the factors which have hindered diabetic patients from practicing the preventive foot care practices because this is a research work aimed at informing subsequent intervention. The full meaning of PRECEDE is Predisposing, Reinforcing and Enabling constructs in Educational Diagnosing and Evaluation.

Predisposing factors are such that motivates or provide a reason for behaviour and includes Knowledge, Readiness to change, Belief. The Enabling factors are those which enables person to act on their predispositions: these factors includes available resources, supportive assistance and services, Skills. The Reinforcing factors come into play as the behaviour is initiated encouraging repetition or persistence of behaviour; they come into play through social support, praise, reassurance, symptom relief.

For the purpose of this research, the PRECEDE model will be used to explore the relationship between predisposing factors (Knowledge, Beliefs, Readiness to change, poor communication between patients and health care providers, Duration of diabetes, Socio-economic status, place of residence, ethnicity differences) Enabling factors (Availability of resources, Availability of the necessary materials including appropriate foot wears, skills, Time convenience, coping with multiple self-care behaviours and accessibility of health centres and Reinforcing factors (Social support such as care,

reminders and assistance from spouse, Children, Work Colleagues, health care providers and friends) and extent of foot care practices among these diabetes patients).

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**FIGURE 1: The Application of the Precede Conceptual Framework to the Current Study**

## CHAPTER THREE

### RESEARCH METHODOLOGY

#### 3.1 Study design and scope

The study was descriptive cross sectional in design.

The study was designed to assess the knowledge of diabetes, knowledge of foot care practices Actual foot care practices, factors affecting the practice of foot care practices and the cost of treating diabetic ulcer disease among diabetic patients of university college hospital Ibadan, Ibadan, Oyo State.

#### 3.2 Study site

This study was carried out among diabetic patients of university college hospital Ibadan, Ibadan, Oyo State. University College Hospital Ibadan was selected considering the statistics of lower limb amputation carried out in the last couple of years as a result of Diabetic Foot Ulcer. It is the teaching hospital of the University of Ibadan, Ibadan, Oyo State Nigeria. It runs different clinics for different cases on different days, but the burden of diabetes necessitated the need to run the clinic twice a week - Mondays and Fridays. The Diabetic clinic usually offers diabetic health education to the patients. This is taken by the health education nurses. The education centers on general diabetes education, symptoms and management of such, symptoms of hypoglycemia and the actions to take in events of such and Diabetic Foot care Education. The Diabetic foot care education is usually carried out using Behavioural change Communication materials which has different information serving as guidelines for effective foot care. The information includes foot hygiene, Home care, Medical care, appropriate foot wears among others.

#### 3.3 Study population

The study population constituted of all the diabetic patients who comes for treatment and check up in university college hospital Ibadan, Ibadan, Oyo State.

### 3.4 Inclusion criteria

For the purpose of this study, only registered diabetic patients in University College Hospital Ibadan, Ibadan, Oyo State were included.

### 3.5 Exclusion criteria

All the diabetic patients who were not registered in the diabetic clinic of the University College Hospital Ibadan were excluded from this study.

### 3.6 Sample size determination

The average monthly population of the diabetic patients attending clinic in University College hospital Ibadan was estimated to be around 200. The prevalence of Diabetes in Nigeria is 4.64 (IDF, 2014). This gave a small sample of 67 respondents. Thus the sample size of this study was determined using (Yamane, 1967) sample size formula below:

$$n = \frac{N}{1+N(e)^2}$$

Where:

n = required sample size

N = Estimated population of diabetic patients at UCH (200)

e = degree of error tolerance at 5%

$$n = \frac{200}{1+200(0.05)^2}$$

$$n = \frac{200}{1.5}$$

$$n = 133$$

### **Adjusting the sample size for 20% non-response rate:**

$$n_f = \frac{n}{1-NR}$$

Where:

NR = Non-response rate of 20%

$n_f$  = Adjusted sample size due to non-response

$$n_f = \frac{133}{1-20\%}$$

$$n_f = 166$$

Thus the sample size for this study was 166 registered diabetes patients at UCH.

### **3.7 Sampling Technique**

Purposive sampling technique was adopted for this study. To this end, 204 consenting registered diabetic patients were selected for the study.

### **3.8 Instrument For Data Collection**

The instrument used for data collection in this study was questionnaire, a quantitative instrument. The questionnaire had five sections which included; section A; the socio-demographic characteristics of the respondents, section B; knowledge of respondents on diabetes type 2 and foot care practices, section C; Extent of foot care practices among the respondents, section D; information on factors that promotes or inhibits the practice, and section E Information on the cost of treating foot ulcer diseases among the patients who already had it. There were both open ended and close ended questions.

### **3.9 Validity Of The Instrument**

It is the degree to which an instrument measures what it is suppose to measure. The instrument was designed using simple English with its validity ensured through extensive

literature search on foot care practices among diabetic patients. The supervisor oversaw the development of the instrument before its subsequent administration and other lectures in the department of Health Promotion and Education to ensure face and content validity. The corrections made by these experts were adapted to improve the instrument. Filter questions were strategically placed within the instrument to ensure that the respondents were not faking the responses. The instrument was translated between English and Yoruba (The local language of the target population) Languages. This was to ensure that the instrument retained its original meaning.

### **3.10 Reliability Of The Instrument**

This defines the extent to which an instrument constantly yields the same results on repeated trials. This was ensured by pretesting 10% of the instrument on the diabetic patients attending clinic at Adeoyo Hospital, Ibadan, Oyo State as efforts to pretest at OAUTH Ife were turned down by the hospital management. This population has similar characteristics with the actual population but did not consist of those who participated in the study. The findings from the pretest was used to scrutinized and reset the items in the instrument for necessary adjustments before the main study. Also its internal consistency was determined using the Cronbach's Alpha coefficient analysis. Result that shows correlation coefficient was 0.83 which was greater than 0.05 and thus the instrument was reliable.



### **3.11 Method of data collection**

The researcher wrote a letter to the Chairman Medical Advisory Committee (CMAC) University College Hospital and also paid visit to the diabetic clinic for permission and planning prior to the conducting of the study. The respondents were adequately informed about the study and valid informed consents were gotten and signed from them. Afterwards, there was administration of an interviewer administered semi structured questionnaires to respondents by the researcher and trained research assistants.

Six research assistants were trained on the purpose of the study, the details of each item of the instrument and the process of collecting informed consent from the research participants including the need for confidentiality of the information provided by the research participants. This training was taken by an expert as a facilitator and was focused on the objectives and the importance of the study. Two of the research assistants were involved in the pretesting of the instrument. The clinic runs only twice a week, Mondays and Fridays, the data collection took place during these days and lasted for 4 weeks (8 days) between 11th September and 9th October, 2015. Six trained research assistants were recruited for the studies, three females and three males. At the end, 204 questionnaires were administered and analysed. The researcher supervised the data collection process to ensure validity of responses.

### **3.12 Ethical Consideration**

Prior to the commencement of the study, ethical approval was obtained from the UI-UCH Ethical Review Committee. The committee ensured that the research work conforms to the generally accepted scientific principles and international ethical guideline required in human subjects research and to review the ethical components of the study.

The nature, purpose and processes involved in the study were well explained to the participants with emphasis on confidentiality, privacy and anonymity of information provided. In other to ensure anonymity of responses, code numbers were given to each participant and any form of identification was not be included in the questionnaire. Information gathered from the respondents were stored in the computer package for analysis by the principal investigator and with no access to unauthorized persons. There

was also translation and back translation of the instrument between English and Yoruba (The local language of the target population) Languages. This was to ensure that the contents and the questions in the instrument were well understood by the research participants.

### **3.13 Data Analysis Method**

Data obtained from the administered questionnaire were edited for the purpose of completeness and accuracy. Processing of data included sifting, sorting, collation and coding of administered instruments. Serial numbers were assigned to each questionnaire for easy identification and for correct data entry and analysis. A coding guide was developed to code and enter each question into the computer for analysis. Analysis was done using SPSS version 20.

The socio demographic characteristics were analyzed using descriptive statistics like mean, proportion, percentages and frequencies. Knowledge of diabetes and foot care practices was analyzed using descriptive statistics and further subjected to inferential statistics using Chi-square to investigate the relationship between this knowledge and some socio demographic characteristics (Age, Gender, Duration of Diabetes Diagnosis, income and educational status of the respondents). A 7-item knowledge scale was used for knowledge of diabetes. Scores <16, 16-25 and >25 were categorized as poor, average and good knowledge respectively. While a 7-item knowledge scale was used for knowledge of foot care practices. Scores <4, 4-5 and >5 were categorized as poor, average and good knowledge respectively. Foot care practices among the patients were analyzed using percentages and frequencies. Chi-square was used to find out the association between the knowledge of foot care and practice of same and also the association between socio demographic characteristics and the practice of foot care.

Also factors affecting adherence to foot care practices were subjected to logistic and multiple regression to explore the strength of significance of each to the adherence of foot care practices among these patients. Cost was analyzed using range, media, mean and mode. The total financial cost and average out of pocket expenses incurred were

calculated. Frequency tables were generated appropriately. Finally, information obtained were summarized and presented in tables and charts.

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## CHAPTER FOUR

### PRESENTATION OF FINDINGS

#### 4.1 Socio-Demographic and Economic Characteristics of Respondents

##### 4.1.1 Respondents' Age, Sex, Marital Status, Religion, Ethnicity and Residential Area

Two hundred and four questionnaires were administered, collated and analysed in this study. Majority of this population being females 116 (56.9%) compared to the males 88 (43.1%). Majority of the respondents; 88 (43.1%) were between 65 – 79 age group which was closely followed by the 50 – 64 age group; 84 (41.2%), however, over ninety percent of respondents were above age 50. Those aged  $\geq 80$  were 17 (8.3%), while those within 35 - 49 years constituted the least population 15 (7.4%). The participants' ages range from 38 years to 100 years with a mean age of  $64.38 \pm 10.53$ , the median age was 65 years while the modal age was 70years. The mean age for females was  $61.65 \pm 9.95$  and that of males was  $67.99 \pm 10.2$ . While most of the respondents; 156 (78.0%) were currently married, the single, and divorced population were 4 (2.0%) and 5 (2.5%) respectively, and 35 (17.5%) of the respondents were either a widow or a widower. The distribution of respondents by their religious affiliations showed that most of the respondents were Christians 131 (64.2%) compared to Muslims 68 (33.3%). 184 (90.6%) respondents were Yorubas, 15 (7.4%) were Igbos, 2 (1.0%) were Hausas while the remaining 1.0% belong to Edo and Delta category. Majority 105 (51.7%) were residents in semi urban centres, 79 (38.9%) in urban areas and only 6 (2.9%) in rural areas.

##### 4.1.2 Respondents' level of Education, Occupation and Income

While 20 (9.8%) of the respondents had no formal education, 57 (27.9%) had primary education, 54 (26.5%) had secondary education, and 66 (32.4%) reported to have had a form of tertiary education. Although about one out of every three respondents 73 (35.8%) that was interviewed was either retired or unemployed, however, 129 (63.2%) was engaged in one form of labour/service ranging from civil servants to business people (including farmers and traders among others) to clergy men. The average income of respondents was observed to be ₦53, 603.62  $\pm$  59, 232.67 while the range is between

₦2000.00 - ₦500,000.00, the median is ₦40000.00 while the modal income is ₦500,000.00

#### **4.1.3 Respondents' Family history of diabetes and Duration of diabetes diagnosis**

Majority of the respondents 159 (77.9%) reported not to have diabetes traced to their family history, however 32 (15.7%) reported that either or both of their patients were diabetic, while the other 13 (6.4%) reported that other relatives of theirs apart from their parents were diabetic. Greater percentage of the respondents 159 (79.5%) have had diagnosed diabetes for 10years (120months) or less, while 12 (6.0%) have had diabetes between 20years (240months) to 40years (480months). The range of diagnosed diabetes duration among the respondents is between 2months to 480months (40years) while the mean duration of diabetes diagnosis is 93.68 months  $\pm$  86.49.

The summary of respondents' social demographic and economic characteristics are presented in table 4.1

**Table 4.1: Socio-Demographic and Economic Characteristics of respondents**

<i>Variables</i>	<i>Categories</i>	<i>Frequency (%)</i>
<i>Sex</i>  <i>n=204</i>	Female	116 (56.9)
	Male	88 (43.1)
<i>Age Group</i>  <i>n=204</i>	35-49	15 (7.4)
	50-64	84 (41.2)
	65-79	88 (43.1)
	80 and above	17 (8.3)
<i>Marital Status</i>  <i>n=200</i>	Single	4 (2.0)
	Married	156 (78.0)
	Widow/widower	35 (17.5)
	Divorced	5 (2.5)
<i>Ethnicity</i>  <i>n=204</i>	Igbo	15 (7.4)
	Yoruba	184 (90.2)
	Hausa	2 (1.0)
	Others (Edo and Delta)	2 (1.0)
<i>Religion</i>  <i>n=199</i>	Christianity	131 (65.8)
	Islam	68 (34.2)
	No formal education	20 (10.2)
<i>Educational Status</i>  <i>n=197</i>	Primary	57 (28.9)
	Secondary	54 (27.4)
	Tertiary	66 (33.5)

	Rural	6 (3.2)
<b>Residence</b>		
	Semi – Urban	105 (55.3)
<b>n=190</b>	Urban	79 (41.6)
	Government	27 (13.4)
<b>Occupation</b>	Private	27 (13.4)
<b>n=202</b>	Business/clergy/farming/others	75 (37.1)
	Retired/unemployed	73 (36.1)
	Less than 20000	53 (27.0)
	20001 – 40000	55 (28.1)
<b>Monthly Income(Naira)</b>	40001 – 60000	43 (21.9)
<b>n=196</b>	60001 – 80000	19 (9.7)
	80001 – 100000	10 (5.1)
	100001 and above	16 (8.2)
	Immediate parent	32 (15.7)
	Grand parent	2 (1.0)
<b>Family History of Diabetes</b>	Siblings	5 (2.5)
<b>n=204</b>	Other relatives	6 (3.0)
	None	159 (77.9)
	< 120 months(10years)	159 (79.5)
<b>Duration of Diabetes Diagnosis</b>	121 months - 240 months (20years)	29 (14.5)
<b>(Months)</b>	241 months - 360 months (30years)	6 (3)
<b>n=200</b>	>361months	6 (3)

## 4.2 Respondents' Knowledge of Diabetes and Foot Care Practices

### 4.2.1 Respondents' Level of knowledge of Diabetes

Result of the knowledge of respondents on causes of diabetes showed that most 120 (58.8%) has an average knowledge of diabetes, 27 (13.2%) has poor knowledge while 57 (27.9%) has high knowledge. However, there exist some knowledge gaps among the respondents as represented in table 4.2a below. Only 12 (5.9%) mentioned heredity as a cause of diabetes, also obesity, lack of regular check of blood sugar and physical inactivity received negative response from almost 50% of the respondents (see table 4.2a). Though 169 (82.8%) recognised adherence to recommended as one of the methods to control diet, 112 (54.9%) and 79 (38.7) did not recognise the use of insulin and physical activity as one the methods to control diabetes. Also keeping record of the blood sugar was disregarded by 115 (56.9%) as a method for controlling diabetes. There is also poor knowledge of the complications of diabetes. Whereas 152 (74.5%) mentioned diabetic foot ulcer and Eye problem as complications that could result from diabetes, only 102 (50%) recognised stroke, kidney and heart failure as other complications of diabetes.



**Table 4.2a: Respondents' Level of knowledge of Diabetes****n=204**

<i>Variables</i>	<i>Categories</i>	<i>Frequency (%)</i>
Causes of diabetes	1. Increased intake of carbohydrates in such an amount that the body cannot synthesize	No 67 (32.8)
		Yes 137 (67.2)
	2. Physical Inactivity	No 96 (47.1)
		Yes 108 (52.9)
	3. Lack of regular check of blood sugar	No 113 (55.4)
		Yes 91 (44.6)
	4. Obesity	No 110 (53.9)
		Yes 94 (46.1)
	5. Heredity	No 192 (94.1)
		Yes 12 (5.9)
What are the components of an ideal diet for a person with diabetes? (Fruits, Vegetables, proteins, Carbohydrates, Mineral Salt, Water, Vitamins, Fats and Oil)	No	57 (27.9)
	Yes	147 (72.1)
The methods used to control Diabetes	1. Use of Insulin	No 112 (54.9)
		Yes 92 (45.1)
	2. Use of Diabetes medication	No 32 (15.7)
		Yes 172 (84.3)
	3. Recommended diet	No 35 (17.2)
		Yes 169 (82.8)
	4. Physical Activity	No 79 (38.7)
		Yes 125 (61.3)

		Yes	125 (61.3)
	5. Regular check of blood sugar with care	No	68 (33.3)
		Yes	136 (66.7)
	6. Keeping record of the blood sugar level	No	115 (56.9)
		Yes	88 (43.1)
	7. Keeping up with Doctors' appointment	No	66 (32.4)
		Yes	138 (67.6)
	The behavioural habits that are risk factors for Diabetes includes: Smoking, sedentary lifestyle, Lack of exercise, alcohol consumption	No	78 (38.2)
		Yes	126 (61.8)
Complications of Diabetes	1. Diabetic Foot Ulcer	No	47 (23.0)
		Yes	157 (77.0)
	2. Eye problem	No	58 (28.4)
		Yes	146 (71.6)
	3. Kidney failure	No	115 (56.4)
		Yes	89 (43.6)
	4. Heart disease	No	96 (47.1)
		Yes	108 (52.9)
	5. Stroke	No	96 (47.1)
		Yes	108 (52.9)
	Any food that has less than 20 calories per serving is a free food for a Diabetic patient	No	157 (77.0)
		Yes	47 (23.0)

**\* All the above options are true about diabetes and as such should receive a yes answer.**

**Table 4.2b (i) Knowledge score of respondents on diabetes**

<i>Scores (33points)</i>	<i>Frequency %</i>
Poor Knowledge ( $\leq 13$ )	27 (13.2)
Fair Knowledge (14-24)	120 (58.8)
High Knowledge ( $>24$ )	57 (27.9)

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#### 4.2.2 Respondents' Level of knowledge of foot care practices

185 (90.7%) respondents agreed that a diabetic patient should engage in daily exercise while 19 (9.3%) are unaware of the importance of daily exercise for diabetic patients. Also 165 (80.9%) agreed that a diabetic patient should always wash and dry the feet in between the toes while 39 (19.1%) are unaware of this foot care preventive practice. While 111 (54.4%) were against diabetic patients engaging in self medication, 57 (27.9%) supported the practice of such, the remaining 36 (17.6%) do not know whether it is a good foot care practice for a diabetic patient or not. 130 (63.7%) said that stepping on heating pads and any hot surface( beaches, water bottles e.t.c) affects a diabetic patient, 18 (8.8%) disagreed with this while 56 (27.5%) do not know whether it affects a diabetic patient or not. Generally, 31 (15.2%), 62 (30.4%) and 111 (54.4%) had poor, Average and Good knowledge of foot care care preventive practices respectively. See table 4.2c and 4.2d for details.

**Table 4.2c: Respondents' Level of knowledge of Foot care Practices** *n=204*

<i>Variables</i>	<i>Categories</i>	<i>Frequency (%)</i>
*A diabetic patient should engage in daily exercise	No	0
	Yes	185 (90.7)
	Don't Know	19 (9.3)
*A diabetic patient should always wash and dry the foot in between toes.	No	0
	Yes	165 (80.9%)
	Don't Know	39 (19.1)
Self medication on foot problems is good for a diabetic patient.	No	111 (54.4)
	Yes	57 (27.9)
	Don't Know	36 (17.6)
Stepping on heating pads and hot water bottles and hot sandy beaches does not affect a diabetic patient.	No	130 (63.7)
	Yes	18 (8.8)
	Don't Know	56 (27.5)
Early reporting of foot injuries is not important for diabetes patients	No	146 (71.6)
	Yes	37 (18.1)
	Don't Know	21 (10.3)
*Patients should report any form of redness/injuries on their foot to the hospital	No	6 (2.9)
	Yes	178 (87.3)
	Don't Know	20 (9.8)
If diabetic wounds are untreated they will dry up	No	113 (55.7)
	Yes	47(23.2)
	Don't Know	44 (21.2)

**\* Correct knowledge options are with asterisks (\*)**

*Table 4.2d Knowledge score of respondents on foot care practices*

<i>Scores (7 points)</i>	<i>Frequency %</i>
Poor Knowledge ( $\leq 3$ )	31 (15.2)
Fair Knowledge (4-5)	62 (30.4)
High Knowledge ( $> 5$ )	111 (54.4)

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Level of knowledge in general was on a average level for diabetes but slightly high for foot care practice. The result shows that a little above half of the respondents had a average knowledge of diabetes 120 (57 %). In contrast, about half of the respondents expressed a high knowledge about foot care practice 111(54.4%). See table 4.2e

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**Table 4.2e: Level of Knowledge Of Diabetes and Foot Care Practices**

	<b>Knowledge of diabetes</b>	<b>Knowledge of foot care practices</b>
	<b>n (%)</b>	<b>n (%)</b>
<b>Poor knowledge</b>	27 (13.2)	31 (15.2)
<b>Average knowledge</b>	120 (58.8)	62 (30.4)
<b>High knowledge</b>	57 (27.9)	111 (54.4)
<b>Total</b>	204 (100)	204 (100)



### 4.3 Foot care practices among the respondents and observed gaps in practice

The result of respondents' foot care practices is shown in table 4.3a and table 4.3b. Almost all respondents 185 (90.7%) wear appropriate foot wear and exact size, although 24 (12.1%) disclosed that they never inspect foot wear before wearing it. 40 (19.6%), 20 (10.1%), 26 (12.9%) of the respondents wears covering shoes, tight and high heel shoes everyday. While as few as 19 (9.4%) walk around barefooted outside the house every day, the number of those who walk bare footed inside the house everyday increased notably to 54 (26.6%). Although, three out of four respondents 151 (75.1%) inspects foot for injuries daily, only 138 (68.7%) take the time to inspect in between toes for redness. Washing of foot with lukewarm water and mild soap was a daily practice for a little above half of the respondents 112 (56.6%) and 113 (56.8%) daily use cold water to wash their feet. 56 (28.9%) respondents reported to always soak feet before washing. Majority of the respondents 162 (81.0%) dry their feet in between toes every day after washing, application of thin coat of petroleum jelly after drying the feet has never been practiced by 47 (23.3%) of the respondents.

From table 4.3b, it was revealed that most of the respondents 120 (58.8%) carry out self-examination of their feet while only 46 (22.5%) have had their feet examined by either a doctor or a nurse, however, 36 (17.6%) reported that no one examines their feet. Redness on feet was noticed by 47 (24.0%) of the respondents but reported to health workers by only 40 (85.1%) of the people who have noticed redness on their feet. Also only 66 (33%) of the respondents use nail cutter to trim their nails.

Generally, the level of foot care practices among the respondents is fairly high. 135 (66.2%), 34 (16.7%) and 35 (17.2%) has average, High and Poor practice of foot care preventive practices respectively. See table 4.3c

**Table 4.3a** *Foot care practice among diabetic patients*

		Everyd ay	Weekl y	Monthl y	Yearl y	Never
Inspects your foot for injuries	n=201	151 (75.1)	16 (17.8)	4 (2.0)	0 (0)	30 (14.6)
Inspects in between your toes for redness	n=201	138 (68.7)	24 (11.9)	4 (2.0)	0 (0)	35 (17.1)
Inspects inside of footwear for objects before wearing it	n=198	163 (82.3)	10 (5.1)	1 (0.5)	0 (0)	24 (12.1)
Walk around bare-footed outside the house	n=203	19 (9.4)	9 (4.4)	3 (1.5)	0 (0)	172 (84.7)
Walk around barefooted inside the house	n=203	54 (26.6)	11 (5.4)	2 (1.0)	1 (0.5)	135 (66.5)
Wear high heel shoes	n=202	8 (4.0)	9 (4.4)	8 (4.0)	1 (0.5)	176 (87.1)
Wear tight shoes	n=199	11 (5.5)	4 (2.0)	4 (2.0)	1 (0.5)	179 (89.9)
Wear appropriate foot wear and exact size	n=201	185 (92.0)	3 (1.5)	0 (0)	0 (0)	13 (6.3)
Wash foot with lukewarm water and mild soap	n=198	112 (56.6)	10 (5.1)	2 (1.0)	0 (0)	74 (37.4)
Use cold water to wash feet	n=199	113 (56.8)	18 (9.0)	3 (1.5)	0 (0)	65 (32.7)
Soak feet before washing it	n=193	56	7	2	0	128

	(29.0)	(3.6)	(1.0)	(0)	(66.3)
Dry feet in between toes after washing n=200	162 (81.0)	0 (0)	2 (1.0)	0 (0)	36 (18.0)
Apply thin coat of petroleum jelly after drying feet n=201	151 (75.1)	2 (1.0)	1 (0.5)	0 (0)	47 (23.4)
Cut nails regularly n=200	112 (56.0)	60 (30.0)	24 (12.0)	0 (0)	4 (2.0)

**Table 4.3b: Foot care practice among diabetic patients (Continued)**

<i>Variables</i>	<i>Categories</i>	<i>Frequency (%)</i>
<i>How do you cut your nails</i>  <i>n=195</i>	Straight across	151 (77.4)
	Vertically	17 (8.7)
	Top to bottom	8 (4.1)
	Diagonally	19 (9.3)
<i>What do you use to cut your nails?</i>  <i>n=200</i>	Razor	130 (65)
	Teeth	2 (1.0)
	Nail cutter	66 (33.0)
	Others (scissors, finger)	2 (1.0)
<i>Who examines your feet</i>  <i>n=204</i>	Doctor / nurse	46 (22.5)
	Spouse	1 (0.5)
	Children	1 (0.5)
	Self	120 (58.8)

	None	36 (17.6)
<i>What do you do when your foot wear is bad</i> <i>n=190</i>	Indifferent	2 (1.1)
	Change it	188 (98.9)
<i>Do you get advice from the hospital before buying foot wears?</i> <i>n=195</i>	Yes	125 (64.1)
	No	70 (35.9)
<i>Have you ever notice redness on your foot</i> <i>n=196</i>	Yes	47 (24.0)
	No	149 (76.0)
<i>Have ever reported such to your health care providers?</i> <i>n=47</i>	Yes	40 (85.1)
	No	7 (14.9)

**Table 4.3c Respondents Level of foot care practices**

<b>PRACTICE LEVEL (19 points)</b>	<b>Frequency (%)</b>
Poor Practice (<10)	35 (17.2)
Average Practice (10-15)	135 (66.2)
High Practice (>15)	34 (16.7)

There exist notable gaps in foot care practices of respondents. Table 4.3d was designed conscientiously to reveal areas where these gaps existed. The column representing wrong practice was arranged in descending order. Therefore, the first item in the table shows the most wrongly practiced foot care while the last item reveals the least incorrectly practiced which is also the most rightly practice foot care. Majority of the respondents 134 (67.3%) use cold water to wash their feet and a little less than half of the respondents 86 (43.4%) do not wash with lukewarm water and mild soap. 26 (12.9%) still enjoy wearing high heel shoes, while 68 (33.5%) walk around the house barefooted. The table below shows a comprehensive result.

**Table 4.3d: Gaps in foot care practices among diabetic patients**

	<b>Proportion performing the practice n (%)</b>	<b>Proportion not performing the practice n (%)</b>
Using cold water to wash feet n=199	134 (67.3)	65 (32.7)
Using sharp objects to cut your nails n=200	134 (67.0)	66 (33.0)
*Washing feet with lukewarm water and mild soap n=198	112 (56.6)	86 (43.4)
Walking around inside house barefoot n=203	68 (33.5)	135 (66.5)
Soaking feet before washing n=193	65 (33.7)	128 (66.3)
*Inspecting of in between toes for redness daily n=201	138 (68.7)	63 (31.3)
*Inspecting of foot for injuries daily n=201	151 (75.1)	50 (24.9)
*Applying of petroleum jelly after drying the feet daily n=201	151 (75.1)	50 (24.9)
*Drying toes in between toes after washing n=200	162 (81.0)	38 (19.0)
*Inspecting inside of foot wear before wearing it n=198	162 (82.3)	36 (17.7)
Walking around barefoot outside the house n=203	31 (15.3)	172 (84.7)
Wearing high heel shoes n=202	26 (12.9)	176 (87.1)
Wearing tight shoes n=199	20 (10.1)	179 (89.9)

*Wearing appropriate foot wear and exact size	n= 201	185 (92.0)	16 (8.0)
*Reporting of redness or bleeding on foot	n=47	40 (85.1)	7 (14.9)

\* **Appropriate practices are with asterisk (\*)**

**Inappropriate practices are without asterisk (\*)**

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#### 4.4 Significant factors that promote or inhibits adequate foot care practices

The factors that promotes or inhibits adequate foot care practices among the respondents were divided into Predisposing, Enabling and Reinforcing factors. Under the predisposing factors, only 51 (25.0%) respondents admitted to have heard about foot care preventive practices while 51 (27.1%) were not willing to carry out these practices. 84 (43.9%) stated that health workers do not train them on how to carry out the preventive foot care practices as a result of which 71 (34.8%) respondents stated that they do not know the correct foot wears to put on. See table 4.4a (i and ii) for details. Under the enabling factors, 27 (13.5%) respondents do not know how to wash their feet properly. While 49 (24.5%) do not know how to test their glucose level, 64 (32.0%) do not know how to interpret the result after testing their glucose level. 40 (20.4%) respondents stated that they are too busy to carry out their foot care preventive practices. Refer to tables 4.4b (i and ii) for details. For the reinforcing factors, 42 (20.6%) respondents stated that they do not receive social support including reminders and encouragement on their foot care practices. Refer to table 4.4.



**Table 4.4a(i): Predisposing factors affecting foot among the respondents**

	<i>Yes</i>	<i>No</i>
Heard about foot care preventive practices <i>n=204</i>	153 (75.0)	51 (25.0)
Willingness to carry out the foot care preventive practices <i>n=192</i>	140 (72.9)	51 (27.1)
Health workers mention them <i>n=204</i>	136 (66.7)	68 (33.3)
Health workers train on how to carry them out <i>n=196</i>	112 (57.1)	84 (43.9)
Know the correct kind of foot wear to put on <i>n=204</i>	133 (65.2)	71 (34.8)

**Table 4.4a (ii): Predisposing factors affecting foot among the respondents  
(Continuation)**

<i>How often respondents visit the clinic n=193</i>		
	<i>Frequency</i>	<i>Percentage</i>
Weekly	23	11.9
Monthly	65	33.7
Quarterly	85	44.0
3 times per year	3	1.6
Biannually	5	2.6
two months interval	5	2.6
on appointment	5	2.1
first visit	2	1.0
Total	193	100.0

**Table 4.4b(i): ENABLING FACTORS affecting foot care practices among the respondents**

REQUIRED SKILLS BY THE PATIENTS	VERY WELL	MODERATELY	POOR
Wash feet properly	121 (60.5%)	52 (26.0%)	27 (13.5%)
Trimming your nail	108 (54.0)	81 (40.5)	13 (6.5)
Test glucose level	95 (47.5)	58 (29.0)	49 (24.5)
Interpret the result of the test	74 (37.0%)	64 (32.0)	64 (32.0)
			<b>n=200</b>

**Table 4.4b(ii): ENABLING FACTORS affecting foot care practices among the respondents (Continuation)**

	Yes	No
Have enough time to carry out the above skills <b>n=196</b>	156 (79.6)	40 (20.4)
Have manual to assist perform the skills <b>n=192</b>	78 (40.6)	115 (59.9)
Have enough money to buy a glucometer <b>n=162</b>	142 (87.7)	20 (12.3)
Have money to transport for regular check up <b>n=151</b>	142 (94.0)	9 (6.0)
Have the money to buy appropriate footwear <b>n=197</b>	185 (93.9)	12 (6.1)

#### 4.4c: REINFORCING FACTORS AFFECTING THE PRACTICE OF FOOT CARE AMONG THE RESPONDENTS

*Table 4.4c: Number of persons reminding patients about daily foot care practices*

<i>Persons involved in reminding patients</i>	<i>Frequency (%)</i>
None	42 (20.6)
1-3 persons	94 (46.1)
4-6 persons	57 (27.9)
7-9 persons	11 (5.4)
Total	204 (100)

#### **4.5 Foot ulcer and its management**

Among the 204 diabetic patients interviewed, only six reported to have foot ulcer, this translates to a prevalence rate of 2.9% among the sample of respondents. The gender distribution of foot ulcer shows that more males 4(66.7%) than females 2 (33.3%) were affected. The duration of foot ulcer among patients ranges from 3 days to 7 years. However 3 out of the 6 foot ulcer patients reported to have been diagnosed a year ago (see table 4.5a).

**Table 4.5a: Duration of foot ulcer diagnosis among the respondents**

<b>Duration of foot ulcer</b>	<b>Frequency</b>
<b>3 days</b>	1
<b>6 months</b>	1
<b>1 year</b>	3
<b>7 years</b>	1
<b>Total</b>	6

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#### **4.5 Indirect Cost Of Management Of Foot Ulcer**

The indirect cost of the management of foot ulcer revealed the effect of the resources spent on the management of foot ulcer on the respondents' day to day activities. 4 out of the 6 respondents who had foot ulcer reported that cost of management of diabetic foot ulcer affects their family feeding, 3 out of 5 respondents stated their quality of life have never been the same as well as their productivity since all but 1 (retiree) have not gone to work since the diagnosis of foot ulcer. Refer to tables 4.5b, c, d and e for details.

**Table 4.5b: Effect of the management of foot ulcer on the family among the respondents**

	Yes	No	Not sure	Total
Affected other family upkeep	2	1	1	4
Affect distant relations upkeep	2	3	1	6
Affect payment of house rent	2	4	-	6
Affect family feeding	4	1	1	6
Affect payment of children school fees	1	4	1	6

**Table 4.5c: When last did you go to work**

	Frequency
Never worked since then	1
Previous week (clergy)	1
6 months ago	1
8 years ago	1
Retired	2
<b>Total</b>	<b>6</b>



**Table 4.5d: Perception of Quality of life after the diagnosis of foot ulcer**

	Frequency
Moderate	2
Decreased	3
Total	6

**Table 4.5e: Perception of productivity after the diagnosis of foot ulcer**

Perceived state by the respondents	Frequency
Improved	3
Poor	3
Total	6

#### **4.6 Direct Cost**

This section addresses the amount which the patients have spent on diagnosis. Refer to table 4.6a for details. Only one respondent have been amputated as a result of diabetic foot ulcer. 90% of these patients with ulcer indicated that these costs were borne by their children and other relatives (refer to table 4.6b for details). Also 5 out of the 6 respondents reported to spend more than 50% of their income on the management of foot ulcer (refer to table 4.6c for details). Treatment was reported be by doctors and nurses by all the respondents while 5 out of the 6 respondents reported that the ulcer have not completely healed (table 4.6e for details).

**Table 4.6a: Cost Of Diagnosis By Respondents With Diabetic Foot Ulcer**

AMOUNT (₦)	FREQUENCY
2000	1
3500	1
4000	1
5000	1
31000	1
NO RESPONSE	1
TOTAL	6

**Table 4.6b: Payment for expenses of the treatment of DFU among respondents**

Expenses paid by:	Frequency
Children	1
Family/relative	3
Self and children combined	1
No response	1
Total	6

**Table 4.6c: Proportion of income spent on the management of DFU among the respondents**

Proportion	Frequency
30% percent	1
More than 50%	2
70%	1
90%	1
No response	1
Total	6

**Table 4.6d: Source of treatment of respondents with DFU**

Treated by:	Frequency
CONSULTANT	1
DOCTOR / NURSE	5
TOTAL	6

**Table 4.6e: Outcome of treatment of DFU among the respondents**

Outcome	Frequency
Healed completely	1
Healed partially	4
Not healed	1
TOTAL	6

## 4.7 Research Hypotheses

### 4.7.1 Hypothesis One

**Hypothesis 1:** There is no significant relationship between a patient's knowledge of foot care practices and actual performance of same.

The table below shows that there is a no significant relationship between patients' knowledge and their actual practice ( $X^2 = 8.824$ ,  $df = 4$ ,  $p = 0.66$ ). 6 (19.5%) of those who reported to have a low knowledge tend to be poor in their foot care practice while only about 16 respondents out of 111 who had high knowledge had high practice of foot care. See table 4.7a for details

**Table 4.7a: Relationship between patients' knowledge of foot care practices and their actual practice**

Actual practice	Knowledge of foot care practices		
	Low level	Average level	High level
Poor practice	6 (19.4%)	16 (25.8%)	13 (11.7%)
Average practice	17 (54.8%)	36 (58.1%)	82 (73.9%)
Good practice	8 (25.8%)	10 (16.1%)	16 (14.4%)
Total N=204	31 (100%)	62 (100%)	111 (100%)

Chi Square  $X^2 = 8.824$

*Remark: Not significant*

df = 4

p>0.05 (=0.66)

#### 4.7.2 Hypothesis Two

**Hypothesis 2:** There is no significant relationship between the availability of enabling factors for the respondents' and their adherence to the preventive foot care practice.

The result in table 4.7b shows that there is a significant relationship between exposure to enabling factors and respondents foot care practice ( $X^2 = 20.057$ ,  $df = 4$ ,  $p = .000$ ). It was observed that majority (45.7%), that is, 16 out of 35 of those who have poor foot care practice are exposed to low availability of resources, in contrast, for patients who have excellent foot care practice, the result shows that majority of them (65.7%) have resources available to them on a high scale.

**Table 4.7b: Relationship between availability of resources and adherence to preventive foot care practice**

Actual practice	Availability of resources			Total n=204
	Low	Moderate	High	
Poor	16 (45.7)	10 (28.6)	9 (25.7)	35 (100)
Average	24 (17.3)	42 (30.8)	69 (51.9)	135 (100)
Good	3 (8.6)	9 (25.7)	22 (65.7)	34 (100)

Chi Square  $X^2 = 20.057$  *Remark: significant*  
df = 4  
p<0.05 (=0.000)



### 4.7.3 Hypothesis Three

**Hypothesis 3:** There is no significant relationship between getting social support from patient's social network (reinforcing factor) and the regular practice of preventive foot care.

The result shows a significant relationship between patients' enjoyment of social support and their foot care practice ( $X^2 = 18.452$ ,  $df = 2$ ,  $p = .000$ ). Over half (56.8%) of those who have foot care practice enjoyed low level of support from their social network. In contrast, it was observed that 82.1% of respondents who had good foot care practice enjoyed high social support from their social network. See table 4.7c

**Table 4.7c: The relationship between getting social support from patient’s social network and the actual practice of preventive foot care**

Actual practice	Receives support		Total n=151
	Low	High	
Poor practice	10 (56.8)	7 (41.2)	35 (100)
Average practice	15 (14.2)	91 (85.8)	106 (100)
Excellent practice	5 (17.9)	23 (82.1)	28 (100)

Chi Square  $X^2 = 18.452$  *Remark: significant*  
df = 2  
p<0.05 (=0.000)

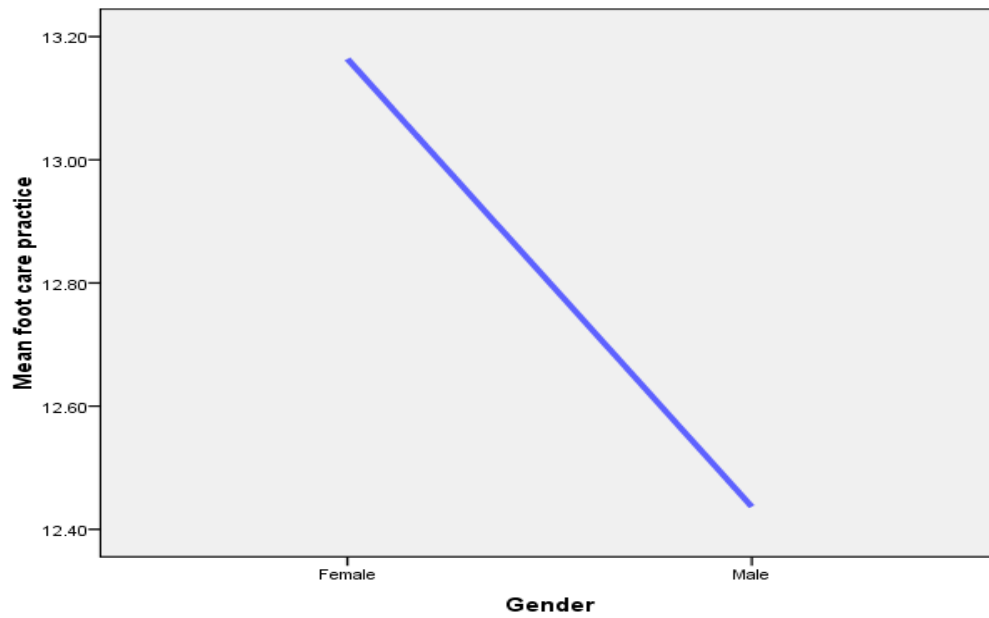
#### **4.7.4 Hypothesis 4: There is no significant relationship between foot care practice and their gender**

The table 4.7d below shows that there is no significant relationship between foot care practices and respondents' gender ( $X^2 = 3.448$ ,  $df = 2$ ,  $p = .178$ ) see table 4.7d below for details. However, on an average, females tend to have a better foot care practice compared to their male counterpart. See also figure 2 for the strength of this relationship.

**Table 4.7d: The relationship between foot care practices and gender**

Actual practice	Gender		
	FEMALE	MALE	TOTAL
Poor	15 (42.9)	20 (57.1)	35 (100)
Average	80 (59.3)	55 (40.7)	135 (100)
Good	21 (61.8)	13 (38.2)	34 (100)
Chi Square $X^2 = 3.448$ $df=2$ $p=0.178$ <i>Remark: not significant</i>			

**Figure 2: Relationship between gender and foot care practices among the respondents**



The binary logistic regression was performed to test the study hypotheses and the results are presented in Table 4.8 below as shown in the table, two of the three factors measured showed significant influence on foot care preventive practice.

Patients who had high predisposing factor (OR = 3.35287,  $p < 0.05$ ) and high reinforcing factor (OR = 2.83540,  $p < 0.05$ ) have higher likelihood of better foot care practice, indicating that patients who enjoy high predisposing factor were about 3.4 times more likely to have a better foot care practice compared to patients with low predisposing factor, in addition, patients with high reinforcing factor were also 1.8 times more likely to have better foot care practice compared to patients with low predisposing factor.

Patients enabling factors did not exert significant influence over foot care preventive practice suggesting that a patient with high enabling factor does not necessarily have better foot care practice than other patients. However, the odds ratios for patient who had average or high enabling factor was observed to be higher than the odds ratio for patients with low enabling factor. As shown in the result, patients who have at least average enabling factor were 1,3 times more likely to have a better foot care practice than other patients (OR = 1.33629,  $p < 0.05$ ). Though, patients with at least an average enabling factor have higher odds of better foot care practice than other patients, the result was however not statistically significant ( $p > 0.05$ ).

**Table 4.8: Logistic Regression Examining The Influence Of Three Factors (Predisposing, Enabling And Reinforcing) On Diabetic Patients Foot Care Practice**

		Odds ratio	95% Confidence Interval
<b>Predisposing factor</b>	Low (RC)	1.00000	
	Average	2.24224	0.562 – 8.938
	High	3.35287*	1.175 – 9.570
<b>Enabling factor</b>	Low (RC)	1.00000	
	Average	1.33629	0.437 – 4.086
	High	1.21776	0.345 – 4.300
<b>Reinforcing factor</b>	Low(RC)	1.00000	
	High	2.83540*	1.178 – 6.824

\*P<0.05, RC means reference category

**Table 4.9a: Multiple regression table showing the combined effect of the three factors on foot care practice**

ANOVA <sup>b</sup>							
Model		Sum of Squares	df	Mean Square	F	R <sup>2</sup>	Sig.
1	Regression	241.528	3	80.509	12.755	.207	.000 <sup>a</sup>
	Residual	927.876	147	6.312			
	Total	1169.404	150				

**Table 4.9b: Multiple regression table showing the individual effect of the three factors on foot care practice**

Model		Unstandardized		Standardized	T	Sig.
		Coefficients		Coefficients		
		B	Std. Error	Beta		
1	(Constant)	9.462	.851		11.113	.000
	Predisposing factor	.463	.156	.295	2.967	.004
	ENABLING factor	.028	.074	.037	.381	.704
	Reinforcing factor	1.090	.361	.235	3.020	.003



Multiple regression was conducted to examine the influence of predisposing, enabling and reinforcing factors on foot care preventive practice. The overall model explained 20.7% of variance in foot care practice which was revealed to be statistically significant  $F(3)12.755$ ,  $P<0.001$ . Therefore all three independent variables have a significant combined effect on foot care practice (see table 1). In addition, table 2 presents the actual impact of each of the factors in predicting foot care practice. It reveals that predisposing factor ( $\beta=0.295$ ,  $P<0.05$ ) and reinforcing factor ( $\beta=0.235$ ,  $P<0.05$ ) are significant predictors of foot care practice. Higher predisposing and reinforcing factors are associated with high level of foot care practice. The influence of the enabling factor was seen to be insignificant. The predisposing factor has the highest effect on foot care practices.

## CHAPTER FIVE

### DISCUSSION OF FINDINGS

#### 5.1 Socio-Demographic and Economic Characteristics of the respondents

The population studied consists mainly of females 116 compared to the males 88 with over ninety percent of respondents being above age 50. This suggests that most of the respondents are type II diabetes patients. This is in line with the findings of Seid and Tsige 2014 which stated that type II patients are usually elder. Only 20 (9.8%) of the respondents had no formal education, others (184 - 89.2%) has a form of either a primary, secondary or tertiary education. Although about one out of every three respondents that was interviewed was either retired or unemployed, however, majority of the respondents were engaged in one form of labour/service ranging from civil servants to business people with an average income of ₦53, 603.62 ± 59, 232.67 while the range is between ₦2000.00 - ₦500,000.00. Greater percentage of the respondents have had diagnosed diabetes for 10years (120months) or less, while about one out of every five respondents has diabetes traceable to their family history.

#### 5.2a Knowledge Of Diabetes

The results from this study reveals that majority of the respondents have an average knowledge of diabetes. This could be because majority of the respondents belong to the diabetic association in UCH where constant diabetic education is being organised for the members just as Seig and Tsige 2014 noted that majority of their participants also belong to the Ethiopian diabetes association. This findings is also in line with the findings from the studies conducted by Saurabh et al 2014 and Saleh et al (2012) who reported average basic knowledge of diabetes among their respondents. However, the results contradicts the findings from different studies which showed that knowledge of diabetes generally among diabetic patients is very poor (Dikeukwu (2011); Kavanagh et al; (2010); Adeniyi (2014) and Odili and Eke Odili and Eke (2010). Adeniyi 2014, who carried out his own study on women noted that the poor knowledge of diabetes among the participants culminated into poor attitude towards the management of the disease. Also the results

from this study reveals that there is no relationship between the patients' level of education and his knowledge of diabetes which is also in contrast with the findings from the studies of (Dikeukwu (2011); Saurabh et al (2014) and Kavanagh et al, (2010) which concluded that patients level of education affects their knowledge.

In as much as the result from this study revealed an average knowledge level of diabetes, there still exists some notable gaps in knowledge among the respondents. Only 12 (5.9%) mentioned heredity as a cause of diabetes, also obesity, lack of regular check of blood sugar and physical inactivity received negative response from almost 50% of the respondents and also greater percentage of the respondents did not recognise the use of insulin, keeping record of the blood sugar and physical activity as one the methods to control diabetes. There is also poor knowledge of the complications of diabetes. Whereas 152 (74.5%) mentioned diabetic foot ulcer and Eye problem as complications that could result from diabetes, only 102 (50%) recognised stroke, kidney and heart failure as other complications of diabetes. This is also in contrast with the findings from the studies of Saurabh et al 2014 and Saleh et al (2012), reported average of diabetes complications and management.

### **5.2b Knowledge Of Foot Care Practices**

The result from this study reveals that there is slightly high level of knowledge of foot care preventive practices among the respondents as 54% has high knowledge of that. While this study is in agreement with the studies from Abu-Oamar 2014, Jinadasa et al 2011 and Hellenberg 2013 who also reported high knowledge of foot care practices among their different participants from their separate studies, it however in contrast to the studies conducted by Dessalu et al 2011, Beiranvand et al 2014, Chellan et al 2012, Kumhar 2014 and Dikeukwu 2011 who reported poor knowledge of foot care practices among their participants stating that larger percentage of the participants have poor knowledge. Also the results from this study is not in agreement with Gholap et al 2013, Basker et al 2014 and Seid et al 2015 from their different studies reported moderate level

of knowledge of foot care practices among their different participants stating that 58%, 53% and 56.2% of their different study participants have knowledge of foot care practices

This could be as a result of the higher level of education and literacy level among the respondents in this study as about 66 (32.4%) has a form of tertiary education, but about 80% of this population also has one form of formal education or the other while the findings from other authors concluded that poor knowledge of the patients was traceable to low level of education, illiteracy and low level of awareness of what to do to care for their feet. Hellenberg 2013 buttressed this by stating that most of the participants in his study were primary and secondary school leavers and added that their knowledge was also affected by the information their got from the media as none of them has attended any classroom teaching on foot care nor read any hand out. Dessalu et al, 2011 added that low socioeconomic status has been found to be associated with the knowledge of the patients on foot care practices.

### **5.3 Foot Care Practices Among The Respondents**

Findings from this study revealed that the respondents' level of foot care practice is at the average level, thus it is fairly high as 135 (66.2%), 34 (16.7%) and 35 (17.2%) has average, High and Poor practice of foot care preventive practices respectively. This could be as a result of the foot care education which is available by the health education nurses in the clinic as Seige and Tsige emphasized that effective education is a pointer to effective foot care practices. Also it could be as a result of the moderate level of social support received by these patients as Vismanathan et al 2005 stated that there is a strong relationship between getting social support and patients' adherence to foot care practices. This result is in agreement with the findings Berhe et al (2012) and Dikeukwu 2011 who reported moderate adherence but it is in contrast with the findings of Saleh, 2012; Basker et al, 2014; Beiranvand S et al, 2014; Saurabh et al 2013; Dessalu et al, 2011 and Kumhar 2014 who reported poor and substandard level of adherence to foot care practices among their different respondents. Also the result of the studies of Jinadasa and Jeewantha 2011 and Hellenberg 2013 reported high practice among the respondents from their separate studies.

In line with the findings from the studies of Saurabh 2014, this studies revealed high adherence to the use of appropriate foot wear and in contrast to the findings from Hellenberg, 2013; Gholap and Mohite 2013; Basker et al 2014; Jinadasa and Jeewantha 2011; Dessalu et al 2011 and Kumhar 2014 who from their different studies reported low adherence to the use of inappropriate foot wears. This is evident from even the number wearing tight shoes and high heel shoes. However, in agreement with the findings of Basker et al 2014 and Kumhar 2014, the use of incorrect foot wear was found to be higher among females than among males. The practice of receiving advice from health care providers before purchasing foot wear and that of walking barefooted inside the house were found to be poor in this studies and it is in line with findings from all the studies reviewed which is also in line with the findings from Saurabh 2014.

The practice of washing of feet regularly with warm water was reported to be high in some of the studies (Saurabh 2014; Basker et al 2014 and Dikeukwu 2011). However in as much as this practice is fairly high among the respondents, three out of every four respondents reported to still use cold water to wash their feet in the evening while use lukewarm water in the morning. The practice of the use of moisturizer for the feet was found to be fairly high as three out of every five respondents reportedly has this as a daily practice; this was in contrast with the findings from the different studies of Dikeukwu 2011; Hellenberg 2013; Saurabh 2014 and Jinadasa and Jeewantha 2011 who reported low adherence to this. The practice of not walking barefooted outside the house was found to be high from all the studies reviewed which was also found to be high for these studies. While the practice of inspecting foot wear before wearing such was found to be averagely poor in all literatures reviewed, this study has found this practice to be on the average among the patients.

The practice of not drying feet in between the toes which is an important risk factor for the development of foot ulcer and infection which was almost the lifestyle of the participants from the study of Basker et al 2014 was found to be the practice of one third of the respondents in this study. Additionally, soaking of feet which is a very bad practice for diabetic patients and was reported to be a common practice among some patients according to the findings from the study of Dikeukwu in 2011, has been reported to be

the practice of two out of every five of the respondents from this study. The patients were doing it in ignorance as some of them were reported doing it as the best they could do to prevent foot ulcers. However, Saurabh from his study in 2014 reported that most of the patients have the good practice of changing their foot wear once it gets spoilt; this is in line with the findings from this study.

#### **5.4 Factors Affecting the Adherence to Foot Care Practices Among the Respondents**

A major significant factor which is related to poor adherence is poor communication between patients and health care providers. This could be as a result of the fact that most of the respondents visit the clinic just once in a quarter which is not a good foot care practice as Vijay 2012 noted that the visit should be more frequently. This was in agreement with the findings from Dessalu et al, 2011 and Seid& Tsige, 2015. But in contrast with the reports from Dessalu 2011, Kumhar 2014; Hellenberg 2013 and Basker et al, 2014, poor knowledge and poverty do not contribute to poor practice of foot care from the findings of this study.

The results from this study revealed that there is no relationship between education status of the respondents and their practice of foot care, this is in contrast with the findings from the studies by Aziz, 2010; Dessalu et al 2011; Berhe 2012; Gholap and Mohite 2013; Hellenberg, 2013 and Basker et al, 2014 which reported this to be a factor that either promote or inhibit foot care practices among diabetic patients. Hellenberg, 2013 noted that people of higher education has practice of footcare than people of lower education status. Also this study found out that there is no relationship between the duration of diabetes diagnosis and the practice of foot care among the patients which is in contrast with the findings from the studies of Aziz, 2010; Dessalu et al 2011; Berhe 2012; Gholap and Mohite 2013; Hellenberg, 2013 and Basker et al, 2014 where it was reported that longer duration (>10years) affects foot care practices. However, in line with the findings from previous studies time availability was found to be significant to the promotion or inhibition of foot care practices among the patients.

Additionally, Social support including spouse, children, parents, colleagues and friends has been also found to influence adherence to foot care practices among patients from

this study. Patients who gets reminders and encouragement from their social has better foot care preventive practices more than their counter parts. This finding is in line with the findings from Tang et al, 2008 and the International Working Group On Diabetic Foot Management who concluded that social support plays a role in diabetes specific quality of life and self-management practices emphasizing that support enhances adequate foot care practices among the diabetes patients. Also Bakker et al, 2015 concluded that it is important to take both patients and relatives and also health care providers through the foot care practices and its importance as this will strenghten the motivation among the diabetic patients.

### **5.5 Strenght Of Each Of The Predisposing, Enabling And Reinforcing Factors On The Patients Adherence To Foot Care Practices.**

Multiple regression was conducted to examine the influence of predisposing, enabling and reinforcing factors on foot care preventive practice. All three independent variables have a significant combined effect on foot care practice. In addition, it revealed that predisposing factor and reinforcing factor are significant predictors of foot care practice. Higher predisposing and reinforcing factors are associated with high level of foot care practice. The influence of the enabling factor was seen to be insignificant. This arises from the fact that the patients are more motivated to carry out these practices when they know what to do and also receives social support from their relations (Bakker et al, 2012). The predisposing factor has the highest effect on foot care practices.

### **5.6 Cost Of Treating Of Diabetic Ulcer**

The cost of treating diabetic foot ulcer was analyzed into direct and indirect costs. The indirect cost of treating diabetic foot ulcers from this study included decreased productivity, decreased quality of life, drastic effects on family responsibility. This could be as a result of the fact most of these patients do not go to work again or work less as a result of the burden of DFU. This could also be associated with the depression and trauma which the patients battles with as a result of the pains or agony of having amputated limbs. This findings is in line with the findings made by Seid& Tsige, 2015;

Colagiuri, Kent, Kainu, Sutherland, & Vuik, 2015 and Farshchi et al 2014 from their different studies.

Additionally, Farshchi et al 2014 found disability, the number of days absent from work due to diabetes -related health care, the loss of value because of work absence and mortality to be indirect costs of the complications of diabetes, this was also confirmed from this study where it was discovered that more than half of the patients has not been going to work since they started treating diabetic foot ulcer.

The results of the direct cost of treating diabetic foot ulcer which was presented in chapter four reveals clearly that the patients spends so much, a minimum of 50% of their income, in the management of this complication. Atimes the money spent is more than the income of the patients which transfers the burden to members of their family, this is because high cost is incurred from the management of foot ulcer, moreso, most of the respondents are primary and secondary school leavers which presents some of them with meagre income. This is in agreement with the reported finding from the studies of Ethner et al, 2009 where the authors concluded that this is not only an indirect cost to the patient but even borne more by the members of his social support. The mean cost of diagnosis among the patients who already has foot ulcer is ₦10100 ± ₦11523.89, while the range is ₦2000-₦30000. The mean cost for wound dressing is ₦23333.33 ± ₦23180.45, while the mean cost for drugs is ₦31662.5. The mean cost for feeding is ₦30760, that of transportation is ₦24150. Only one patient has been amputated and he spent ₦200000.00 on surgery alone while his monthly income was ₦50000.00 only. This result of the direct cost is in line with the findings of Ogbera et al, 2014 which also supported that these costs were borne in most instances by individuals and often payment is “out of pocket”.

Both the direct and indirect cost of treating DFU presents cost effectiveness for those without the complication. Taking appropriate preventive foot care measure is both cost effective and cost saving considering the additional direct and indirect cost incurred by patients with DFU and more for the amputees.



## 5.7 Implication For Health Promotion And Education

The fact that diabetes could result to loss of sensation in the feet is a clear maker that every diabetic patient is at risk of developing foot ulcer because one can get injured without noticing it if the foot care practice is poor. In spite of this, DFU is highly preventable by 49-85% (Bakker et al, 2012) if appropriate strategies are implemented and adequate resources deployed. The incorporation of three strategies is recommended to strenghten the adherence to preventive foot care practices by diabetic.

First, structured educational interventions focusing on the nature of diabetes should be more often in diabetic clinics. Sensitization and awareness should be increased in the communities with simple and appropriate behavioural change communication materials used to bring the importance of attending clinic often to the diabetic patients. Most of these patients do not attend clinic until complications like DFU develops. This will significantly save people the trauma as a result of amputation.

Second, health promotion and education plays vital roles in the clinical management of diabetes and as such more health care providers should be sponsored and trained in the field of health promotion and education so as to be well equipped with the best models to be used to achieve these behavioural changes.

Finally, since it has been established that social support is a strong dictator of adherence to foot care practices, relatives of the patients should be incorporated in the trainings given to the patients on foot care practices as they serve as a motivators to these patients and also the indirect and cost borne by these relatives are averted. Manuals should also be made available for these patients during these trainings.

## 5.8 Conclusion

1. The knowledge of diabetes among the patients is at average level.
2. The knowledge of foot care practices among the patients is slightly high. The patients seems to have only head knowledge of these practices which is not translating actual practice.
3. Despite the level of knowledge of foot care practices among the patients, the adherence to these practices is still at the average level.
4. There exists so many gaps in practice of foot care among the respondents (refer to chapter four table 4.3c)
5. Social support from both the health workers and the relatives of these patients in terms of reminders encouragement will serve as a strong motivation towards achieving high adherence towards foot care practices among these patients.
6. Both the direct and indirect of treating diabetic foot ulcer are relatively costly but highly preventable.
7. Comparison between the direct cost of treating of diabetic foot ulcer and the cost of preventing it was not possible because proportion of patients with ulcer is relatively low compared to those without the foot ulcer. However, this presents cost effectiveness for those who does not have diabetic foot ulcer.
8. More money was spent on surgery followed closely by the cost for drugs, wound dressing, feeding, transportation and diagnosis.

## 5.9 Recommendations.

This study has revealed the gaps in practice among diabetic patients, factors affecting it and the cost of treating diabetic foot ulcer, it is therefore recommended that

1. As there is an increase in the number of people living with diabetes with a corresponding increase in the burden on the limited health care resources, diabetes patients should be adequately educated and trained on how to play active roles in the management of their feet and diabetes generally. There should be a manual prepared specifically for foot care preventive practices which should be made available to the patients by the health workers, both in English Language and in the local language of the patients.
2. Since the place of social support on adherence to foot care practices among diabetic patients was significant in this study and all the studies reviewed, relatives of these patients should be incorporated into the trainings for these patients for them to understand their place in the adherence to foot care practices among the patients.
3. There should be increased sensitization, health education and trainings on how to carry out these foot care practices among the patients. The content of this health education should be simple, consistent and relevant.
4. Health care providers are encouraged to examine the feet of the diabetic patients at least once in a year and the records properly kept for future referencing.
5. Since the prevalence of DFU in this population is relatively low, sensitization and public enlightenment should be intensified in the communities to encourage diabetic people to attend clinics regularly so as to be equipped with the knowledge of adequate foot care to reduce the rate of amputations among the diabetic patients. Also health promotion activities for foot care among diabetic patients should be intensified.
6. Well designed education promotional materials should be available in sufficient quantities and be put to use effectively and always by trained health personnel.
7. More researchers could research more into the same topic among the in patients in other places with special emphasis on more of the factors affecting foot care practices among the patients. Also when these researches are on, there should be proper and ethical support from the hospital management and staff as informations from these informs us

about the current situation on ground about diabetic foot care and profers possible suggestions on the way forward.

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## REFERENCES

- Abubakari AR, Bhopal RS.(2008). Systematic review on the prevalence of diabetes, overweight and physical inactivity in Ghanaian and Nigerians. *Public Health.*;122:173–182.(PubMed).
- Abu-Qamar MZ. (2014). Knowledge and practice of foot self-care among Jordanians with diabetes: an interview-based survey study. *J Wound Care.*;23(5):247–50.
- A. Chijioko; AN Adamu; AM Makusidi. (2014). Journal of Endocrinology , Metabolism and Diabetes of South Africa Mortality patterns among type 2 diabetes mellitus patients in Ilorin , Nigeria Mortality patterns among type 2 diabetes mellitus patients in Ilorin , Nigeria, (May 2015), 37–41. <http://doi.org/10.1080/22201009.2010.10872231>
- Adeleke SI, Asani MO, Belonwu RO, Gwarzo GD, Farouk ZL. (2013). Childhood diabetes mellitus in Kano, North West, Nigeria. *Niger J Med*; **19**: 145-147 [PMID: 20642077 DOI: 10.4314/njm.v19i2.56502]
- Adeniyi Mofoluwake. (2014). An Assessment of Knowledge on Type 2 Diabetes, the Means of Preventing it, and Attitudes towards Preventing Type 2 Diabetes Mellitus in Middle-aged Nigerian Women., (October), 91.
- American Diabetes Association. The cost of diabetes. Available at: [www.diabetes.org/advocacy/news-events/cost-of-diabetes.html](http://www.diabetes.org/advocacy/news-events/cost-of-diabetes.html)
- Aziz Nather, Bee C.S., HuakYiong, et al. (2010). Socioeconomic profile of diabetic patients with and without foot problems. *Diabetic Foot & Ankle.* (1) : 5523-5528.
- Bakker K, Apelqvist J, Schaper NC, et al. (2011). Practical guidelines on the management and prevention of the diabetic foot. *Diabetes Metab Res Rev.* 2012;28(Supp 1):225-31.

Bakker K; Ahmed M; Houtum; Apelqvist j; Arab M; Armstrong D; Bernard O, Boulton A; Lavery L; Prompers I Putten M.V et al. Diabetes and foot care; Time to Act. A joint publication of the international Diabetes Federation and the international Working Group on the Diabetic foot.

Beiranvand, S., Fayazi, S., & Asadizaker, M. (2015). Effect of Educational Programs on the Knowledge , Attitude , and Practice of Foot Care in Patients With Diabetes, 4(2). <http://doi.org/10.5812/jjcdc.26540>

Berhe, K. K., Kahsay, A. B., & Gebru, H. B. (2012). Adherence to Diabetes Practices among Type II Diabetic Patients in Ethiopia ; A Cross, 2012.

Boyko EJ, Ahroni JH, Stensl V, Forsberg RC, Davignon DR, Smith DG. A prospective study of risk factors for diabetic foot ulcer; The Seattle Diabetic foot study. Available from: <http://Care diabetes journal .org/content/22/7/1036>.

Centre for Disease Control Nigeria. 2015 fact sheet

Chellan, G., Srikumar, S., Varma, A. K., Mangalanandan, T. S., Sundaram, K. R., Jayakumar, R. V., ... Kumar, H. (2012). Foot care practice - The key to prevent diabetic foot ulcers in India. *Foot*, 22(4), 298–302.

Chinenye S. A.E.Uloko, A.O.Ogbera etal. (2012). “Profile of Nigerians with diabetes mellitus (2008): results of a multicenter study,” *Indian Journal of Endocrinology and Metabolism*, vol. 16, no. 4, pp. 558–564, 2012.

Chukwu BN (2013). Gender Differential in the Incidence of Diabetes Mellitus among the Patients in Udi Local Government Area of Enugu State, Nigeria. *Med J Soc Sci*, 4(8), 131–138. <http://doi.org/10.5901/mjss.2013.v4n8p131>

Colagiuri, S., Kent, J., Kainu, T., Sutherland, S., & Vuik, S. (2015). RISING TO THE CHALLENGE PREVENTING AND MANAGING TYPE 2.

- Dessalu. O.O.; Salawu .F.K.; A.k. Jimoh; A.A Adekoya; O.A Busari, A. . O. (2011). Diabetic Foot Care: Self Reported Knowledge and Practice Among Patients Attending Three Tertiary Hospital in Nigeria. *Ghana Medical Journal*.
- Dikeukwu Robert. (2011). The Awareness And Performance Of Appropriate Foot Self-Care Practices Among Diabetic Patients Attending Dr . Yusuf Dadoo Hospital, Gauteng Province, South Africa., 76.
- Ekpenyong C.E., U.P.Akpan, J.O.Ibu, and D. E. Nyebuk. (2012). “Gender and age specific prevalence and associated risk factors of type 2 diabetes mellitus in Uyo metropolis, South Eastern Nigeria,” *Diabetologia Croatica*,vol.41, no.1,pp. 17–28.
- Enang O.E., O. E. Essien,H. Okpara, O. A. Fasanmade, and A. E. Ohwovoriole. (2012). Prevalence and risk factors of dysglycaemia in Calabar, South East Nigeria [dissertation], National Postgradu- ate Medical College of Nigeria.
- Ewenighi CO, Nwanjo HU, Dimkpa U, Onyeanusi JC, Nnatuanya IN, Onoh LUM. (2013). Prevalence of Gestational Diabetes Mellitus; Risk factors among pregnant women in Abakali metropolis Ebonyi State Nigeria. *NJIRM*; **4**: 56-61
- Ethner SL, Cadwell BL, Russel LB et al. (2009). Investing time in health: Do socio-economically disadvantaged patients spend more or less time on diabetes self-care? *Health Econ.*; 18(6): 645-63
- Farshchi A, Esteghamati A, Sari AA, Kebriaeezadeh A, Abdollahi M, Dorkoosh FA, et al. (2014). The cost of diabetes chronic complications among Iranian people with type 2 diabetes mellitus. *J Diabetes Metab Disord.*; **13**(1):42.
- Gholap, M. C., & Mohite, V. R. (2013). To assess the Knowledge and Practice regarding Foot Care among Diabetes Patients at Krishna hospital , Karad. *4*(2), 69–75.

Hellenberg, S. (2013). Knowledge and practices regarding foot care among patients with Type 2 diabetes in Ho Chi Minh City , Vietnam Examiner :

Ikpeme, I. A., Udosen, A. M., Ngim, N. E., Ikpeme, A. A., & Amah, P. (2010). Footcare practices among Nigerian diabetic patients presenting with foot gangrene. *African Journal of Diabetes Medicine*, 18, 15–17.

International Diabetes Federation (2011): Diabetes Atlas 5th edition.

International Diabetes Federation (2014): Diabetes Atlas 6th edition.

“Issues in the New Poverty Report,” This Day Live Newspaper 21, 2013, <http://www.thisdaylive.com/articles/issues-in-the-new-poverty-report/137011/>.

Jinadasa CVM, Jeewantha M. (2011). A study to determine the knowledge and practice of foot care in patients with chronic diabetic ulcers. *Int J Collab Research International Med Public Health*.;3(1):114–22.

Jill Heitzman. (2013). Foot care of patients with Diabetes. Available from: <http://www.nsgcentre.com/pdf>.

King H, Ansari RE, Herman WH. Global burden of disease 1995-2025: (2014). Prevalence, Numerical estimates and projections. Available from: <http://care.diabetesjournal.org/21/9/14/14>.

Kumar .A., S. K. Shahi, S. Kumar et al. (2012). “Prevalence of diabetic foot ulcer and associated risk factors in diabetic patients from North India,” *The Journal of Diabetic Foot Complications*, vol.4, no.3, pp. 83–91.

Kumhar, M. (2014). Foot Wear and Footcare Knowledge — An Independent Risk Factor for Diabetic Foot in Indian Diabetics, (January), 25–28.

Lancet (2005); 365: 1527. Editorial.



Marshall CA, Slansby G. (2004). Lower limb amputation. *Surgery*; 22: 335–7.

McCInnes A.D., (2012). “Diabetic foot disease in the United Kingdom: about time to put feet first,” *Journal of Foot and Ankle Research*, vol. 5, article 26.

National Diabetes Statistics (2011). National diabetes information clearinghouse. from <http://diabetes.niddk.nih.gov/dm/pubs/statistics>.

Odili Valentine and Eke Ijeoma. (2010). Knowledge of Diabetes Mellitus among Registered Nurses in Benin City. *International Journal of Health Research*, 3, 10. Retrieved from <http://www.ijhr.org>

Ogbera O.A., O.Fasanmade, A.E.Ohwovoriole and O. Adediran, (2006). “An assessment of the disease burden of foot ulcers in patients with diabetes mellitus attending a Teaching Hospital in Lagos, Nigeria,” *International Journal of Lower Extremity Wounds*, vol.5, no. 4, pp.244–249,

Ogbera, A. O., & Ekpebegh, C. (2014). Diabetes mellitus in Nigeria : The past , present and future, 5(6), 905–911. <http://doi.org/10.4239/wjd.v5.i6.905>

Ogunlade .S.O., Alonge .T.O., Omololu .A.B., Gana .J.Y. and Salawu .S.A. (2002): Major limb amputation in Ibadan. *African Journal of Medical Sciences*. December 31.

Oguntibeju O.O.; N Odunaiya; B Oladipo and EJ Truter (2012): Health behaviour and quality of life of patients with Type 2 diabetes attending selected hospitals in South Western Nigeria. *West Indian journal* vol 61, No 6.

Otu, A. A., Umoh, V. A., Essien, O. E., Enang, O. E., Okpa, H. O., & Mbu, P. N. (2013). Profile , Bacteriology , and Risk Factors for Foot Ulcers among Diabetics in a Tertiary Hospital in Calabar , Nigeria, 2013(January 2008).

Ramsey SD, Newton K, Blough D, McCulloch DK, Sandhu N, Reiber GE, Wagner EH. (1999). Incidence, outcomes, and cost of foot ulcers in patients with diabetes.;22(3):382–387. doi: 10.2337/diacare.22.3.382.(Pubmed)

- Saleh, F., Mumu, S. J., Ara, F., Begum, H. A., & Ali, L. (2012). Knowledge and self-care practices regarding diabetes among newly diagnosed type 2 diabetics in Bangladesh: a cross-sectional study. *BMC Public Health*, *12*(1), 1. <http://doi.org/10.1186/1471-2458-12-1112>
- Saurabh, S., Sarkar, S., Selvaraj, K., Kar, S. S., Kumar, S. G., & Roy, G. (2014a). Brief Communication Effectiveness of foot care education among people with type 2 diabetes in rural Puducherry, India, *18*(1), 106–110. <http://doi.org/10.4103/2230-8210.126587>
- Saurabh, S., Sarkar, S., Selvaraj, K., Kar, S. S., Kumar, S. G., & Roy, G. (2014b). Effectiveness of foot care education among people with type 2 diabetes in rural Puducherry, India. *Indian Journal of Endocrinology and Metabolism*, *18*(1), 106–110. <http://doi.org/10.4103/2230-8210.126587>
- Seid, A., & Tsige, Y. (2015). Knowledge, Practice, and Barriers of Foot Care among Diabetic Patients Attending Felege Hiwot Referral Hospital, Bahir Dar, Northwest Ethiopia, 2015.
- Ugege O, Ibitoye PK, Jiya NM. (2013). Childhood diabetes mellitus in sokoto, north-western Nigeria: A ten year review. *SahelMed J*; **16**: 97-101
- Unachukwu C, Babatunde S, Ihekweba AE. (2007). Diabetes, hand and/or foot ulcers: a cross-sectional hospital-based study in Port Harcourt, Nigeria. *Diabetes*; **75**:148–152.(PubMed)
- Vijai basker G and Hawa Redwan. (2014). Assessment on Knowledge and Practice of Foot Care among Diabetes Patients attending Medical Opd. *World Journal of Pharmaceutical Research*, *3*(8), 145–159.

Viswanathan V, Thomas N, and Tandon N (2005). Profile of diabetic foot complications and its associated complication - a multicentric study from India. J. Association Physicians India.

WHO. (2013). *Diabetes*. WHO Media centre: 15 mars 2013, from <http://www.who.int/mediacentre/factsheets/fs312/en/>

WHO (2015): Diabetes Facts sheet.

Zhang P, Zhang X, Brown JB, Vistisen D, Sicree RA, Shaw J, Nichols GA. (2010). Economic impact of Diabetes. Diabetes Atlas, IDF.;4:1–28

**APPENDIX 1**

**QUESTIONNAIRE (ENGLISH VERSION)**

**FOOT CARE PREVENTIVE PRACTICES AND ASSOCIATED FACTORS  
AMONG DIABETIC OUTPATIENTS AT UNIVERSITY COLLEGE HOSPITAL  
IBADAN, NIGERIA.**

Dear Respondent,

I am currently a postgraduate student from the department of Health Promotion and Education of the Faculty of Public Health, College of Medicine, University of Ibadan, Ibadan. I am carrying out a study on foot care preventive practices and associated factors among diabetic outpatients at University College Hospital Ibadan, Nigeria. The purpose of this study is purely for academic research, aimed at contributing to the body of knowledge in the area of foot care preventive practices and its associated factors that either promote or inhibit adherence to these practices among diabetic patients.

Your sincere response is encouraged as participation in this study is voluntary, absolute anonymity and confidentiality shall be maintained as there is no wrong or right answers and the information provided will only be used for research purposes.

Please kindly show your participation in this study is voluntary by answering YES or NO to the question below:

ARE YOU INTERESTED IN THIS STUDY? YES { } NO{ }

Thank You very much.

**SECTION A: SOCIO-DEMOGRAPHIC INFORMATION**

**NOTE:** Please tick (√) in the appropriate boxes.

1. Sex 1. Female                      2. Mal
2. Age in years (as at last birthday) .....

3. Marital Status 1. Single/Never married 2. Married 3. Widowed 4. Divorced 5. Other (Specify).
4. Ethnicity 1. Igbo 2. Yoruba 3. Hausa 4. Other (specify).
5. Religion 1. Christianity 2. Islam 3. Traditional 4. Other (specify)
6. Educational status 1. Non formal education 2. Primary 3. Secondary 4. Tertiary
7. Family History of Diabetes 1. Mother/Father, 2. Grandparents, 3. Brothers/Sisters, 4. Other relatives, 5. Nil
8. Occupation 1. Government 2. Private business 3. Retired 4. Unemployed 5. Farmer 6. Other
9. Monthly Income .....
10. Residential Area. 1. Rural 2. Semi urban 3. Urban
11. Duration of Diabetes diagnosis .....
12. How much do you spend on feeding in a week?.....
13. How much do you spend on diabetes treatment in a week?.....

### KNOWLEDGE OF DIABETES AND FOOTCARE PRACTICES

#### a. KNOWLEDGE OF DIABETES

No	Question	Options	Remarks
	What are the causes of diabetes?	1. Increased intake of carbohydrates in such an amount that the body cannot synthesize	
		2. Physical Inactivity	
		3. Lack of regular check of blood sugar	
		4. Obesity	
		5. Others (specify) _____	

What are the components of an ideal diet for a person with diabetes?	1. Fruits	
	2. Vegetables	
	3. Carbohydrates	
	4. Proteins	
	5. Vitamins	
	6. Minerals Salt	
	7. Fats and Oil	
	8. Water	
Mention the methods used to control Diabetes	1. Use of Insulin	
	2. Use of Tablets	
	3. Recommended diet	
	4. Physical Activity	
	5. Regular check of blood sugar with care	
	6. Keeping record of the blood sugar level	
	7. Keeping up with Doctors' appointment	
	8. Others (specify) _____	
Mention the behavioural	1. Smoking	

	habits that are risk factors for Diabetes	2. Sedentary lifestyle	
		3. Lack of exercise	
		4. Alcohol taking	
		5. Other (please specify)	
	Mention the complications of Diabetes	1. Diabetic Foot Ulcer	
		2. Amputation	
		3. Eye problem	
		4. Kidney failure	
		5. Heart disease	
		6. Stroke	
		7. Death	
		8. Others (specify)	
19	What is a free food for a Diabetic patient?	Any food that has less than 20 calories per serving	
		. Any food that has less than 30 calories per serving	
		. Any food that has less than 40 calories per serving	
		Any food that has less than 50 calories per serving	
		Others (specify)	

**b. KNOWLEDGE OF FOOTCARE PRACTICES**

Please kindly answer either Yes, No or Don't Know

S/N	Questions	1. Yes	2. No	3. Don't know
20	A diabetic patient should engage in daily exercise			
21	A diabetic patient should always wash and dry the foot in between toes.			
22	Self medication on foot problems is good for a diabetic patient.			
23	Stepping on heating pads and hot water bottles and hot sandy beaches does not affect a diabetic patient.			
24	Patients should report any form of injuries/redness on their foot early to the hospital			
25	If diabetic wounds are untreated they will dry up			

**FOOTCARE PRACTICES AMONG THE DIABETIC PATIENTS**

S/N	QUESTIONS	1.EVERYDAY	2.WEEKLY	3.MONTHLY	4.YEARLY	5.NEVER
26	Do you inspect your foot for injuries?					
27	Do you inspect in between your toes for redness?					



28	Do you inspect inside of your foot wear for objects before wearing it?					
29	Do you walk around bare-footed <b>OUTSIDE</b> the house?					
30	Do you walk around <b>INSIDE</b> your house bare footed?					
31	Do you wear high heel shoes?					
32	Do you wear tight shoes?					
33	Do you wear covering shoes?					
34	Do you wear appropriate foot wear, your exact size?					
35	Do you wear stockings?					
36	Do wash your foot with					

	lukewarm water and mild soap?					
37	Do you use cold water to wash your feet?					
38	Do you soak your feet before washing it?					
39	Do you dry your feet in between your toes after washing?					
40	I apply a thin coat of petroleum jelly after drying my feet					
41	Do you cut your nails regularly?					

**Please choose one option from the list**

42. How do you cut your nails? 1. straight across 2. vertically 3. top to bottom 4. diagonally. 5. Others (specify) .....

43. What do you use to cut your nails? 1. Razor 2. Teeth 3. Nail cutter 4. other (specify .....)

44. Have you ever noticed redness or bleeding on your foot especially between your toes?  
1. Yes 2. No (If No, go to number 47)

45. Have you ever reported such to your health care provider? 1. Yes 2. No
46. Who examines your feet? 1. Doctor/Nurse 2. Yourself 3. Your spouse 4. Traditional Doctors 5. Other (Specify)
47. Do you get advice from the hospital before buying foot wears? 1. Yes 2. No
48. What do you do when your foot wear gets bad? 1. Manage it 2. It does not make any difference using it 3. Change it.

### FACTORS AFFECTING PREVENTIVE FOOTCARE PRACTICES

#### a) PREDISPOSING FACTORS:

49. Have you heard about foot care preventive practices before? 1. Yes 2. No
50. Do you feel like carrying them out? 1. Yes 2. No
51. How often do you visit this clinic? 1. Weekly 2. Monthly 3. Quarterly 4. Yearly 5. Others (Specify) .....
52. Do the health workers mention them to you? 1. Yes 2. No
53. Do they train you on how to carry them out? 1. Yes 2. No
54. Do you know the correct kind of foot wear to put on? 1. Yes 2. No
55. If yes mention it.
56. What are the wrong foot wears for you to use? (List them)

#### b) ENABLING FACTORS:

57. Do you have the appropriate skills to carry out the following daily foot care practices?

S/N	PRACTICE	1.VERY WELL	2.MODERATELY	3.POOR
	Wash your feet properly			
	Trimming your nail			

	Test your glucose level			
	Interpret the result of the test			

58. Do you always have time to carry the above skills? 1. Yes 2. No

59. Do you have a manual to assist you perform the skills? 1. Yes 2. No (If no, go to no. 65)

60. Do you need one? 1. Yes 2. No

61. Do you have the enough money to buy a glucometer? 1. Yes 2. No

62. Do you have enough money to transport yourself and your care giver to hospital for regular check up? 1. Yes 2. No

63. Do you have the money to buy the appropriate foot wear? 1. Yes 2. No

64. Do you find them in the market when you go there? 1. Yes 2. No

**c) REINFORCING FACTORS:**

65. Whom among the following has been reminding you about the daily foot care practices?

S/N	PERSON	1. YES	2. NO	3. CAN'T SAY
	My Colleagues			
	My friends			
	My brothers			
	My sisters			
	My Parents			

	My doctor			
	My Children			
	My Spouse			
	The Nurses			

66. I usually get encouragement regularly from them 1. Yes 2. No.

**COST OF TREATING FOOT ULCER AMONG RESPONDENTS WHO ALREADY HAD IT**

67. Do you have a foot ulcer? 1. Yes 2. No **(IF NO, STOP INTERVIEW)**

68. How long have you had the wound?.....

69. How much was the cost of diagnosis?.....

70. Who treated you?.....

70b. What was the outcome of the treatment? 1. Healed completely 2. Healed partially  
3. Not healed.

71. How much of your total income went into the management ( Cost of drug, physiotherapy) of this ulcer since diagnosis?(in percentage if possible).....

72. Who paid for these expenses? .....

73. When did you go to work last?.....

74. How many days have you been absent from work in the last 3 months?.....

75. How will you grade your productivity now compared to before? 1. Same 2. Increased  
3. Moderate 4. Decreased

76. How would you rate your quality of life now compared to before? 1. Same 2. Improved 3. good 4. Poor.

77. Have been amputated? 1. Yes 2. No

78. How much the cost of the surgery? .....

79. Do the amount you spend on the management of this condition affect the under listed responsibility:

S/N	RESPONSIBILITY	YES	NO	3.UNDECIDE D	REMARKS
1	Children school fees				
2	Family feeding				
3	House rent				
4	Distant relations' upkeep				
5	Other family upkeep like clothing, medical care e.t.c				

80. On the estimate, how much have you ever spent on the following:

1. Diagnosis (₦).....
2. Treatment and wound dressing (₦).....
3. Transportation (₦).....
4. Feeding (₦).....
5. Drugs (₦).....
6. Surgery (If applicable) (₦).....
7. Others (Please specify) (₦).....

## APPENDIX 2

### QUESTIONNAIRE (YORUBA VERSION)

#### GBÈNDÉKE ISE FUN ITOJU ÈŞÈ ATI AWON OHUN TI O NSE OKUNFA RE LAARIN AWON LÁÌSÀN TI O NI ITO SUGA NI ILÉ EKO ISEGUN NLA TI UCH, IBADAN, NIGERIA.

Eyin Oludahun,

Oruko mi ni CHINENYE I.ANEKWE, mo je akeko ti abala Health Promotion ati Education, ti eya Public Health, Ile eko Isegun ni fasiti Ibadan. Mo nse iwadi lori gbèndéke ise fun itoju èşè ati awon ohun ti o nse okunfa re laarin awon aláìsàn ti o ni ito suga ni ilé eko isegun nla ti UCH, Ibadan, Nigeria.

Iwadi yi ni wa fun sise alekun imo lori gbèndéke ise fun itoju èşè ati awon ohun ti o nse okunfa, yala lati ma tele awon gbèndéke ise yi tabi lati ma tele won laarin awon aláìsàn ti o ni ito suga orisi keji.

A fe idahun lotito nitoripe kikopa ninu iwadi yi je ti atinuwa, àidánimọ ati asiri li ao muduro beni ko si idahun ti o to tabi ti ko to ati wipe gbogbo alaye ti e ba pese ni a o lo fun iwadi yi nikan soso.

Jọwọ fi ipo atinuwa rẹ lati kopa ninu iwadi yi han nipa fawabale tabi atanpako titẹ sita ninu apoti ni isalẹ. Ese pupo

#### ABALA A: ALAYE NIPA ARA RE

Akiyesi: Jowo fala bayi  sinu awon apoti ti o ba ye

1. (Ewo ni o) 1. Obinrin  2. Okunrin

2. Ojo ori ni iye odun ( ni ojo ibi to kẹhin) .....

3. Ipo igbeyawo 1. Emi nikan / Mi o gbeyawo ri  2. Moti gbéyàwó  3. Opó

4. Awon ilemoṣu  5. Awon omiran ( so ni pato )

.....

4. Eya won i o? 1. Igbo  2. Yorùbá  3. Hausa  4. Awon omiran (so ni pato )

.....

5. Esin won i o nsin? 1. Kristiṣiṣi  2. Musulami  3. Esin Ibile  4. Awon omiran (so ni pato ) .....

6. Ipo Iwe kika 1. Mi o kawe  2. Ile iwe alakobere  3. Ile iwe mewa  4. Ile  iwe giga

7. Itan aarun ito suga ninu idílé. 1. Iya / Baba  2. Sayin òbí  3.

Arákunrin/arábìnrin 4. 4. Ebi miiran 5.  si

8. Iru ise ti o nse? 1. Ise ijoba  2. Ise aladani  3. Karakata  4. Osise feyinti

5. Alainise lowo  6. Agbe  7. Awon omiran (so ni pato )

.....

9. Owo oṣoṣu.....

10. Adugbo ilbugbe re 1. Abule  2. Aarin abule ati igboro  3. Igboro

11. Igba ti o ti se ayewo fun ito suga .....

12. Elo lo ti na lori ounje ni oṣe kan? .....

13. Elo lo ti na lori itoju ito suga ni oṣe kan ? .....

### IMO NIPA ITO SUGA ATI GBÈNDÉKE ISE FUN ITOJU ẸSẸ

#### (a) Imo nipa Ito Suga

S/N	Ìbèèrè	Mu ninu iwonyi	Awon Ifiyesi
14.	Ki ni awon okunfa ito suga?	Ki a ma je kabohidrati ni iwon iye ti ara ko le ge kale	
		Ki a ma fara sise	
		Aiki newo suga inu eje deede	
		Sisanra pupo ju	
		Awon omiran (pato) .....	
15.	Kini awon eya ara ounje ti o se deede fun	Eso	
		Efo	



	eni ti o ni ito suga	kabohidrati	
		Proteni	
		Vitamini	
		Orisirisi iyo asalore	
		Ora ati Ororo	
		Omi	
16.	Daruko awon ona ti a le fi gba toju aarun ito suga	Lilo insulini	
		Lilo oogun onikoro	
		Ounje ti o peye	
		Fifi ara sise	
		Sise ayewo suga inu eje pelu itoju	
		Sise akosile suga ara	
		Nini ipade pelu dokita	
		Awon omiran (pato) .....	
17.	Daruko awon iwa ti o le se akoba lati ni ito suga	Siga mimu	
		Igbe aye ti ka fara sise	
		Aiki nse ere idaraya	
		Oti mimu	
		Awon omiran (pato)	
		.....	
18.	Daruko awon abeyin yo lati ara ito suga	Ogbe ese lati ara ito suga	
		Owo tabi ese gige	
		Oju didun	
		Ikuna kidinrin	
		Aarun okan	
		Stroki	
		Iku	
		Awon omiran (pato) .....	
19.	Kini a npe ni onunje ofe fun alaisan ti oni ito	Eyikeyi onunje ti ko ni to ogun kalori ni bibu	
		Eyikeyi onunje ti ko ni to ogbon kalori ni	

	suga?	bibu	
		Eyikeyi ounje ti ko ni to ogoji kalori ni bibu	
		Eyikeyi ounje ti ko ni to adota kalori ni bibu	
		Awon omiran (pato) .....	

**(b) Imo Nipa Itoju Eṣe**

Jowo dahun boya **Bẹni, Bẹko** tabi **Mi o mo**

S/N	Ìbèèrè	Bẹni	Bẹko	Mi o mo
20.	Alaisan ito suga ye lati ma sere idaraya lojojumo			
21.	Alaisan ito suga ye lati ma fo aarin ika ese re ki o si je ko gbe			
22.	Didalo oogun fun isoro ese ara eni dara fun alaisan ti o ni ito suga			
23.	Diduro lori rin ati igo omi gbigbona ati iyanrin eti okun gbigbona ko le se akoba fun alaisan ti o ni ito suga			
24.	Awon alaisan ye ki won ma so fun ile iwosan nipa eyikeyi ogbe tabi ese pipon ti won ba ni			
25.	Ti a ko ba toju ogbe ito suga, yo gbe			

S/N	Ìbèèrè	Ojojumo	Osoose	Osoosu	Odoodun	Mi o se ri
26.	Se o ma nye ese re wo lojojumo fun ogbe?					
27.	Se o ma nye aarin ika ese re wo boya o pon?					
28.	Se o ma nye inu bata re wo fun nkan ki o to wo?					
29.	Se o ma nrin nita lai wo bata?					

30.	Se o ma nrin ni inu ile lai wo bata?					
31.	Se o ma now bata gogoro?					
32.	Se o ma now bata to fun?					
33.	Se o ma now bata ti o nbo ese?					
34.	Se o ma now bata ti o se deede ese re?					
35.	Se o ma now sitoki?					
36.	Se o ma nfo ese re pelu omi ti o loworo ati ose?					
37.	Se o ma nfi omi tutu foe se re?					
38.	Se o ma nre ese re sinu omi ki o to fo?					
39.	Se o ma nje ki ese re ki o gbe ti o ba fo tan?					
40.	Mo ma nfi ikunra pa ese mi leyin ti o ba gbe tan?					
41.	Se o ma nge eekana re deede?					

### ISESI ITOJU ESE LAARIN AWON ALAISAN ITO SUGA

#### Jowo yan ọkan ninu awon akojọ wonyi

42. Bawo ni o ẹ ma nge eekana ẹ? 1. gígùn koja 2. ni inaro 3. oke si isalẹ 4. lati egbe si aarin.

43. Kí ni o ma nlo lati ge eekana ẹ? 1. Abe 2. Eyin 3. Ige eekana 4. Awon omiran (so ni pato ....)

44. Nje o ti ri ese re ko pon tabi ki eje ko ma san lati ese re papa lati aarin ika ese? 1. Beenì 2. Rara (Ti o ba je Beeko, lo si ibeere 47)

45. Nje o ti so fun osise ilera re ri nipa re? 1. Beenì 2. Rara

46. Ta ni o ma nse ayewo ẹẹ ẹ? 1. Dokita/Noosi 2 Fun ara re 3. Oko tabi iyawo 3. Onisegun ibile 4. Awon omiran (so ni pato)

47. Se o ma ngba amoran lati ile iwosan ki o to ra bata? 1. Beeni 2. Rara  
 48. Kí ni o ma nṣe nigbati bata re ba baje? 1. Yoo lo 2. Ko se nkankan lati ma lo 3. Paro re

**OKUNFA GBÈNDÉKE ISE FUN ITOJU ÈṢẸ**

**(a) Okunfa ti o le mu ni lati gbe igbese:**

49. Nje o ti gbọ nipa awon gbèndéke ise fun itoju èṣe ri? 1. Bẹni 2. Bẹko  
 50. Ṣe o fe lati ma se won? 1. Bẹni 2. Bẹko  
 51. Bawo ni o se ma nwa si ile iwosan yi si? 1. Oṣese 2. Oṣoṣu 3. Eemerin lodun 4. Odoodun  
 52. Ṣe awon osise ilera ma daruko won fun o? 1. Bẹni 2. Bẹko  
 53. Se won ma nko o lati se won? 1. Bẹni 2. Bẹko  
 54. Nje o mo irú bata ti o ye fun o lati wo? 1. Bẹni 2. Bẹko  
 55. Ti o ba je bẹni, daruko re  
 .....  
 56. Awon bata wo ni koo ye fun oo lati woo? (Daruko won)

**(b) Okunfa ti o le faye gba igbese wonyi:**

57. Ṣe o ni awon ironi lagbara ti o ye lati se awon itoju ese wonyi lojoojumọ?

S/N	Ise	Daradara	Diedie	Ko dara to
a.	Fifo ese bo ti ye			
d.	Gige eekana			
e	Yiye gbedeke gulukosi wo			
e	Ti tumo esi ayewo			

58. Ṣe o mo ni asiko nigba gbogbo lati se awon ironi lagbara to wa loke yi? 1. Bẹni 2. Bẹko  
 59. Ṣe o ni iwe atonisona ti o le ran o lowo lati se awon ironi lagbara wonyi? 1. Bẹni 2. Bẹko (Ti o ba je bẹko, lo si ibeere 59)  
 60. Ṣe o nilo okan? 1. Bẹni 2. Bẹko  
 61. Ṣe o ni owo toto lati ra inrinse to nye suga ara wo? 1. Bẹni 2. Bẹko  
 62. Se o ni owo toto lati gbe ara re ati olutoju re lo si ile iwosan fun ayewo deede?

1. Bẹni 2. Bẹko

63. Ẹ o ni owo lati ra bata ti o ye? 1. Bẹni 2. Bẹko

64. Ẹ o ma nri wọn ni oja nigba ti o ba lo sibẹ? 1. Bẹni 2. Bẹko

**(d) Okunfa ti o nse ifidimule:**

65. Ta ninu awon woyi ni o ti ma nran o leti nipa isesi toju ese?

S/N	Eniyan	1. Bẹni	2. Bẹko	Mi o le so
a.	Awon alabasisepo mi			
b.	Awon ore mi			
d.	Awon arakunrin mi			
e.	Awon arabinrin mi			
e.	Awon obi mi			
f.	Dokita mi			
g.	Awon omo mi			
gb.	Oko/Iyawo mi			
j	Awon Noosi			

66. Mo ma nri oro itunu gba lati odo won deede. 1. Bẹni 2. Bẹko

**Iye owo fun itoju ogbe ẹẹ ito suga laarin awon oludahun ti o tin i tele**

67. Se o ni ogbe ẹẹ? 1. Bẹni 2. Bẹko (Ti ba je beeko, da ijomitoro yi duro)

68. Lati igba wo lo tin i? .....

69. Elo ni owo ti o san fun ayewo? .....

70. Tani o se itoju fun o? .....;

70b. Kini abajade itoju na? 1. iwosan patapata 2. Iwosan die 3. Ko san

71. Elo ni o lo si itoju (owo oogun, fisioterapi) ogbe na ninu gbogbo owo ti o nwole fun o losu lapapo lati igba ti o ti ni? (ni ida ogoorun ti o ba seese) .....

72. Tani o san awon owo wonyi? .....

73. Igba wo ni o lo si ibi ise gbeyin? .....

74. Ijo melo ni o pa ibi ise je lati bi ose meta seyin? .....

75. Bawo ni o se le se osuwon ise deede re si bayi ni afiwe si ti isaaju? 1. Bakana ni 2.

Alekun wa 3. O se deede 4. O din ku

76. Bawo ni o se le se oşuwon igbe aye re bayi ni afiwe si ti išaaju? 1. Bakana ni 2. O dara si 3. O dara 4. Ko dara

77. Se won ti ge ese re? 1. Beęni 2. Beęko

78. Elo ni iye owo ise abę na? .....

79. Şe iye owo ti o na lori isakoso ipo yi pa awon ojuse wonyi lara bi:

S/N	Ojuse	1. Beęni	2. Beęko	Mi o mo	Awon Ifiyesi
1.	Owo ile-iwe awon omo				
2.	Jije ninu ile				
3.	Owo ile				
4.	Owo itoju ebi				
5.	Awon itoju ile miran bi rira aso, owo ile iwosan ati beebe lo				

80. Bi elo ni o tin a lori awon knan wonyi:

1. Ayewo (₦) .....

2. Itoju (₦) .....

3. Owo irinse (₦) .....

4. Owo ounje (₦) .....

5. Owo Oogun (₦) .....

6. Ise abę (Ti o ba nilo re) (₦) .....

7. Awon omiran (Jowọ so pato) (₦) .....

### APPENDIX 3

#### CONSENT FORM

Dear Sir/Madam,

Good day to you!

My name is Anekwe Chinenye. I am a student of the Department of health Promotion and Education, Faculty of Public Health, College of Medicine, University College Hospital Ibadan. I am researching into the Foot Care Preventive Practices And Associated Factors Among Type II Diabetic Patients In University College Hospital Ibadan, Nigeria. Findings from this study will add to the existing body of knowledge in the areas of foot care and also provide insight into the different approaches of health promotion through which it can be improved thereby reducing the prevalence, cost of it and subsequent amputation.

You will not need to mention your name but you will be given a serial number. Your responses and opinions will be kept confidential. They will not be used against you but will be used to protect you as an autonomous person where the need arises.

Your candid opinion will be highly appreciated. You are free to accept to participate or not to participate. You are also free to withdraw from the study during the course if you wish without victimization.

CONSENT: Now that detailed information about the study has been explained to me, and I fully understand, I volunteer to participate in the study.

\_\_\_\_\_  
Signature of Participant

\_\_\_\_\_  
Signature of Interviewer

## DEDICATION

This project is dedicated to my Sustainer and Guide, The Almighty God for His unfathomable love, care, Great Grace and massive Help all these period. My King, I extol You!!

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## ACKNOWLEDGEMENT

I wholeheartedly want to appreciate my Father for his guidance, sustenance, provision and counsel to me all through the period of this work. I lack the appropriate words to adequately appreciate my supervisor, the Head of Department Health Promotion and Education, Faculty of Public Health, Professor Oladimeji Oladepo. His contribution and fatherly guidance throughout the period of this study is unexplainable. At every stage of this project, he was there to ensure that things are on track whether he is on leave or not. He went the extra mile to ensure that this work is successfully completed and in appropriate time. I also want to appreciate all the academic staff of this beautiful department especially Dr. M.A Titiloye, for taking time to assist me in the development of my instrument, Mrs. Oluwasanu for assisting me proof read my work, and all the other staff of this department including Mr. John Imaledo for you were all significantly instrumental to the successful completion of this project.

I will not fail to acknowledge the support given to me by the health education nurses in the diabetic clinic in UCH especially Mrs Adekoya. Thank you so much for your support all through the period of this work. Oluwafemi Adewusi, only God Himself can appreciate you for me by surprising you massively on all sides. All my friends too numerous to mention including Steve Ameh and Tayo Adetunji for all your assistance during the data collection and analysis process.

My heartfelt gratitude goes to my adorable Mother, you have been there through thin and thorn giving me your maximum support financially, morally, prayers and otherwise. My Auntie too, for your financial and moral support, you are inestimable. You will surely live to enjoy the fruits of your labour. To my siblings, I appreciate all your prayers and support. You are the best family one can ever have, I love you so much and will not trade you people for anything.

## ABSTRACT

In Nigeria, 3, 746.51 persons are currently diabetic with 105, 091 deaths resulting from the condition annually (IDF, 2014). This rise in prevalence of Diabetes Mellitus is likely to bring an increase in its complications including Diabetic Foot Ulcer (DFU) among diabetic patients. This complication is highly preventable when appropriate practices are adhered to by the patients. However, information is scanty about the extent to which diabetic patients prevent foot ulcers through the preventive foot care practices and the factors that promote or inhibit the adherence to the practices. This study is therefore designed to investigate into the foot care preventive practices and associated factors among diabetic outpatients in University College Hospital Ibadan, Nigeria.

This cross-sectional study enrolled 204 consenting registered diabetic patients from the outpatient diabetic clinics. A pretested interviewer administered semi structured questionnaire was used to elicit responses from participants on socioeconomic variables, knowledge of diabetes, knowledge of foot care, Foot care practices, Factors affecting the practice of foot care and the cost of treating diabetic foot ulcers. Socio demographic factors was analysed using descriptive statistics. Knowledge of foot care practice was measured on a 7point scale with scores 0-3, 4-5 and >5 classified as poor, average and high knowledge respectively. Foot care practices among the respondents was measured on a 19-point scale. Foot care practices between 0-9 was classified as poor practice, 10-15 as average practice while >16 as high practice. Data collected was analysed using mean, median, ranges, Chi<sup>2</sup>, Logistic and Multiple regression.

The mean age for the respondents was  $64.38 \pm 10.5$ . Only (9.8%) of the respondents had no formal education, others (89.2%) has a form of either a primary, secondary or tertiary education About one out of every three respondents 35.8% that was interviewed was either retired or unemployed, however, 63.2% was engaged in one form of labour/service ranging from civil servants to business people. The average income of respondents was observed to be ₦53, 603.62  $\pm$  59, 232.67. The knowledge of foot care was observed to be high (54.4%), while the knowledge of diabetes was observed to be on the average level (58.8%) among the respondents. On foot care practices, average foot care practice was

reported from the respondents (66.2%). However, washing of feet with cold water, using sharp objects to cut the toes, walking barefooted inside the house, soaking of feet before washing, non-inspection of feet especially in between the toes and non-application of petroleum jelly after drying the feet by most respondents were some of the notable gaps in practice reported from this study. Predisposing factors was found out to be the most significant predictor of foot care practices, followed by Reinforcing factors. Enabling factors were found to be insignificant. Under direct cost analysis, most money was spent on surgery followed by cost of drugs with most respondents spending more than 50% of their income on the management of DFU. The reported effect of cost of treating DFU range from reduced productivity, quality of life and inability to meet up with family responsibilities.

In conclusion, the prevalence of DFU in this population is very low 2.9% in contrast to the high prevalence reported from previous studies reviewed. This low prevalence is attributed to the diabetic education in the clinics. The educational activities should further be scaled up.

**Keywords:** Foot care practices, Diabetes Mellitus, Diabetic foot ulcers, Factors affecting DFU, Cost, Knowledge.

**Word Count:** 500

## CERTIFICATION

I certify that this work was carried out by me, ANEKWE Chinenye Ifechukwu in the Department of Health Promotion and Education, Faculty of Public Health, College of Medicine, University of Ibadan, Ibadan, Nigeria.

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## ACRONYMS

DM Diabetes Mellitus

DFU Diabetic Foot Ulcer

WHO World Health Organisation

IDF International Diabetes Federation

CDC Centre for Disease Control

UCH University College Hospital

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