



## **KAMUZU COLLEGE OF NURSING**

ASSESSMENT OF KNOWLEDGE, PRACTICES AND BARRIERS TO FOOT CARE AMONG  
PATIENTS WITH DIABETES MELLITUS AT ZOMBA CENTRAL HOSPITAL, MALAWI.

MSc (Adult Health Nursing)

By

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A Thesis Submitted to Faculty of Nursing, Kamuzu College of Nursing, in partial fulfillment of the requirements for the award of Master of Science Degree in Adult Health Nursing

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**Declaration**

I, **Evelyn Chibwe**, hereby declare that this thesis is a result of my own effort and has not been presented for any other award at the University of Malawi or any other university

Other people's work referenced has been duly acknowledged.


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## Certificate of approval

The undersigned certify that this thesis represents the student's own work and effort and has been submitted with our approval.

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## **Dedication**

This thesis is dedicated to my loving parents William and Elizabeth Chibwe whose support, love and faith are the truest kinds of magic I know.

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## **Abstract**

**Background:** Foot ulceration is one of the most common complications among patients suffering from Diabetes Mellitus. Good knowledge and practice regarding foot care has been documented to reduce the risk of such foot complications and amputation. This descriptive cross sectional study was conducted to assess knowledge, assess practices and identify barriers to foot care among patients with diabetes at Zomba Central Hospital.

**Materials and methods:** A structured questionnaire was used to assess foot care knowledge, practices, and other related variables of 81 systematically selected diabetic patients. Data obtained were analyzed using Statistical Package for the Social Sciences Software version 20.0. Descriptive statistics and bivariate correlations with 95% confidence interval were computed and findings have been presented in tables and figures.

**Findings:** Of 81 Diabetes patients, 82.7% (n=62) had good knowledge and 26.6 % (n=21) had good practice on foot care. With regard to knowledge, 90.1% (n=73) were aware of the first thing to be done when they found redness/bleeding between their toes and 75.3% (n=61) were aware of the importance of inspecting the feet. Poor foot practices included; 81.5% (n=66) walked bare footed and 66.7% (n=54) used a stone to clean their feet. Barriers to foot care reported by respondents were: lack of knowledge and lack of money to buy appropriate materials.

**Conclusion:** The findings have highlighted the gaps in knowledge, practices and barriers to foot care in DM patients. The study recommends enhancement of health education on foot care, continual motivation and support to patients with Diabetes. The study was done in one hospital, if multiple sites where used the data could have been enriched.

## **List of abbreviations**

<b>AIDS</b>	Acquired Immunodeficiency Syndrome
<b>CNCDS</b>	Chronic Non-Communicable Diseases
<b>COMREC</b>	College of Medicine Research and Ethics Committee
<b>DAM</b>	Diabetes Association of Malawi
<b>DFU</b>	Diabetic Foot Ulcer
<b>DM</b>	Diabetes Mellitus
<b>HIV</b>	Human Immunodeficiency Virus
<b>KCN</b>	Kamuzu College of Nursing
<b>LEA</b>	Lower Extremity Amputation
<b>WHO</b>	World Health Organisation
<b>ZCH</b>	Zomba Central Hospital

**Operational definitions**

**Diabetes Mellitus:** A chronic condition that affects the regulation of blood glucose in the body.

**Diabetic foot:** A complication of the lower extremities resulting from uncontrolled blood glucose levels.

**Knowledge of foot care:** Information DM patients have on prevention of foot complications, assessment of the feet, protective wear of the feet and cleaning of the feet.

**Practice on foot care:** Action taken by DM patients to prevent foot complications such as assessing the feet, putting on protecting foot wear such as shoes, socks and using safety precautions when cleaning the feet.

## Table of Contents

Declaration .....	i
Certificate of approval .....	ii
Dedication .....	iii
Acknowledgements.....	iv
Abstract .....	v
List of abbreviations .....	vi
Operational definitions.....	vii
<b>CHAPTER 1 INTRODUCTION AND BACKGROUND .....</b>	<b>1</b>
Introduction .....	1
Background .....	2
The burden of DM .....	2
The burden of DFUs .....	3
Foot care knowledge and practices among DM patients.....	4
Problem statement.....	4
Justification of the study .....	5
Objectives of the study.....	6
Broad objective of the study .....	6
Specific objectives.....	6
<b>CHAPTER 2 LITERATURE REVIEW .....</b>	<b>7</b>

Introduction .....	7
DM patients knowledge on foot care .....	8
DM patients’ practices on foot care .....	10
DM patients’ barriers to foot care .....	16
<b>CHAPTER 3 METHODOLOGY .....</b>	<b>18</b>
Introduction .....	18
Research design.....	18
Study population .....	19
Sample size.....	19
Meaning of symbols .....	19
Sample size calculation: .....	20
Inclusion and exclusion criteria for respondents.....	20
Inclusion criteria .....	20
Exclusion criteria.....	20
Sampling method.....	20
Study setting.....	22
Data collection methods .....	23
Data collection tool .....	23
Tool validity and reliability.....	24
Validity .....	24

Reliability .....	24
Pilot study.....	25
Recruitment process of respondents.....	25
Data collection.....	25
Data management and analysis .....	26
Ethical considerations .....	26
Limitations of the study.....	27
Plan for dissemination of the findings.....	28
CHAPTER 4 FINDINGS.....	29
Introduction.....	29
Respondents’ demographic characteristics .....	29
Respondents knowledge on foot care.....	31
Knowledge score on foot care .....	31
Knowledge of respondents on prevention of foot complications .....	31
Knowledge of respondents on shoe wearing .....	32
Knowledge of respondents on socks wear.....	32
Knowledge of respondents on toe and nail care .....	33
Respondents’ practices on foot care and shoe wearing .....	34
Practice of respondents on use of socks .....	34
Respondents’ practices on nail care and cleaning of the feet .....	35

Association between demographic variables and practices on foot care .....	36
Respondents' barriers to foot care.....	37
<b>CHAPTER 5 DISCUSSION OF FINDINGS .....</b>	<b>39</b>
Introduction .....	39
Knowledge of respondents on foot care .....	39
Importance of taking drugs.....	39
Knowledge on complication of DM on the foot.....	40
Foot assessment .....	40
Foot wear .....	41
Association of knowledge and some demographic variables.....	43
Practices of respondents on foot-care.....	44
Respondents' practices on examination of feet .....	44
Foot wear practices among respondents.....	45
Shoes.....	45
Socks.....	46
Foot cleaning practices.....	47
Respondents barriers to foot care .....	47
Conclusion .....	49
Recommendations .....	49
Practice .....	49

Research.....	49
Limitations of the study.....	50
References.....	51
APPENDICES .....	59
Appendix 1: English Questionnaire : Assessing knowledge, practices and barriers to foot care among diabetic patients at Zomba Central Hospital, Malawi .....	59
Appendix 2: Mafunso mu Chichewa: Kafukufuku okhudza zomwe anthu odwala mtenda ya shuga amadziwa ndi zomwe amachita posamalira mapazi .....	67
Appendix 3: Participants information sheet .....	75
Appendix 4: Participant’s consent form.....	78
Appendix 5: Kalata yofotokoza zakafukufuku.....	79
Appendix 6: Kalata ya chivomerezo yolowela mukafukufuku .....	82
Appendix 7: Approval Certificate from COMREC .....	83
Appendix 8: Letter requesting for permission to conduct study at ZCH .....	84
Appendix 9: Letter of support from the Hospital Director of ZCH .....	85
Appendix 10: Letter requesting for permission to conduct a pilot study at KCH.....	86

**List of tables**

Table 1: Respondents' Demographic Characteristics (N= 81) ..... 30

Table 2: Association of Demographic Variables and Knowledge on Foot Care ..... 37

**List of figure**

Figure 1: Knowledge score on foot care ..... 31

Figure 2: Knowledge of respondents on recommended shoes..... 32

Figure 3: Respondents Knowledge on Foot Care ..... 33

Figure 4: Shoes worn by respondents ..... 34

Figure 5: Type of socks worn by respondents ..... 35

Figure 6: Practice of respondents' on cleaning material ..... 35

Figure 7: Respondents' practices on foot care..... 36

Figure 8: Respondents' barriers to foot care ..... 38

## CHAPTER 1

### INTRODUCTION AND BACKGROUND

#### Introduction

Diabetes Mellitus (DM) is recognized as one of the fastest growing threats to public health in almost all countries globally. Its rapid rise in incidence is of great concern to health care professionals and the community at large (Gholap & Mohite, 2013). Smeltzer et al. (2010) defined DM as a group of metabolic diseases resulting from defects in insulin secretion, insulin use by the body cells, or both. The disease is characterized by an increase of glucose in the blood circulation; hyperglycemia (Lewis, Dirksen, Heitkemper, Butcher & Camera, 2011).

Long-term effects of hyperglycemia lead to micro-vascular and neuropathic complications such as Diabetic Foot Ulcers (DFUs). According to Desalu et al. (2011) DFUs are the commonest complication of DM and the leading cause of hospital admissions, limb amputations, morbidity and mortality in DM patients. It is also stated that lower limb amputations affect almost 50% of patients and accounts for nearly 80% of all non-traumatic amputations of the lower limb (Abbas, 2016). However, most of the foot complications can be prevented if DM patients have knowledge on foot care and put effort to learn and practice appropriate foot care habits (Linton, 2016).

Foot care knowledge and practices such as: daily inspection of feet for bruises and cuts proper foot wear, washing of the feet and inspection of any feet deformities among others could minimize the risk of foot complications up to 85% (Sutariya & Kharadi, 2016). However, poor knowledge and poor foot care practices were identified as risk factors for foot problems in DM patients (Motala & Ramaiya, 2010). Therefore, to prevent foot complications, it is important to identify knowledge and deficiency regarding foot care, so that proper self-care interventions are done. Therefore, the study assessed perspectives, practices and barriers to foot care among patients with DM at ZCH.

## **Background**

### **The burden of DM**

DM is one of the chronic non-communicable diseases (CNCDs). It is increasingly becoming a significant cause of morbidity and mortality in adults in developed and developing countries (Heitzman, 2010). According to International Diabetes Federation (IDF) (2015) NCDs, DM, being one of them caused 60% of all deaths worldwide and estimated to have caused 4.6 million deaths in 2011 in people aged 20 to 79 years. IDF (2015) estimated that there were 415 million adults aged 20-79 years with DM worldwide and 193 million undiagnosed. If this rise is not halted, by 2040 there will be 642 million people living with the DM (Ogurtsova et al., 2017)

In Africa, DM was previously considered as a rare disease that mostly affected the affluent (Msyamboza et al., 2011). However, according to IDF (2015), 14.2 million adults aged 20-79 years had DM and it is projected that 34.2 million people will have DM by 2040. DM presents an added challenge in Sub-Saharan Africa (SSA) where resources are scarce to manage both communicable and non-communicable diseases (Mbanya, Motala, Sobngwi, Assah, & Enoru, 2010). This has contributed to short life expectancy among DM patients and development of DM related complication (Abbas, 2016).

According to IDF (2015) the top four countries with the highest number of people affected by DM in SSA were, South Africa with 2.3 million, Democratic Republic of Congo with 1.8 million, Nigeria 1.6 million and Ethiopia with 1.3 million. Nearly half of all adults with DM in the SSA region live in these four countries. In Malawi, studies conducted by Wicks, Castle and Gelfand (1973) showed that DM was not an important public health problem with prevalence of less than 1%. However, epidemiological changes that affected other countries have affected Malawi as well.

The prevalence of DM has increased from 1% or less in 1970 to 5.6% in 2009 according to the WHO step wise approach to chronic disease risk factor survey (Kelias P. Msyamboza et al., 2011). Age-sex-standardized prevalence of DM in Malawi among adults aged between 25 and 64 years was 6.5% in males and 4.7% in females (Kelias P Msyamboza, Kathyola, & Dzewela, 2013). However, the prevalence of DM in Zomba is not known due to lack of data in health facilities on how many patients they may have with diabetes. However, Burgess, (2015) reports that ZCH has approximately 250 patients with DM that are seen at the diabetic clinic.

### **The burden of DFUs**

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 DM patient (Armstrong, Cohen, Courric, Bharara, & Marston, 2011). Risk factors associated with development of DFU include peripheral neuropathy, foot injury, poor metabolic control, foot deformities, long duration of uncontrolled DM , old age, and lack of knowledge on foot care practices (Gholap & Mohite, 2013). A research study reports that DFU is responsible for approximately 85% of all amputations performed in DM patients (Moxey et al., 2011). It is the leading cause of non-traumatic lower extremity amputations (LEA) and one of the feared complication of DM (Lewis, Dirksen, Heitkemper, & Bucher, 2014). Patients with DM face a 25 times greater risk of amputation than people without (IDF, 2015). It is globally believed that every 30 seconds a lower limb is lost due to complications of DM (IDF, 2015) .

In Malawi, risk factors to development of DFUs are common among DM patients. Assayed, Muula and Nyirenda (2015) reported 30.7% impaired sensation in the feet among DM patients attending Diabetic Clinic in Mangochi. Cohen et al. (2010) also reported that among 478 diabetic patients attending diabetic clinic in Blantyre, 222 reported foot numbness, 157 reported sensory loss and

38 had ulcers or amputations. Going through literature and anecdotal notes, data was unavailable for prevalence of foot complications among DM patients attending the DM clinic at ZCH.

### **Foot care knowledge and practices among DM patients**

Studies have globally been done on knowledge and practices of foot care among patients with diabetes. Jinadasa and Jeewantha (2011) states that knowledge on foot care is an important factor for foot management and can be utilized as a predictor of good practices in self-care. In addition, knowledge on foot care serves as a guide for the effectiveness of the patient's involvement in self-care practices. In a study conducted in India by George et al. (2013), findings showed that DM patients lacked knowledge on foot care and this contributed to poor foot care practices.

Regionally, Desalu et al. (2011); Seid and Tsige (2015) showed that DM patients had little knowledge on foot care and foot self-examination. This had been caused by lack of guidelines for recommended foot care, including regular foot examinations hence delay in detection of foot problems and complications. In Nigeria, Desalu et al. (2011), revealed that DM patients lacked knowledge on foot care. In Ethiopia, a study by Seid and Tsige (2015) on knowledge, practice, and barriers to foot care among diabetic patients attending Felege Hiwot Referral Hospital showed that DM patients were not aware of the importance of foot care and good practices such as putting on well covered shoes and cleaning the feet with a soft cloth.

### **Problem statement**

There has been limited research on DM in Malawi. However, Malawi Diabetic Retinopathy Study (MDRS) done in 2012 at ZCH and Queen Elizabeth Central Hospital showed that 14.5% of respondents had neuropathy and 4.5% had foot ulcers of which 2.2% had amputations among 357 DM participants (Burgess, 2015). Results from these studies (Assayed et al., 2015; Burgess, 2015; Cohen et al., 2010) showed that foot complications are a problem amongst DM patients

and even at ZCH. This puts DM patients at risk of developing DFUs which are costly to heal and have shown to negatively affect the individuals' quality of life and cause financial constraints to individuals, families and health care systems (Policarpo et al., 2014). There is no documented study on assessment of the knowledge, practices and barriers to foot care in Malawi, specifically at ZCH despite the fact of these studies being conducted.

### **Justification of the study**

Findings from this study (drawn from patient with DM themselves) have unveiled the knowledge and practice gap patients with DM have pertaining to foot care. Barriers that patients with DM experience in foot care have been shown. Findings driven directly from patients with Diabetes themselves, will provide health care workers, researchers, program specialist as well as policy makers a pathway to create health education materials and intensify teaching on foot care (Formosa, Gatt, & Chockalingam, 2012). Findings will help health workers to determine the gaps that can be there among DM patients and where to intensify awareness and teaching. The findings will broaden health workers understanding of the underlying reasons why some DM patients do not do foot care. The findings will also help policy makers in the planning of effective interventions (programs, services and policies) that promote foot care knowledge and practices on foot care at both district and national level in Malawi. This will assist in addressing consequences that may be brought due to lack of knowledge among patients with DM.

The results generated will contribute to the body of knowledge in the health sector especially non communicable diseases health as an addition to the scant literature on foot care in DM patients.

## **Objectives of the study**

### **Broad objective of the study**

The broad objective of the study was to assess knowledge, practices and barriers to foot care among DM patients at Zomba Central Hospital Diabetic Clinic.

### **Specific objectives**

1. To assess knowledge of DM patients regarding foot care.
2. To examine practices of DM patients on foot care.
3. To analyse association of selected variables with knowledge
4. To identify barriers to foot care among DM patients

## CHAPTER 2

### LITERATURE REVIEW

#### **Introduction**

This chapter presents a review of literature on studies that were conducted on knowledge, practices and barriers to foot care among patients with Diabetes Mellitus (DM) globally, regionally and nationally. However, most of the studies accessed were conducted globally and regionally with few conducted in Malawi. The review of literature available globally, regionally and nationally provided the context of what is known on foot care knowledge, practices and barriers among DM patients. The reviewed literature has been organized in accordance with the study objectives which included: knowledge of DM patients on foot care; practices of DM patients on foot care and the barriers encountered. The study utilized a narrative type of literature review that synthesized different studies from which conclusions were drawn about the DM patients' knowledge, practices and barriers they encountered.

The following data bases were utilized for literature search; PubMed Open Access through Google, Google Scholar, PLoS one, BioMed Central, Hinari and Research Gate. The search terms used for literature search were diabetes mellitus OR diabetes mellitus complication of foot OR diabetes foot ulcer OR foot complications OR knowledge on foot care OR practices on foot care; AND barriers to foot care OR effect of education on foot care; OR foot care AND Sub Saharan Africa OR foot care AND globally OR foot care AND Malawi to get internet journals and currently published articles. The literature reviewed included articles from the years 2010 to 2017, published in English language.

The chapter is divided into three sections according to the objectives. The first and second sections describe studies on knowledge and practices on foot care (Bartolo, Mizzi, & Formosa, 2013;

Chiwanga & Njelekela, 2015; Desalu et al., 2011; Gholap & Mohite, 2013; Hellenberg & Thunberg, 2013; Magbanua & Lim-Alba, 2017; Muhammad-Lutfi, Zaraiyah, & Anuar-Ramdhan, 2014; Otene et al., 2015; Qadi & Al Zahrani, 2011; Solan et al., 2017; Sutariya & Kharadi, 2016) The third section describes studies on barriers to foot care (Guell & Unwin, 2015; Matricciani & Jones, 2015; Seid & Tsige, 2015)

### **DM patients knowledge on foot care**

DM patients are required to have appropriate knowledge on foot care for them to practice proper management of the foot (Gholap & Mohite, 2013). Otene et al. (2015) conducted a descriptive cross sectional survey at Central Hospital, Sapele and Delta State University Teaching Hospital, Oghara, both in Delta State of Nigeria. The survey aimed to assess the knowledge of DM patients on foot care. DM patients responded to a semi structured self-administered questionnaire. The findings showed that 50.5% of respondents knew that putting on foot wear was the most common foot care strategy to prevent foot injury. A good number of respondents, 77.6 % knew that DM patients needed to pay special attention in care of their feet, but 60.8 %, were not sure if the development of complication of DM could be prevented.

The study further showed that DM patients were less aware of the complication of DM especially that foot ulcers could lead to limb amputation. As such, the study concluded that there was need to intensify health education to improve knowledge on foot care. Muhammad-Lutfi et al. (2014), conducted a cross sectional study in Malaysia which aimed at assessing foot care knowledge among DM patients.

The study findings revealed that 58% of DM patients had poor knowledge on foot care. Among the parameters that were assessed on the knowledge, 47.8% of the respondents did not have knowledge on type of water to use for washing the feet, 32.1% knew the importance checking the

temperature of water before bathing; 42.0% knew the importance of not applying lotion in the inter-digital space; and only 23.6% had knowledge on application of talcum powder in the inter-digital space. The study concluded that there was need to increase community awareness on foot care in order to reduce the incidence of DFUs among DM patients.

Desalu et al. (2011), carried out a study in Nigeria at three tertiary hospitals, aimed at determining knowledge of foot care among DM patients. The design was quantitative; and 352 DM patients answered a structured questionnaire. The findings showed that a greater proportion, of DM patients had poor knowledge on foot care. They did not know the complications of DM, and parameters for foot care. While as, 68.8% were unaware of the first thing to do when they found redness or bleeding between toes and 61.4% were unaware of the importance of inspecting the inside of the footwear for objects. The study recommended the need for providing information on foot care to DM patients to improve knowledge.

To the contrary, Sutariya and Kharadi (2016) conducted a study and examined knowledge and practices on foot care among DM patients. Data was collected from 103 DM patients who had attended outpatient department of surgery from January 2015 to December 2015 in India. Purposive non probability sampling method was used to select participants. Twenty questions for knowledge of foot care were included in the questionnaire. The knowledge scores were classified as good, satisfactory and poor depending upon the score found. The findings showed that 50.0 % of the respondents had satisfactory knowledge about foot care. 33.0 % of the respondents knew that the temperature of water should be checked before using it and 92.2 % of the respondents knew about not to walk bare footed. Furthermore, 23.3% of the respondents were aware of the importance of proper and comfortable footwear and 43.1 % of the respondents had knowledge on

inspection of the inside of the footwear before wearing them to prevent leg trauma. The study findings revealed that DM patients had adequate knowledge on foot care.

Qadi and Al Zahrani (2011) carried a study in Saudi Arabia aimed at assessing patients' foot care knowledge. A questionnaire was used to get data from 747 DM patients. The findings of the study showed that 91.2% knew the importance of washing feet daily, 77.8% knew the importance of not walking barefooted and 74.4% knew the importance of getting medical help when they had a sore. Similarly, a study by George et al. (2013) aimed at assessing knowledge and practices regarding foot care in India. The study was cross-sectional, conducted in Community Health and Development Base Hospital, a secondary level hospital run by the Community Health Department of a Medical College. The study recruited 212 respondents and a self-administered questionnaire was used to obtain data. The findings showed that 75.0 % of respondents had good knowledge about foot care. It was observed that 74.5 % of the respondents said that feet should be inspected daily and 49.0 % said that they needed to inspect the foot wear every time they wore it.

From the studies reviewed on foot care knowledge among DM patients, it seems patients had different knowledge on different attributes on foot care. However, the studies showed that most patients with DM had average knowledge despite lacking knowledge on some attributes. This might indicate that some areas needed to be intensified during health education for patients to have the knowledge. In addition, it might mean that some attributes are not taught, thus why patients did not have the knowledge. As such it is important that guidelines on foot care are followed.

### **DM patients' practices on foot care**

Foot-care in DM patients involves a series of activities that need to be performed on regular basis to maintain healthy and nourished feet to prevent foot complications. Every DM patient needs to be taught all things that must be done about foot care once diagnosed of DM. Health workers

should repeat this to the DM patient on each clinic visit. According to Ignatavicius and Workman (2013), all DM patients and guardians need to be taught on how to inspect the feet for numbness, cuts, red spots and swelling every day. They need to use a mirror to check the bottom of the feet for sores or ask a family member to assist.

DM patients need to keep the skin smooth and soft by rubbing a thin coat of skin lotion over the skin; tops and bottoms of the feet as well. This prevents the skin from drying, which might cause skin breakdown. However, the use of powder and skin lotion in between the toes is discouraged, as they can trap moisture which might put the patient at risk of developing or ulcers (Linton, 2016). Lewis, Dirksen, Heitkemper, Butcher and Camera (2011) added that foot care involves trimming toe nails once a week and when necessary, after a bath, as at that time the toe nails become soft and the risk for injury from cuts is minimised or prevented. Wearing of shoes at all times is encouraged in patients with DM to prevent the risk of getting blisters, injuries/ trauma through pricks when walking bare footed (Gholap & Mohite, 2013). Inappropriate footwear is another most common source of trauma (Jarl & Lundqvist, 2016). As such, DM patients need to wear comfortable shoes that fit well to protect the feet from footwear injuries. Leather shoes are preferred than plastic shoes as plastic shoes do not allow adequate air circulation. This would lead to accumulation of moisture in the shoes (Amogne, Reja, & Amare, 2011). The moisture would further predispose DM patients to develop sores. DM patients are advised to put on shoes that have medium heels because too flat or too high heeled shoes do not allow even distribution of foot pressure. Uneven distribution of pressure on the plantar puts the DM patient at risk of developing plantar ulcer (Jarl & Lundqvist, 2016). In addition, Deribe, Woldemichael, and Namera (2014) stated that DM patients should use well-fitting shoes. Use of ill-fitting shoes might cause bruises to the skin around the shoe edges leading to wounds that might develop into DFUs. As such ill-

fitting shoes should be discouraged among DM patients. DM patients are further encouraged to check inside the shoes before wearing; in order to remove objects that can cause harm to the feet (Lewis et al., 2014).

DM patients are encouraged to put on cotton socks which do not hinder circulation in order to prevent injury and to prevent hot or cold injury to the feet (Lewis et al., 2011). Prolonged sitting with legs closed is discouraged among DM patients as it promotes blockage to blood flow to the feet hence putting the patient at risk of developing foot ulcers. Therefore, DM patients should sit with legs separated and they should wriggle the toes and move ankles up and down for 5 minutes, 2 or 3 times a day. Smeltzer et al. (2010) stated that DM patients should be encouraged to check their feet at least once a year with health care providers, or if there is a risk, to follow healthcare instructions and not to do self-medication or use home remedies to treat foot problems.

Solan et al. (2017), conducted a cross sectional study that aimed at determining knowledge and foot care practices among diabetic patients attending Jazan Diabetic Center in Saudi Arabia 250 DM patients responded to a questionnaire. The findings revealed that foot care practices were inadequate because only 68.0% respondents inspected their feet regularly, 57.2% dried their toes and feet properly, and 44.0% walked on bare feet. Furthermore, inadequacies on foot care practices included non-inspection of the inside of their footwear by 23.8% of respondents and 29.6 % reported putting on shoes without socks. In Saudi- Arabia, Al Odhayani, Al Sayed Tayel, and Al-Madi (2015) conducted a study that aimed at assessing foot care practices among DM patients at King Khalid University Hospital, King Abdulaziz University Hospital, King Fahad Medical City, National Guard Hospital, Military Hospital, and Prince Salman Hospital in the capital city of Saudi Arabia. The study was quantitative, utilized cross-sectional design and questionnaire was used to collect data.

The findings showed that DM patients had poor practices on foot care. It was noted that among 350 respondents, 27.7% soaked their feet, 38.3 % tested the water temperature before submerging their feet, 36.3 % used medicated products for warts, corns, or calluses, 41.1% applied creams or lotion in-between their toes. 49% of the respondents reported wearing shoes with socks, 36.0 % inspected the inside of their shoes for foreign objects before wearing, 26.3 % used a hot water bottle or heating pad, 40.6 % reported not sitting with their legs crossed. In addition, 43.0 % dried their toes and 47 % wore leather ventilated shoes regularly, 46.8 % examined the feet when they felt a problem in the affected foot, 14.0 % examined the feet once a week and 16.9% checked the feet on regular basis 42.6 % took regular care of their feet, 28.9 % used proper fitting footwear, and 28.3 % monitored their feet for minor injuries.

Chiwanga and Njelekela (2015) conducted a study that aimed at determining foot care practices among DM patients in Dar-es-salaam, Tanzania. In this quantitative design, 404 DM patients responded to a questionnaire. The findings showed that foot self-care practices were not performed by the respondents, even in the groups that were at high risk for developing foot ulcers. 32.4% of respondents did not inspect their feet regularly and 32.8% did not inspect the inside of their shoes. Risky behaviors, such as cutting toenails with sharp instruments (e.g., razor blade or knife) were performed by over 80.0 % of the respondents. These poor practices could cause foot injuries especially if the patient presented with peripheral neuropathy or had retinopathy as part of DM complications.

Bartolo, Mizzi, and Formosa (2013) conducted a non-experimental comparative study on 60 DM patients in Malta. The study compared foot care practices of patients with diabetes below the age of 65 years and those above 65 years. One-to-one interviews were conducted. The findings showed that 49.0% of respondents never inspected their shoes before putting them on, while 80.0

% reported that they never inspected their shoes when taking them off, for foreign bodies and uneven wear, 39.0% of respondents presented with non-protective shoes, such as sandals and 49% reported that they never wore trainers 42% wore lace-up shoes. Furthermore, 80.0 % reported that they never wore seamless socks, stockings or tights, while 90.0 % reported that they never used a bath thermometer.

Hellenberg and Thunberg (2013) conducted a study in Ho Chi Minh City, Vietnam to investigate practices regarding foot care among patients with Type 2 DM. The study was quantitative, descriptive, and cross-sectional in nature. A questionnaire was used to obtain data from 100 DM patients. The findings showed that foot care practices were poor. It was also noted that DM patients had their own practices despite being told on what they were supposed to do. For instance, 20.0% reported that they tested the water before washing their feet. About 33.0 % reported that they walked around barefooted. Only 9.0 % used moisturizing cream on their feet and 69.0 % sat with their legs crossed even though it was not good for blood circulation.

Similarly, a study was conducted in three primary health care centers in Abha City, Kingdom of Saudi Arabia (AL-Asmary, Mostafa, & Al-Khaldi, 2013). A total of 432 DM patients were recruited. A questionnaire and a feet examination sheet were used to obtain data. The findings showed that practices on foot care were generally satisfactory. 90% of the respondents made sure that the shoes did not contain any harmful objects and 91.4% daily washed their feet. Few of them, 26.0 % regularly applied moisturizing agents to their feet skin and 25.9% checked the skin temperature.

In another cross-sectional, analytical study conducted in Phillipines by Magbanua and Lim-Alba (2017) that aimed to assess practices on foot care among DM patients. 330 adult patients with DM

at the outpatient clinics were given self-administered questionnaires on practices on diabetic foot self-care. 71.0 % of DM respondents had good foot care practices, 76.0 % of the respondents examined their feet daily, 97.0 % washed their feet daily, 71.0 % did not use nylon socks, 77.0% never used pointed shoes , 83.0 to 96.0 % did not place their feet near hot objects and 72.0 % did not use corn paints or plasters . More than half, 57.0% checked their shoes before putting them on, 63.0 % dried the areas between the toes, 54.0 % did not put lotion in between toes and 60.0 % often checked that the feet were dry after washing.

Despite these good practices, some were omitted such as; 60.0 % did not use lotion on their feet, 69.0 % did not regularly inspect their footwear after taking them off from the shoes, 77.0 % did not wear slippers most of the time, 30.0 % never wore shoes without socks and never checked the temperature of the water they used for washing feet. About 45.0 % walked barefooted indoors and about 13.0% walked barefooted outdoors.

Studies (Desalu et al., 2011; Gholap & Mohite, 2013; Muhammad-Lutfi et al., 2014; Otene et al., 2015; Qadi & Al Zahrani, 2011; Sutariya & Kharadi, 2016) reviewed showed that the practices of DM patients on foot care were inadequate. This indicated that foot-care practices are a challenge among DM patients globally. It is therefore, important to note that poor foot care practices might lead to foot complications. Foot complications lead to financial constraints to the patient, family and to the nation. As such, it is necessary that these foot-care practices be enhanced and maintained to identify barriers that prevent patients from doing foot care.

### **DM patients' barriers to foot care**

Barriers to promotion of health care activities limit patients involvement in performing care (Guell & Unwin, 2015). A number of factors can prevent patients not to perform foot-care such as lack of knowledge, lack of motivation, lack of resources and lack of support from others just to mention a few. Better understanding from the perspectives of people with diabetes on barriers they face to achieve effective foot care, may help to inform health care professionals to the development of interventions. The DM patients become motivated and capable of doing good practices on foot care when they are well informed (Formosa et al., 2012). However, the DM patients will not perform such activity if they are not convinced of foot care benefits (Beiranvand, Fayazi, & Asadizaker, 2015).

Seid and Tsige (2015) carried out a cross sectional study in Ethiopia that aimed at identifying the barrier to foot-care among 313 DM respondents. A questionnaire was used to collect data. The barriers to foot-care reported included: poor communication between them and nurses/physicians reported by 56.8%, 19.1% lacked motivation to perform foot-care and 6.3% reported lack of support from family members. Similarly, Matricciani and Jones (2015) also found patient-provider relationship and perceived importance of foot-care practices as key barriers to foot-care.

In Caribbean Barbados, Guell and Unwin, (2015) explored barriers to foot-care among DM respondents. The study was qualitative in nature and in-depth interviews were conducted. The respondents reported that lack of skills in doing it as the main barrier to its practices. Literature has also revealed that the main barrier to foot-care among DM patients in all the studies; (Guell & Unwin, 2015; Matricciani & Jones, 2015; Seid & Tsige, 2015) was lack of knowledge and skill to do it. As such it is suggested that patients need to be assessed on the knowledge they have on foot-

care and barriers they face to perform it. This will help in tailoring health education according to the need of patients.

In conclusion, this chapter has provided a review of previous research studies related to the topic under study. Studies reviewed across Africa and beyond used different designs, settings, sampling procedures and sample sizes. However, they all found that DM patients have different knowledge levels on different aspects of foot-care. Some of them knew its importance such as; not walking bare foot, not using the foot to check the water temperature and the importance of going to the hospital for foot assessments while others lacked such information. Furthermore, it has been shown that DM patient's practices on foot-care were substandard with harmful practices on foot care predisposing themselves to foot ulcers; that could have been prevented if proper foot-care was done. Most of the studies reviewed on knowledge, practices and barriers to foot-care were done elsewhere and not in Malawi. Therefore, the study presented in chapter three examined knowledge, practices and barriers to foot care in Malawian context.

## **CHAPTER 3**

### **METHODOLOGY**

#### **Introduction**

Research methodology is the total strategy, from the identification of the problem to the final plans of data gathering and analysis (Grove, Burns & Gray, 2013). Therefore, methodology involves procedures used in designing procedures for data collection, management and analysis. The study aimed to assess knowledge, practices and barriers to foot care among DM patients at Zomba Central Hospital (ZCH) Diabetic Clinic. Therefore, the chapter discusses the research design, setting, sampling methods, ethical considerations, data collection techniques; the instruments which were used, data analysis, limitation of the study, time frame, budget and plans for dissemination of the study findings.

#### **Research design**

Polit and Beck (2014) defines research design as the overall plan for obtaining answers to the questions being studied and the handling of some of the difficulties encountered during the research process. Therefore, it is the architectural backbone of the study. A cross sectional descriptive study was employed to collect quantitative data on knowledge, practices and barriers to foot care among DM patients at ZCH, Diabetic Clinic.

Quantitative methods were employed because the researcher wanted to test and describe relationships between knowledge of patients with diabetes and demographic variables that are associated with knowledge on foot care. In quantitative studies, concepts can be measured and compared to previous or subsequent work (Polit & Beck, 2014). As such this made it ideal for this study because some factors which the researcher was testing were already known in a different population. Descriptive study design was chosen because it is a means of describing what exists

in research. In addition, the design also helps to determine the frequency with which something occurs (Kumar, 2014).

Descriptive cross-sectional studies measure events as well as potentially related factors at a specific time without manipulating the environment (Polit & Beck, 2014). Being a cross-sectional study, data was collected from each participant at one point in time thereby capturing all phenomena from a large population during that period hence it was timely and economical (Grove et al., 2013).

### **Study population**

Polit and Beck (2014) defines a population as all the individuals with the common characteristics to provide the anticipated data. In this study the population consisted of DM patients attending diabetic clinic at ZCH.

### **Sample size**

A sample is a subset of the population, using samples is more practical and less costly than collecting data from an entire population (Polit & Beck, 2014). In this study the sample size was 81 DM patient attending DM clinic at ZCH. The sample size was calculated using Lemeshow, Hosmer, Klar, and Lwanga, (1990) formula;  $n = Z^2 P (1-P)/e^2$

### **Meaning of symbols**

n= sample size, number of DM patients used as study respondents

Z is the value of the standards normal variate for a given confidence interval. For a 95% confidence interval, Z takes the value of 1.96

P= the proportion of DM patients in Malawi which is at 5.6% (Msyamboza, Mvula, & Kathyola, 2014)

e= the acceptable error measured as proportion of the standard deviation, thus the accuracy or standard error of estimate, which was set at 0.05

**Sample size calculation:**

$$n= Z^2P(1-P) / e^2$$

$$n=1.96^2 \times 0.056(1-0.056) / 0.05^2$$

$$n=3.84 \times 0.056 \times 0.944 / 0.0025$$

$$n=0.205 / 0.0025$$

$$n=81$$

Therefore, the sample size was 81 DM patients.

**Inclusion and exclusion criteria for respondents**

**Inclusion criteria**

In this study all male and female DM patients above 18 years of age, with type 1 or type 2 DM ; who attended the diabetic clinic for follow up care, able to speak, understand Chichewa or English languages, provided informed consent were included in the study.

**Exclusion criteria**

DM patients who were below 18 years of age, who did not attend the diabetic clinic for follow up care, who could not, speak and understand Chichewa or English, did not consent to participate were excluded in the study.

**Sampling method**

This is the process of selecting a portion of the population to represent the entire population so that inferences about the population can be made (Polit & Beck, 2014). In quantitative studies the aim is to find a sample whose key characteristics are closely similar to those of the population. Polit

and Beck (2014) stated that large sample recruitment is encouraged in quantitative studies in order to give a true representation of the subjects and to maximize chances of generalization of the research findings to the whole population.

In this study the researcher used systematic sampling method to recruit 81 respondents'. Systematic sampling is a type of probability sampling which select members from a larger population according to a random starting point and a fixed periodic interval. Systematic sampling method involves the selection of every  $k^{\text{th}}$  subject on the same list (Polit & Beck, 2014). In this study the researcher chose systematic sampling method because it ensured each subject in the known population and equal chance of being selected which prevented sampling bias. The following formula was used to systematically recruit subjects:

$$k = \frac{N}{n}$$

Meaning of the symbols in the formula:

$k$  = sampling interval

$N$  = the size of the population. In this study the size of the population was 279. It was calculated basing on attendance of DM patients in each month at DM clinic in third quarter of the year 2016 thus: July, August and September (BAOBAB Health, 2016).

Therefore,  $k = 279 / 81 = 3.4$  which is approximately 3

Therefore, every 3<sup>rd</sup> subject from the queue as they attended the follow up clinic was included in the study until 81 subjects were interviewed. The researcher was responsible for doing systematic

sampling. Respondents who met the inclusion criteria were interviewed privately after giving information clearly about the study and obtained consent to participate in the study.

### **Study setting**

The study was conducted at ZCH Diabetic Clinic. ZCH is one of four tertiary and central hospitals located in the Southern Region of Malawi. This is a referral hospital catering for a population of 2.6 million of people living in the five districts of the south-east zone of Malawi namely; Machinga, Balaka, Mangochi, Phalombe and Zomba (Gawa et al., 2011). The hospital was selected as an area of study because it has a well set up diabetic clinic which offers treatment to patients with DM within Zomba City and the surrounding health centers. Therefore, the urban and rural DM patients participated in the study. However, Burgess, (2015) showed that patients with diabetes at Zomba Central Hospital have risk factors of developing foot complications. The study showed that 14.5% had neuropathy, 4.5% had foot ulcers before of which 2.2% had an amputation. These results implies that patients with diabetes have risks as such knowledge and practices on foot care have to be assesses to prevent complications.

According to data extracted from medical electronic records at ZCH Diabetic Clinic, approximately 279 patients were reviewed each month in the third quarter of year 2016 thus: July, August and September (BAOBAB Health, 2016). The Diabetic Clinic was conducted once a week, on Thursdays from 8:00 am until 13:00 hrs. During each clinic day, clinical officers and nurses examined approximately 70 patients. This was done with support from the clerk. During waiting time, an expert client with diabetes or clerk gave health education about DM symptoms and complications in general.

### **Data collection methods**

Data Collection is an important aspect of any type of research study. Inaccurate data collection can impact the findings of a study and ultimately lead to invalid findings (Kumar, 2014). Quantitative data collection methods, rely on random sampling and structured data collection instruments that fit diverse experiences into predetermined response categories (Polit & Beck, 2014). They produce findings that are easy to summarize, categorize compare, and generalize. Thorough literature search of different studies related to the current study led to the formulation of the questionnaire (Desalu et al., 2011; Hellenberg & Thunberg, 2013; Solan et al., 2017; Sutariya & Kharadi, 2016). The tool was developed taking into consideration of all the objectives of the study.

### **Data collection tool**

A structured questionnaire in English and Chichewa (Appendix 1 & 2) is adapted from similar studies conducted before (Desalu et al., 2011; Hellenberg & Thunberg, 2013; Qadi & Al Zahrani, 2011; Sutariya & Kharadi, 2016) and from International Diabetes Federation Clinical Practice Recommendations on the Diabetic Foot (Ibrahim, 2017). The questionnaire was used to obtain information on social-demographic data, knowledge on foot care practices on foot care and barriers to foot care. The data collection tool was subdivided into 4 parts based on the study objectives which included demographic characteristics, knowledge on foot care, practices of foot care and barriers to foot care as follows:

**Section A:** Demographic characteristics comprised 10 items, 1A-9A that elicited the following data: age, gender, marital status, tribe, religion, education, occupation and duration of illness.

**Section B:** DM patients' knowledge on foot care comprised of 24 questions, 1B to 24B. Each question had a score of 1(yes) for knowing the facts and a score of 0 (No) for no knowledge. In total, a combined additive score from 1 to 8 was rated poor, 9 to 24 was rated satisfactory. The

questions elicited data on causes, predisposing factors, signs and symptoms of foot ulcers and of prevention of diabetic foot ulcers.

**Sections C:** DM patients' practices on foot care comprised of 16 questions, 1C to 16C. The questions elicited data on practices on foot care thus; foot wear, socks wear, assessment of the feet, materials used to clean the feet and nail care.

**Section D:** DM patients' barriers to foot care comprised of 1 question, 1D. The question elicited data on respondents' barriers to foot care.

### **Tool validity and reliability**

#### **Validity**

Validity is defined as the degree to which a test measures what it is supposed to measure (Polit & Beck, 2014). This concerns the soundness of the study's evidence that is whether the findings are unbiased, and well grounded (Grove et al., 2013). In this study, prior to data collection, the data collection tool was reviewed by the supervisor and two subject content experts to ensure that the tool was accurate, appropriate and measured what it expected to measure.

#### **Reliability**

Reliability is defined as the degree to which a data collection instrument measures the same way each time it is used under the same condition with the same subjects (Polit & Beck, 2014). For the reliability of this study instrument, the questions were adopted from existing questions in multiple studies (Desalu et al., 2011; George et al., 2013; Hellenberg & Thunberg, 2013; Policarpo et al., 2014; Seid & Tsige, 2015a; Sutariya & Kharadi, 2016) that assessed DM patients' knowledge, attitudes and practices on foot care. The tool was piloted on patients with similar characteristics but at a different setting. The pilot study input also strengthened the tool.

### **Pilot study**

A pilot study was conducted at Kamuzu Central Hospital at the diabetic clinic. The purpose of the pilot study was to check the instruments' usability thus, time taken, clarity of terms and logical flow of questions (Kumar, 2014). Kamuzu Central Hospital diabetic clinic was chosen because it is also a referral hospital in the central region on Malawi and therefore provided required respondents with similar characteristics as those at the actual setting at ZCH. The recommended pilot size was approximately 10% of the final sample size (Hertzog, 2008). Hence 8 DM patients were recruited to participate in the pilot study as the study sample size was 81.

After permission was granted by the hospital director and consent obtained from each respondent the questionnaire was administered to 8 DM patients. An explanation was given on the purpose of the study, and a written consent was obtained from the respondents. Interviews were conducted in the private room. The interviews were conducted in Chichewa language as most respondents were Chichewa conversant. It took 30 minutes to complete the interview. After the pilot study, some questions which were not clear were rephrased and those which were repeated were removed.

### **Recruitment process of respondents**

Health care workers working at Diabetic Clinic were informed on the purpose of the study prior to the study to prepare them. The researcher was at the Diabetic Clinic 30 minutes before the clinic started to prepare a place for data collection. Data collection was conducted every Thursdays during the diabetic clinic. Data was collected after patients were reviewed by the clinician not to violate their right to be reviewed which would be their core reason for the visit to the clinic.

### **Data collection**

Data collection took a period of 6 weeks. DM patients, who met the criteria, understood the detailed written information about the study and upon clear understanding and agreeing to

participate in the study; consent was obtained by signing a form (Appendix 3 & 5) with a pen, or a thumb print if unable to write. This indicated willingness to participate in the study (Appendix 4 & 6).

### **Data management and analysis**

At the end of each collection day and before storage, the questionnaires were checked for completeness and accuracy of responses. Thereafter, each questionnaire was assigned serial identification numbers and kept in sequential order for easy detection of any missing questionnaire and in readiness for data entry. After which, the completed questionnaires were kept in a locked cupboard that was only accessible by the researcher. Then the data were coded before entering it onto computer. Coding is the process of transforming data into symbols usually numbers (Polit & Beck, 2012). The data set was created in SPSS version 20 and data were entered.

Data was analyzed using SPSS version 20.0 which used descriptive statistics and summarized using means, frequencies and percentages. The results were presented in tables and charts. Analysis of Variance test was also used to compare the mean knowledge score obtained against various age groups, religion, educational status, occupation, socioeconomic status, duration of illness and distance to the hospital. Tables that showed significant association using 95% as a cut point in the two-way association were generated. Other than the tables, data was also presented in summary statements, bar charts and pie charts.

### **Ethical considerations**

Ethics refers to a system of moral values that are concerned with the degree to which research procedures, with regard to their adherence to professional, legal and social obligations to the research participants are observed (Polit & Beck, 2014). In order to make sure those participants' rights were not violated in any way during the research period, proposal was submitted for ethical

review and approval at College of Medicine Research and Ethics Committee (COMREC) and a certificate for approval was given (Appendix 7). Permission to conduct research was sought from the Hospital Director at ZCH (Appendix 8) and participants at the ZCH Diabetic Clinic were given written information on the purpose, procedures, risks and benefits of being involved in the study and if understood, a consent form was signed as proof of willingness (Appendix 4).

In this way the respondents' right to information, anonymity and confidentiality, informed consent, self-determination was observed. Their decision was respected even if they decided to leave the study after they had already consented, without negative treatment from the researcher. Respondents participated voluntarily in order to respect their right to make a decision and minimise discomfort as such observing human dignity. Respondents were reassured that anything that was discussed was not to be shared with anyone to ensure confidentiality. Respondents' refusal to participate in the study did not prevent them from getting treatment at any point.

Respondents' numbers were used instead of names on questionnaires and information was kept with the researcher in a secure cabinet in order to maintain anonymity and confidentiality. Respondents were informed that the study will not involve any physical risks; however, any psychological stress experienced due to giving out of personal information would be handled professionally by the researcher or by providing referral for counseling.

### **Limitations of the study**

The study was confined to one hospital; multiple sites could have enriched the data and research findings. A structured questionnaire only was used, but individual in-depth interviews and a checklist on practices could have yielded richer data. These limitations resulted from time and material resource constraints of the researcher as the study was a requirement for the fulfilment of the degree of Master of Science in Adult Health Nursing.

**Plan for dissemination of the findings**

The findings from the study will be disseminated to patients at ZCH Diabetic Clinic, stakeholders and health professionals through meetings. Publication of the findings will be done through research conferences and in peer reviewed journals. Copies of the thesis will be made available to NCDs Department at Ministry of Health, Kamuzu College of Nursing Library, ZCH and Nurses and Midwives Conference room at ZCH.

## CHAPTER 4

### FINDINGS

#### Introduction

This chapter presents findings of DM patients' knowledge, practices and barriers to foot-care at Zomba Central Hospital Diabetes Clinic. The aim of the study was to: describe knowledge, practices and barriers to foot-care among DM patients. The findings are presented as demographic characteristics, knowledge, practices, association of various demographic variables with knowledge and lastly barriers to foot-care among DM patients. The following conventions have been used for presentation of the research findings in this chapter:

- N=total sample
- n= total of sub variables or topics

#### Respondents' demographic characteristics

The demographic characteristics of the respondents which include gender, age, religion, tribe, level of education, marital status, occupation, duration of illness, and distance to the hospital are presented. A total of 81 respondents attending ZCH diabetic clinic, participated in the study. Over half 58.0% (n=47) of the respondents were females and 51.9% (n=42) were aged 45 years and above. It was revealed that 72.8% (n=59) respondents were Moslems, 69.1% (n=56) were married, 49.4% (n=40) attended primary education. There were 39.5% (n=32) who belonged to Yao tribe and 40.7% (n=33) were farmers. Almost 43% (n=43) of the respondents had lived with DM for more than 2 years. Table 1 presents all the findings.

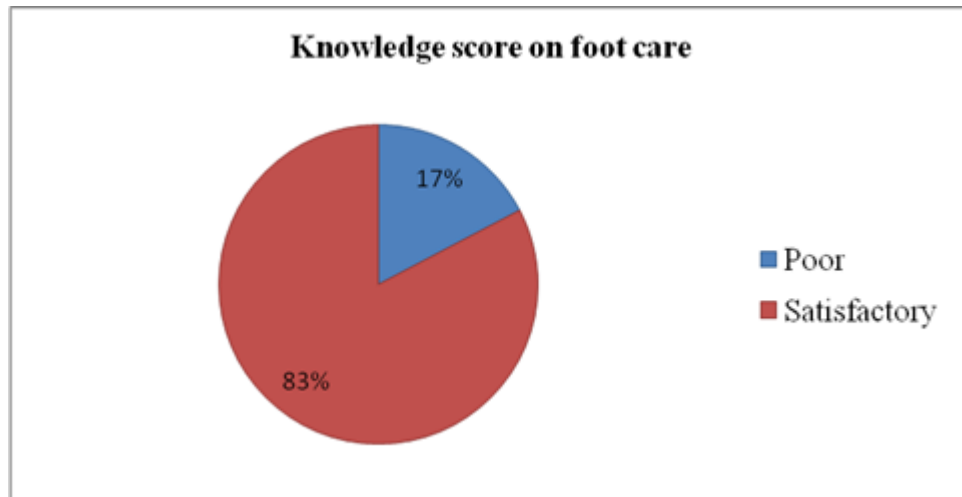
**Table 1: Respondents' Demographic Characteristics (N= 81)**

<b>Characteristic</b>	<b>Frequency (n)</b>	<b>Percentage (%)</b>
<b>Sex</b>		
Male	34	42
Female	47	58
<b>Age (years)</b>		
18 – 24	6	7.4
25 – 34	16	19.8
34 – 44	17	21
45+ years	42	51.9
<b>Religion</b>		
Christian	22	27.2
Moslem	59	72.8
<b>Marital status</b>		
Married	56	69.1
Single	8	9.9
Divorced	7	8.6
Widow	9	11.1
Separated	1	1.2
<b>Educational Level</b>		
Tertiary	3	3.7
Secondary	22	27.2
Primary	40	49.4
Never attended	16	19.8
<b>Tribe</b>		
Yao	32	41
Tumbuka	4	5.1
Chewa	18	23.1
Lomwe	24	30.8
<b>Occupation</b>		
Farming	33	40.7
Civil Servant	7	8.6
Business	22	27.2
Don't work	19	23.5
<b>Duration of illness(years)</b>		
≤ 1	13	16
2	25	30.9
≥ 2	43	53.1

## Respondents knowledge on foot care

### Knowledge score on foot care

The findings have shown that at least 83 % (n=67) had satisfactory knowledge on foot care. Out of 24 questions on knowledge of foot care 67 participants scored above 9. (M=12.73, SD=4.013). See figure 1



**Figure 1: Knowledge score on foot care.**

### Knowledge of respondents on prevention of foot complications

The findings showed that 90.1% (n=73) of the respondents were aware that medication should be taken regularly to prevent complications, 65.4% (n=53) respondents knew that they should look after their feet because they may not feel any foot injury, 75.3% (n=61) respondents knew that they should look after their feet because wounds and infections may not heal quickly.

Out of 81 respondents, 79% (n=64) indicated that DM patients should look after their feet because they may get a foot ulcer. In relation to smoking, 66.7% (n=54) of the respondents indicated that smoking causes poor circulation to the feet; 46.9% (n=38) indicated that DM patients should check their feet at least twice a day.

Out of 81 respondents 79% (n=64) knew that they should go to the hospital if they have redness or a sore on the foot and 75.3% (n=61) stated that herbs should not be applied.

### **Knowledge of respondents on shoe wearing**

Out of 81 respondents 49.4% (n=40) knew that shoes should be worn and 64.2% (n=52) knew that they needed to inspect the inside of the shoe before wearing; 30.9% (n=25) knew that they should put on closed shoes and 59.3% (n=48) seemed to know that shoes should also be worn indoors. In regards to the recommended shoe to put on 44.4% (n=36) of the respondents were able to mention “leather” as recommended shoes and 50.6% (n=41) reported “plastic” as the recommended shoe.

See figure 2



**Figure 2: Knowledge of respondents on recommended shoes.**

### **Knowledge of respondents on socks wear**

In relation to the type of socks respondents should put on, 50.6% (n=41) out of 81 respondents seemed to know that silk socks should not be worn and 32.1% (n=26) mentioned that cotton socks are recommended.

### Knowledge of respondents on toe and nail care

Findings also showed that only 23.5% (n=19) knew that toenails should not be trimmed with a razor blade, 28.4% (n=23) of the respondents seemed to know that one can use a mirror to check the feet

Overall, the mean pass rate on knowledge on foot care was found to be 53.2%. Figure 3 presents knowledge of respondents on different attributes on foot care.

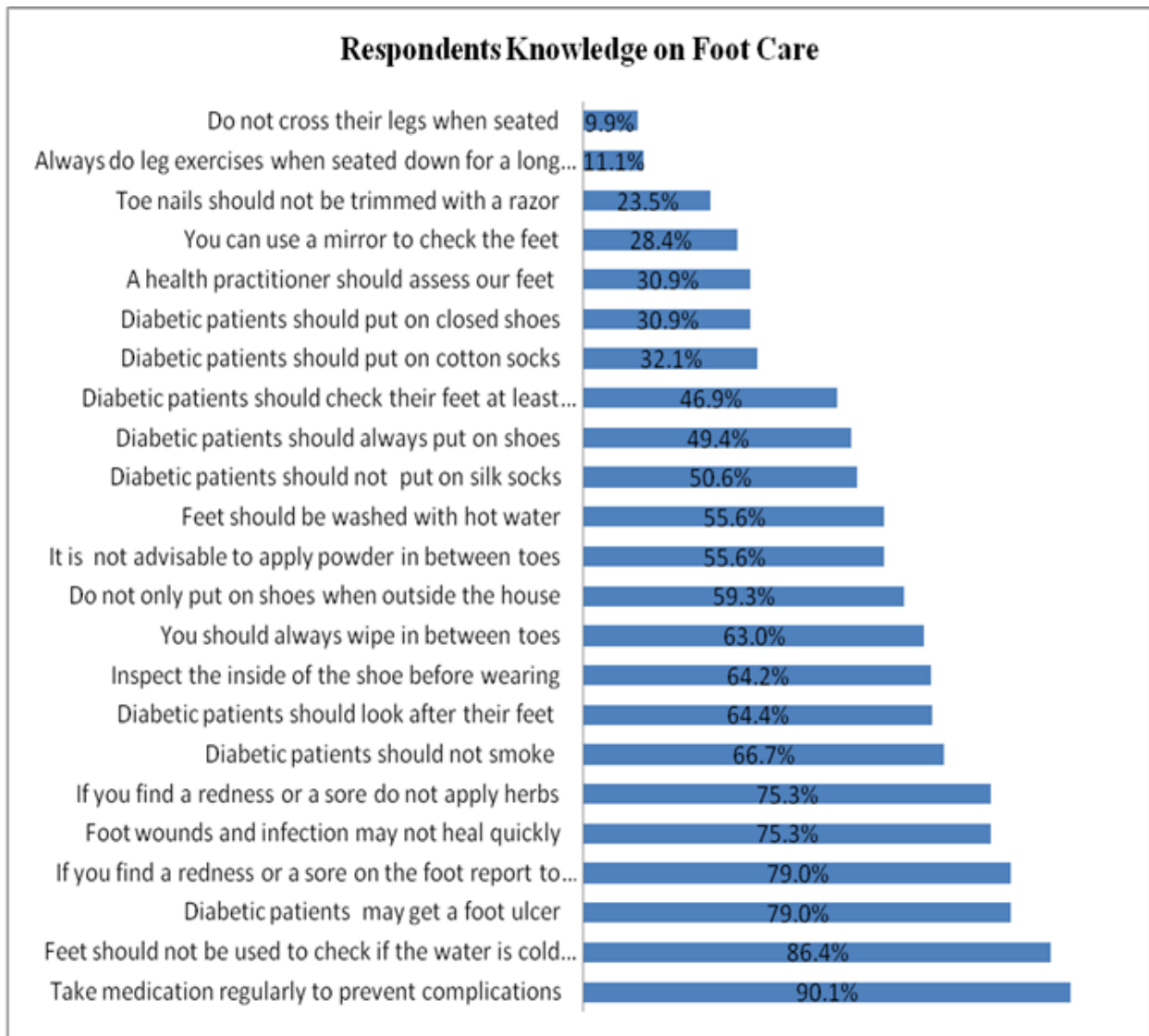
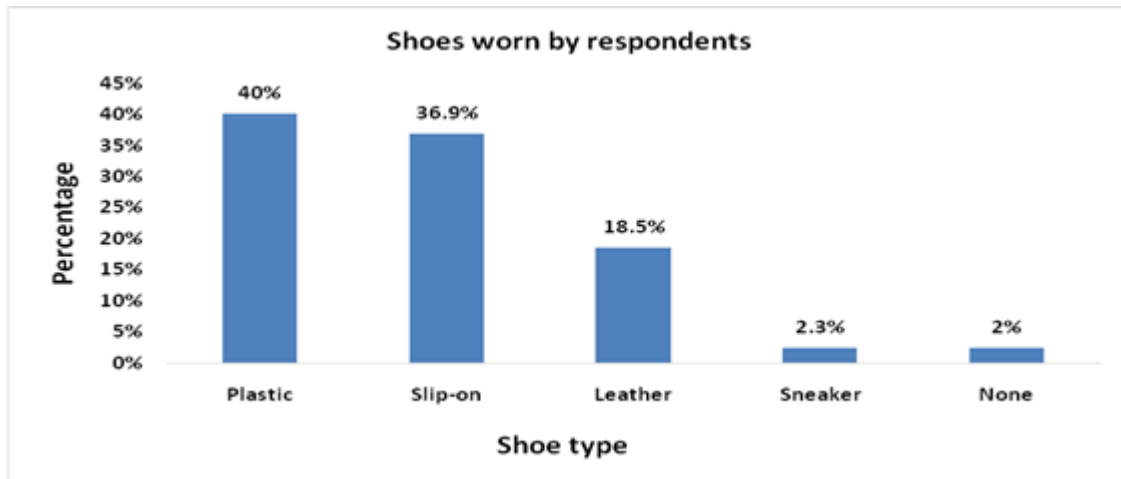


Figure 3: Respondents Knowledge on Foot Care

### Respondents' practices on foot care and shoe wearing

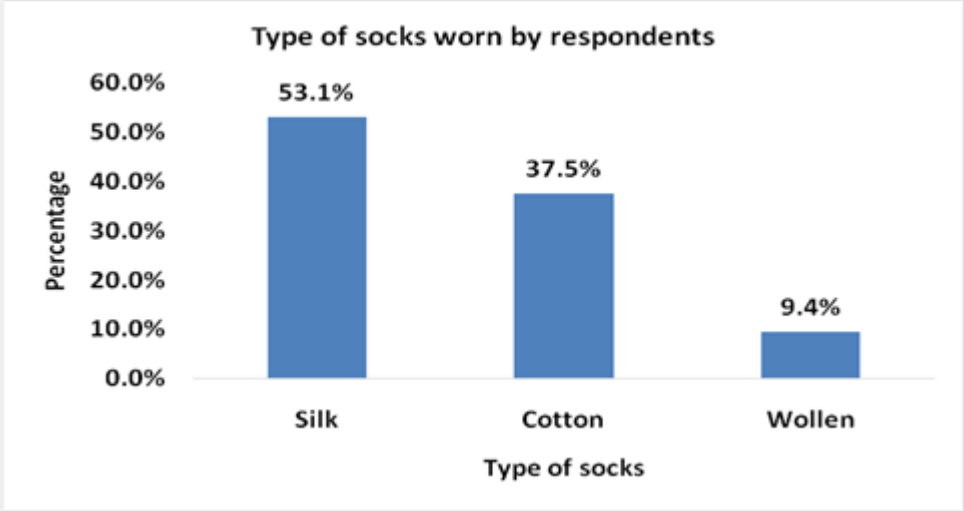
Out of 81 respondents 18.5% (n=15) did not walk barefoot while 81.5% (n=66) walked bare foot; 50.6% (n=41) checked inside the shoe before putting it on; 9.9% (n=8) of the respondents did not put on open shoes; 40% (n=52) did put on plastic shoes; 18.5% (n=24) did put on leather shoes; 2.3% (n=3) did put on sneakers; 36.9% (n=48) did put on slip-ons. See figure 4



**Figure 4: Shoes worn by respondents**

### Practice of respondents on use of socks

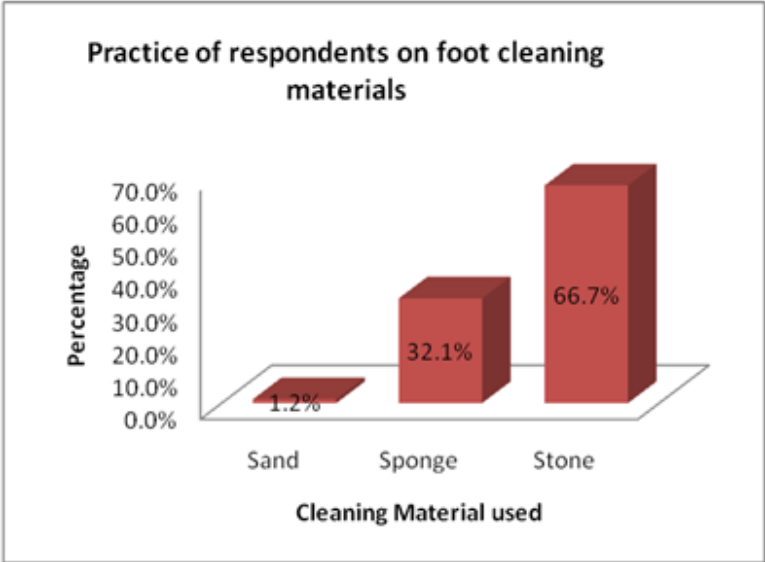
In regards to use of socks among respondents 40.7% (n=33) agreed they did put on socks, and males (28.4%, n=23) used socks more than females 12.3% (n=10); 53.1% (n=17) put on silk socks; 37.5% (n=12) put on cotton. See figure 5



**Figure 5: Type of socks worn by respondents**

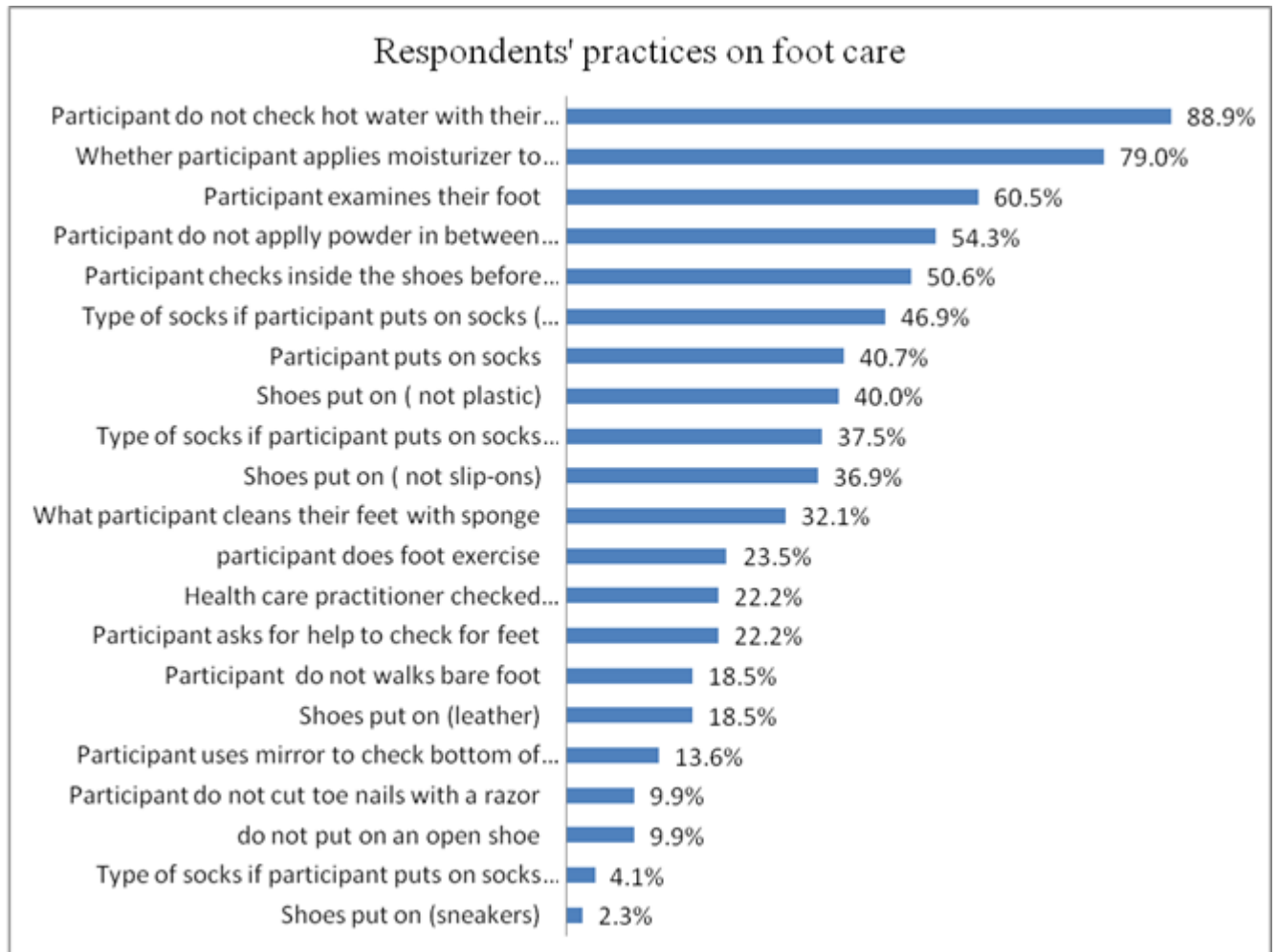
**Respondents’ practices on nail care and cleaning of the feet**

In regard to nail care, only 9.9% (n=8) did not use razor blades to trim toe nails. Out of 81 respondents 32.1% (n=26) used sponge and 66.7% (n=54) used a stone for cleaning the feet. See figure 6.



**Figure 6: Practice of respondents' on cleaning material**

On average, about 33% of the respondents displayed correct practices on foot care. Figure 7 summarizes the findings of respondents on foot care practices.



**Figure 7: Respondents' practices on foot care**

**Association between demographic variables and practices on foot care**

An analysis of variance (ANOVA) was used to determine if there were significant differences between the demographic variables and mean scores in knowledge on foot care.

The findings of the study showed significant mean differences within the groups of duration of illness ( $F=3.75, p=0.02, df=3$ ) and occupation ( $F=5.22, p=0.002, df=3$ ). The study further revealed that for those with less than a year in duration of sickness had a lower mean in knowledge on foot

care M=10.31 which was significantly lower compared to other group means at M=12.44 and 13.63 for 2 years and more than 2 years respectively. Similarly, in occupation, civil servants demonstrated a high mean score (M=17.00) in comparison to other group means at M=12.85, 13.05, and 10.58. This is also reflected in the association table 2

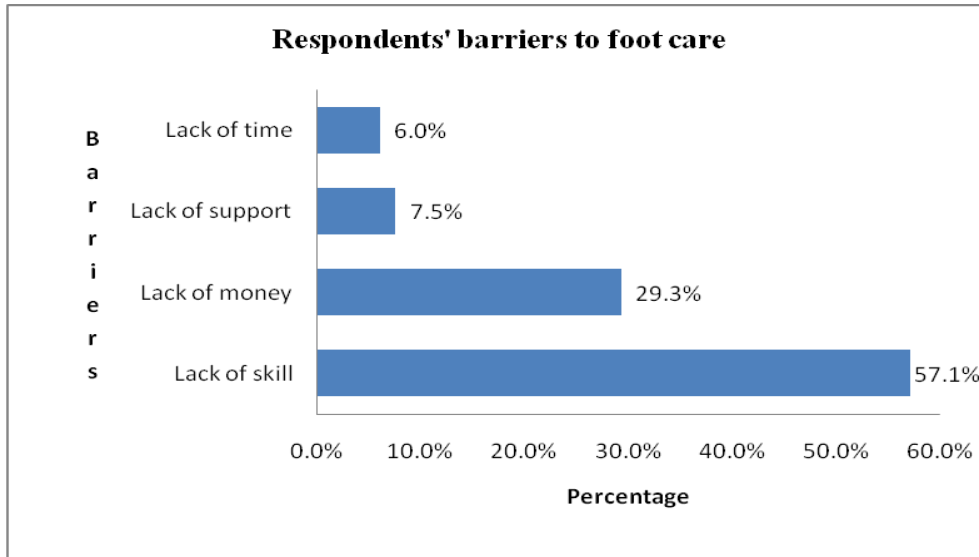
**Table 2: Association of Demographic Variables and Knowledge on Foot Care**

<b>Demographic variable</b>	<b><i>F</i> value</b>	<b><i>df</i></b>	<b><i>P</i></b>
<b>Age</b>	1.03	3	0.38
<b>Religion</b>	0.19	1	0.67
<b>Duration of illness</b>	3.75	2	0.02
<b>Gender</b>	0.33	1	0.569
<b>Tribe</b>	1.12	3	0.34
<b>Marital status</b>	0.57	4	0.683
<b>Level of education</b>	1.12	3	0.35
<b>Occupation</b>	5.235	3	0.002

**Note.** *df*: degree of freedom. **F**: f-ratio, variance of group means

### **Respondents' barriers to foot care**

Respondents were asked about their barriers to foot care. Some of the barriers mentioned by respondents were: lack of knowledge, which was mentioned by 57.1 % (n = 76) followed by lack of money to buy required materials for foot care 29.3%, (n =39). See figure 8



**Figure 8: Respondents' barriers to foot care**

## CHAPTER 5

### DISCUSSION OF FINDINGS

#### **Introduction**

This chapter presents a discussion of the findings of a study that assessed DM patients' knowledge, practices and barriers to foot-care. The study was conducted at Zomba Central Hospital (ZCH) diabetic clinic. The discussion follows study objectives thus: knowledge of respondents on foot-care, practices of respondents on foot care, association of some demographic variables with knowledge and respondents' barriers to foot-care. The limitations of the study and recommendations regarding foot-care among DM patients have also been discussed.

#### **Knowledge of respondents on foot care**

This section discusses knowledge on foot care among respondents on importance of drug compliance, foot assessment and appropriate foot wear.

#### **Importance of taking drugs**

The findings showed that 90.1 % (n=73) of the respondents indicated that it is important to take medication to prevent foot complications. The findings demonstrate that respondents put effort in ensuring intake of medication to prevent complications. This may be attributed to the fact that drug compliance is emphasized more during health education and DM patients feel it is important to do so. In addition, patients might have had repeated health education on importance of taking medication thus at the clinic and at the pharmacy where they got the drugs. This repetition of information might have conveyed the message that drug taking is very important as such they complied with the medication. This should be encouraged. DM patients' adherence to their anti-diabetic medications is an important factor in prevention of undesirable complications such as foot problems. This finding is similar to that of Sutariya and Kharadi (2016) in India who also found

that 90.3% DM patient took their medication to prevent complications. The similarity could be that the majority of the respondents in both studies had DM more than 2 years. It is indicated that with more years having DM, patients seem to know the importance of taking medication to prevent complications because they are exposed to more health education during the frequent clinic visits.

### **Knowledge on complication of DM on the foot**

The findings of this study showed that 74% (n=64) of the respondents had knowledge that they can develop an ulcer on the foot as a complication of DM and feel no pain. This indicated that DM patients had knowledge. This could have been emphasized to them at the clinic, or they could have read about it or they might have seen someone having the complication of DM. It should be indicated that having knowledge regarding disease and its complications has significant benefits to decreasing complications associated with the disease (Beiranvand et al., 2015). This finding is consistent with that of Otene et al. (2015) who also found that 84 % of DM patients had knowledge that DM is associated with feet complication. The similarities might be due to the similarities in the study settings, as both studies were done in teaching hospitals. A teaching hospital provides medical education and training to future and current health professionals. As such, they might have materials that aid in health education to DM patients.

### **Foot assessment**

In the present study, 79% (n=64) respondents knew that they should check the feet daily for any abnormalities. This means that respondents had knowledge that feet should be checked for any abnormalities daily. This may be related to the fact that most respondents had DM for more than 2 years as such they had several health education sessions at the facility. Duration of DM might indicate that DM patients had multiple visits to the clinic. As such they had repeats of the same message. However, this does not mean that those with less than 2 years of DM had less knowledge.

Regardless of the duration of illness, DM patient's health education emphasize on checking of the feet daily. In line with the finding, Qadi and Al Zahrani (2011) in Saudi Arabia found 74.4 % of DM patients being aware that feet should be checked. The reason for the similarities could be that in both studies most respondents had DM for more than 2 years; as such they had information on the importance of foot assessment in DM patients.

### **Foot wear**

The current study also found that 59.3% (n=48) of the respondents knew that shoes can be worn outdoors only. This could be because foot wearing indoors is deemed unhygienic in most Malawian homes. However, this puts a risk of developing foot sores as injuries to the foot can also happen inside the house. Therefore, patients with DM should be warned about the chances of injury and an ulcer associated with walking barefoot even indoor. These results differ from Sutariya and Kharadi (2016) study in India where it was found that 92.2% of the respondents knew the importance of wearing shoes both indoor and outdoor. The difference may be explained by the difference in the populations and the cultures among the respondents. Literature indicates that differences in population, culture, race, and ethnic background may affect the pattern of knowledge among DM patients (Bartolo et al., 2013).

Another finding was that only 30.9 % (n=25) of respondents knew that closed shoes are recommended compared to open shoes. This means that respondents had knowledge that open shoes are recommended. This may be so as open shoes are fashionable considering that most respondents were females. In addition, it might indicate that DM patients lack knowledge on the recommended shoe style as they are not taught at the clinic. With such lack of knowledge, it might mean that when buying shoes, open ones may be preferred. This increases the chance of getting foot ulcers as open shoes increases the risk of injury to DM patients than closed shoes. Contrary

to this finding, Sutariya and Kharadi (2016) found that only 23.3% of the respondents knew the recommended shoe style. Most of the study respondents were males, compared to the current study. Therefore, it can be stated that preferences of shoe type among DM patients depend on the gender of the patient's preferences, financial capacity and comfortability of the patients. It should be indicated that closed shoes are recommended among DM patients.

Despite having good knowledge on some aspects of foot care, respondents in the current study did not know on the recommended shoe type for DM patients. 50.6 % (n=41) of the respondents reported that the recommended shoes to put on is plastic compared to leather shoes. This could be related to the fact that most DM patients' that attended the clinic were of low economic standing, therefore, could not afford to buy leather shoes which are more expensive. As such, they are taught to buy any shoe as long as they are not walking barefoot. However, it should be emphasized during health education that the recommended shoes are leather and benefits of leather shoes to plastic should be taught so that patients have broader knowledge hence they can make informed decision on their own. This finding concurs with Solan et al. (2017) who found that only 40% of study respondents had knowledge on recommended shoes in DM patients. The similarities in the finding may be linked to the education level, and economic status because in both studies most respondents were illiterate and of low economic status. Most Malawians live below the poverty line Government of Malawi (2016) and cannot afford the recommended leather shoes. As such they are encouraged to buy shoes they can afford instead of walking barefoot. Illiteracy imposes significant challenges to foot care attentiveness and unavailability of proper resources which increases the risk of foot complications. This is so because patients are less likely to afford and or comprehend the health education taught in the clinics.

### **Association of knowledge and some demographic variables**

The findings of this study have also shown that duration of illness was significantly associated with knowledge of foot care ( $F=3.75, p=0.02, df=3$ ). This finding is similar to a study in India by George et al. (2013) who also found that duration of illness was associated with knowledge of foot care. This could be attributed to multiple visits by DM patients to the health care facility with longer duration of illness which exposed them to more patient education. In both studies DM patients had multiple visits to the health care facility. As such, this made them to be more knowledgeable on foot-care. However, this finding is in contrast with that of Muhammad-Lutfi et al. (2014) in Malaysia who found no association between knowledge and duration of illness. This may be due to geographical factors, and educational level differences among the respondents in the studies. In western countries patients are literate and receive adequate information from the readings and the experiences from the long duration of illness (Dinesh, Kulkarni, & Gangadhar, 2016).

However, continuous health education is still needed to reinforce information given to DM patients in the health facilities. Furthermore, occupation of respondents showed significant association with knowledge on foot care ( $F=5.22, p=0.002, df=3$ ). Civil servants showed to have more knowledge with a mean score of 17 compared to the other groups. The finding is comparable with that of Hellenberg and Thunberg (2013) and Dikeukwu and Omole (2013) who found that civil servants had more knowledge on foot care than the others. This might be attributed to the fact that most civil servants have attended education to secondary level and are exposed to more information than others. People with a higher education level are more likely to read and to obtain information regarding foot care from other sources apart from the hospital. These findings indicate that occupation and education of DM patients has an influence of foot-care practices.

### **Practices of respondents on foot-care**

The current study found that only 26.6% (n=21) of the respondents had good practice on foot care. This shows that respondents did not follow the recommended foot care practices. This might be related to the fact that respondents lacked time, skills and also resources to do foot care. In addition, this is a reflection of poor application of knowledge into practice because in the same study results showed that respondents had good knowledge score of 82.7% on foot care. This may be attributed to the fact that demonstrations on how to do foot care were not done by health workers at the diabetic clinic. This finding is similar to what (Bartolo, Mizzi, & Formosa, 2013; Chiwanga & Njelekela, 2015; Magbanua & Lim-Alba, 2017) found, that the practices on foot care among DM patients was poor despite having good knowledge on foot care. The similarity could be attributed to the fact that all the studies involved respondents from urban and rural areas and utilised interviewer administered questionnaires.

### **Respondents' practices on examination of feet**

This study showed that respondents daily inspected their feet, 60.5 % ( n=49) of the respondents examined their feet. This might be due to the fact that most respondents were Moslems. The religion teaches them to wash the feet frequently when visiting the mosque for prayers. These practices help DM patients to inspect their feet and clean them in the process. This practice should be encouraged as it helps to identify sores and any abnormality in the foot, hence timely management and prevention of complications. This finding is similar to that of Solan et al. (2017) who found that 90% of the respondents inspected their feet. The similarity between the studies could be due to religion of the respondents in the studies. Contrary to the current finding, in India, Dinesh et al. (2016) found that only 0.5% of the respondents inspected their feet. The difference in the findings may be due to the differences in the sample sizes and study sites. .

## **Foot wear practices among respondents**

### **Shoes**

While shoes should be examined for softness, tightness and objects that may cause skin punctures, in this study only 50.6% (n=41) of respondents reported not regularly inspecting their shoes. This might be related to the fact that respondents lack time to do so, or they have not mastered the routine of doing so before wearing the shoes. However, such practices increase the risks of being pricked by objects in the shoes which can cause foot sores. Therefore, it is the responsibility of health workers to highlight to patients on the importance of checking the shoes even if sandals are worn. In addition, they have to be encouraged to make this as a routine and do it on daily basis. In addition, most respondents may not have checked their shoes because most of the respondents in the study were elderly. This might mean that they forgot to do or might have difficulties to inspect the shoes due to biological changes in the body either mentally or physically. This finding is similar to that of Magbanua and Lim-Alba (2017), who found that 69 % of the respondents did not regularly inspect their footwear. The similarity could be due to the fact that the study populations were of similar age groups; most of the respondents were elderly, above 45 years. As such this group of people would require assistance from close relations to help them in their day to day foot care practices.

Finding of the current study showed that walking barefoot is a common practice among DM patients. This was seen in 81.5% (n=66) of the respondents. Cultural practice of walking barefoot in most homes and on special occasions such as funerals might contribute to the practice of walking barefoot inside and outside of the house. This suggests that DM patients at ZCH are at risk of foot injuries which might delay in healing leading to amputation. The finding was contrary to Sutariya and Kharadi (2016) who found that 85% of the respondents wore shoes. The differences in the

finding could probably be attributed to differences in the study populations, culture and economic status.

The finding was in contrast to that of Solan et al. (2017) study as well, probably attributed to differences in study setting and educational level. The current study found that respondents used inappropriate, non-protective foot wear such as plastic shoes reported by 40% (n=52) of the respondents and sandals 36.9% (n=48) than the recommended shoes. This indicates that the use on non-protective wear was common among DM patients. The finding concurred with findings in Malta by Bartolo et al. (2013) where 39.0 % of the respondents reported to put on sandals. The finding might be similar because most respondents in both studies were female and the shoes stated are fashionable and attractive than leather and closed ones. Furthermore, the preference to inappropriate foot wear is because their cost effective and commonly found.

### **Socks**

The present study showed that 59.3 % (n=48) of respondents did not put on socks. The results might be because most of the study participants were females. As such, wearing socks could be viewed unattractive. However, among those who reported that they wore socks, 53.1% used silk socks, which are not recommended. This could be related to the fact that silk socks are readily available in store, especially in China shops which have dominated the market industry in Malawi. On the other hand, silk socks are cheaper compared to the recommended cotton and wool socks. However, the use of silk socks should be discouraged as this might restrict aeration of feet and retain moisture which might cause fungal infections, thereby contributing to foot sores.

The finding is similar to Hellenberg and Thunberg (2013) who found that 67 % of the participant never wore socks. The similarities could be that in both studied females were more than males.

However, in Hellenberg and Thunberg (2013) study 93% reported not to wear silk socks. This could be due to the differences in study settings, and socio economic status in the studies.

### **Foot cleaning practices**

The study found that respondents used undesirable foot cleaning and nail care practices. 90.1% (n=73) of the respondents used razor blade to trim toe nails and 66.7% (n=54) used stones to clean the feet. The above mentioned practices increased the risk of developing cuts on the feet especially if they had peripheral neuropathy.. Stones are mostly used for cleaning in the feet in most Malawian household since they are cheap and readily available. Furthermore, most respondents were farmers and could be argued that their feet got very dirty thus why they opted to clean with a stone, an effective way to clean feet. While, razor blades were commonly used because they were also cheap. In addition it could be lack of knowledge on how to use nail cutters which are safer.

The finding is similar to what Chiwanga and Njelekela (2015) in Tanzania found that risky behaviours, such as cutting toenails with sharp instruments (razor blade or knife) by over 80 % of the respondents. The similarity could be due to settings, populations, poverty, cultural and education levels as both studies were done in Africa.

### **Respondents barriers to foot care**

The findings of the study have shown that 57.1% (n=71) of the respondents reported lack of skill and 29.3% (n=39) reported lack of finance to buy necessary material for foot care as barriers to foot care. These findings are in line with a study from Nigeria were 33% of the respondents mentioned lack of skill and 5.7% reported lack of finance as barriers to foot care (Desalu et al. 2011). Lack of skills predisposed them to doing practices that are not recommended or not even doing foot care practices. Furthermore, lack of finances predisposed them to buying cheaper and readily available materials for foot care such plastic shoes. This might be related to the fact that

most DM respondents were unemployed. Because of that, any money that was found might be used on necessities such as food rather than on luxuries such as nail cutter.

The current study also found that 7.5% (n=10) reported lack of support from family members as a barrier to foot-care. Lack of support was reported as one of the barriers because DM is a chronic illness, as such members of the family might experience tiredness in helping with the care tasks which might be involving such as foot examination. The foot is deemed to be unhygienic mostly and asking for help in foot examination may not yield a positive answer. This finding is similar to that of Seid and Tsige (2015) in Ethiopia who also found that 6.8% (n=11) of the respondents reported lack of support from family members as a barrier to foot care. This similarity could be explained by the similarity in population, design and setting of the studies.

However, the barriers found in the current study differ from those of Guell and Unwin (2015) in Caribbean nation of Barbados who listed respondents' past experience on foot-care and health workers' prioritization of controlling blood sugar levels as barriers to foot care. These findings differ because of the differences in the designs, one was quantitative and the other one was qualitative.

## **Conclusion**

In conclusion, the current study found that respondents had knowledge on foot-care. However, the knowledge was not translated into practices because practices on foot-care were poor. Risky behaviors on foot-care were reported by respondents. The respondents listed lack of money to buy necessary equipment for foot-care and lack of support from family members as barriers to foot-care.

## **Recommendations**

Recommendations have been made to improve DM patient care and management under practice and research.

## **Practice**

- Health care workers need to demonstrate to DM patients on how foot care should be done during the clinic days.
- Health care workers need to intensify information, education and communication be given to DM patients on foot care. For example making sure that they are present at the clinic when patients are teaching each other and also having one to one teaching sessions on foot care.
- Health care workers need to educate and show DM patients alternatives on foot cleaning, such as use of a sponge which is soft and not abrasive.

## **Research**

The following aspects require further research:

- Qualitative research should be conducted to understand entailed information about attitudes and practices on foot care among DM patients.

- Knowledge on DM patients' foot care, complications and management should be researched among health care workers' perspectives regarding the type of information they give DM patients at the clinic.
- Prevalence of diabetes among muslims.

### **Limitations of the study**

- This study was conducted in government health facility at ZCH and did not include patients who attended private clinics. It cannot be assumed that the responses expressed by respondents' in this study would be similar to those attending private clinics. The sample was not representative of all DM patients in the district hence generalization of the findings would be difficult. The quantitative design only was used, inclusion of qualitative design could have enriched the data.
- One site was used; multiple centers could have provided richer data.

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**APPENDICES**

**Appendix 1: English Questionnaire: Assessing knowledge, practices and barriers to foot care among diabetic patients at Zomba Central Hospital, Malawi**

Date of interview..... Participant’s number.....

Starting time..... Finishing time.....

**Instruction: Circle the right answer**

**Section A: Demographic Data**

1A. Gender

- 1. Male
- 2. Female

2A. How old are you?

- 18-24
- 25-34
- 35-44
- 45+ years

3A. What is your Religion?

- Christian
- Moslem
- 8. Other (specify).....

4A. What is your marital status?

- Married
- Single
- Divorced
- Widow
- Separated

5A. How far have you gone with your education?

- Tertiary level
- Secondary level
- Primary level
- Never attended

6A. What is your tribe?

- Yao
- Chewa
- Tumbuka
- Lomwe

8.

(Other).....

7A. What is your occupation?

- farming
- I don't work
- Civil servant
- 8. Others (specify).....
- Business

8A. How many years have u had Diabetes?

- Less than 6 months
- 2 years
- 1 year
- 2 +years

9A. Do you smoke tobacco?

- Yes
- No

**Section B: Knowledge on Diabetes and foot care**

1B. Diabetic patients should take medication regularly to prevent complications?

- Yes
- No

2B. Diabetic patients should look after their feet because they may not feel a minor injury to their feet?

• Yes

• No

3B. Diabetic patient should look after their feet because wounds and infection may not heal quickly?

• Yes

• No

4B. Diabetic patient should look after their feet because they may get a foot ulcer?

• Yes

• No

5B. Diabetic patients should not smoke because smoking causes poor circulation and affects the feet?

1. Yes

2. No

6B. Diabetic patients should check their feet at least twice a day?

1. Yes

2. No

7B. If you find a redness or sore on the foot report to the hospital?

1. Yes

2. No

8B. If you find redness or sores on the foot apply herbs?

1. Yes

1. No

9B. Feet should be washed with hot water?

i. Yes

ii. No

10B. Feet should be used to check if the water is cold or hot?

1. Yes

2. No





1. Yes

2. No

3C. What types of shoes do you put on?

1. Plastic. Yes No

4. Slippers. Yes No

2. Leather. Yes No

3. Sneakers Yes No

5. I don't put on shoes.

4C. Do you put on an open shoe?

1. Yes

2. No

5C. Do you check inside the shoes before wearing them?

1. Yes

2. No

6C. Do you apply powder in between the toes?

1. Yes

2. No

7C. How often do you do feet exercise?

1. Never

2. Once a day

3. More than one time

8C. Do you check hot water with your leg?

1. Yes

2. No

9C. Do you use a mirror to check bottom of the feet?

1. Yes

2. No

10C. Do you ask for help to check the feet?

- 1. Yes
- 2. No

11C. Do you cut your toe nails with a razor?

- 1. Yes
- 2. No

12C. What do you clean your feet with?

- 1. A sponge
- 2. Stone
- 3. Sand
- 8. Other (specify).....

13C. Do you apply moisturizer on your feet?

- 1. Yes
- 2. No

14C. Do you put on soaks?

- 1. Yes
- 2. No

15C. What type of soaks do you put on?

- 1. Silk Yes No
- 2. Cotton Yes No
- 3. Wool Yes No
- 4. I do not put on socks



**Appendix 2: Mafunso mu Chichewa: Kafukufuku okhudza zomwe anthu odwala mtenda ya shuga amadziwa ndi zomwe amachita posamalira mapazi**

Tsiku lakafukufuku..... Nambala ya otenga mbali.....

Nthawi yoyambira..... Nthawi yomalizira.....

**Langizo: chongani poyenera**

**GAWO LOYAMBA : Mbiri yaotenga mbali mukafukufuku**

1A. Ndinu

1 Mamuma 2.mkazi

2A. Muli ndi zaka zingati ?

- 18-24
- 25-24
- 35-44
- Kuposa45

3A. Ndinu a chipembezo chanji?

- khilisitu
- Chisilamu
- 8. Zina (nenani).....

4A. Umoyo wa pa banja

- Sindinakhalepo pa banja
- wapabanja
- Banja linatha
- wosiyidwa

5A. Sukulu munafika nayo pati?

- Pulayimale
- Sekondale

- Koleji
- sinapiteko

6A. Ndinu a mtundu wanji?

- Yao
- Chewa
- Tumbuka

- Lomwe
- 8. Tchulani.....

7A. Mumayenda mtunda okula bwanji kuchokera kwanu kudzafika kuchipatala kuno?

1. 1 -3 kilomita
2. 4-6 kilomita

3. 7-9 kilomita
4. kuposa 9 kilomita

8A. Mumagwira ntchito yanji ?

- Ulimi
- Wogwira muboma
- Bizinesi

- Sindimagwira ntchito
- 8. zina( tchulani).....

9A. Mwakhala ndi mtenga ya Shuga kwa zaka zingati ?

- Kochepera miyezi 6
- Chaka chimodzi

- Zaka ziwiri
- Kuposa zaka ziwiri

10A. Mumasuta fodya?

- Eya
- Ayi

**GAWO LACHIWIRI: Zomwe mumadziwa sokhuzana mateda a shuga ndi kasamalidwe ka mapazi**

1B. Kodimunthuwodwalamatenda a shugaamayenerakumwamakhwalamwandondomeko pofuna kupewa zovutazomwe zimadza ndimatendawa?

- Eya
- Ayi

2B. Kodimunthuwodwalamatenda a shugaamayenerakusamalira mapazi awo?

- Eya
- Ayi

3B. Kodimunthuwodwalamatenda a shugaamayenerakusamaliramapaziawochifukwazilondazakumapazizimachedwakupola?

- Eya
- Ayi

4B. Kodi munthuwodwala matenda a shugaakuyenerakusamaliramapaziawochifukwaathakukhalandichilondakuphazi?

- Ayi
- Eya

5B. Kodi munthuodwalamatenda a shugaamayenerakusutafodya?

- Eya
- Ayi

6B. Kodi munthuodwalamatenda a shugaakuyenerakuonamapazikoposakamodzi pa tsiku?

- Eya
- Ayi

7B. Kodi munthu odwala matenga a shuga amayenera kupita ku chipatala akaonachilondakapenakufiirakuphazi?

- 1. Eya
- 2. Ayi

8B. Kodi munthu wodwala shuga akuyenera kupaka mankwala a chikuda akaona chilonda kapena kufiira kuphazi?

- Eya
- Ayi

9B. Kodi madziotenthaazigwiritsidwaposukamapazi?

- Eya
- Ayi

10B. Kodi mapaziazigwiritsidwantchitopofunakudziwangatimadzialiotenthakapenaayi?

- Eya
- Ayi

11B. Kodi munthuodwalashuga amayenera kuvala ansapatonthawi zonse?

- Eya
- Ayi

12B. Kodi munthuodwala Shugaamayenerakuvalansapatozotani?

- Zachikopa
- masilipasi
- Zapulasitiki
- zilizonse

13B. Kodi munthuodwalashugaakuyenerakuvalansapatoakakhalakubwarobasi?

- Eya
- Ayi

14B. Kodi munthuodwalashuga amayenerakuonamkatimwansapatoasana valenthawi zonse?

- Eya
- Ayi

15B. Kodi munthuodwalashuga amayenerakuvalansapatozotsekaphazi?

- Eya
- Ayi

16B. Kodi munthuodwalashugaakuyenerakuvalamasokosioterera?

- Eya
- Ayi

17B. Kodi munthuodwalamatenda a shuga amayenerakuvala masokosiansaluyakotoni?

- Eya
- Ayi

18B. Kodi munthakugwiritsantchitokalilolepoonerakunsikwamapazi?

- Eya
- Ayi

19B. Kodi mukuyenerakupakapawudalapakatikati padzalazakumapazi?

• Eya

• Ayi

20B. Kodi dzalazakumapazizikuyenerakupuputidwamokwanira?

• Eya

• Ayi

21B. Kodi munthuodwalamatenda a shugaamayenerakuyikamwendowinapamwamba pa nzake akakhala pansa?

• Eya

• Ayi

22B. Kodi munthuodwalashuga

amayenerakusunthasunthamiyendongatiwakhlapansikwanthawiyayitali?

• Eya

• Ayi

23B. Kodi dzikhadabozadzalazakumapazizikuyenerakudulidwandilezala?

• Eya

• Ayi

24B. Madotolo akuyenerakuonamapaziamunthuodwalashugakamodzi pa chakakapenapakakhalavuto

• Eya

• Ayi

## **GAWO LACHITATU: Machitidwe pa kasamalidwe ka mapazi**

1C. Kodimumawonamapazianu?

1.Eya • Ayi

Ngatieya mumawawonakangati pa tsiku?

4. Kamodzi pa tsiku

6. Koposa kawiri pa tsiku

5. Kawiri pa tsiku

Ngatiayi, chifukwachanisimutero?

• Ndizovuta

• Ndilibenthawi

• Sindimatha

8.zina(tchulani) .....

2C. Mumayendamusanavalensapato ?

• Eya

• Ayi

3C. Mumavalansapatozotani?

• Zapulasitiki. Eya Ayi

• Za nsalu Eya Ayi

• Zachikopa Eya Ayi

• Ma silipazi Eya Ayi

• Sindimavala nsapato

4C. Mumavala nsapato zotsegula?

1. Eya

2. Ayi

5C. Mumaona mkati mwa nsapato musanavale?

• Eya

• Ayi

6C. Mumapaka pawudalap akati pa dzalaza kumapazi?

- Eya
- Ayi

7C. Mumayendetsayendetsa miyendo mukakhalitsa pansi?

- Ayi
- Eya

8C. Mumagwiritsa ntchito mapazi pofuna kudziwa ngati madzi akutentha?

- Eya
- Ayi

9C. Mumagwiritsa ntchito kalilole poona kungsi kwa mapazi?

- Eya
- Ayi

10C. Mumafunsachithandizongatimufunakuonamapazingatikulichilondakapenakuifiila?

- Ayi
- Eya

11C. Kodimumagwiritsalezalapodulazikhadabozadzalazakuphazi?

- Eya
- Ayi

12C. Mapazianumumagwiritsantchitochanipowatsuka?

- Chinkhupure
- Mchenga
- Mwala
- 8. Tchulani.....

13C. Mumapakamafutamapazianu ?

- Eya
- Ayi

14C. Mumavala ma sokosi?

- Eya
- Ayi

15C. Mumavala ma sokotosiotani?

- OteleraEya Ayi
- a kotoni Eya Ayi
- oluka Eya Ayi
- sindimavala

16C. Adotoloanakuyenzani / kuwonamapazianu?

- Eya
- Ayi

Ngati eya, anakuyezani/kuwona kangati?

- Kamodzi
- Kawiri
- Kuposelakawiri

### **GAWO LA CHINAYI: Ziphinjo zokulrtsani kusamala mapazi anu**

1D. Mukuonangatzokhomazomwe mumakumananazopofunakusamalamapazianundichani?

1. Kusaziwa momwe mapazi amayenera kusamalidwa. Eya Ayi
2. Kusaphunzitsidwandianthu a chipatala. Eya Ayi
3. Kusowandalamazogulirazinthuzobvomerezekapakasamalidwekamapazi. Eya Ayi
4. Kusowanthawi. Eya Ayi
8. Tchulani .....

### **ZIKOMO POTENGA NAWO MBALI MUKAFUKUFUKUYU**

### **Appendix 3: Participants information sheet**

#### **This is a research on “Exploring knowledge, practices and barriers to foot care among patients with diabetes at Zomba Central Hospital, Malawi”**

My name is Evelyn Chibwe, a student at Kamuzu College of Nursing, pursuing Master Degree course in Adult Health Nursing. I am conducting a study on knowledge, practice and barriers to foot care among diabetic patients at Zomba Central Hospital. You are therefore invited to take part in the research study. Before you decide to take part in the research it is necessary that you understand why the research is being conducted and what will be involved. Please ask if you need clarification on anything that is unclear and participation is voluntary

#### **What is the purpose of the study?**

The purpose of the study is to explore knowledge, practice and barriers to foot care among diabetic patients. The findings of the study will help in identification of knowledge and practice gaps in foot care among diabetic patients which may help in developing policies that could strengthen information, education and communication giving on foot care to ensure prevention of diabetic foot ulcers which have been shown to have a great impact on the economy of a country.

#### **Do I have to take part?**

Participation in this study is voluntary. You are free to withdraw at any time if you need to do so. Your refusal to participate will not have any effect on the care to be rendered to you. If you agree to take part you will be asked to endorse your signature and information that you will provide will be confidential and your name will not appear on any questionnaire so as to maintain confidentiality and no one will be able to identify who answered.

**What do I expect as a participant?**

You will be asked some questions related to Diabetes, diabetic foot care , causes, prevention, and barriers of not doing foot care. You will be required to answer the questions truthfully and it will take less than one hour.

**What are the possible risks for taking part?**

There no risk associated with the study

**What are the possible benefits?**

There are no immediate benefits to you, but the study may help in improvement of care given to other diabetic patient's in future through information and assessments.

**Contacts for further information**

If you need further information or you are worried about any aspect of the study, please contact:

**The Study Investigator:** Evelyn Chibwe,

Kamuzu College of Nursing, Private Bag 1,Lilongwe.

Phone: 0999329828; Email: [chibwe2016evelyn@kcn.unima.mw](mailto:chibwe2016evelyn@kcn.unima.mw)

**The Study Supervisor:** Associate Professor M. Mbeba

Kamuzu College of Nursing, P.O Box 415, Blantyre

Phone: 088885764; Email: [marymbeba@kcn.unima.mw](mailto:marymbeba@kcn.unima.mw)

The Secretariat,

College of Medicine Research Ethics Committee

Private bag 360, Blantyre.

Telephone number 01 877 245; Email: [comrec@medcol.mw](mailto:comrec@medcol.mw)



## **Appendix 5: Kalata yofotozoza zakafukufuku**

### **Kafukufuku okhudza zomwe anthu odwala mtenda ya shuga amadziwa ndi zomwe amachita posamalira mapazi.**

Dzina langa ndine Evelyn Chibwe, ophunzira wa pa sukulu ya ukachenjede ya za unamwino ndi uzamba ya Kamuzu College of Nursing. Ndikupanga maphunziro a ukachejede okhudza za umoyo wa anthu akuluakulu. Ngati mbali imodzi yamaphunziro anga, ndimayenera kupanga kafukufuku. Kafukufuku amene ndikupanga ndiwofuna kudziwa maganizo a anthu odwala mtenda ya shuga pazomwe amadziwa, malingaliro awo komanso machitidwe awo posamalira mapazi. Kafukufuku amaneyi adzachitikira ku chipatala chachikulu cha Zomba matsiku omwe kumachitika chipatala cha anthu odwala shuga, lachinai.

Muli kupephedwa kutenga nawo mbali mu kafukufukuyu. Kafukufukuyu wavomelezedwa ndi akomiti yona za research ya Kamuzu College of Nursing komanso college ya madotolo. Mukuyenera kumvetsetsa cholinga cha kafukufukuyu musanapange chisankho cholowa nawo. Ngati chilipo chchina chomwe simunamvetse chokhuzana ndi kafukufuku ameneyu, muntha kufuns. Kutenga nawo mbali pa kafukufuku ameneyu ndi kosaumiriza ayi.

### **Kodi cholinga cha kafukufukuyu ndi chani?**

Cholinga chakafukufukuyu ndikufuna kudziwa maganizo a anthu odwala mtenda ya shuga pazomwe amadziwa, malingaliro awo komanso machitidwe awo posamalira mapazi pa chipatala chachikulu cha Zomba

Pali chikhulupiliro choti zotsatira za kafukufukuyu zizathandiza kudziwa zomwe anthu odwala amadziwa ndi kuchita posamalira mapazi awo ndipo zitha kuthandiza kupeza njira zoyenera zothandizira kuchepesa mtenda ya zilonda za mapazi zomwe zimabwera chifukwa cha shuga.

### **Kodi ndingatenge nawo mbali pakafukufukuyu?**

Ndikufuna kwanu kusankha kutenga nawo mbali mukafukufukuyu kapena ayi. Muli ndi ufulu kufuna kusiya nthawi imene mukufuna ndipo izi sizizasokneza chisamalidwe chanu kapena kulandira thandizo.

Mayankho anu azasungidwa mwachinsinsi ndipo dzina lanu silizalembedwa pena paliponse chifukwa tizagwiritsa ntchito nambala. Mapepala onse azaotchedwa pomaliza pakafukufuku ameneyu.

**Kodi chizachitike ndi chani ngati nditenge nawo mbali?**

Mukavomereza kutenga nawo mbali mukafukufukuyi mudzafunsidwa mafunso okhuzana ndi zomwe mukuziwa za kasamalidwe ka mapazi, mavuto omwe amabwera chifukwa chosamalira mapazi ndi ziphinjo zomwe mumakakumana nazo posamalira mapazi.

Mukupephedwa kuyankha mafunsowa malinga ndi momwe mukudziwira ndi mowona mtima ndipo mafunsowa adzatenga nthawi pafupifupi ola limodzi

**Kodi zovuta zimene zingaoneke potenga nawo mbali ndi ziti?**

Palibe zovuta zodziwika mukatenga nawo mbali mukafukufukuyu.

**Kodi phindu lake ndi chiani?**

Sikuti pali phindu lina lapadera mukatenga nawo mbali. Pali chikhulupiro choti zotsatira zakafukufukuyu zithandathiza kupeza njira zomwe zingathandize kufalitsa ubwino wosamalira mapazi mu anthu a shuga komanso kuti achipatala tingapangepo chani kuti matenda azilonda za kuphazi zomwe zimaza chifukwa cha shuga zichepe.

**Kuti mumve zambiri**

Ngati mufuna kumva zambiri zakafukufukuyu kapena muli ndi nkhawa funsani anthu awa:

**Mwini Kafukufuku:** Evelyn Chibwe,

Kamuzu College of Nursing, Private Bag 1, Lilongwe.

Phone: 0999329828; Email: [chibwe2016evelyn@kcn.unima.mw](mailto:chibwe2016evelyn@kcn.unima.mw)

**Othandizira Kafukufuku:** Associate Professor M. Mbeba

Kamuzu College of Nursing, P.O Box 415, Blantyre

Phone: 088885764; Email: [marymbeba@kcn.unima.mw](mailto:marymbeba@kcn.unima.mw)

**kapena**

The Secretariat,

College of Medicine Research Ethics Committee

Private bag 360, Blantyre.

Phone: 01 877 245; Email: [comrec@medcol.mw](mailto:comrec@medcol.mw)

## Appendix 6: Kalata ya chivomerezo yolowela mukafukufuku

Onenetsani kuti mwawerenga ndi kumvetsetsa zakafukufuku ameneyu musanasayinire

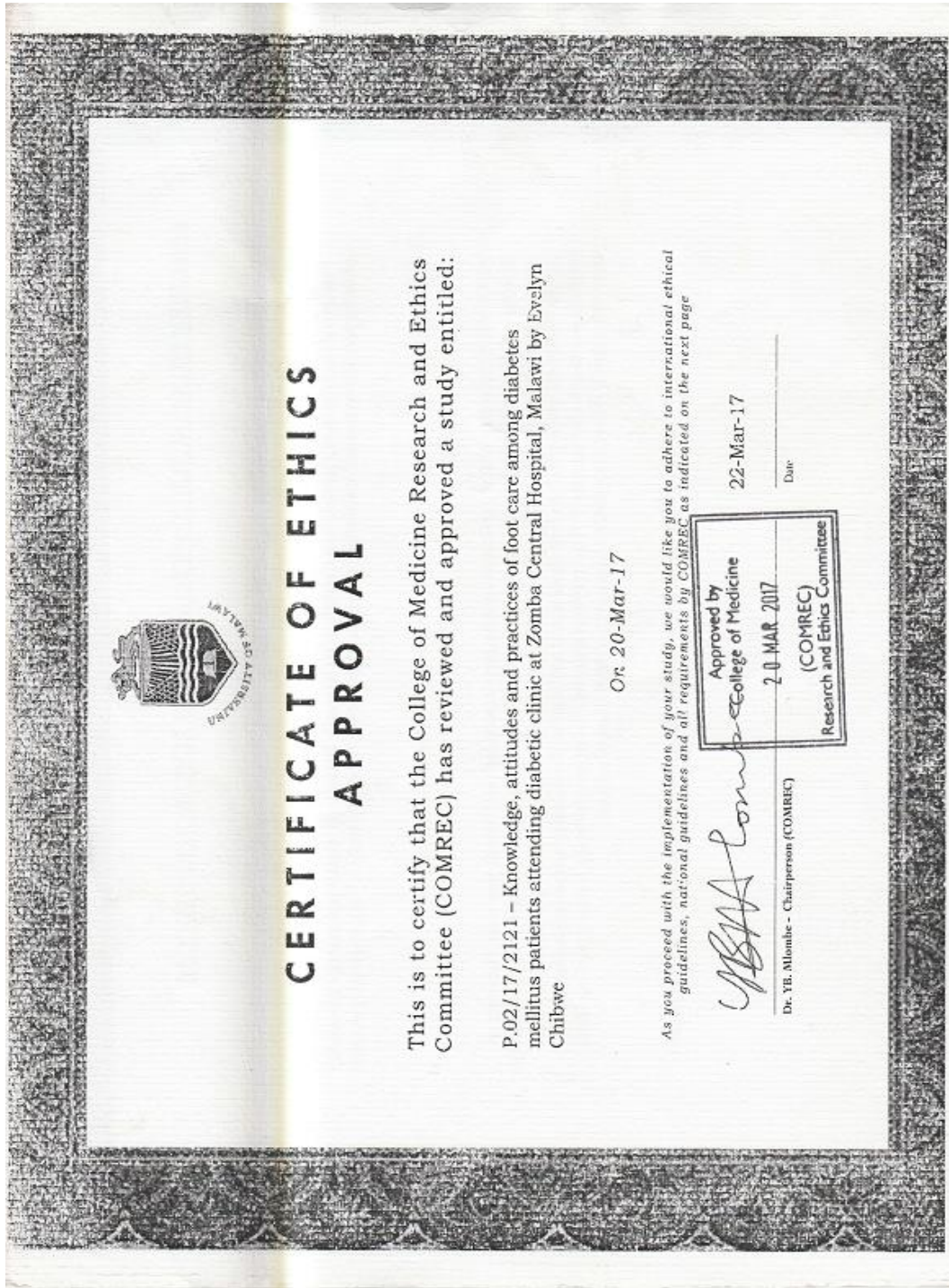
1. Ndawerenga (kapena wina wandiwerengera) kalata yolongosola za kafukufuku ali pamwambayu ndipo ndamvetsetsa cholinga chakafukufukuyu ndizovuta zake. Inde/ Ayi
2. Ndavomereza kutengapo mbali pa kafukufukuyu mosaumirizidwa ndi kufunsidwa mafunso amukafukufukuyi. Ndamvetsa kuti ndili ndi ufulu kusiya nthawi ina iliyonse. Inde/ ayi
3. Ndikuziwa kuti sindiyenera kuvulala kapena kupeza vuto munthawi ya kafukufukuyi, ndipo zomwe ndingayankhule kapena kupereka mukafukufukuyu sizidzanditembenukira. Inde/Ayi
4. Ndikumvetsa kuti zomwe zamukafukufukuyu zizasungidwa mwachinsinsi ndikugwiritsidwa ntchito ndiopanga kafukufukuyi kapena okkuzidwa ndi kafukufukuyi. Inde/Ayi
5. Ndamvetsetsa kuti palibepo phindu la ndalama potenga nawo mbali mukafukufuku ameneyu. Inde/Ayi
6. Ndikudziwa mmene ndikapezere opanga kafukukuyu ngati ndikofunika kuteri. Inde/Ayi
7. Inde ndikuvomereza kutenga nawo mbali mukafukufukuyu. Inde/ Ayi

Dzina la Otenga Mbali Saini Tsiku

.....  
Mboni Saini Tsiku

.....  
Dzina la opanga kafukufuku Saini Tsiku

Appendix 7: Approval Certificate from COMREC



**Appendix 8: Letter requesting for permission to conduct study at ZCH**

Kamuzu College of Nursing

Private Bag 1

Lilongwe

28<sup>th</sup> November, 2016

The Hospital Director

Zomba Central Hospital

P.O Box 21

Zomba

Dear Sir,

**RE: Permission to conduct a study on knowledge, attitudes and practices of foot care among patients with diabetes attending diabetic clinic at Zomba Central Hospital**

I am Evelyn Chibwe, a student at Kamuzu College of Nursing, pursuing Master of Science degree in Adult Health Nursing. In partial fulfillment of the masters' programme, I am required to complete a research project.

I hereby request for approval to conduct a study titled above at your institution. The study will involve diabetic patients attending diabetic clinic on Thursday. It will be conducted between February and March 2017 after approval by COMREC.

Your consideration will be appreciated.

Yours faithfully,

**Evelyn Chibwe**

**Cell:** 0999329828, 0882455988

**Email:** [chibwe2016evelyn@kcn.unima.mw](mailto:chibwe2016evelyn@kcn.unima.mw)

**CC:** The research supervisor

: COMREC

**Appendix 9: Letter of support from the Hospital Director of ZCH**

Telephone: +265 (0) 1 525 816  
Fax: +265 (0) 1 524 538  
E-mail:  
All communications should be addressed to:  
The Hospital Director



*In reply please quote No Ref.....*

MINISTRY OF HEALTH  
ZOMBA CENTRAL HOSPITAL  
P.O. BOX 21,  
ZOMBA

Ref. No.....

21<sup>nd</sup> November, 2016

The Chairman  
College of Medicine Research and Ethics Committee  
P. Bag 303  
Chichiri  
Blantyre

Dear Sir,

**LETTER OF NO OBJECTION**

The Management of Zomba Central Hospital is pleased to inform you that Evelyn Chibwe would like to conduct a study at the facility as a study site and the management has no objection. COMREC approval will allow officer to do the study.

The title of research is "**Knowledge, altitude and Practices of Foot Care among Diabetic patients attending Diabetic Clinic at Zomba Central Hospital**".

Your consideration will be greatly appreciated.  
Thanks in advance

Yours faithfully

Martias Joshua (Dr)  
HOSPITAL DIRECTOR

## **Appendix 10: Letter requesting for permission to conduct a pilot study at KCH**

Kamuzu College of Nursing

Private Bag 1

Lilongwe

20<sup>th</sup> December, 2016

The Hospital Director

Kamuzu Central Hospital

P.O Box 149

Lilongwe

Dear Sir,

### **RE: Permission to conduct a pilot study on knowledge, attitudes and practices of foot care among Patients with diabetes attending Diabetic Clinic at Kamuzu Central Hospital**

I am Evelyn Chibwe, a student at Kamuzu College of Nursing, pursuing Master of Science degree in Adult Health Nursing. In partial fulfillment of the masters' programme, I am required to complete a research project.

I hereby request for approval to conduct a pilot study titled above at your institution. The study will involve diabetic patients attending Diabetic Clinic on Tuesday and Friday. It will be conducted between February and March 2017 after approval by COMREC. The main study will be conducted at Zomba Central Hospital.

Your consideration will be appreciated.

Yours faithfully,

**Evelyn Chibwe**

Cell: 0999329828, 0882455988