COLLEGE OF HEALTH SCIENCES

SCHOOL OF NURSING AND MIDWIFERY

PREVALENCE OF DIABETIC FOOT ULCERS AND ITS ASSOCIATED FACTORS AMONG DIABETIC PATIENTS ATTENDING DIABETIC FOLLOW-UP CLINICS AT PUBLIC HOSPITALS OF GOFFA AND WOLITA ZONES, SOUTH ETHIOPIA, 2021

BY

DAWIT SIMION (BSC.)

A THESIS SUBMITTED TO SCHOOL OF GRADUATE STUDIES OF ADDIS ABABA UNIVERSITY, COLLEGE OF HEALTH SCIENCES, SCHOOL OF NURSING AND MIDWIFERY AS PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN ADULT HEALTH NURSING

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SCHOOL OF NURSING AND MIDWIFERY

NAME OF PRINCIPAL INVESTIGATOR	**DAWIT SIMION**
PRIMARY ADVISORS	**YOHANIS AYALEW (ASSISTANT PROFESSOR)**
CO ADVISOR	**KETEMA BIZUWORK (MSc. N, MSc in TRID)**
TITLE OF THE STUDY	**PREVALENCE OF DIABETIC FOOT ULCER AND ITS ASSOCIATED FACTORS AMONG DIABETIC PATIENTS ATTENDING DIABETIC FOLLOW UP CLINICS AT GOFFA AND WOLAITA ZONES, SOUTH ETHIOPIA 2021**
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ADDRESS OF THE INVESTIGATOR	**E- mail:dawitsimion@gmail.com** **CELL PHONE:+251916387793**

APPROVAL SHEET

ADDS ABABA UNIVERSITY

COLLEGE HEALTH SCIENCE SCHOOL OF NURSING AND MIDWIFERY DEPARTMENT OF NURSING

I, the undersigned MSc student, declare that I have submitted my original work on a title prevalence of diabetic foot ulcer and its associated factors among diabetic patients attending diabetic follow-up clinic at public hospitals of wolaita and Goffa zones for examination.

Submitted by:

Dawit Simion _____ _____

Name of student Signature Date

This thesis work has been submitted for examination with my approval as an advisor.

Approved by:

1. Yohannes Ayalew (PhD Fellow) _____ _____

   Name of Major Advisor Signature Date

2. Ketema Bizuwork(MSc in TRID) _____ _____

   Name of Co-Advisor Signature Date

STATEMENT OF THE AUTHOR DECLARATION

By my signature below, I declare and affirm that this thesis is my own work. I have followed all ethical principles of research in the preparation, data collection, data analysis, and completion of this thesis. All scholarly matter that is included in the thesis has been given recognition through citation. I affirm that I have cited and referenced all sources used in this document. Every effort has been made to avoid plagiarism in the preparation of this thesis.

This thesis is submitted in partial fulfillment of the requirement for a graduate degree from the Addis Ababa University at the College of Health Sciences, School of Nursing and Midwifery, department of nursing. The thesis is deposited in the Addis Ababa University Digital Library and is made available to local, national and international scientific community. I solemnly declare that this thesis has not been submitted to any other institution anywhere for the award of any academic degree, diploma or certificate.

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STUDENT:

Dawit Simion	_____	_____
NAME:	SIGNATURE:	DATE

RESEARCH ADVISORS:

Yohannes Ayalew (PhD Fellow)	Assistant professor	_____	_____
NAME	RANK	SIGNITURE	DATE
Ketema Bizuwork(Msc in TRID)	Lecturer	_____	_____
NAME	RANK	SIGNITURE	DATE

APPROVAL BY THE BOARD OF EXAMINATION

This thesis by Dawit Simion is accepted in its present form by the board of examiners as satisfying thesis requirement for the degree of masters in adult health nursing.

EXTERNAL EXAMINER:

Erdaw Tachbele(PhD)	Assistant professor	_____	_____
NAME	RANK	SIGNITURE	DATE

RESEARCH ADVISORS:

Yohannes Ayalew (PhD Fellow)	Assistant professor	_____	_____
NAME	RANK	SIGNITURE	DATE

Ketema Bizuwork(Msc in TRID)	Lecturer	_____	_____
NAME	RANK	SIGNITURE	DATE

DEPARTMENT HEAD

Wudma Alemu (PhD Fellow)	Assistant professor	_____	_____
NAME	RANK	SIGNITURE	DATE

BIOGRAPHIC SKETCH

My registered name is Dawit Simion Bilate. I was born in December 4 1990 at Sawula town SNNPR. My primary and secondary education was at Kusti primary school and Sawula senior secondary and preparatory school respectively. I have started my academic carrier by taking a diploma in public health nursing and later on graduated BSc in clinical nursing from Hawassa collage of health science SNNPR. I have five years of clinical experience at Lotte health center and seven months of academic experience at Wolaita sodo university.

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ACRONYMS

ADA	America diabetic association
AOR	Adjusted odds ratio
BMI	Body mass index
BP	Blood Pressure
COR	Crude odds ratio
DFS	Diabetic foot syndrome
DFU	Diabetic foot ulcer
DM	Diabetic Mellitus
DPN	Diabetic Peripheral neuropathy
IDF	International diabetic federation
PAD	Peripheral arterial disease
PN	Peripheral neuropathy
PVD	Peripheral vascular disease
SNNPR	Southern Nation, Nationalities, and Peoples Region
TASH	Tikur Anbessa Specialized Hospital

Contents

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

Diabetic foot ulcer (DFU) is defined as a localized wound of the skin and/or underlying tissue below the uncle in people with diabetes mellitus irrespective of duration. It is one of the chronic complications of diabetes which has more than 25% lifetime risk and it is the leading cause of non-traumatic lower limb amputation. In Ethiopia there are no major studies assessed the prevalence and associated factors of diabetic foot ulcers among diabetic patients at a zonal or regional level. The objective of this study was to assess the prevalence and its associated factors of diabetic foot ulcers among diabetic patients attending follow-up clinics at public hospitals of Goff and Wolaita zones south Ethiopia. An institution-based cross-sectional study was conducted from March 1-30/2021. Systematic random sampling technique was used to select the study subjects. Epi data and SPSS version 20 was used for data cleaning and analysis. Bi-varriate and multi-varriate logstic regression was done to identify independent predictors of diabetic foo ulcer. The prevalence of diabetic foot ulcer was found to be 22.6%. Five variables;poor foot care peripheral neuropathy ,duration of diabetes >=10 years,HbA1c level >=7.0mg/dl , and overweight had statistically significant association with diabetic foot ulcer .The prevalence of diabetic foot ulcer at the study area is high. Responsible bodies should work hardly to prevent diabetic foot ulcer and its related complications.

Key words: diabetes mellitus, diabetic foot ulcer, diabetic foot syndrome.

CAPTER ONE: INTRODUCTION

Diabetes mellitus is one of the metabolic disorders characterized by elevated blood glucose which is caused by genetic and environmental factors that destruct beta cells of the pancreas and or decrease tissue resistance towards insulin(1). It is known for its devastating acute and chronic complications (2). Diabetic foot ulcer is one of the major complications of diabetes Mellitus with an estimated lifetime risk of 10-25% among diabetic patients(3).

Diabetes and related complications are becoming the main concern of the world health contributing to a major cause of morbidity and mortality(1). Diabetic foot ulcer and other lower extremity complications are by far very common, complex, and has a significant economic impact on the patient as well as the medical coast of countries(2). A diabetic foot ulcer is defined as a localized wound of the skin and/or underlying tissue below the uncle in people with diabetes mellitus irrespective of duration(3). Diabetic neuropathy, trauma, and concomitant peripheral vascular disease are considered as some of the causes of DFU (4). The lifetime incidence of a foot ulcer is estimated to be 19% to 34% among people with diabetes(2). Diabetic foot ulcer (DFU), peripheral vascular disease (PVD), and peripheral neuropathy (PN) are the leading cause of lower extremity amputation in patients with diabetes mellitus(5).

The pathophysiology of DFU heavily relies on a triad of neuropathy, trauma with secondary infection, and arterial occlusive disease. The intrinsic muscle atrophy produced by peripheral neuropathy leads to anatomical changes of the hammertoe on the plantar surface of the foot at the metatarsal heads(4). Diabetic peripheral neuropathy (DPN) is the single most important risk factor for the development of DFU(6). Arterial occlusion due to hyperglycemia and associated changes in glucose metabolism, perfusion of the foot below the level become inadequate to maintain skin integrity and result in ischemic ulcer or gangrene(4).

A detailed patient history, physical examination with due emphasis on the co-existence of renal and cardiac conditions in patients with diabetes mellitus is important to identify, predict, and prevent DFU (4).

Regular examination of feet for signs of neuropathy, impaired blood flow, and skin changes, and proper footwear can prevent foot ulcers that often lead to gangrene and limb amputation(7). The American diabetic association (ADA) outlined as a risk factor for a foot ulcer and recommended to include in the comprehensive foot examination for adult patients with diabetes include foot ulcer history, previous amputation, peripheral neuropathy, peripheral vascular disease, foot deformity, diabetic nephropathy, visual impairment, (especially patients on dialysis), poor glycemic control, and cigarette smoking(8). According to international diabetic federation (IDF) Clinical Practice Recommendations on the Diabetic Foot – 2017 a person with a history of previous foot ulceration or previous lower extremity amputation is 36 times more likely to develop a future ulcer and 50% chance to develop a serious lesion on the contralateral limb within two years respectively(6).

The primary management goal of a diabetic foot ulcer is preventing lower extremity amputation through early identification of risk foot, proper treatment of ulcerated foot, and avoiding further problems(3).

Optimizing the treatment of atherosclerotic risk factors, enhanced wound healing measures, ensuring appropriate shoe wear, treating infection, and providing patient rehabilitation to remain ambulatory activities should always be involved in the multidisciplinary management of critical limb ischemia and foot ulcer(9).

DFU can heal with appropriate therapy like surgical debridement, off-loading of pressure, attention to infection, and if necessary, vascular reconstruction. A study in a territory hospital in Europe indicated that approximately 77% of DFU healed in one year(2). Adjuvant wound therapy options like negative pressure therapy, platelet driving growth factor, living cellular therapy, and extracellular matrix products were recommended for DFUs that fail to improve after four weeks of standard wound care(6).

The incidence of DFU and its complications are dramatically increasing due to the high prevalence of diabetes mellitus and the improving life expectancy of diabetic patients. Therefore the DFU has to be one of the major research areas for the prevention, early detection, and proper management, avoiding complications, and rehabilitation(6, 10).

Diabetes mellitus and its complex complications are increasing due to population expansion, urbanization, increased aging, reduced physical activity, and dietary changes. It is estimated that there were 463 million diabetic patients globally in 2019(11, 12). Globally 6% of adults are estimated to have either DM I or II, and of these 80% live in low and middle-income countries(13). If this trend continues, an estimated 592 million people or one in ten adults will have diabetes by 2035(14). In the last two decades, the prevalence of diabetics has been increasing dramatically(15).

One of the major complications of diabetes mellitus is DFU and the global prevalence is estimated to be more than 6% (16). Studies show that diabetic foot ulcer is the leading cause of non-traumatic limb amputation and it is estimated that there is amputation every 30 seconds due to diabetes in the world (3). According to the international diabetic report of WHO 2015, it is estimated that 9.1 million to 26.1 million people develop DFU worldwide annually(2). According to a recent study conducted to assess the characteristics, prevalence, and outcome of DFU in Africa, 13% of diabetic patients develop a foot ulcer in Africa(17).

Diabetic foot ulcer precedes 85% of lower-limb amputations in patients with diabetes mellitus and it is a chronic disabling complication that affects more than 350 million people worldwide as of seminars in vascular surgery report 2018(9). The five-year mortality rate of patients with DFU is ranging from 43% to 55% and up to 75% in patients with lower limb amputations(3). A diabetic foot ulcer is one of the devastating complications of diabetes is responsible for 20 % of hospital admission(4).

The proper understanding and comprehensive management of DFU is lacking among health care providers which is the other significant contributing factor in the early identification and management(6). It is reported that only 23-49% of diabetic patients are evaluated about foot ulcers by their health care providers(8). Recurrence of a foot ulcer is the other challenge with 40% and 60% recurrence in one year and three years respectively(2).

Foot ulcers compromise the quality of life by affecting daily activities, physical health, and the economy(18). Studies show that DFU adversely affects the health-related quality of life among diabetic patients(19). Diabetic foot ulcer has a substantial economic burden on the patients expending from 9-13 billion dollars annually (20). Besides all this knowledge of patients with

DFU had low knowledge about diabetic foot care even when compared with diabetic patients without DFU(21).

According to the systemic review and meta-analysis conducted in 2019, in Ethiopia, the overall prevalence of DFU is estimated to be 12.98 % with a higher magnitude in Addis Ababa the capital of the country (1). The prevalence of DFU is expected to be more than this hence patients screened for peripheral neuropathy and diabetic foot are very low(22). Rural residence, presence of callus in the feet, poor foot self-care practice, and body mass index are associated with foot ulcers (1, 23). According to a descriptive retrospective study using medical records at black lion specialized hospital, the major admission diagnosis(39%) for type two DM was DFU(24)

The prevalence of DFU and its associated factors were studied in some hospitals of the country with prevalence ranging from 1.5% to 31.5% (1, 25, 26). But no major studies are indicating the prevalence of DFU and associated factors at the zonal or regional level. Therefore, the aim of this study was to assess the prevalence and its associated factors of diabetic foot ulcer among diabetic patients attending diabetic follow up clinic at public hospitals of Wolaita and Goffa zones, South Ethiopia. This will help to understand the extent of its impact to create appropriate investigation and treatment guidelines. Another significance of this study for the nursing profession is, it will provide evidence-based data for diabetic foot ulcer care. Furthermore, the finding may serve as baseline data for policymakers and researchers.

CHAPTER TWO: LITERATURE REVIEW

2.1. Introduction

A diabetic foot ulcer is a severe and complex complication of diabetes that is characterized by lesions in the deep tissues associated with the neurologic and peripheral vascular disorder of the lower limb below the ankle (10). Loss of sensation, limited joint mobility, and deformity would result in callus formation. Because of this, abnormal load and subcutaneous hemorrhage form which eventually leads to ulceration(3). The management of foot ulcers should involve a multidisciplinary team with great due on prevention of lower limb amputation. This team needs to involve the diabetic patient as an active member that works with the team to adopt behaviors that enable them to prevent injuries(3, 5). A total of 45 previous studies, guidelines, and reports on DFU were reviewed that were published between 2013 and 2020. Then, the prevalence, associated factors, study method, and gaps in the study were critically analyzed.

2.2. Prevalence of Foot Ulcers

A systemic review and meta-analysis on the global epidemiology of diabetic foot ulceration in 2017 revealed that the prevalence of global DFU was 6.3% which was higher in males (4.5%) than females(3.5%)(10). Another study conducted to assess the prevalence of foot ulcers on 6992 diabetic patients using ICD-9 diagnosis code from health plan administrative data indicated that 205(2.9%) had DFU and 101 (1.4%) had lower extremity amputations(27). A descriptive cross-sectional study conducted in southwest Iran among 605 diabetic patients shows that 39 (6.4%) of diabetic patients developed foot ulcers (15). A similar study conducted on 92 diabetic patients who are under renal replacement therapy in Spain hospital shows that 17.4% of the patients had developed DFU (28). A two-year prospective cohort study conducted on ulcer free diabetic patients at Ahvaz hospital of Iran found that the incidence of DFU was 5.62%(29). A cross-sectional study conducted in Saudi Arabia found that among 598 diabetic patients the overall prevalence of DFU was 11.4%(30). A community-based cross-sectional study conducted to assess the prevalence of diabetic foot syndrome (DFS) among 620 DM patients declared that 51.8% had DFS(31).

A systemic review and meta-analysis conducted to assess the prevalence, characteristics, and outcome of DFU in Africa in 2018 identified that the prevalence of DFU in Africa was 13% and approximately 15% undergo lower extremity amputation(17). A cross-sectional study conducted in Egypt to assess the prevalence and associated factors among adult DM patients aged 18 years and above show that the prevalence of DFU was 14.8% with 6.1% active ulcer and 8.7% previous history of foot ulcer(32). A similar study conducted in two regional hospitals of Cameroon found that the prevalence of DFU was 11.8%(33). Another similar study conducted in Khartoum Sudan determined the prevalence of DFU was 18.1% among 310 diabetic patients on treatment for at least one year in hospital(34).

According to the systemic review and meta-analysis conducted in Ethiopia, the prevalence of DFU was found to be 12.98 with the highest magnitude in Addis Ababa(1). An institution-based Cross-sectional study conducted among diabetic patients attending diabetic follow-up clinics at Amahara regional state shows that the prevalence of diabetic retinopathy, foot ulcer, and nephropathy were 25.5%, 21.2%, and 11.4% respectively(26). A similar study conducted at the University of Gonder referral hospital revealed that the prevalence of DFU was 13.6%(35). Another similar study conducted in the Ayder referral hospital Tigrai region among adult diabetic patients attending diabetic clinics determined the prevalence of DFU to be 12%(25). Based on the cross-sectional study conducted in Arbaminch hospital south Ethiopia, the prevalence of DFU among 216 diabetic patients was found to be 32(14.8%)(36).

2.3. Factors Associated with Diabetic Foot Ulcer

According to a cross-sectional study conducted in Jeddah Saudi Arabia insulin use, longer diabetic duration and non-Saudi nationality were associated with a higher prevalence of foot ulcer and the study also show Patients with DPN had 3.21 times higher odds of foot complications than those without the condition, and patients with PAD had nearly 3 fold higher odds of foot complications than those without the condition(30).

Another similar study at the university hospital of Michigan USA mentioned that the presence of micro or macrovascular disease would higher the prevalence of foot complications almost by two to four folds (27).

A study conducted by Ahvaz southwest Iran identified that patients with decreased 10gm of monofilament sensation had nine times more chance of developing DFU than patients with normal sensation. The study also addressed that abnormal ankle-brachial index (ABI) increases the odds of DFU by 6 folds. Furthermore, the study illustrated that long diabetic duration, illiteracy, and increased BMI were significantly associated with foot ulcers(15)

A prospective cohort study conducted in Ahvaz Iran to determine risk factors associated with diabetic foot ulcer among diabetic patients revealed the following results: patients with dyslipidemia had a six-fold higher chance of developing a foot ulcer, patients with diabetic nephropathy had a three-fold higher chance of developing foot ulcers, patients with the previous history of a diabetic foot ulcer or amputation had seventeen times more chance of developing foot ulcers and patient with callus had four-fold more chance of developing foot ulcers (37).

Another prospective cohort study conducted to determine the incidence and risk factors of diabetic foot ulcers has shown that a patient with a previous history of DFU or amputation is ten times more likely to develop DFU when compared to patients with no history of DFU. The other associated factor in this study was insulin usage, in which case patients under insulin therapy are six times more likely to develop foot ulcers than patients using oral diabetic agents or lifestyle modification. According to the study distal neuropathy, and foot deformity were also significantly associated with foot ulcers(29).

In a study conducted in the northern area of Saudi Arabia older age and long diabetic, duration had four and six times more chance of developing DFU than young age and short diabetic period respectively(38).

A study conducted at Taw am-John Hopkins affiliated hospital shows that illiterate diabetic patients are less likely to recognize foot risk factors(P-value 0.004), use proper footwear(P-value 0.010), and practice foot care(P-value 0.002) in comparison to literates(39).

A study conducted in Sri Lanka determined that low income, impaired vibration sense, and abnormal monofilament test were found to be 23 times, 25 times and 2 times increased the risk of developing DFU respectively (40).

A large prospective cohort study conducted at Riyadh, Saudi Arabia demonstrated that chariot joint, PN, PVD diabetic duration of 10 years and above and poor glycemic control have increased the risk of DFU by 42,15,14, 7, and 3 times respectively (41).

Based on the systemic review and meta-analysis to assess characteristics prevalence and outcome of diabetic ulcers in Africa, diabetic neuropathy was found to be the most predisposing factor for DFU, and prevalence of the peripheral arterial disease is correlated with lower limb amputations(17).

A cross-sectional study conducted to assess Prevalence, Clinical Presentation, and Factors Associated With Diabetic Foot Ulcer in Cameroon, revealed that loss of protective sensation and peripheral arterial disease were independently associated with foot ulcer (33).

According to a study in Khartoum Sudan, non-healing DFU were significantly associated with duration of ulcer (<12 months) (P value=0.002), smoking (P value=0.000), poor glycemic control (P-value 0.001), and presence of skin callus P-value-0.000)

According to a across a sectional study conducted in Alexandra, Egypt foot ulcer is associated with a history of coronary disease (p-value 0.001), and renal replacement(p-value 0.001)(32)..

Unmatched case control study conducted to identify the determinant factors of diabetic foot ulcer at Tikur Anbessa specialized hospital indicated that patients who are using insulin alone, who

has PN, and do not inspect their foot daily had three times, seven times and six times increased risk of developing diabetic foot ulcer(42)

According to cross-sectional research conducted on diabetic patients attending the diabetic follow up clinic of Gonder referral hospital north Ethiopia, patients living in a rural area are 2.57 times more likely to develop foot ulcers than urban residents. The study also identified obesity, poor self-care practice and neuropathy increased the risk of DFU by two, three, and twenty-two times respectively (35).

A similar study conducted at Arbaminch hospital south Ethiopia revealed that rural residence mean arterial blood pressure greater than 90 mm hg and duration of diabetes for more than 10 years Were independently increased the risk of developing DFU by four, five, and eight times respectively (36).

2.4. Summary of Literature Review

The average world prevalence of DFU is calculated to be 6.3% with the higher prevalence in North America(13%, 95% CI: 10.0-15.9) and the lowest prevalence in oceanic(3%, 95% CI: 0.0-5.01)(10). Most literatures agree that peripheral arterial disease, peripheral neuropathy, long duration of diabetes, and rural residence were significantly associated with a high prevalence of DFU((1, 30, 36). In Ethiopia, though few studies assessed the prevalence of DFU and associated factors among diabetic patients, they were not consistent and only a single hospital-based survey(1, 5, 25, 35, 36). Therefore, there is a need to see the prevalence of DFU and associated factors among diabetic patients in different hospitals at two or more zones.

2.3 Conceptual Framework

This conceptual framework is developed after a critical review of previous researches, foot care guidelines, and global diabetic reports (1, 5, 10, 32, 43). The diagram shows the relationship between DFU and the possible influential factors like socio-demographic factors, behavioral factors, clinical factors, and diabetes-related factors.

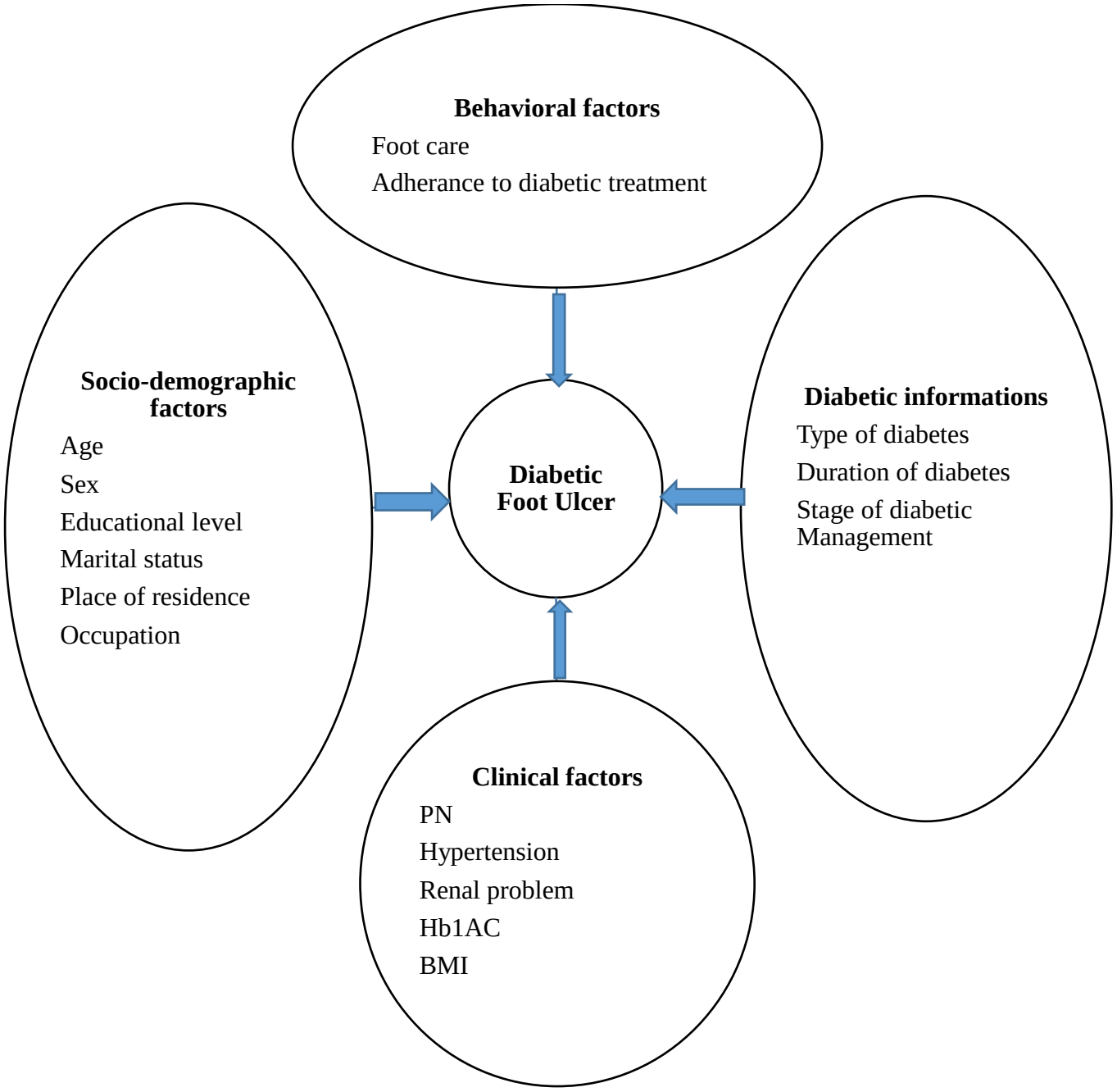

Figure 1. A conceptual frame work for DFU developed after reviewing different previous literatures for the topic prevalence of DFU and its associated factors among diabetic patients attending diabetic clinic at public hospitals of Goffa and Wolaita zones, 2021.

CHAPTER THREE: OBJECTIVE

3.1. General Objective

- To assess the prevalence and its associated factors of DFU among diabetic patients attending diabetic follow-up clinics at public hospitals of Wolaita and Goffa zones, south Ethiopia from March 1-30/2021.

3.2. Specific Objectives

- To determine the prevalence of diabetic foot ulcers
- To identify factors associated with diabetic foot ulcer

CHAPTER FOUR: METHODS AND MATERIALS

4.1. Study Setting and Period

The study was conducted from March 1-30/2021 at three public hospitals of Wolaita and Goffa zones south Ethiopia. Wolaita and Goffa zones are found 312 and 415 km far from Addis Ababa respectively in the southwest direction. According to the population projection of Ethiopia 2019, the total population of wolaita and Goffa were 2,044,079 and 964,3632 respectively (44). A total of eight public hospitals in the zones; five from the wolaita zone and three from the Goffa zone. From these eight hospitals, five hospitals have separate diabetic follow up clinic.

4.2. Study Design

- ✓ Institution-based cross-sectional study design was used.

4.3. Population

4.3.1. Source population

- ✓ Diabetic patients attending diabetic clinics at public hospitals of Wolaita and Goffa zones

4.3.2. Study population.

- ✓ Diabetic patients attending diabetic clinics at randomly selected public hospitals of Wolaita and Goffa zones.

4.3.3. Study subjects

- ✓ Randomly selected diabetic patients who fulfil the inclusion criteria and attending diabetic clinics at randomly selected public hospitals of Wolaita and Goffa zones from March 1-30 2021.

4.4. Eligibility Criteria

4.4.1. Inclusion criteria

- ✓ All diabetic patients attending diabetic clinics and who have at least one prior visit to randomly selected public hospitals.

4.4.2. Exclusion criteria

- ✓ Clients who are critically ill and mentally incompetent who are unable to provide the required information by themselves
- ✓ Gestational diabetes

4.5. Sample Size determination

Sample size (N) is calculated using a single proportion formula. Considering the following assumption: standard normal distribution with a confidence interval (CI) of 95%(Z=1.96), the tolerable margin of error (d=0.05), and anticipated proportion of diabetic DFU, 12.98 % (p)taken from a previous meta-analysis study(1) and a design effect of 1.5 to have sufficient sample size. There are 1752 diabetic patients attending in five public hospitals of wolaita and Goffa zones according to the existing annual reports of the institution 2012 E.C.

$$n = \frac{(Z\alpha/2)^2\, p(1-p)}{d^2} = \frac{(1.96)^2 0.13(1-0.13)}{(0.05)^2} = 174$$

Since the total population is less than 10,000, a correction formula is used

$$nf = \frac{no}{1+\frac{no}{N}} = \frac{174}{1+\frac{174}{1752}} = 158$$

By adding a 10% non-response rate the sample size will be =174

And considering the design effect of 1.5, the total sample size will be 1.5*174=261

Where

- ✓ n=sample size
- ✓ P= prevalence 12.98% (1)
- ✓ Za/2= standard normal distribution with 95% confidence interval is 1.96
- ✓ d=margin of error 5% and
- ✓ nf= final sample size

4.6. Sampling Procedures

There are five hospitals which have diabetic follow up clinic in Wolaita and Goffa zones. Out of these, three public, Sawula general hospital, Christian hospital and Otona referral hospital were selected by using the lottery method. The number of study subjects are proportionally allocated (based on the mean number of diabetic patients attending diabetic clinics monthly in each selected hospital). Average number of diabetic patients attending diabetic clinic of Otona referral hospital, Sawula general hospital and Christian hospital were 1320(39.7%),1082(32.6%) and 916(27.6) respectively. Therefore 104 subjects from Otona general hospital,84 subjects from and

73 subjects from Christian hospital a total of 261 participants identified. Study subjects are selected by a systematic random sampling method by using the patient register as a sampling frame.

4.7. Variables

4.7.1. Dependent variable

- Diabetic foot ulcer

4.7.2. Independent variables

- **Clinical factors:** PVD, PN, hypertension, renal problem, Hb1AC, BMI, active foot problem
- **Socio-demographic factors**: age, sex, educational level, marital status, place of residence, occupation
- **Diabetic information**: type of diabetes, duration of diabetes, stage of diabetic management
- **Behavioral factors**: foot care, adherence to treatment,

4.8. Operational Definition

- Foot ulcer: refers to a diabetic patient with a current foot ulcer below the uncle during observation by a data collector.
- Good adherence: patients who have scored all of the described adherence components
- Good Foot care: patients who have scored a mean of the described foot care components

4.9. Data Collection Tool and Data Quality Assurance

Data was collected by using a structured questionnaire**.** The questionnaire was adapted from different previous published literature on similar study topics with the (1, 5, 6).It is prepared for face to face interview with the diabetic patient and has four parts. Part -I socio-demographic characteristic, Part-II history of diabetic Mellitus, part- III behavioral factors, and part-IV clinical factors.

The questionnaire was reviewed by a senior expert on diabetes mellitus for its internal validity and revised according to the comments obtained from the expert(face validity)(45).besides this, to ensure the quality of the questionnaire pretest was done on 5% of the total population at Areka hospital and any error found during the pretest was corrected and modification was made into the final version of the data collection format. To maintain consistency of the tool the questionnaire first translated from English to Amharic by language expert then back to English. Training was given to data collectors and supervisors for two days before the actual data collection All completed data collection forms was examined for completeness and consistency during data management, storage, cleaning, and analysis.

4.10 Data Collection Procedure

Data was collected by six nurses were are oriented about DFU screening and who are working in the study setting during the study period. Those patients who attend the diabetic clinic and fulfill the inclusion criteria had undergone screening for DFU and be interviewed. Clinical factors like PVD, PN, hypertension, renal problem, Hb1AC, and BMI was collected from patient documents.

4.11. Data Processing and Analysis

The collected data was cleaned and checked for any missing and inconsistency by epi data, and then exported to SPSS version 20 for analysis. Descriptive statistics was performed to identify the distribution of socio-demographic characteristics of the study participants. Besides, Bivariate logistic regression was used to assess the association between dependent and independent variables. To control confounding effect those variables having p-value < 0.05 in Bivariate logistic regression were enter into multivariate logistic regression. Then those variables having a p-value <0.05 are considered as having a significant independent association.

4.12. Ethical Clearance

Ethical clearance and an approval letter was obtained from the Institutional Review Board of the College of Health Sciences of Addis Ababa University. An official letter was obtained from the school of Nursing and Midwifery, TASH. After explaining the purpose and possible benefit of the study, written informed consent was obtained from each patient before starting the procedure. The study was explained fully (i.e. the aim of the study; the significance of the study) to each patient before joining the study and for patient agreed to participate then informed consent form was given to sign. The study participants are informed about their rights to refuse to join, ask any question, or withdraw at any particular point during the data collection process without being frustrated. Appropriate covid-19 prevention measures were strictly maintained by wearing a face mask, using a hand sanitizer, and keeping physical distance during the data collection.

CHAPTER FIVE: RESULT

5.1. Socio-demographic characteristics of respondents

A total of 261 study subjects were interviewed with 100% response rate. The mean age of the respondents was 51.13 ± 12.581 years. Majority 176(67.4%) of the study subjects were males and most 159(61%) of the respondents were urban residents. Protestant religion took the first place by 96(37%) whereas 214(82%) of the participants of the study were married. Half of the respondents 129(49.4%) had educational level of collage and above and government employment was the primary occupation of the respondents.

Table 1. Socio demographic characteristic of diabetic patients at diabetic follow up clinics of Wolaita and Goffa zones, South Ethiopia march 2021, N=261

Variable	Frequency	Percent
Gender		
Male	176	67.4
Female	85	32.6
Age		
16-22	9	3.4
23-29	11	4.2
30-36	10	3.8
37-43	31	11.9
44-50	53	20.3
51-57	62	23.8
58-64	51	19.5
65-71	28	10.7
72 and over	6	2.3
Mean age	51.13 ± 12.581 years	
Marital status		
Single	28	10.7

Married	214	82.0
Divorced	15	5.7
Widowed	4	1.5
Residence		
Urban	159	60.9
Rural	102	39.1
Educational status		
No formal education	58	22.2
Primary school	37	14.2
Secondary school	37	14.2
Collage and above	129	49.4
Occupation		
Government employee	94	36.0
Non- government employee	28	10.7
Self employed	56	21.5
Farmer	40	15.3
Student	16	6.1
Others	27	10.3
Religion		
Orthodox	90	34.5
Muslim	60	23.0
Protestant	96	36.8
Catholic	11	4.2
Others	4	1.5

5.2. Diabetic related characteristics of respondents

Type two diabetes is the most common 186 (71.3%) type of diabetes among respondents and majority 203(77.8%) of the subjects' duration of diabetes since diagnosis was less than 10 years. Oral diabetic agent was the most common 160(61.3%) type of diabetic medication used among the respondents.

Table 2. Diabetic related characteristic of diabetic patients attending diabetic follow up clinic at public hospitals of Wolaita and Goffa zones, South Ethiopia march 2021, N=261

Variable	Frequency	Percent
Type of diagnosis		
Type one	75	28.7
Type two	186	71.3
Place of diagnosis		
Public health institution	236	90.4
Private health institution	25	9.6
Type of diabetic medication		
Insulin alone	74	28.4
Oral anti diabetic agent	160	61.3
Both injectable and oral antidiabetic agent	25	9.6
Life style modification	2	0.8
Duration of diabetes		
< 10 years	203	77.8
>= 10 years	58	22.2

5.3. Prevalence of diabetic foot ulcer

59 respondents were presented with diabetic foot ulcer at the time of data collection which is 22.6% of the subjects and 41(69.5%) of them are type two diabetic patients.60% 0f patients with diabetic ulcer also had hypertension and more than half 34(57.6%) of them had poor diabetic foot care. Three fourth of patients with diabetic foot ulcer were adhered to diabetic treatment where as 60% them had diabetic peripheral neuropathy.

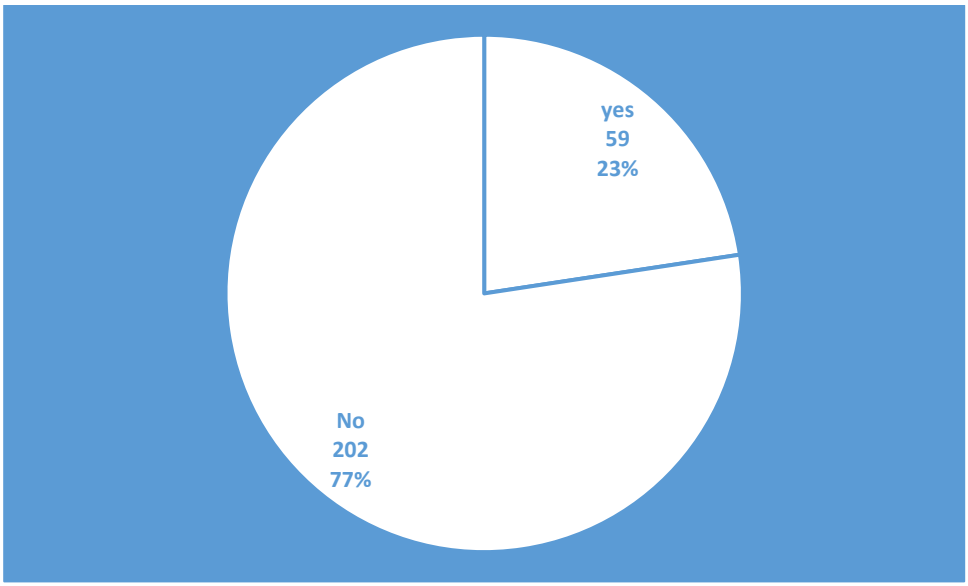

Figure 2. Prevalence of diabetic foot ulcer among diabetic patients attending diabetic follow up clinic at public hospitals of Wolaita and Goffa zones South Ethiopia March 2021.N=261

5.4. Behavior related characteristics of respondents

Regarding to adherence to treatment, majority 238(91.2%) of respondents had good adherence to their treatment specifically taking medication, attending follow up and checking blood glucose properly. likewise, most of the respondents inspect their foot daily, bath feet with warm non-water, moisturize feet, cut nails carefully

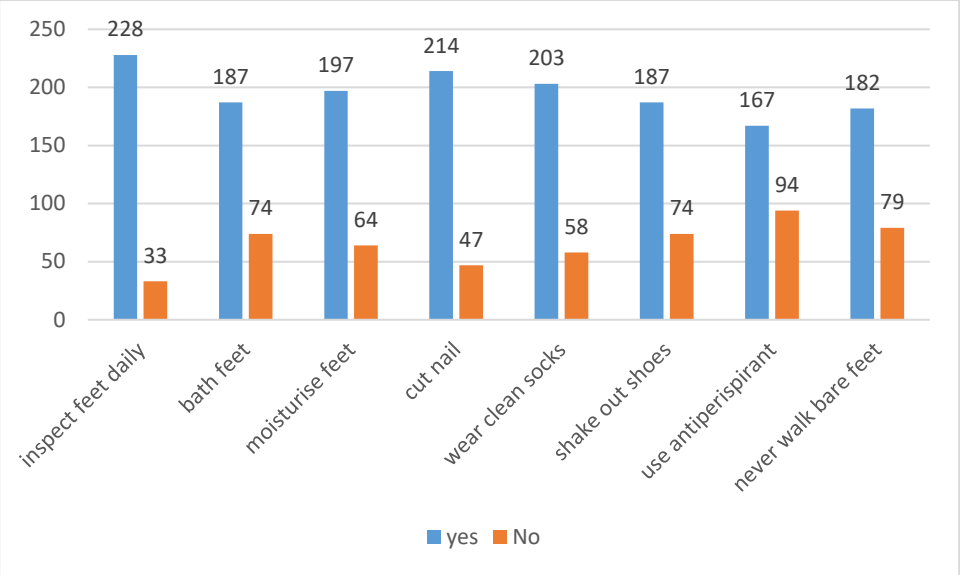

Figure 3. Foot care practice of diabetic patients attending diabetic follow up clinic at public hospitals of Wolaita and Goffa zones, South Ethiopia March 2021 N=261

5.5. Clinical characteristic of respondents

One quarter 65 (24.9%) of the respondents were found to be hypertensive whereas 96(36,8%) of respondents had HbA1C greater than 7.0mg/dl. Pertaining to co-morbidity, chronic kidney disease, peripheral neuropathy, and peripheral vascular disease were 25(9%), 49(18.8%) and 27(10.3%) respectively. Majority 187(71.6%) of the respondents had normal body mass index but also significant 62(23.7%) number of respondents had body mass index of above normal (over weight and obese).

Table 3. Clinical related characteristics of diabetic patents attending diabetic follow up clinic at public hospitals of Wolaita and Goffa zones, South Ethiopia March 2021, N=261

Variable	Frequency	Percent
Hypertension		
Yes	65	24.9
No	169	75.1
HbA1c		
<7mg/dl	165	63.2
>=7mg/dl	96	36.8
Chronic kidney disease		
Yes	25	9.6
No	236	90.4
Peripheral vascular disease		
Yes	27	10.3
No	234	89.7
Peripheral neuropathy		
Yes	49	18.8
No	212	81.2

5.6. Factors associated with diabetic foot ulcer

Ten variables (type of diabetic medication, adherence to treatment, foot care, hypertension, chronic kidney disease, peripheral vascular disease, peripheral neuropathy, level of HbA1c, duration of diabetes and body mass index) were met required minima for multivariate logistic regression analysis from bivariate logistic regression with P-value of 0.05. For these 10 variables multivariate logistic regression analysis was done and only five variables (foot care, peripheral neuropathy, duration of diabetes, level of HbA1c, and body mass index) had found to be statistically significant association with the dependent variable by scoring P-value of less than 0.05.

Further, patients with poor foot care had 4 times higher chance of developing diabetic foot ulcer in comparison with diabetic patients with good foot care (AOR: 3.932, 95%CI (1.113,13.891) and also peripheral neuropath increased the risk by 6 times when compared to diabetic patients without peripheral neuropathy (AOR; 6.223,95%CI (1.309,29.596). Pertaining to duration, diabetes patients who had more than 10 years of diabetes since diagnosis were found to be 5.4 times higher chance of developing diabetic foot ulcer in comparison with those who were diagnosed for less than 10 years (AOR; 5.463,95%CI (2.603,28.013). Considering level of HbA1c, patients who had HbA1c level more than 7.0mg/dl were 68 times higher chance of developing foot ulcer when compared with patients who has less than 7.0mg/dl. This study also revealed that overweight patients had 17 times higher chance of developing DFU when compared to patient with normal weight.

Table 4. Factors associated with diabetic foot ulcer among diabetic patients attending diabetic follow up clinic at Public hospitals of Wolaita and Goffa zones, South Ethiopia March 2021, N=261

Variables	Diabetic foot ulcer		COR (95%CI)	P value	AOR (95%CI)	P value
	Yes	no				
Type of diabetic medication						
Insulin alone	18(24.3%)	56(75.7%)	1		1	
Oral anti diabetic agent alone	25(15.6%)	135(84.4%)	.576(.292,1.139	0.113	.435(.073,2.585)	.360
Both	16(64%)	9(36%)	5.531(2.088,14.651)	.001*	.704(.072,6.916)	.764
Life style modification	0(0%)	2(100%)	.000(.000,.00)	.000	.000(.000,.000)	1.000
Adherence to treatment						
Good adherence	42(17.6%)	196(82.4%)	1		1	
Poor adherence	17(73.9%)	6(26.1%)	13.22(4.920,35.533)	.000*	1.711 11.3(0.176,16.468)	.321
Foot care						
Good foot care	26(12.1%)	188(87.9%)	1		1	
Poor foot care	33(70.2%)	14(29.8%)	17(8.070-35.997)	.000*	3.932(1.113,13.891)	.033*

Hypertension						
Yes	36(55.4%)	29(44.6%)	9.337(4.853,17.967)	.000*	1.328(.296,6.060)	.714
No	23(11.7%)	173(83.3%)	1		1	
Chronic kidney disease						
Yes	19(76.0%)	6(14.0%)	15.517(5.831,41.294)	.000*	1.957(.253,15.164)	.520
No	40(16.9%)	196(73.1%)	1		1	
Peripheral vascular disease						
Yes	19(70.4%)	8(29.6%)	11.519(4.714,28.146)	.000*	.243(.035,1.678)	.151
No	40(17.1%)	194(82.9%)	1		1	
Peripheral neuropathy						
Yes	34(69.4%)	15(30.6%)	16.955(8.113,35.432)	.000*	6.223(1.309,29.596)	.022*
No	25(11.8%)	187(88.2%)	1		1	
HbA1c						
<7mg/dl	4(2.4%)	161(97.6%)	1		1	
>=7mg/dl	55(57.3%)	41 (42.7%)	53.9(18.496,157.623)	.000*	68.404(13.523,346.015)	.000*

Duration of diabetes						
<10 years	26(12.8%)	177(87.2%)	1		1	
>=10 years	33(56.9%)	25(43.1%)	8.986(4.631,17.438)	.000*	5.463(2.603,28.013)	.000*
Body mass index						
Norma	22(11.8%)	165(88.2%)	1		1	
Over weight	16(48.5%)	17(51.5%)	7.059(3.125,15.944)	.000*	17.3(2.97,101.50)	.002*
Obese	19(65.5%)	10(34.5%)	14.250(5.878,34.547)	.000*	1.140(.149,8.705)	.899
Under weight	2(16.7%)	10(83.3%)	1.500(.308,7,297)	.615	.588(.036,9.507)	.708

* Statistically significant at p-value< 0.0

CHAPTER SIX: DISCUSSION

Diabetic foot ulcer is still the leading cause of non-traumatic lower limb amputation , but the prevalence of diabetic foot ulcer is still dramatically increasing through the country and the whole world as well.(17) The computed prevalence of diabetic foot ulcer prevalence from this study further assured this situation with 22.6%.

The prevalence from this study was consistent with studies conducted Felege Hiwot referral hospital, northern Ethiopia (21.7%) and Sudan Khartoum (18.1%).(26, 34) Whereas relatively higher than Gonder referral hospital (13.6), Ayder referral hospital(12%), Cameroon(11.8%),Iran(6.4%), Egypt(8.7%) and Saudi Arabia(11.4%).(25, 32, 33, 35, 38) These variations might be due to study design, study year and period, socio-economic, health institution service quality (most of the health institutions in the study area were not equipped with necessary medical equipment and specially trained health care providers) and attitude difference of diabetic patients towards treatment adherence and diabetic foot care.

In multi varriate logistic regression; foot care, peripheral neuropathy, duration of diabetes, HbA1c, and BMI were declared independent predictor of the outcome variable diabetic foot ulcer.

Regarding the first independent predictor foot care; those categorized as poor foot care had 4 times higher chance of developing foot ulcer when compared to patients with good foot care; this finding coincides with the study conducted in Gonder referral hospital.(35)

Pertaining to the second independent predictor variable peripheral neuropathy; patients with peripheral neuropathy had 6 times higher chance of developing diabetic foot ulcer when compared to patients without diabetic neuropathy; these finding corroborates the conclusion of the studies conducted in Gonder referral hospital, TASH and Saudi Arabia yet a study conducted in Iran argues that there is no significant association between diabetic foot ulcer and diabetic peripheral neuropathy. (35, 38, 42)

Regarding the third independent predictor duration of diabetes; this study revealed that patients with more than 10 years of duration since diagnosis were 5.4 times greater probability of developing foot ulcer when compared to less than 10 years' diabetic duration. This is consistent with study conducted at Felege Hiwot referral hospital, Egypt and Iran but contradicts with the systemic review and meta-analysis conducted in Ethiopia.(1, 26, 32) This might be related to the difference in study design, sample size and techniques.

The fourth independent predictor is HbA1c. HbA1c is a measure of how well blood sugar has been over the last 3 months. In this study patients with HbA1c of greater than 7mg/dl had 68 times a higher chance of developing diabetic foot ulcer in comparison with patients who have less than 7mg/dl; this is consistent with a similar study conducted in Saudi Arabia(38). Yet neither most of the available studies in Ethiopia included these variable in their study nor identified independent association, this gap might be linked to lack of HbA1c test at most of the health institutions.

Regarding the fifth and last independent predictor of this study; overweight patients had 13 times higher chance of developing diabetic foot ulcer when compared to normal body weight patients. This finding is similar with a study conducted in Iran.(37)

The findings from this study are on the other hand contrary to the studies conducted at Arbaminch, Gonder referral hospital, and Sudan Khartoum regarding the variables; hypertension, rural residence, treatment with insulin, peripheral arterial disease which this study identified that there is no statistically significant association with the dependent variable DFU.

CHAPTER SEVEN: STRENGTH AND LIMITATIONS OF THE STUDY

7.1. Strength of the study

- ✓ This study identified the association between HbA1c and diabetic foot ulcer which might be the first study in Ethiopia
- ✓ The finding from this study might be generalized to the public hospitals of Wolaita and Goffa zones since better represented and systematic sampling technique was employed.
- ✓ High response rate of study participants

7.1. Limitation of the study

- ✓ Causal relationship cannot be addressed since cross sectional design is employed
- ✓ Possible risk of social desirability bias secondary to sensitive and personal question related to diabetic self-care and socio demographic aspect such as income

CHAPTER EIGHT: CONCLUSION AND RECOMMENDATION

8.1. Conclusion

In conclusion the prevalence of diabetic foot ulcer at the study area is high which shows the burden of diabetic foot ulcer and foot care practice, peripheral neuropathy, duration of diabetes, HbA1c and BMI found to be statistically significant association with the outcome variable diabetic foot ulcer

8.2 Recommendations

For policy makers (health minister, diabetic society and NGOs)

The study had suggested there is great need for designing programs and policies aimed at transforming diabetic treatment adherence, foot care practice and glycemic control. It is also better to prepare guidelines and provide training for health care workers concerning the service quality of the overall diabetic management by giving special attention in diabetic foot care and prevention methods.

For health institutions and health care workers

It is better if the diabetic clinics are composed of multidisciplinary team including nurse, doctors, dieticians and diabetic educators which are specially trained on diabetic management. Furthermore, it's better for health professional to have a collaborative partnership with patients in order to promote the practice of foot care and glycemic control by patients. The health institutions are also encouraged to prepare scheduled diabetic foot examination sessions in addition to routine follow up programs which will help to reduce diabetic foot ulcer

For researchers

Better to conduct further study with different research design, population and period on the factors associated with diabetic foot ulcer by including variables not considered on this research.

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ANEXES

Annex I. Participant's Information Sheet

Greeting: Good morning/afternoon My name is _____I am working on behalf of research conducted by Dawit Simion student of Addis Ababa University, School of Allied health science. I would like to ask a few questions which take around 7 minutes. The genuine responses that you are going to give are very important to identify problems related to diabetic foot ulcer and design programs. You are selected randomly to be a participant of this study if you give me consent after you have understood the following information sheet:

Title of the study: Prevalence of diabetic foot ulcer and associated factors among diabetic patients attending diabetic clinics at public hospitals of Wolaita and Goffa zones, south Ethiopia 2021.

The objective of the study: To assess the prevalence of diabetic foot ulcers and associated factors among diabetic patients attending diabetic clinics at public hospitals of Wolaita and Goffa zones, south Ethiopia 2021.

The benefit of the study: you will not gain any direct benefit, yet if you have a diabetic foot ulcer during the examination, management opportunities will be arranged and you will be followed. If you don't have a diabetic foot ulcer you will be recommended for frequent evaluation and follow-up.

Risk of the study: The study has no risk for the participants and the interview will be private to make safe participants from any fear.

Rights of participants: Participating and not participating in the study are the full rights of participants and you can ask any question which is not clear to you. You do not have to answer any questions that you do not want to answer and you may end this interview at any time you want to.

Confidentiality: Any information forwarded will be kept private your name will not be specified

Annex II. Informed Consent

I have read this form or it has been read to me in the language I comprehend and understand all conditions stated above.

Are you willing to participate in this study?

1. No (Say Thank you)

2. 2. Yes participant's signature …… Continue your interview I certify that the nature and purpose, the potential benefits and possible risks associated with participating in this study have been explained to the volunteer

._____ _____

Date Signature of the interviewer

Result of the interview:

1. Completed 2. Respondent not available 3. Refused. 4. Partially completed

Checked by supervisor, name _____Signature _____Date_____

Annex III: Data Collection Form of English Version

Part 1: Socio-demographic Information

S.0N.	Question	Response category	Remark
1	Age	_____	
2	Sex	1. Male 2. Female	
3	Place of residency	1. Urban 2. Rural	
4	Marital status	1. Single 2. Married 3. Divorced 4. Widowed 5. Other _____	
5	Religion	1. Orthodox 2. Muslim 3. protestant 4. catholic 5. other_____	
6	Occupation	1. Government employee 2.Nongovernmentalemployee 3. Self-employed 4. Farmer 5. Student 6.Other**(specify)**_____	
7	Educational level	1. Unable to read and write 2. read and write 3. Primary(1-8th grade) 4. Secondary(9-12th grade) 5. Diploma and Above	
8	Income	**Enter_____ birr per month**	

Part II: Diabetic related factors

s. no	Question	Response	Remark
1.	How long have you been since you have diagnosed with diabetes mellitus?	----------	
2.	Where did you diagnosed as diabetic	1. Health center 2. Public hospital 3. Private health institution 4. Self-diagnosis	
3.	Type of diabetes	1. Type one 2. Type two	
4.	Type of diabetic medication	1. Insulin alone 2. Oral antidiabetic agents alone 3. both injectable and oral antidiabetic agents 4. Lifestyle modification	
5.	Do you have an active DFU	1. Yes 2. No	Ask and cheek for DFUs

Part III: Behavior related factors

s. no	Question	Response	Remark
1.	Do you take your medications properly?	1. Yes 2. No	1 Good adherence 2. Poor adherence
2.	Do you attend your follow up properly?	1. Yes 2. No	
3.	Do you check your blood glucose	1. Yes 2. No	
4.	If yes, how often	1. Weekly 2. Every two weak 3. Every two month 4. Only when requested by a health care provider	
5.	How do you take care of your feet(multiple responses possible)	1. Inspect feet daily 2. Bath feet in warm non-hot water gently 3. Moisturize feet but not between toes 4. Cut nails carefully 5. Wear clean, dry socks 6. Shake out shoes and feel the inside before wearing 7. use an antiperspirant on the soles of feet 8. never walk bare feet	1. mean and/or above 2. below mean

Part IV: Clinical factors from the patient record, laboratory investigation, and measurement

s. no	Question	Response	Remark
	Blood pressure in mmHg	----------	1. hypertensive(>=140/90 mmgh) 2. not hypertensive
	Result of HbA1c	----------	1. less than 7mg/dl 2. >=7mg/dl
	Chronic kidney disease	1. Yes 2. No	
	Peripheral vascular disease	1. Yes 2. No	
	Peripheral neuropathy	1. Yes 2. No	
	Height in centimeters	----------	
	Weigh in kilogram	----------	
	BMI	----------	1. Under weight (<=18.5) 2. Normal (18.5-24.9) 3. Over weight (25-29.9) 4. Obese(<=30)

Thank you for your time!!!

Annex IV: Amharic Version Information Sheet

የአማርኛ መረጃ መሰብሰብያ መሳርያ

በ---------- ሆስፕታል የስኳር ህክምና ክልኒክ በስኳር ታማምዎች ላይ የምከሰተዉን የእግር ቁስለት እና ተያያዥ ጉዳዮችን ለማጥናት የተዘጋጀ መጠይቅ።

ሀ.ለተሳታፍዎች የጥናቱ መረጃ መግለጫ

ሰላምታ፡እንደምን ዋልሽ/ክ ወይም እንደምን አደርሽ/ክ

ስሜ---------- ይባላል። በ አድስ አበባ ዩንቨርስት በህክምናና ጤና ሳይንስ ኮሌጅ 2ተኛ ድግር ተመራቂ ተማር የሆነዉ ዳዊት ስምኦን በምያካህደዉ ጥናት ለይ መረጃ ሰብሳብ ነኝ።በስኳር ህመም ምክንያት የምመጣዉን የእግር ቁስለትን አስመልክቶ እስከ 7 ደቅቃ የምወስድ ጥያቀዎችን ለመጠየቅ አወዳለሁኝ። የእርሶ በእዝህ ጥናት መሳተፍ በስኳር ህመም ምክንያት የምመጣዉን የእግር ቁስላት እና ተያያዥ ችግሮችን ለመለየት እና የመፍተሃ አቅጣጫዎችን ለማስቀመጥ ያግዛል። እርሰዎ የተመረጡት በተለይ ምክንያት ሳይሆን የስኳር ታማም ሲለሆኑ እነ በአጋጣም ነዉ። ጥናቱን አስመልክቶ ግልጽ ለማድረግ ያህል

የጥናቱ ርዕስ፡- በጎፋ ዞን እነ ወላይታ ዞን በምገኙ የመንግስት ሆስፒታሎች በስኳር ህመም ምክንያት የምከሰት የእግር ቁስለት እና ተያያዥ ችግሮች የምል ነዉ።

የጥናቱ ዓላማ፡ በጎፋ ዞን እነ ወላይታ ዞን በምገኙ የመንግስት ሆስፒታሎች በስኳር ህመም ምክንያት የምከሰት የእግር ቁስለት እና ተያያዥ ችግሮችን መመርመር ነዉ።

የጥናቱ ጥቅም፡ ምን እንኳን በጥናቱ ላይ የሚሳተፉ ሰዎች በቀጥታ የሚያገኙት ጥቅም ባይኖርም ከጥናቱ የሚገኘዉ መረጃ ዓላማ፡በጎፋ ዞን እነ ወላይታ ዞን በምገኙ የመንግስት ሆስፒታሎች በስኳር ህመም ምክንያት የምከሰት የእግር ቁስለት እና ተያያዥ ችግሮችን ለመቅረፍ ከማስቻልም በላይ በሀገር ደረጃ ለምቀረጹ ፕሮግራሞች የራሱ የሆነ አስተዋጽኦ እንደምኖረዉ ይታመናል።

የጥናቱ ስጋት፡- በጥናቱ ላይ መሳተፍ ለተሳታፊዎች ምንም የሚያመጣው ችግር የሌለ እና የሚሰጡት መረጃ ሚስጥራዊነቱ የተጠበቀ ነው።

የተሳታፊዎች መብት፡- በጥናቱ ላይ መሳተፍም አለመሳተፍም ሙሉ መብት ያላቸው ሲሆን ተሳታፊዎችም በማንኛውም ጊዜ እራሳቸውን ከጥናቱ ማግለል ይችላሉ፤ ከዚህም በተጨማሪ በጥናቱ ላይ ማንም አይነት ጥያቄዎች ካሏቸዉ የበለጠ እንዲብራራላቸዉ መጠየቅ ይችላሉ።

የጥናቱ ሚስጥራዊነት፡- ማንኛውም መረጃ ሚስጥራዊነቱ የተጠበቀ ሲሆን በመጠይቁ ላይ የተሳታፊዎችን ስም መግለፅም አስፈላጊ አይደለም።ከማንነትዎ ጋር በቀጥታ ተያያዥነት ያሊቸው መረጃዎች በሙለ በዋና ተመራማሪው ሚስጥራዊ በሆነ የመረጃ ጥንቅር ዘዴ ከተቀየሩ በኋሊ ብቻ ሇምርምር ሂደቱ የሚውለ ይሆናለ።

Annex V: Amharic Version Consent Form

ለ. የስምምነት ቅጽ

ከላይ ያነበብኩልዎትን መረጃ በሚገባ ተረድተዋል? በጥናቱ ላይ ለመሳትፍ ፈቀደኛ ነዎት ?

1) አይደለሁም (አመሰግናለሁ)

2) አዎ (ቃለ መጠይቁ ይቀጥላል)

የተጠያቂዉ ፊርማ …… ቀን……

ቃለ መጠይቁ የተካሄደበት ቀን……..

የቃለ መጠይቁ ዉጤት

1) የተፈጸመ 2) መልስ ሰጭ የለም

3) መልስ ሰጭው ፍቃደኛ ያልሆነበት 4) በከፊል የተሞላ

ያረጋገጠዉ ተቆጣጣሪ ስም……...ፊርማ……ቀን……

Annex VI: Data Collection Form of Amharic Version

ክፍል 1፡-ማህበራዊና ስነህዝባዊ መረጃዎችን በተመለከተ የተዘጋጀ ቃለ መጠይቅ

ተ.ቁ	ጥያቄ	መልሶች	አስተያየት
1.	ዕድሜ	----------ዓመት	
2.	ጾታ	1. ሴት 2. ወንድ	
3.	የመኖሪያ ቦታ	1. ከተማ 2. ገጠር	
4.	የጋብቻ ሁኔታ	1. ያገባ 2. ያላገባ 3. በሞት የተለዩ 4. የተፋታ/ች 5. ሌላ ካለ ይግለጹ	
5.	የስራህ/ሽ/ ሁኔታ	1. የመንግስት ሰራተኛ 2. የመንግስታዊ ያልሆነ ቅጥር 3. የግል ስራ 4. አርሶ አደር 5. ተማሪ 6. ሌላ ካለ ይግለጹ ……	
6.	ሃይማኖት	1. ኦርቶዶክስ 2. ሙስሊም 3. ፕሮቴስታንት 4. ካቶሊክ 5. ሌላ ካለ ይግለጹ	
6.	የትምህርት ደረጃ	1.ማንበብና መፃፍ የማይችል/ትችል 2.ማንበብና መፃፍ የሚችል/ትችል 3. አንደኛደረጃ ያጠናቀቀ/ች(ከ1ኛ-8ኛ ክፍል) 4. ሁለተኛ ደረጃ ያጠናቀቀ/ች(ከ9ኛ-12ኛ ክፍል) 5.ዲፕሎማ እና ከዚያ በላይ	
7.	የወርሃዊ ገቢ	----------ብር	

ክፍል 2፡ ስለ ስኳር ህመም ታሪክ መረጃዎችን በተመለከተ የተዘጋጀ ቃለመጠይቅ፡፡

ተ. ቁ	ጥያቀዎች	ሚላሾች	አስተያየት
1.	የስኪር ህመም እንዳለብዎ ለመጀመርያ ግዘ ያዎቁት መቸ ነዉ?	----------ዓ/ም	
2.	የስኪር ህመም እንዳለብዎ ለመጀመርያ ግዘ ያዎቁት የት ነዉ?	1. ጤና ጣቢያ 2. በመንግስት ሆ/ል 3. በግል ሆ/ል ወይም ክሊኒክ 4.በራስዎ የደም ምርመራ በማድረግ	
3.	የትኛው አይነት የስኳር ህመም አለብዎ ?	1. አንደኛው አይነት 2. ሁለተኛው አይነት	
4.	የትኛውን የስኪር ህመም መቆጣጠረያ ይወስዳሉ?	1. በመርፌ የሚሰጠውን 2. በኪኒን የሚሰጠውን 3. ሁለቱንም ዓይነት 4. አመጋገቤን በማስተካከል ብቻ	
5.	በስኪር ህመም ምክንያት የምመጣ የእግር ቁስለት አሁን አለብዎት?	1. አዎ 2. አይ	

ክፍል 3፡ ከባህር ጋር የተገናኙ መረጃዎችን በተመለከተ የተዘጋጅ ቃለመጠይቅ።

ተራ ቁጥር	ጥያቄዎች	ምላሾች	አስተያየት
	የስኪር ህመም መድህንት በአግባቡ ይወሰዳሉ?	1. አዎ 2. አይ	
	ለ ህ ክ ምና ክ ት ት ል ዎ በ ተ ገ ቢው ስ ዓ ት እ ና ቦ ታይ ገ ኛ ሉ ?	1. አዎ 2. አይ	
	የደም የስኪር መጠን ሊከት በቋምነት ያደርጋሉ?	1. አዎ 2. አይ	
	ምልሱ አዎ ከሆነ መቸ መቸ?	1. ቤየሳምንቱ 2. በሁለት ሳምንት አንደ ግዜ 3. በወር አንድ ግዜ 4. የጤና ባለሙያዎች በጠየቁኝ ግዘ ብቻ	
5.	የእግር ቁስለትን ለመከላከል ምነ ምን ነገሮችን ያደርጋሉ?(ከአንድ በላይ ምላሽ ይቻላል)	1. በየቀኑ እግሮቸ መቁሰል አለመቁሰላአዉን አመረምራለሁ 2. በማያቃጥል ሙቅ ውሃ ውስጥ እግረን በቀስታ እታጠባለሁ 3. ከጣቶች መሀል ዉጭ ያሉ የእግሮቸን ክፍል ሁ ል ግዘ እርጥበ ፣ አደርጋለሁ። 4.የጣት ጥፍሮቸን በጥንቃቄ ዕቆረጣለሁ። 5. ንጹህ እና ደረቅ ካልሲዎችን ሁል ግዘ እጠቀማለሁ።	

		6. ጫማ ከመጫማተ በፊት ጫማዎችን በማወዛወዝ ዉስጡን እፈትሸዋለሁ 7. ሸፍን ጫማዎችን ሳደርገ የላብ ማደርቅያ መድሀንቶችን እጠቀማለሁ። 8. በባዶ እግር በጭራሽ አልራመድም።	