



COLLEGE OF HEALTH SCIENCES

DEPARTMENT OF NURSING

SCHOOL OF HEALTH SCIENCES

DEPARTMENT OF NURSING

**KNOWLEDGE AND SCREENING PRACTICES FOR TYPE 2 DIABETES
MELLITUS AMONG KYAMBOGO UNIVERSITY STAFF, KAMPALA, UGANDA.**

BY OSCASS JIMMY RUVA

REG. NO. 18/U/36651/PS

SUPERVISED BY: TOM NGABIRANO (MSN, BSN, RN)


**A RESEARCH DISSERTATION SUBMITTED TO THE MAKERERE UNIVERSITY
DEPARTMENT OF NURSING IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE AWARD OF BACHELOR OF
SCIENCE IN NURSING DEGREE OF
MAKERERE UNIVERSITY**

NOVEMBER, 2022

DECLARATION

I, Oscass Jimmy Ruva, hereby declare that this Dissertation entitled “**Knowledge and the Screening Practice for type 2 Diabetes Mellitus among Kyambogo University Staff, Kampala**” has been written by me with the help of my supervisor and to the best of my knowledge; I confess that no such a dissertation report has been submitted to any other institution before for funding.

Oscass Jimmy Ruva

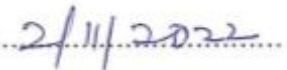
Signature.....

Date.....

SUPERVISOR'S APPROVAL

Tom Ngabirano (MSN)

Signature.....

Date.....

ACKNOWLEDGEMENT

I thank the Almighty God for the gift of life and strength he has given me throughout the process of proposal writing, data collection and dissertation writing.

In a special way, I thank my supervisor **Mr. Tom Ngabirano** for the guidance, time and tireless efforts in supervision of this dissertation and to my academic mentor, madam Mariam for the encouragement and mentorship. I appreciate with grateful heart, Dr. Pesh Muwanguzi and all the faculty staff members of the department for the sharing their knowledge and wisdom with us.

Special appreciation to Louis and Adele Lindenmeyr for their kind support and encouragement. And to all my family members for their endurance and love during my period of study. To my classmates for your unwavering support. Indeed it's a shared success!

TABLE OF CONTENTS

DECLARATION	i
ACKNOWLEDGEMENT	ii
TABLE OF CONTENTS	iii
LIST OF ABBREVIATIONS	vii
LIST OF TABLES	viii
LIST OF FIGURES	ix
OPERATIONAL DEFINITIONS	x
ABSTRACT	xi
CHAPTER ONE	1
1.0 Background	1
1.1 The Problem Statement	3
1.2 Purpose of the Study	3
1.3 Specific Objectives	4
1.4 Research Questions	4
1.5 Scope of study	4
1.6 Significance of the study	4
1.5.1 Conceptual framework	5
1.5.2 Explanation of the conceptual framework	5
CHAPTER TWO: LITERATURE REVIEW	7
2.0 Introduction	7
2.1.0 Knowledge of diabetes mellitus	7
2.1.2 Knowledge of risk factors for diabetes mellitus	7
2.1.3 Knowledge of symptoms of diabetes mellitus	8
2.1.4 Knowledge of complications of diabetes mellitus	9
2.1.1 Knowledge of prevention of diabetes mellitus	9

2.2 Screening Practice for Diabetes Mellitus	10
2.3 Knowledge and screening for diabetes	11
2.4 Conclusion of the literature review	12
CHAPTER THREE: METHODOLOGY	13
3.1 Study design	13
3.2 Study site	13
3.3 Study population	14
3.4 Selection criteria	14
3.4.1 Inclusion criteria	14
3.4.2 Exclusion criteria	14
3.5 Sample size determination	14
3.6 Sampling procedure	15
3.7 Study variables	16
3.7.1 Independent variables	16
3.7.2 Dependent variables	16
3.8 Data collection tools	16
3.9 Data collection procedure	17
3.10 Quality control measures	17
3.11 Data management	18
3.12 Data analysis	18
3.13 Ethical considerations	19
3.14 Dissemination	19
3.15 Study limitations	19
CHAPTER FOUR: RESULTS	21
4.0 SOCIODEMOGRAPHIC CHARACTERISTICS	21
4.1.0 KNOWLEDGE OF DIABETES MELLITUS	23
4.3 SCREENING PRACTICE FOR DIABETES	24

4.4 KNOWLEDGE AND SCREENING PRACTICE FOR DIABETES	27
CHAPTER FIVE: DISCUSSION	28
5.1.0 KNOWLEDGE OF DIABETES	28
5.1.1 Knowledge (understanding) of diabetes mellitus is	28
5.1.2 Knowledge of risk factors for diabetes	28
5.1.3 Knowledge of symptoms of diabetes	29
5.1.4 Knowledge of diabetic complications	29
5.1.5 Knowledge of prevention of diabetes	30
5.2.0 SCREENING PRACTICE FOR DIABETES	30
5.3.0 KNOWLEDGE AND SCREENING PRACTICE FOR DIABETES	32
CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS	33
6.1: CONCLUSIONS	33
6.2: RECOMMENDATIONS	33
6.2.1: To policy makers	33
6.2.2: To health care workers	33
6.2.3: To researchers	33
REFERENCE	34
APPENDICES	41
APPENDIX ONE: SIMPLE DIABETIC STATUS SCREENING TOOL	41
APPENDIX TWO: SELF-ADMINISTERED QUESTIONNAIRE	43
APPENDIX THREE: CONSENT FORM	48
APPENDIX FOUR: BUDGET	53
APPENDIX FIVE: ACTIVITY PLAN	54
APPENDIX SIX: COVID-19 RISK MANAGEMENT PLAN	55
APPENDIX SEVEN: SIMPLE DIABETIC STATUS SCREENING TOOL LUGANADA	56
APPENDIX EIGHT: QUESTIONNAIRE LUGANDA VERSION	57

LIST OF ABBREVIATIONS

ADA:	American Diabetic Association
BMI:	Body Mass Index
DKQ:	Diabetic Knowledge Questionnaires
DM:	Diabetes Mellitus
IDF:	International Diabetic Federation
USPST:	United States Preventive Services Task Force
WHO:	World Health Organization

LIST OF TABLES

Table 4. 1: Socio-demographic characteristics of participants		22
Table 4. 2: Description of diabetic knowledge score for participants	n=221	23
Table 4. 3: Diabetic knowledge score for five knowledge areas	(n=221)	23
Table 4. 4: Diabetic knowledge score at different cutoff points	(n=221)	24
Table 4. 5: participants screening practices for diabetes	(n=94)	26
Table 4. 6: Reasons for not screening for diabetes among study participants	n(127)	26
Table 4. 7: Association between knowledge of diabetes and screening practice	n(221)	27

LIST OF FIGURES

Figure 4. 1: Proportion of participants' responses to either they have screened for diabetes or not 25

OPERATIONAL DEFINITIONS

Knowledge of diabetes: theoretical or practical understanding of diabetes

Screening for diabetes: checking for diabetes when there are no symptoms

Practice: The actual application or use of an ideal, beliefs, or methods

Diabetes: chronic, metabolic disease characterized by elevated blood sugar

ABSTRACT

Introduction: Knowledge is considered a key component in any future onset of diseases including its prevention and detection. Knowledge of diabetes risk factors, symptoms, prevention, prevention, management, and complications are important because they can motivate people to assess their risk factors, and if they have the disease, seek proper treatment and healthcare and adjust their lifestyle for a lifetime (Moodley & Rambiritch, 2014).

Methods: The study employed descriptive quantitative study design. 221 participants were selected using a proportionate sampling method. Knowledge was assessed using modified Diabetic Knowledge Questionnaires (DKQ) as validated by Menino, Maria, & Clarisse, (2017). 27 questions were used to assess five knowledge areas of diabetes. Responses were scored 0-27 (0-100%) and graded $\leq 74\%$ as low knowledge and ≥ 75 high knowledge. Mean, median, mode, range, and standard deviation score for the five knowledge areas were obtained. Data entered into excel and analyzed using SPSS for correlation analysis and the level of significance was set at $p < 0.05$.

Results: The overall mean knowledge score for participants was 76%. Knowledge of what diabetes mellitus is, risk factors, and symptoms were low at $\leq 74\%$. Participants' knowledge of complications and prevention of diabetes were high. Screening practice was low with only 94(42%) of the study participants reporting to have screened for diabetes. Self-referral and recommendations from the medical workers were the main motivators for their screening practices. Lack of information about screening was the major reason for not screening (52.8%).

Discussion: The study provides baseline understanding of diabetic knowledge and screening practice. There is a need for policy makers to improve information and communication to the public regarding diabetes and particularly screening for the disease especially to those at risk to address the gaps that exist.

CHAPTER ONE

1.0 Background

Diabetes Mellitus (DM) is a leading non-communicable disease clinically that presents with hyperglycemia either due to insulin deficiency (type 1 diabetes mellitus) or insulin resistance (type 2 diabetes mellitus). The disease is increasing exponentially in prevalence globally. Low and middle-income countries are carrying the heaviest burden of illness due to westernization and change in lifestyle. In the year 2021, 537 million adults (1 in 10) aged 20-79 years were living with diabetes with low and middle-income countries reportedly having 3 in 4 (75%) cases of the global burden of the pandemic (IDF, 2021). According to the World Health Organization, diabetes alone directly accounted for 1.5 million deaths globally. Individuals with diabetes can present with potentially life-threatening acute hypoglycemia and hyperglycemia. Diabetes threatens the quality of life through arrays of complications associated with the disease such as chronic kidney disease, cardiovascular diseases, blindness, neurological deficit, and erectile dysfunction in men, among other complications and the burdens it levies on the individuals and their families causing both financial and social related problems (Islam, et al., 2015). Diabetes has economic impacts too, as it is associated with higher medical costs, reduction in the labor force and productivity, and most sadly, premature mortality from the complications of the illness (Dall, et al., 2019).

In the past, diabetes was seen as a disease in affluent nations, but in the 21st century, the disease affliction has evolved as underprivileged countries, countries with virtually limited resources for prevention, diagnosis, treatment and management of the disease have taken the lead. In Uganda, the overall prevalence of diabetes was reported to be at 10.1% in 2016, with the rural population ranking higher at 16.1% (Chiwanga, et al., 2016).

The exponential surge in diabetic cases, morbidity, and mortality require increased knowledge among the general population about the disease as a measure to influence lifestyle and behavior

change. Knowledge is considered a key component in any future onset of disease including its prevention and detection. Knowledge of diabetes risk factors, prevention, detection, treatment, management, and complications are important for both asymptomatic and diagnosed individuals with the disease. Adequate knowledge of diabetes is important because it prevents eminent chronic comorbidities of diabetes, which has great implications for the quality of life of diabetic sufferers. Awareness of diabetes can motivate people to assess their risk factors, and if they have the disease, seek proper treatment and healthcare and adjust their lifestyle for a lifetime (Moodley & Rambiritch, 2014).

Literature searches on diabetic knowledge in Uganda yielded limited results. One study on knowledge, attitudes and perceived risks related to diabetes mellitus among university students in Uganda reported adequate knowledge with 99% reportedly being knowledgeable about the disease (Kharono, et al., 2017). However, the level of knowledge of the general population about the disease has not been ascertained.

Given the high prevalence of diabetes and the significance of early detection, experts recommend screening for diabetes for all adults aged 45 years and above independent of the individual risk factors as well as for obese people with a Body Mass Index (BMI) of 25 and above regardless of their age (ADA, 2018). Screening for diabetes could lessen complications through early interventions and appropriate management of the condition (Backholer, Chen, & Shaw, 2012) by allowing early detection, diagnosis, and treatment, hence improving treatment outcome (USPST, 2021).

Despite the significance of screening, the current database search for literature on screening practices for diabetes in Uganda did not yield any useful results. This study, therefore, sets out to examine the level of knowledge of diabetes and the screening practice of the disease among Kyambogo University staff.

1.1 The Problem Statement

Diabetes is a lifelong illness with consequences on the sufferers, their families, and the economy through the reduced quality of life, longevity, impaired productivity as well as high cost of management. Low and middle-income countries carry the heaviest global burden of diabetes amidst limited resources for prevention, diagnosis, treatment, and management of the disease. At least 3 in 4 (75%) cases of diabetes mellitus patients live in low and middle-income countries, Uganda inclusive (IDF, 2021). There is evidence that type 2 diabetes can be prevented through increased physical activity, weight reduction, healthy dieting, and other interventions. It is also well documented that early diagnosis, treatment, and management of diabetes improves the quality of life through the reduction of complications and costs of hospitalization frequently associated with the severe disease. However, this requires sufficient knowledge of the disease and that people take the initiative to screen for the disease early.

Adequate knowledge of diabetes, especially of risk factors and complications could potentially trigger lifestyle changes that are important for its prevention and management outcomes and also screening for early detection and interventions.

Although knowledge is critical to diabetic prevention and management, the lack of literature regarding the current level of knowledge about the disease in Uganda makes it difficult to direct interventions to target at-risk populations. This study intends to ascertain what participants already know about diabetes, thereby attempting to narrow the gap that exists in the literature today. The study attempted to correlate whether knowledge of diabetes impacted screening practice for the disease.

1.2 Purpose of the Study

The purpose of the study was to determine the knowledge and the screening practices for diabetes among the staff of Kyambogo University, Kampala.

1.3 Specific Objectives

1. To assess the level of knowledge of diabetes mellitus among the staff of Kyambogo University, Kampala
2. To describe the screening practice for diabetes mellitus among the staff of Kyambogo University, Kampala
3. To examine the relationship between knowledge and screening practice for diabetes among the staff of Kyambogo University, Kampala

1.4 Research Questions

1. What was the level of knowledge of diabetes mellitus among the staff of Kyambogo University, Kampala?
2. What was the screening practice for diabetes mellitus among the staff of Kyambogo University, Kampala?
3. Did there exist a relationship between knowledge and screening for diabetes among the staff of Kyambogo University, Kampala?

1.5 Scope of study

The study was conducted at Kyambogo University, Kampala located at Nakawa Division, one of the administrative units of the Kampala capital city authority. The University has seven faculties with more than 1000 staff, both academic, administrative, and support staff. The study sought to assess knowledge and the screening practices for diabetes among the university staff.

1.6 Significance of the study

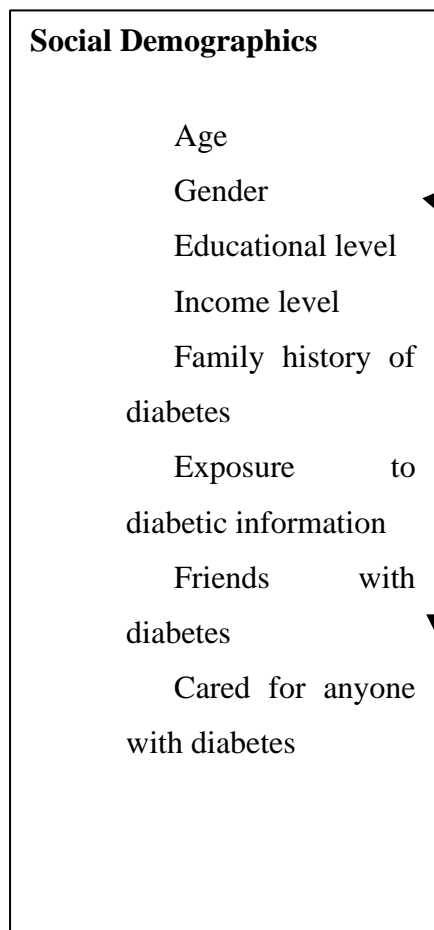
The study ought to provide valuable information leading to the development of effective and evidenced-based diabetic population education, which could help to improve the knowledge and therefore, screening practices of diabetes.

Data obtained from this study could as well be used to develop effective teaching methods regarding diabetes mellitus and the screening practices for diabetes and may form a part of policy or guideline development for diabetic education and screening.

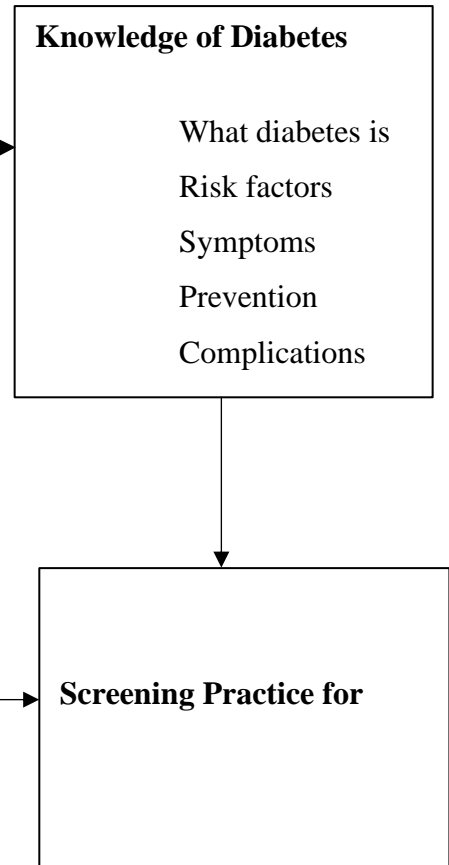
Healthcare providers to learn more about diabetic knowledge and screening behaviour for practices so that they can help target interventions accordingly may utilize the data generated from the study. The research findings may also act as a future reference for those conducting research in a similar area of study.

1.5.1 Conceptual framework

Independent Variables



Dependent



Adopted from Zamri, Rahman, & Haque, (2020)

1.5.2 Explanation of the conceptual framework

The conceptual framework above indicates that there is a relationship between the independent variables (demographic characteristics) and the two dependent variables (knowledge of diabetes and the screening practices).

Demographic characteristics are important because they may be important determinants of knowledge of diabetes and screening behaviors for the disease. For example, people with higher socioeconomic status may have different eating behavior compared to those with lower social statuses and those who are highly educated could have gotten exposed to diabetic literature over their course of education.

Knowledge of diabetes awakens people's awareness about their risk to the disease and the consequences the disease imposes upon their life and so may take appropriate actions including screening to either prevent the disease or delay its onset.

The practice of screening for diabetes is important because it enables early detection, diagnosis, and interventions.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

This chapter was about the analysis of the existing literature on knowledge of Diabetic Mellitus and the screening for diabetes among healthy or asymptomatic populations. It examined knowledge of diabetes mellitus, screening practice for diabetes mellitus, the linkage between diabetic knowledge and screening for the disease, and the factors that determine knowledge of diabetes and the screening practice for the disease. Finally, it concluded by highlighting the gaps that exist in the literature.

2.1.0 Knowledge of diabetes mellitus

Diabetes is a chronic disease that is characterized by hyperglycemia. There are two types of diabetes, type 1 and type two diabetes mellitus. Knowledge of diabetes mellitus is considered an important aspect of the disease process, its prevention, and management. Adequate knowledge of diabetes is important because it delays or even prevents eminent chronic comorbidities of diabetes, which has great implications on the quality of life of diabetic sufferers. Diabetic knowledge, according to some literature, can motivate people to assess their risk factors, and if they have the disease, seek proper treatment and healthcare and adjust their lifestyle for a lifetime (Moodley & Rambiritch, 2014). It is well documented that diabetes can be prevented through lifestyle interventions including increased physical activities, a healthy diet, and weight reduction (Palacios, Kyamer, & Maki, 2018).

2.1.2 Knowledge of risk factors for diabetes mellitus

Apart from genetic predisposition, risk factors for diabetes such as an unhealthy diet and sedentary lifestyle (physical inactivity) are the most important lifestyle-related risk factors for diabetes. This is because there tends to be insulin resistance at the receptor sites due to increased body weight and total body fat. Results from previous studies regarding knowledge of diabetes risk factors show varied outcomes.

In Saudi Arabia, only 35.8% reportedly identified obesity as a risk factor for diabetes mellitus (Alanazi, et al., 2018). One study that examined the prevalence of diabetes, knowledge, and attitude of the rural population towards diabetes and hyperglycemic event in Sudan found that 57.2% and 46.9% knew that genetics and nutritional habits, respectively, were risks for diabetes (Balla, Ahmed, & Awadelkareem, 2014).

2.1.3 Knowledge of symptoms of diabetes mellitus

Although most patients with type 2 diabetes initially are asymptomatic, diabetic patients will eventually present with 'classical symptoms of the disease. These classic symptoms include polyuria, polydipsia, and polyphagia, which are eminently present in type 1 diabetes mellitus but also in type 2 diabetes patients with very high hyperglycemia. Unexplained weight loss, fatigue, and restlessness are all symptoms of diabetes (Ramachandran, 2014).

Progressively, symptoms of chronic complications begin to manifest after a long period of poor management and control of diabetes. These symptoms are usually system-specific. Progressive loss of vision, tingling sensation in the distal extremities, reduced renal function, high blood pressure, foot ulcers that do not heal, and erectile dysfunction in men could all be evidence of impending organ or system dysfunction resulting from diabetes mellitus (IDF, 2020).

A significantly lower level of knowledge of the symptoms of diabetes has been reported in some studies. In Malaysia, frequent urination, hunger, and thirst were reported by the majority in one study as the clinical presentation of diabetes mellitus (Chinnappan, Sivanandy, Sagarar, & Molugulu, 2017). In one study in Sudan, Balla, Ahmed, & Awadelkareem, (2014) found only 38.1% knew that dizziness was a symptom of diabetes. Knowledge of rigor, sweating, and palpitations as signs of diabetes mellitus was also very low at 24.4%, 21.4%, and 17.1% respectively.

2.1.4 Knowledge of complications of diabetes mellitus

Diabetes is one of the diseases that can cause serious complications, both immediate and long-term that impair quality of life leading to premature mortality. Diabetes affects nearly all organs and systems of the body. Left untreated or poorly managed, diabetes can cause life-threatening hyperglycemic and hypoglycemic states. The long-term complications arise as a result of poor control of blood glucose and usually manifest over a while. Diabetic retinopathy, diabetic nephropathy (kidney disease), diabetic neuropathy, and cardiovascular complications are the most significant causes of morbidity and eventually mortality in diabetic patients (Toprak & Yigitaslan, 2019).

Studies have demonstrated a low level of knowledge of complications of diabetes. In Saudi Arabia, Aljofan, Altebainawi, & Alrashidi, (2019) found only 24% of their participants knew that diabetes may cause eye disease, 28% correctly mentioned kidney disease as a potential complication of diabetes, 26% reportedly identified foot ulcers as a consequence of diabetes mellitus, and only 20% could recognize heart disease as an important complication of diabetes (Aljofan, Altebainawi, & Alrashidi, 2019). In yet another study in Sudan, only 31.1% identified retinopathy as a complication of diabetes mellitus and most strikingly, only 16% knew that cardiovascular sequelae could be caused by diabetes mellitus (Balla, Ahmed, & Awadelkareem, 2014).

Chinnappan, Sivanandy, Sagarani, & Molugulu, (2017) also demonstrated through their study that 61.2% of their study respondents knew that foot ulcers were a complication of diabetes, while heart disease, kidney disease, and stroke were the least known complications of diabetes mellitus at 27.7%, 38.25%, 32.5%, and 20% respectively.

2.1.1 Knowledge of prevention of diabetes mellitus

Diabetes, especially type 2 can be prevented or delayed with lifestyle interventions. To prevent diabetes, experts advise lifestyle changes including physical exercise, a healthy diet, reducing

weight, and early screening. Moderate to intense physical activities of about 150 minutes a week has been demonstrated to reduce the incidence of diabetes in high-risk individuals (Kowler, et al., 2002). Eating whole grains, nuts, legumes, vegetables, and minimal refined or processed foods has also been linked to a reduced incidence of type 2 diabetes (Qian, Liu, Hu, Bhupathiraju, & Sun, 2019). A 7% weight loss is an achievable practice yet effective intervention in the prevention of type 2 diabetes mellitus. In one study, a weight reduction of 1 kg resulted in about 16% diabetic risk reduction and for every 5% reduction in total body fat, there was a reported 25% risk reduction (Hamman, et al., 2006).

Many studies have shown different levels of knowledge regarding the prevention of diabetes. In Italy, a study on diabetic prevention, knowledge, and risk perception reported that 16% of the participants knew the diabetic risk and protective factors (Pelullo, Rossiello, Nappi, Napolitano, & Giuseppe, 2019).

In Saudi Arabia, in one study that sought to evaluate public knowledge, attitude, and practice toward diabetes mellitus in Hail region, all of the respondents were reported to have been aware of physical activity/exercise as a preventive intervention for diabetes mellitus (Aljofan, Altebainawi, & Alrashidi, 2019).

2.2 Screening Practice for Diabetes Mellitus

Screening for diabetes enables early detection, diagnosis, and treatment with the net goal of improving treatment outcomes for the individuals. There is evidence that type 2 diabetes mellitus is preceded by prediabetes and latent diabetes (onset after 9-12 years) and that lifestyle modification would protect the individual from the risk of diabetes (Duan, Kengne, & Echouffo-Tcheugui, 2021). Although some clinical experts have differed in their opinions about screening for diabetes, the American Diabetic Association and the US Preventive

Services Task Force (USPSTF) maintain that screening for diabetes should be done owing to the increasing prevalence of diabetes (JAMA, 2021), (ADA, 2019).

The American Diabetic Association (ADA) recommends screening for diabetes in all adults aged 45 years and above independent of the individual risk factors and screening for people who are obese with a body mass index of 25 and above with one or more risk factors regardless of age. When a screening test is negative, a repeat test is done in three years to reassess the plasma glucose levels (ADA, 2018).

In the US, a retrospective cohort study that evaluated the national pattern of diabetic screening over seven years reported that about 42.4% of all eligible adults for screening for type 2 diabetes had screened for the disease. In the same study, 50% of adults aged 45 years and older had screened for diabetes and 39.1% of younger adults less than 45 years with high risk had also screened (Kiefer, Silverman, Nelson, & Young, 2014). Another study in Korea reported 53.2% screening rates for diabetes with the likelihood of screening increasing with age (Kim, et al., 2013).

In Nigeria, a study on knowledge of diabetes and screening practices reported that 31% had been screened for diabetes and of which 13% were reportedly diagnosed with diabetes (Osiberu, Oluwasano, Omobowale, Akinola, & Oladepo, 2021).

2.3 Knowledge and screening for diabetes

Knowledge of chronic disease (diabetes mellitus inclusive) is considered an important prerequisite for the individual to consider lifestyle changes toward disease prevention and control (Tian, et al., 2011). In the same vein, knowledge of the seriousness of a disease such as diabetes would awaken the individual to seek interventions to reduce his chances of developing diabetes or delaying the onset of the disease. Screening for diabetes is one of the recommended interventions aimed at identifying diabetes early in its origin before complications become imminent.

Although literature regarding the relationship between knowledge and screening practice for diabetes remains elusive, scholars have published findings of their studies on the correlation between knowledge and screening practice for other chronic diseases. One study in India that assessed the Knowledge and Screening for Cervical Cancer among Women in Mangalore City found that lack of knowledge of cervical cancer directly correlated with poor screening for the disease with 81.9% of the study population reportedly having poor knowledge and subsequently only 7.2% of the participants had screened for cervical cancer. (Kumar & Tanya, 2015).

2.4 Conclusion of the literature review

The purpose of this literature review was to analyze related literature regarding the knowledge of diabetes and the screening practice for the disease and the gaps that exist in the current literature. From the literature review, it is clear that knowledge of diabetes has attracted much attention from researchers around the world perhaps because of the clear and well-documented significance of knowledge in influencing behavioral changes, an important intervention for most chronic diseases. Screening practice for diabetes, from the review of the existing literature, has had little attention from scholars, with limited literature at disposal, although the significance of screening for diabetes has been well documented. More research is required to have a better knowledge of diabetes and importantly screening practice for the disease as a component of the strategies to improve management outcomes from the disease.

CHAPTER THREE: METHODOLOGY

3.1 Study design

The study employed a quantitative descriptive cross-sectional design. The design was chosen as it allows for the collection of data at a single point in time about the knowledge of diabetes and the screening practice for diabetes.

3.2 Study site

The study was conducted at Kyambogo University. The University is located in Kyambogo on Kyambogo Hill, neighboring Banda and Ntinda, and is in the Nakawa West Division, one of the five administrative divisions of Kampala Capital City Authority (KCCA).

Kyambogo University is approximately 8 kilometers from the Central Business District (CBD) of Kampala. Kyambogo University has six (06) faculties including the Faculty of Engineering, Faculty of Science, Faculty of Agriculture, Faculty of Special Needs and Rehabilitation, Faculty of arts and humanities, and faculty of social sciences. The university also has six schools including the School of Built Environment (SOFBE), School of Vocational Studies, School of Computing and Information Science, School of Education, School of Art And Industrial Design, and School Of Management And Entrepreneurship. The university has one (01) institute (Institute of Distance Education, E-Learning and Learning Center) and a Directorate of Research and Industrial Training. The university teaches both undergraduate programs (certificates, diplomas, and undergraduate degrees) and postgraduate programs (postgraduate diplomas, masters, and PhDs). Kyambogo University has over 30,000 students enrolled in various programs taught at the university. The university has over 500 support and administrative staff and 1,000 faculty staff members.

3.3 Study population

The study was conducted among members of staff at Kyambogo University

3.4 Selection criteria

3.4.1 Inclusion criteria

All employees of Kyambogo University who were not aware of their diabetes status at the time of this study were included.

3.4.2 Exclusion criteria

All staff of Kyambogo University who confirmed themselves to be diabetic during this study were excluded.

3.5 Sample size determination

To determine the sample size for this study, Kish Leslie's formula (1965) was used.

$$n = \frac{Z^2 PQ}{e^2}$$

Where;

Z=Level of confidence = 95% (1.96)

P= occurrence of diabetes in Uganda =0.5% (statistics from (Chiwanga, et al., 2016).

Q = 1-P = 1-0.5 (0.5)

e- Sample error = 0.05

n= sample size

$$n = \frac{Z^2 PQ}{e^2}$$

$$n = \frac{(1.96)^2 (.5)(.5)}{(0.05)^2}$$

S= Sample size = 385

Finite Size Population Correction

Where n = sample size; N =Population Size

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

$$n = \frac{2000}{1 + 2000 * (.05)^2}$$

$n=333$

The sample size was 333 participants

3.6 Sampling procedure

A proportionate sampling method was used to select participants for this study. The number of participants from each school, faculty, or administrative unit was determined based on their respective population sizes to give each staff a chance of participating in the study. Each faculty, school, department or section was represented by 16.7% of the population. Faculty of Engineering (25), Faculty of Science (28), Faculty of Agriculture (18), Faculty of Special Needs and Rehabilitation (16), Faculty of arts and humanities (22), and faculty of social sciences (24). School of Built Environment (SOFBE) (8), School of Vocational Studies (18), School of Computing and Information Science (22), School of Education (26), School of Art And Industrial Design (12), and School of Management And Entrepreneurship (15) Institute of Distance Education, E-Learning, and Learning Center (6) and a Directorate of Research and Industrial Training (8).

The following number of participants were obtained from departments including Library (22), Estate (14), academic registrar (24), and administration (25).

Simple random selection technique was used to ensure that every single member of the subset of the study population had an equal and fair chance of being selected in order to ensure high internal and external validity.

The researcher and his assistants physically moved from faculty to faculty, school to school, offices to offices, and unit to unit to locate study participants. Each faculty, school, or administrative unit had an exact number of questionnaires as predetermined for that unit. All the staff members available at the time when the PI and/or his trained assistants visit to their workplaces were selected. Upon explanation of the study purpose and brief background to the study, those who consented to the study were issued with the study questionnaire to fill.

3.7 Study variables

3.7.1 Independent variables

The independent variables in this study included socio-demographic characteristics such as age, gender, educational level, income level, and family history of diabetes, exposure to diabetic information, having a friend with diabetes, and caring for someone with diabetes.

3.7.2 Dependent variables

The dependent variables in this study was the knowledge of what diabetes is, diabetes risk factors, symptoms, prevention, management, and complications. The second dependent variable was the screening practices for diabetes which was the primary outcome of the study.

3.8 Data collection tools

A structured questionnaire designed by the researcher was used in this study. The first part of the questionnaire was the participant's socio-demographic characteristics and sought information regarding participants' age, gender, level of education, average monthly income, family history of diabetes, exposure to diabetes information, having a friend with diabetes, and caring for someone with diabetes.

Knowledge was assessed with questionnaires modified from the Diabetic Knowledge Questionnaires (DKQ) as validated by Menino, Maria, & Clarisse, (2017). Participants were asked what they knew about diabetes. They proceeded to respond with either 'yes' or 'no' for

each question eliciting knowledge of diabetes including risk factors for diabetes, symptoms of diabetes, management of diabetes, prevention of diabetes, and complications of diabetes.

Regarding screening practices for diabetes, participants were asked if they have ever screened for diabetes, the number of times they have screened for diabetes, and their motivations for the screening test.

Study participants took around 15- 20 minutes to complete all questionnaires.

3.9 Data collection procedure

Authorization to carry out the study was obtained from the Institutional Review Board of Makerere University School of Health Sciences. Permission was also sought from the Office of the University Secretary of Kyambogo University by the Principal Investigator (PI). Participants were approached by the PI or his assigned research assistants between 0900 hours to 1700 hours local time between Monday and Saturday. The PI or his assigned research assistants identified themselves to the staff and requested their response. Written consent was sought before the questionnaire could be issued.

3.10 Quality control measures

Data was collected by the PI and/or his assigned and trained research assistants. Seventeen (17) questionnaires (5% of the sample size) were administered to a selected group of participants with similar population characteristics outside of the chosen study population to assess the suitability of the contents, their clarity, sequence, and flow of information in the questionnaire. Errors and/ or omissions were corrected. The questionnaires were both in English Language and Luganda. Data entry was carried out by the principal investigator to ensure accuracy and proper interpretation of findings from the study. Data was bias-free.

3.11 Data management

Upon completion, each questionnaire was checked for completeness at the respondent's place just before the researcher and/ or his assistants departed the study site. The completed questionnaires were kept by the principal investigator under safe custody and were only accessed by the principal investigator.

3.12 Data analysis

The data was extracted from fully completed questionnaires from participants' socio-demographic characteristics, diabetes knowledge, and screening practice for diabetes and was exported to the Statistical Package for Social Statistic (SPSS) version 21.0; frequency distribution was computed for all items and variables. Analysis of dependent variables, knowledge about diabetes and screening practice for diabetes, and the independent variable, the socio-demographic characteristics (age, gender, level of education, average monthly income, family history of diabetes, and exposure to diabetic information, having a friend with diabetes, and caring for someone with diabetes) was reported. The data was explored using descriptive statistics to determine the mean, mode, median, range, and standard deviation.

To determine the level of knowledge, self-administered questionnaires containing five knowledge areas regarding diabetes i.e. what diabetes is, risk factors, symptoms, complications, and prevention of diabetes were distributed. A total of 27 questions were administered. Responses were scored 0–27 (0–100%) and graded $\leq 74\%$ as low knowledge and ≥ 75 high knowledge. Mean, median, mode, range, and standard deviation score for the five knowledge areas were obtained. Data entered into excel and analyzed using SPSS for

correlation analysis and the level of significance was set at $p < 0.05$.

.

To describe the screening practice for diabetes, questions on the screening practice were calculated and the mean score for each will be obtained.

To determine if there exists any relationship between the knowledge and screening practices independent Phi coefficient was run to measure the strength of association between the two variables.

3.13 Ethical considerations

The study protocol was submitted to the Institutional Review Board (IRB) of Makerere University School of Health Sciences for review and approval. All participants were required to sign an informed consent before being administered a questionnaire. The participants were given information regarding the risks and benefits of participating in the study and only participants who have voluntarily consented were allowed to complete the questionnaire with an option of opting out, should they feel they cannot continue completing the study. I observed the utmost confidentiality of every participant as none of the participant's photos or names were displayed on the questionnaire. The data collected were password-protected and accessible to only the investigator. No personal identifiers were collected during the survey. All the data were used for research purposes only. Privacy and confidentiality were always observed.

3.14 Dissemination

A dissertation was presented to the Department of Nursing at Makerere University, as partial fulfillment for the award of a bachelor's degree in Nursing. The study results were shared with the Kyambogo University Directorate of Health Services and the University Libraries.

Attempts will be made to publish in peer-reviewed journals to avail this information to the public.

3.15 Study limitations

One limitation of this was selection bias. Selection bias could have influenced selection of the participants, in such a way that equal representation could have been affected. This study was also limited in that it is not set to screen participants medically using proven medical technology for diabetes as such those with known diabetes might have intentionally refused to disclose their statuses and still went on to enroll in the study. Another limitation was that of the reliability of the study tool. Another limitation in this study was nonresponse by respondents which affected data collection and caused delay in processing of data collected.

The researcher ensured that every member of staff had an equal and fair chance of being selected in this study by simple random selection technique since it gave each member of the population an equal chance of being selected and had high internal and external validity. Researchers pretested the study tool in a population of similar characteristics with the study population to determine its reliability. To mitigate nonresponse, the researcher and his assistants made constant follow-ups with the participants and ensured that the questionnaire was filled and completed before they left the study areas.

CHAPTER FOUR: RESULTS

4.0 SOCIODEMOGRAPHIC CHARACTERISTICS

From the sample size of 330 participants, 221 were reached out of which consisted of 53.4% females and 46.6% males. Age group representation was highest at 45-49 years 98, (44.4%) and lowest for less than 29 years 17(7.7%). The study sample consisted of academic and non-academic staff, the non-academic staff had the highest representation of 149(67.4%) and academic staff with the lowest representation of 72 (32.6%), 144(65.2%) were on a full-time permanent and contract while 77(34.8%) were either on a part-time or volunteering. In terms of education, the majority 171 (77.4%) had a bachelor's and above, followed by certificate and diploma with 48(21.7%), and non-formal education and primary education had 1(0.5%) respectively. Most participants 91 (41.2%) earned less than one million, majority 128(57.9%) reported that they had first-degree relatives with diabetes. The majority 124(56.1%) reported that they never had the opportunity to learn some information about diabetes and 97 (43.9%) did not. In terms of caring for someone with diabetes 130 (58.8%) did not care for someone with diabetes.

Table 4. 1: Socio-demographic characteristics of participants

Demographic characteristics of respondents		No. of participants	% (n=221)
Gender	Male	103	46.6
	Female	118	53.4
Age (years)	Less than 29	17	7.7
	30-44	38	17.2
	45-59	98	44.3
	60 and above	68	30.8
Employment status	Full Time permanent and Contract	144	65.2
	Temporary and volunteers	77	34.8
Employment category	Academic or faculty staff	72	32.6
	Non academic	149	67.4
Education level	Non formal education	1	.5
	Primary to secondary	1	.5
	Certificate to diploma	48	21.7
	Bachelors and above	171	77.4
Average income	Less than 1,000,000	91	41.2
	1,000,000-<2,000,000	30	13.6
	2,000,000-<3,000,000	17	7.7
	3,000,000-<4,000,000	12	5.4
	4,000,000 and above	71	32.1
Have a relative with diabetes	No	93	42.1
	Yes	128	57.9
Opportunity to learn information about diabetes	No	97	43.9
	Yes	124	56.1
Have a friend with diabetes	No	115	52.0
	Yes	106	48.0
Have cared for someone with diabetes	No	130	58.8
	Yes	91	41.2

4.1.0 KNOWLEDGE OF DIABETES MELLITUS

Table 4. 2: Description of diabetic knowledge score for participants

n=221

	Sum	Mean (%)	Median (%)	Mode (%)	Range (%)	Standard Deviation
Knowledge score	4544	20.56 (76)	21 (78%)	22, 20 (81.2%)	26 (96%)	3.8

Participants' level of diabetic knowledge was assessed using 27 questions. The overall knowledge mean score was 20.56 (76%), mode 22, 20 (81.5%), range 26, and the Standard Deviation (SD) was 3.8 as shown in table 4.2 above.

Five areas of diabetic knowledge were assessed and the mean, mode, median, range, and standard deviation were reported in table 4.3 below.

Table 4. 3: Diabetic knowledge score for five knowledge areas

(n=221)

	Sum	Mean (%)	Median	Mode	Range	Standard Deviation
What diabetes is	655	2.96(74)	3	3	4	0.857
Risk factors	984	4.45(74)	4	4	6	1.26
Symptoms	1280	5.79(72)	6	7	8	1.69
Complications	869	3.90(78)	4	4	5	1.08
Prevention	756	3.42(86)	4	4	4	0.785

From table 4.3 above, the mean knowledge score for the five diabetic knowledge areas assessed were 74%, 74%, 72%, 78%, and 86% for what diabetes is, risk factors, symptoms, complications, and prevention, respectively. Knowledge of complications and prevention was high at 78% and 86%, respectively.

Participants' knowledge was then categorized as either high or low using a cutoff point of $\geq 75\%$ (high) or $< 75\%$ (low) as presented in table 4.4 below.

Table 4. 4: Diabetic knowledge score at different cutoff points (n=221)

Grades/ Score	Frequency	(%)	Knowledge Category
≥ 75	119	53.9	High
< 75	102	46.1	Low

As shown in Table 4.4 above, more than half 119(53.9%) of the study participants scored $\geq 75\%$ and were categorized as having high knowledge, while 102(46%) of the participants scored less than 75% and were classified as having low knowledge.

4.3 SCREENING PRACTICE FOR DIABETES

Regarding screening practices for diabetes, only 94(43%) of the study participants reported having screened for diabetes while 127 had never screened for diabetes as shown in figure 4.1 bellow.

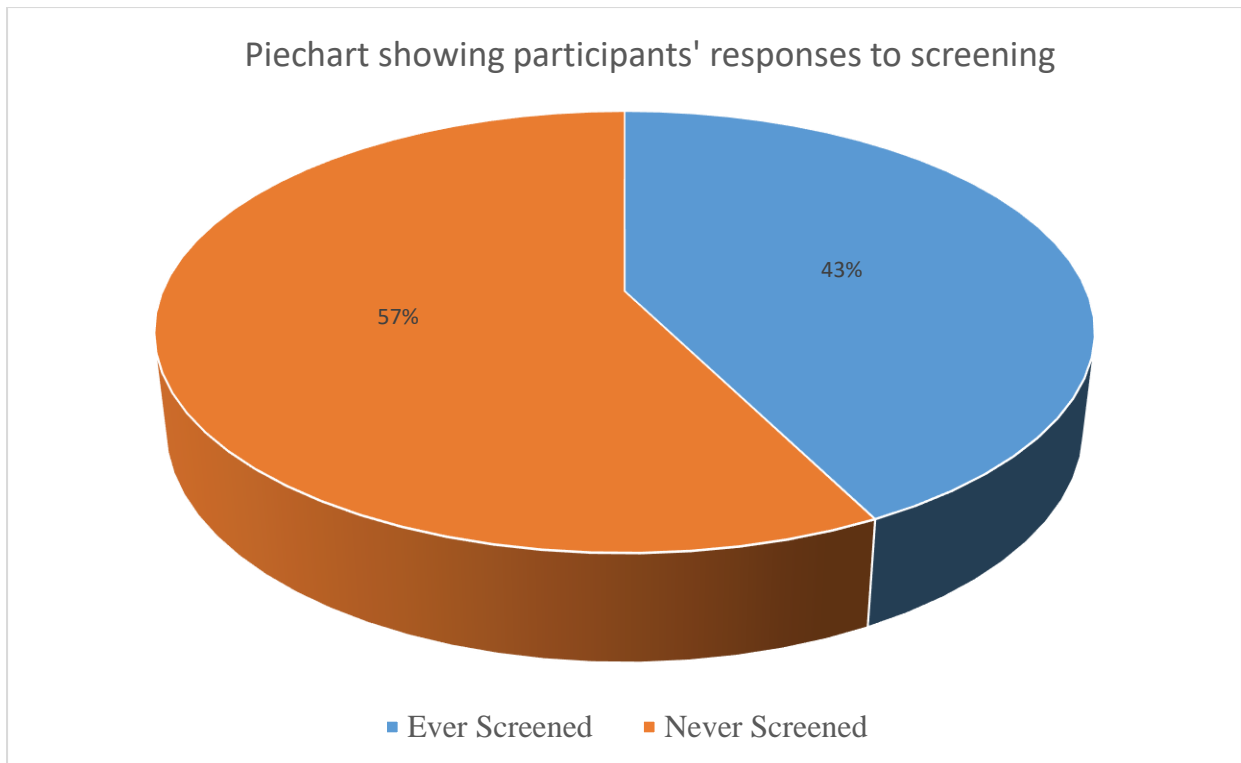


Figure 4. 1: Proportion of participants' responses to either they have screened for diabetes or not

From figure 4.1 above, the majority 127(57%) have never screened for diabetes while 94(43%) claimed to have ever screened for diabetes.

The majority 71 (75.5%) of the participants who claimed to have screened said they had screened at least once in the past three years while 25.5% had screened more than three years ago. The majority 35(37.2%) cited self-referral as the reason for screening while 33(35.1) said they were referred by their healthcare workers for screening. Others reported having had symptoms of diabetes 14 (15%) and relatives with diabetes 12(13%), as shown in Table 4.5 below.

Table 4. 5: participants screening practices for diabetes (n=94)

When last screened	Frequency	%
≤ 3 years	71	75.5
≥3 years	23	24.5
Reasons for screening		
Recommended by health worker	33	35.1
Routine check-up or self-referral	35	37.2
Presence of diabetic symptoms	14	14.9
Had relatives with diabetes	12	12.8

Among those who had denied having screened for diabetes 127 (57.5%), more than half 67(52.8%) mentioned lack of information about screening as the major reason for not screening and 30 (23.6%) claimed high cost of screening as the reason for their failure to screen for diabetes as shown in table 4.6 below.

Table 4. 6: Reasons for not screening for diabetes among study participants n(127)

Reasons for not screening	Frequency	%
Lack of information about screening for diabetes	67	52.8
High cost of screening for diabetes	30	23.6
I have no risk of diabetes	29	10.2
It is not important to screen for diabetes	1	0.8

4.4 KNOWLEDGE AND SCREENING PRACTICE FOR DIABETES

To determine whether participants' knowledge of diabetes was associated with their screening practices for the disease, a Phi Coefficient was run using the highest and lowest score for each

knowledge area: what diabetes is, risk factors, symptoms, complications, and prevention as presented in Table 4.7 below.

Table 4. 7: Association between knowledge of diabetes and screening practice n(221)

		Symmetric Measures	
		Value	Approx. Sig.
Causes high blood sugar	Phi	.047	.483
	Cramer's V	.047	.483
Not curable disease	Phi	.169	.012
	Cramer's V	.169	.012
Obesity/overweight as risk	Phi	.144	.033
	Cramer's V	.144	.033
Pregnancy as risk factor	Phi	.144	.033
	Cramer's V	.144	.033
Frequent urination as a symptom	Phi	-.030	.656
	Cramer's V	.030	.656
Weight loss as a symptom	Phi	-.019	.776
	Cramer's V	.019	.776
Kidney damage as a complication	Phi	.053	.435
	Cramer's V	.053	.435
Heart failure as a complication	Phi	-.054	.426
	Cramer's V	.054	.426
Healthy diet as a prevention	Phi	.048	.475
	Cramer's V	.048	.475
Weight reduction as a prevention	Phi	-.028	.673
	Cramer's V	.028	.673

Table 4.7 above shows negligible negative relationship between knowledge of frequent urination and weight loss as symptoms of diabetes at (-0.030) and (-0.019), respectively. There is also negligible negative association of knowledge of heart failure as diabetes complication (-0.054) and weight reduction as a preventive measure for diabetes (-0.028). For all other knowledge variables, there exists no or negligible positive relationship with screening practice.

CHAPTER FIVE: DISCUSSION

5.1.0 KNOWLEDGE OF DIABETES

This chapter provides conclusions based on the research findings from the data collected on knowledge and the screening practice for type 2 diabetes, among staff of Kyambogo University.

5.1.1 Knowledge (understanding) of diabetes mellitus is

Knowledge of diabetes is important because it awakens individuals to take proactive steps to prevent or slow the onset of diabetes and can act as a motivator for risk assessment, seeking appropriate interventions, and modifying behaviors (Moodley & Rambiritch, 2014). To determine level knowledge of diabetes, five knowledge areas including what diabetes is; risk factors for diabetes; symptoms of diabetes; complications of diabetes; and preventive measures of diabetes were assessed.

The overall participants' mean score for knowledge was 76%, meaning that participants' knowledge about diabetes was high above the cutoff point of $\geq 75\%$. One study by Perera, Silva, & Perera found the overall mean knowledge score of their study participants was low at 68%. A high score was expected from this study given the socio-demographic characteristics of the study respondents.

5.1.2 Knowledge of risk factors for diabetes

There are known risk factors for diabetes including genetic predisposition, old age, physical inactivity, unhealthy diet, overweight, and pregnancy. This study reveals an overall mean knowledge score of risk factors for diabetes at 74%, just one point below the high knowledge threshold. Although the level of knowledge of risk factors is low in this study, in other studies conducted in Saudi Arabia, Bella, Ahmed, & Awadelkareem, (2014), reported much lower knowledge (46.9%). Poor knowledge of risk factors for diabetes was also reported by Aljoudi

& Taha, (2017) in their study of knowledge of diabetes and risk factors in Saudi Arabia. Other studies, however, reported high knowledge of risk factors for diabetes (Aljouidi & Taha, 2017).

Knowledge of risk factors for diabetes is important because it awakens individuals to take preventive measures including screening for the disease.

5.1.3 Knowledge of symptoms of diabetes

Left unchecked, asymptomatic diabetic cases usually proceed to show classical clinical signs of the disease including excessive thirst, excessive hunger, and frequent urination in addition to hyperglycemia. Progressively, symptoms of diabetic complications manifest include weight loss, blurring of vision, slow or delayed wound healing, and feeling of weakness.

In this study, the overall mean score for knowledge of symptoms of diabetes was low at 72% similar to the report by Chinnappan et al., 2017 in their studies that assessed knowledge of diabetes among urban residents in the Klang District of Malaysia and Sudan et al., (2014), which found a poor level of knowledge of symptoms at 38.1%. Fortrell, et al., (2018) equally found low knowledge of the symptoms of diabetes.

Low level knowledge of diabetic symptoms as found in this study may impede early diagnosis and increase the prevalence of individuals presenting with complications.

5.1.4 Knowledge of diabetic complications

Without proper interventions, diabetes has the potential to cause serious complications lowering the quality of life and leading to premature mortality. Damage to the retina of the eyes causes blindness while kidney damage, decreased sensitivity of hands and feet, heart failure, and stroke are all potential complications of diabetes.

In this study, the participants' mean knowledge of diabetic complications was high at 78% above the grade limit of 75%. This finding is contrary to study findings by Aljofan, Altebainawi, & Alrashidi (2019), in which they report poor knowledge of diabetic

complications below 30% and Bella, Ahmed, & Awadelkareem, (2014) who also reported poor knowledge of diabetes complications.

The high level of knowledge of diabetes complications could be explained by the fact that at diagnosis, most people have complications and many people get to know diabetic patients presenting with either one or more complications. This finding underscores the significance of increasing awareness about diabetes and early reporting of symptoms to prevent imminent complications of diabetes.

5.1.5 Knowledge of prevention of diabetes

It is well-documented that diabetes can be prevented with proven interventions. For example, moderate to intensive exercise of 150 minutes per week reduces the chance of developing diabetes in high-risk individuals (Kowler, et al., 2002) and weight reduction of 7% is considered a good intervention in preventing or delaying the onset of diabetes (Qian et al., 2019), among other interventions.

In this study, the overall mean score of preventive measures for diabetes was high at 86%. This is contrary to Perera, De Silva, & Perera, (2013), which reported poor knowledge of preventive measures for diabetes.

The high knowledge of diabetic preventive measures reported here could be a marker for interventions aiming at preventing diabetes if combined with other strategies including information, education, and communication about diabetes. High knowledge was anticipated given the demographic characteristics of the participants.

5.2.0 SCREENING PRACTICE FOR DIABETES

Screening for type 2 diabetes is one of the key recommended interventions for the prevention of type 2 diabetes. The American Diabetic Association recommends that all individuals aged 45 years and above screen at least once every three years and that those with known risk factors

such as obesity should screen as well regardless of their ages. Similar recommendations are advanced by the US Preventive Service Task Force (USPTF) which maintains that due to the high prevalence of diabetes, screening should be done (ADA, 2019) & (JAMA, 2021).

Screening is an important practice because it enables early detection, diagnosis, and appropriate treatment at the earliest possible time before complications become imminent. Individuals with pre-diabetes can then be initiated into special program interventions such as weight reduction, increasing physical activity, and healthy dieting, to reduce their chances of progressing to active disease (Duan, Kengne, & Echouffo-Tcheugui, 2012).

In this study, (94) 42.5% of the participants reported having screened for diabetes. This finding is similar to those reported by Keifer, Silverman, Nelson, & Young (2014) in which they found that 42.4% of their study participants had screened for diabetes. Kim et al., (2013) reported a 53.2% likelihood of screening with increasing age. In Nigeria, 31% of participants reportedly screened for diabetes in one study by Osiberu, et al., (2021).

Although less than half (43%) of the study participants reported to have screened for diabetes, the majority, 71(75.5%) of those who claimed to have screened had screened in the in the past three years which is in line with the American Diabetic Association recommendation for screening for diabetes (ADA, 2019).

In this study, the most cited reasons for screening were self-referral (37.2%) and recommendation by healthcare workers (35.1%).

Those who indicated they haven't screened for diabetes gave varied reasons for their lack of screening including lack of information about screening (52.8), high cost of screening (23.6), the perception that they are not at risk for diabetes (10.2%), and that screening is not a necessary intervention (0.8%).

Poor screening practices reported in these findings could be a potential for serious chronic complications of diabetes and an impediment to the prevention of preventing pre-diabetes from clocking to diabetes as preventive interventions including weight reduction, physical increasing physical activities, and healthy diet may not be reinforced.

5.3.0 KNOWLEDGE AND SCREENING PRACTICE FOR DIABETES

Diabetic knowledge is considered a prerequisite for individual behavior change interventions towards the prevention of diabetes through the awakening of the individual to seek preventive services, including screening to reduce their chances of developing the disease.

In this study, a Phi coefficient was computed to determine the association between diabetic knowledge and screening practice. However, participants' high knowledge level had a negligible effect on their screening practices.

CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

6.1: CONCLUSIONS

Given increasing prevalence of type 2 diabetes, this study sought to determine knowledge and screening practice for type 2 diabetes. The study thus provides a baseline understanding of diabetic knowledge and screening practice. The study indicates high (very good) knowledge of diabetes and poor screening practice for the disease. Consequently, no significant association between the high knowledge of diabetes and screening practices could be ascertained.

6.2: RECOMMENDATIONS

6.2.1: To policy makers

Based on the findings from this study, there is a need for policymakers to shift more attention to diabetic preventive programs including programs that improve information, education, and communication to the public regarding diabetes and particularly screening programs for the disease at all levels of healthcare provision.

6.2.2: To health care workers

The study findings from this study signifies the importance of providing patients with information. Healthcare workers should use every opportunity when they are with their clients to inform them about diabetes and the importance of screening for the disease.

6.2.3: To researchers

Although this study provides valuable insight into our understanding of what people know about diabetes and their screening practices for the disease, there is a need to carry out a study that is representative of the whole population of the country to better appreciate knowledge of diabetes and screening practices among the general population.

REFERENCE

- ADA. (2018). Classification and Diagnosis of Diabetes: Standards of Medical Care in Diabetes. *American Diabetic Association*. Retrieved April 2022, from https://diabetesjournals.org/care/article/41/Supplement_1/S13/30088/2-Classification-and-Diagnosis-of-Diabetes
- ADA. (2018). Classification and Diagnosis of Diabetes: Standards of Medical Care in Diabetes. *American Diabetic Association*. Retrieved April 2022, from https://diabetesjournals.org/care/article/41/Supplement_1/S13/30088/2-Classification-and-Diagnosis-of-Diabetes
- ADA. (2018, Nov. 17). Classification and Diagnosis of Diabetes: Standards of Medical Care in Diabetes-2018. *Diabetic Care*, 13-27. Retrieved March 2022, from Diabetic Journal: https://diabetesjournals.org/care/article/41/Supplement_1/S13/30088/2-Classification-and-Diagnosis-of-Diabetes
- ADA. (2019). Classification and Diagnosis of Diabetes: Standards of Medical Care in Diabetes. *Diabetes Care*. doi:<https://doi.org/10.2337/dc19-S002>
- Alanazi, F. K., Alotaibi, J. S., Paliadelis, P., Alqarawi, N., Alsharari, A., & Albagawi, B. (2018). Knowledge and awareness of diabetes mellitus and its risk factors in Saudi Arabia. *Saudi Medical Journal*, 981-989. doi:10.15537/smj.2018.10.22938
- Aljofan, M., Altebainawi, A., & Alrashidi, M. N. (2019). Public knowledge, attitude and practice toward diabetes mellitus in Hail region, Saudi Arabia. *International Journal of General Medicine*, 255-262. Retrieved April 2022, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6643049/pdf/ijgm-12-255.pdf>
- Alotaibi, A., Ganmi, A., Gholizadeh, L., & Perry, L. (2016). Diabetes knowledge of nurses in different countries: An integrative review. *Science Direct*, 32-49. Retrieved April 2022, from

<https://www.sciencedirect.com/science/article/abs/pii/S0260691716000289?via%3Dihub>

Backholer, K., Chen, L., & Shaw, J. (2012). Screening for diabetes. *The Journal of Royal College of Pathologies of Australia*. Retrieved April 2022, from [https://www.pathologyjournal.rcpa.edu.au/article/S0031-3025\(16\)32579-X/pdf#relatedArticles](https://www.pathologyjournal.rcpa.edu.au/article/S0031-3025(16)32579-X/pdf#relatedArticles)

Balla, S. A., Ahmed,, H. A., & Awadelkareem, M. A. (2014). Prevalence of diabetes, knowledge and attitude of rural population towards diabetes and hypoglycaemic event,Sudan 2013. *American Journal of Health Research*, 536-560. Retrieved April 2022, from <http://www.sciencepublishinggroup.com/j/ajhr>

Chinnappan, S., Sivanandy, P., Sagarar, R., & Molugulu, N. (2017). Assessment of Knowledge of Diabetes Mellitus in the Urban Areas of Klang District, Malaysia. *MDPI*, 1-8. doi:<https://doi.org/10.3390/pharmacy5010011>

Chiwanga, F. S., Njeleka, M. A., Diamond, M. B., Bajunirwe, F., Gawatudde, D., Mutyoba, N. J., . . . Dalal, S. (2016). Urban and rural prevalence of diabetes and pre-diabetes and risk factors associated with diabetes in Tanzania and Uganda. *Global Health Action*, 1-8. Retrieved April 2022, from https://login.research4life.org/tacsgr1doi_org/10.3402/gha.v9.31440

Dall, T. M., Yang, W., Gillespie, K., Mocarski, M., Byrne, E., Cintina, I., . . . Hogan, P. F. (2019). The Economic Burden of Elevated Blood Glucose Levels in 2017: Diagnosed and Undiagnosed Diabetes, Gestational Diabetes Mellitus, and Prediabetes. *Diabetes Care*, 1661–1668. Retrieved April 2022, from https://login.research4life.org/tacsgr1diabetesjournals_org/care/article/42/9/1661/36300/The-Economic-Burden-of-Elevated-Blood-Glucose

- Duan, D., Kengne, A. P., & Echouffo-Tcheugui, J. B. (2021). Screening for Diabetes and Prediabetes. *Science Direct*, 369-385. doi:<https://doi.org/10.1016/j.ecl.2021.05.002>
- Fachirah, J., & Sari, M. I. (2021). The Relationship between Family History of Type 2 Diabetes Mellitus and Knowledge, Attitude, and Practice Regarding Type 2 Diabetes Mellitus among Medical Students. *Open Access Macedonian Journal of Medical Sciences*, 161-166. doi:<https://doi.org/10.3889/oamjms.2021.5695>
- Fatema, K., Hossain, S., Natasha, K., Chowdhury, H. A., Akter, J., Khan, T., & Ali, L. (2017). Knowledge attitude and practice regarding diabetes mellitus among Nondiabetic and diabetic study participants in Bangladesh. *BMC Public Health*. Retrieved April 2022
- Hamman, R. F., Wing, R. R., Edenstein, S. L., Lachin, J. M., Bray, G. A., Delahanty, L., . . . Kriska, A. M. (2006). Effect of Weight Loss with Lifestyle Intervention on Risk of Diabetes. *Diabetic Care*, 29(6). doi:<https://doi.org/10.2337/dc06-0560>
- Herath, H. M., Weerasinghe, N. P., Dias, H., & Weerathna, T. P. (2017). Knowledge, attitude and practice related to diabetes mellitus among the general public in Galle district in Southern Sri Lanka: a pilot study. *Biomed Central*. Retrieved April 2022, from <https://link.springer.com/article/10.1186/s12889-017-4459-5#Sec9>
- IDF. (2020). *Diabetes Complications*. Retrieved April 2022, from International Diabetic Federation: <https://www.idf.org/aboutdiabetes/complications.html>
- IDF. (2021). *Diabetes around the world in 2021*. Retrieved April 2022, from International Diabetic Federation: <https://diabetesatlas.org/#:~:text=Diabetes%20around%20the%20world%20in%2021%3A,%2D%20and%20middle%2Dincome%20countries.>

- IDF. (2021, Dec. 9). *Diabetes facts & figures*. Retrieved April 2022, from International Diabetic Federation: <https://idf.org/aboutdiabetes/what-is-diabetes/facts-figures.html>
- Islam, S. S., Niessen, L. W., Ferrari, U., Biswas, T., Islam, A., & Lechner, A. (2015). Diabetes knowledge and glycemic control among patients with type 2 diabetes in Bangladesh. *Spinger Plus*, 4(284), 1-7. doi:DOI 10.1186/s40064-015-1103-7
- JAMA. (2021). Screening for Prediabetes and Type 2 Diabetes US Preventive Services Task Force Recommendation Statement. *Journal of American Medical Association*, 736-743. doi:doi:10.1001/jama.2021.12531
- Kharono, B., Nabisere, R., Persis, N. K., Nakakeeto, J., Openy, A., & Kitaka, S. B. (2017). Knowledge, Attitudes, and Perceived Risks Related to Diabetes Mellitus Among University Students in Uganda: A Cross-Sectional Study. *East African Health Research Journal*. Retrieved April 2022, from <https://www.ajol.info/index.php/eahrj/article/view/217935>
- Kiefer, M. M., Silverman, J. B., Nelson, K. M., & Young, B. A. (2014). National Patterns in Diabetes Screening: Data from the National Health and Nutrition Examination Survey (NHANES) 2005–2012. *Society of General Internal Medicine*, 612-618. doi:10.1007/s11606-014-3147-8
- Kim, H., Lee, M., Kim, H., Lee, K., Chang, S., Kim, V., . . . Jeon, S. (2013). Factors Affecting Diabetic Screening Behavior of Korean Adults: A Multilevel Analysis. *Asian Nursing Research*, 63-73. doi:<https://doi.org/10.1016/j.anr.2013.04.002>
- Kowler , W. C., Barret-Connor, E., Fowler, S. E., Hamman, R. F., Lachin, J. M., Walker, E. A., . . . Watson, P. G. (2002). Reduction in the Incidence of Type 2 Diabetes Mellitus with Lifestyle Intervention or Metformin. *The New England Journal of Medicine*,

346(6), 393-403. Retrieved April 2022, from
<https://jdc.jefferson.edu/cgi/viewcontent.cgi?article=1344&context=medfp>

Kumar, H., & Tanya, S. (2015). *Annals of Medical and Health Sciences Research*, 751-756.
doi:10.4103/2141-9248.141547

Menino, E. G., Maria, d. A., & Clarisse, M. (2017). Validation of the Diabetic Knowledge Questionnaire in the Portuguese Population. *Diabetic and Obesity International Journal*.

Moodley, M. L., & Rambiritch, V. (2014). An assessment of the level of knowledge about diabetes mellitus among diabetic patients in a primary healthcare setting. Retrieved April 2022, from
<https://www.tandfonline.com/doi/pdf/10.1080/20786204.2007.10873652?needAccess=true>

Osiberu, A. A., Oluwasano, M. M., Omobowale, M., Akinola, Y. J., & Oladepo, O. (2021). A cross-sectional study of the knowledge and screening practices of diabetes among adults in a south western Nigerian city. *Journal of Preventive Medicine and Hygiene*, 529-538. doi:10.15167/2421-4248/jpmh2021.62.2.2059

Palacios, O. M., Kyamer, M., & Maki, K. C. (2018). Diet and prevention of type 2 diabetes mellitus: beyond weight loss and exercise. *Expert Review of Endocrinology & Metabolism*, 1-12. Retrieved April 2022

Pelullo, P. C., Rossiello, R., Nappi, R., Napolitano, F., & Giuseppe, G. D. (2019). Diabetes Prevention: Knowledge and Perception of Risk among Italian Population. *Biomed Research International*, 1-7. doi:10.1155/2019/2753131

- Qian , F., Liu, G., Hu, F. B., Bhupathiraju, S. N., & Sun, Q. (2019). Association Between Plant-Based Dietary Patterns and Risk of Type 2 Diabetes A Systematic Review and Meta-analysis. *Journal of the American Medical Association*, 1335-1344. Retrieved April 2022, from <https://jamanetwork.com/journals/jamainternalmedicine/article-abstract/2738784>
- Ramachandran, A. (2014). Know the signs and symptoms of diabetes. *Indian Journal of Medical Research*, 579–581. Retrieved April 2022, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4311308/pdf/IJMR-140-579.pdf>
- Roux, M. I., Walsh, C., Reid, C., & Raubenheimer, J. (2019). Diabetes-related knowledge, attitude and practices (KAP) of adult patients with type 2 diabetes mellitus in the Free State province, South Africa. *South African Journal Of Clinical Nutrition*, 83-90. Retrieved April 2022
- Saad, K. S. (2019). Knowledge of Diabetic Patients towards Diabetes Mellitus in a Sample of Patients Attending Diabetes and Endocrine Center. *Journal of Pediatrics, Perinatology and Child Health*, 18-26. Retrieved April 2022
- Siddique , M. B., Islam, S. M., Banik, P. C., & Rawal, L. B. (2017). Diabetes knowledge and utilization of healthcare services among patients with type 2 diabetes mellitus in Dhaka, Bangladesh. *BMC Health Services Research*. Retrieved April 2022
- Tian, M., Yingchun , C., Zhao, R., Chen, L., Chen, X., Feng, D., & Feng, Z. (2011). Chronic disease knowledge and its determinants among chronically ill adults in rural areas of Shanxi Province in China: a cross-sectional study. *BMC Public Health*. doi:<https://doi.org/10.1186/1471-2458-11-948>
- Toprak, C., & Yigitaslan, S. (2019). Alagebrium and Complications of Diabetes Mellitus. *Eurasian Journal of Medicine*, 285–292. doi:10.5152/eurasianjmed.2019.18434

USPST. (2021). Screening for Prediabetes and Type 2 Diabetes US Preventive Services Task Force Recommendation Statement. *Journal of the American Medical Association*. Retrieved 2022, from https://login.research4life.org/tacsgr1jamanetwork_com/journals/jama/fullarticle/2783414

Zamri, S. N., Rahman, N. A., & Haque, M. (2020). Knowledge, Attitude, and Practice Regarding Dengue among Students in a Public University in Malaysia. *Bangladesh Journal of Medical Science*, 245-253. doi:<https://doi.org/10.3329/bjms.v19i2.45003>

APPENDICES

APPENDIX ONE: SIMPLE DIABETIC STATUS SCREENING TOOL

Have you been confirmed using medical technology to be diabetic?

1. No
2. Yes

APPENDIX TWO: SELF-ADMINISTERED QUESTIONNAIRE

SECTION A: DEMOGRAPHIC INFORMATION

(Give your response by circling only one option)

1. What is your Gender?
 1. Male
 2. Female
2. What is your age?
3. What is your employment status?
 1. Full Time permanent
 2. Full time contract
 3. Full Time temporary
 4. Volunteer
4. What is your employment category?
 1. Academic or faculty (teaching) staff
 2. Administrative staff
 3. Support staff
5. What is your educational level?
 1. No formal education
 2. Primary level
 3. Secondary
 4. Certificate
 5. Diploma
 6. Bachelor's Degree
 7. Postgraduate

6. On average, how much is your income per month? (UG Shs.)

7. Do you have any first degree relatives (mother, father, brother/sister, uncle/aunt, grandparents) with diabetes?

- 1. Yes
- 2. No

8. Have you ever had an opportunity to learn some information regarding diabetes?

- 1. Yes
- 2. No

9. Do you have a friend with diabetes?

- 1. Yes
- 2. No

10. Have you ever cared for someone with diabetes?

- 1. Yes
- 2. No

SECTION B: DIABETIC KNOWLEDGE QUESTIONNAIRE

In this section, kindly tick your correct response to the questions in the table either **YES** or **NO**.

	Diabetic Knowledge Related Questions	Response	
11.0	What is Diabetes Mellitus (DM)?	Ye s	No
11.1	A condition caused by a lack of or resistance of insulin in the body		
11.2	a condition that when left untreated can result in very high level of sugar in the blood		
11.3	A curable disease with medications over a period of time		
11.4	Diabetes Mellitus disease affect many organs (parts) of body		
12.0	What are the risk factors for diabetes?		
12.1	Older people are at higher risk for developing diabetes		
12.2	If you are diabetic, your children are at higher risk to be diabetic		
12.3	Being over overweight or obese is a risk factor for diabetes mellitus		
12.4	Pregnancy increases the risk for diabetes mellitus		
12.5	Sedentary lifestyle or physical inactivity a risk factor for diabetes mellitus		
12.6	Poor dietary habits (eating high carbohydrate and fat) a risk factor for diabetes		
13.0	What are symptoms of DM?		
13.1	Frequent urination is a symptom of diabetes mellitus		
13.2	Excessive thirst is a symptom of diabetes mellitus		
13.3	Excessive hunger is a symptom of diabetes mellitus		
13.4	Weight loss is a symptom of diabetes mellitus		
13.5	High blood sugar is a symptom of diabetes mellitus		
13.6	Blurred vision is a symptom of diabetes mellitus		

13.7	Slow healing of cuts and wounds a symptom of diabetes mellitus		
13.8	Feeling of weakness is not a symptom of diabetes mellitus		
14.0	Complications of diabetes		
14.1	Diabetes can cause eye problem or even blindness		
14.2	Diabetes cause damage to the kidney		
14.3	Diabetes can cause decrease sensitivity of hands, fingers, and feet		
14.4	Diabetes cause heart failure		
14.5	Diabetes cause brain disease like Stroke		
15.0	Prevention of diabetes		
15.1	Increasing physical activity can prevent diabetes		
15.2	Healthy diet prevent diabetes		
15.3	Weight reduction can prevent diabetes		
15.4	Regular screening for diabetes help in the prevention of diabetic complication		

SECTION C: SCREENING PRACTICE FOR DIABETES

16. Have you ever screened for diabetes?

- 1. Yes
- 2. No

17. If you answered “YES” to question 16 above, when was the last time you screened for diabetes.....

18. Why did you decide to screen for diabetes?

- 1. Recommended by a healthcare worker
- 2. Routine checkup or self-referral
- 3. I had symptoms of diabetes
- 4. I have relatives with diabetes

19. If you answered NO to question 16 above, why haven't you screened for diabetes? (Select all that apply)

- 1. Lack of information about screening for diabetes
- 2. High costs of screening for diabetes
- 3. I have no risk for diabetes
- 4. It is not important to screen for diabetes

The End!
Thank you for your participation.

APPENDIX THREE: CONSENT FORM

Consent Form

Title of the proposed study: Knowledge and the Screening Practice for Diabetes Mellitus among Kyambogo University Staff, Kampala

Principal investigator:

Oscass Jimmy Ruva, student of Bachelor Science in Nursing (BSN) IV Makerere University, Kampala.

Contact: Tel 0782071242 or 0752070577; Email: jimoscass2007@gmail.com

Faculty advisor

Mr. Tom Ngabirano Email; tomngabirano@gmail.com

This study will be a student self-funded

Background and rationale for the study

Diabetes mellitus is a leading non-communicable disease that clinically presents with hyperglycemia either due to insulin deficiency (type 1 diabetes mellitus) or insulin resistance (type 2 diabetes mellitus). The disease is increasing exponentially in prevalence globally. Low and middle-income countries are carrying the heaviest burden of illness due to westernization and change in lifestyle. In the year 2021, 537 million adults (1 in 10) aged 20-79 years were living with diabetes with low and middle-income countries reportedly having 3 in 4 (75%) cases of the global burden of the pandemic (IDF, 2021). According to the World Health Organization, diabetes alone directly accounted for 1.5 million deaths globally.

The study will provide valuable information leading to the development of effective and evidence-based diabetic population education, which will help improve the knowledge and the screening practices for diabetes.

Data obtained from this study will be used to develop effective teaching methods regarding diabetes mellitus and the screening practices for diabetes and will form a part of policy or guideline development for diabetic education and screening.

The data generated from the study will be utilized by healthcare providers to learn more about diabetic knowledge and screening behavior or practices so that they can help target interventions accordingly. The research findings will also act as a future reference for those conducting research in a similar area of study.

Study purpose

The purpose of this study is to determine the knowledge and the screening practice for diabetes among staff of Kyambogo University, Kampala, Uganda

Study procedure

You will be requested to respond to questions in the semi structured questionnaire given to you to fill physically and your responses will be kept confidential. Informed consent or assent is going to be obtained from you as an act of ethical protocol in this study. The whole process will take about 15 minutes.

Who will participate in this study and where the study is going to be conducted from?

We expect to administer questionnaires to 333 participants who are staff of Kyambogo University, Kampala.

Risks/discomforts

By answering questions related to diabetes, participants who might have either lost their loved ones due to the disease or are burdened by caring for a loved one with diabetes may experience emotional discomfort.

Risk mitigation

For participants experiencing emotional discomfort, they will be referred to the counseling unit at the University for counseling and psychological support.

Benefits of the study

No direct benefit to the participant. However, the findings of this study will contribute to the existing literature on the knowledge of diabetes and the screening practices for the disease. The results from the study will be used by healthcare workers and policy makers to develop effective and evidence diabetic education, especially targeting at-risk groups to help reduce the prevalence of the disease.

Costs

Your participation in this study will cost you about 15-20 minutes. You will not incur any other extra costs since you will be requested to participate in the study during your usual office hours.

Compensation for participation in the study

Your participation in this study will not attract any compensation in the form of money.

Reimbursement

There will not be any reimbursement to the participants since they will be located at their workplaces and at their official working hours.

Questions

In case you have any queries about the study, contact Oscass Jimmy Ruva on +256782071242

Questions about participants' rights

For any questions concerning your welfare and rights, feel free to contact the Ag. Chairperson School of Health Sciences IRB (MakSHSIRB), Dr. Kalidi Rajab telephone number +256 776798978 or +256 0200903786)

Feedback on study findings

Research participants will be able to access study findings which will be communicated to the management of Kyambogo University. Copies will also be available at Makerere University Department of Nursing, Albert Cook Medical Library College of Health Sciences and School of Health Sciences Research and Ethics Committee (MakSHSREC).

Statement of voluntariness

Your participation in the study is entirely voluntary and you are free to take part or withdraw at any time without any effects on your employment. Voluntary participation means you can choose whether to participate or not. Refusal to participate or withdraw from the study will not affect your employment status or lead to any sanctions from the University.

Ethical approval of the study

This study will be approved by Makerere University College of Health Sciences Research and Ethics Committee which is an accredited Ugandan based Research and Ethics Committee.

Confidentiality

The information collected will be kept confidential in accordance with the international and local ethical standards governing research involving humans as research participants. The participants identity will be concealed and their names will not appear anywhere on the forms. The study team will be the only one with the authority to access the collected data. However, the School of Health Sciences Research and Ethics Committee and the Uganda National Council for Science and Technology (UNSCT) may have access to private information that identifies the research participants by name where applicable.

For any further questions, I may contact the Chairperson of the School of Health Sciences Research and Ethics Committee (MakSHSREC) on (+256 776798978 / (+256) 0200903786 or Uganda National Council of Sciences and Technology on Tel: (+256)-041- 4705500).

STATEMENT OF CONSENT

The risks, benefits, and my rights regarding this study have been described to me clearly. In the use of this information my identity will be kept confidential and I am aware I may withdraw at any time. I do not waive any of my legal rights but merely indicate that I have been informed about the research study in which I am voluntarily agreeing to participate. By signing below, I agree to participate in this study.

Name.....

Signature of participant/thumbprint.....

Date

Name.....

Signature of interviewer.....

Date

APPENDIX FOUR: BUDGET

S/No	Item	Quantity	Unit cost	Total cost (Ug shillings)
1	Stationery			
	Ream of paper	01	20,000=	20,000=
	Pens	05	500=	2,500=
	Notebook	02	5,000=	10,000=
	Clip board	06	2,500=	15,000=
2	Secretarial services (printing and binding of the dissertation)	-	-	27000
	Printing the questionnaire			278000
3	Sanitizer	01	10000	10000
5	Research Assistants	5	25,000*2	250,000
6	Masks	05	10000	50000
	Total			622,500 UGX

APPENDIX FIVE: ACTIVITY PLAN

SNo	Period	Activities	Responsible person
01	May to June 2022	<ul style="list-style-type: none"> ● Research proposal development ● Consultation with the supervisor on the proposal ● Receiving inputs from the supervisor 	Principle Investigator (PI)
02	July 1 st to 20 th , 2022	<ul style="list-style-type: none"> ● Submission to IRB for scheduling for presentation ● Presenting protocol to IRB ● Working on comments from committee ● Resubmitting protocol for approval 	(PI)
03	July 21 st August 26 th 2022	<ul style="list-style-type: none"> ● Receiving IRB approval ● Receiving administrative approval ● Data collection, entry, and analysis 	PI and his trained research assistants
04	August 27 th to September November 4 th , 2022.	<ul style="list-style-type: none"> ● Drafting report ● Writing final report ● Presenting dissertation report to Department 	PI

APPENDIX SIX: COVID-19 RISK MANAGEMENT PLAN

All persons taking part in the study will wash their hands with water and soap or use an alcohol-based sanitizer.

The research team and study participants will be screened for COVID-19 by asking them questions assessing relating to signs and symptoms of COVID-19 including:

1. Increase in body temperature or fever (Temperature \geq 37.5 Celsius).
2. Presence of a dry cough, and sore throat
3. General body symptoms of malaise.
4. Any contact with a person diagnosed with COVID infection
5. Any history of exposure to a patient with fever, cough, and/or sore throat

A distance of a minimum of two (2) meters will be kept during data collection procedures

No more than ten (10) people will be allowed to converge in one place to undertake research Procedures.

Research teams and participants will consistently wash their hands with soap and water or use hand sanitizer throughout the day when at the research institution or data collection point until when they are ready to leave.

The participants will hand wash or use a sanitizer before being given the data collection tool and after answering the questions on it.

The common materials like pens will be sanitized before and after use for every single participant. The participants and team members will put on masks throughout the process and those who come without masks will be provided with one.

APPENDIX SEVEN: SIMPLE DIABETIC STATUS SCREENING TOOL LUGANADA

**EKYOKUGATTAKO EKISOOKA: EKIKOLWA EKYANGU EKIKOLA KU
KUKEBERA EMBEERA YA SUKIILI**

1. Okakasiddwa nti okozesa tekinologiya w'abasawo okubeera omulwadde wa sukaali?

1. Nedda

2. Yee

APPENDIX EIGHT: QUESTIONNAIRE LUGANDA VERSION

EKYOKUGATTAKO EKYOKUBIRI: EBIBUZO BY'OKUDDIBWAAMU GGWE

NGA GGWE

EKITUNDU A: BWIINO AFA KU BANTU

(Mpa eky'okuddamu kyo ng'oyita mu ngeri emu yokka)

1. Oli was kikula ki?

1. Musajja

2. Mukazi

2. Olina emyaka emeka?.....

3. Omulimu gwo guli gutya?

1. Omulimu gwo ogw'enkalakkalira ogw'ekiseera kyonna

2. Endagaano ey'ekiseera kyonna

3. Omulimu ogw'ekiseera kyonna

4. Omulimu ogw'obwannakyewa

4. Omulimu gwo gwa mutendera ki?

1. Abakozi mu masomero oba abasomesa (abasomesa)

2. Abakozi abaddukanya emirimu

3. Abakozi abawagira

5. Obuyigirize bwo buli butya?

1. Tewali buyigirize butongole
2. Primary level
3. Secondary
4. Certificate
5. Diploma
6. Bachelor's Degree
7. Postgraduate

6. Ku kigero, ssente z'ofuna buli mwezi ziba mmeka?.....UGX

7. Olina owooluganda yenna mu ddaala erisooka (maama, taata, muganda/mwannyina, kojja/ssenga, bajjajja) alina obulwadde bwa sukaali?

1. Yee
2. Nedda

8. Wali ofunyeeko omukisa okuyiga ebimu ku bikwaata ku bulwadde bwa sukaali?

1. Yee
2. Nedda

9. Olina mukwano gwo alina obulwadde bwa sukaali?

1. Yee
2. Nedda

10. Wali olabiriddeko ku muntu alina obulwadde bwa sukaali?

1. Yee

2. Nedda

EKITUNDU B: EBIBUZO KU KUMANYA KU BULWADDE BWA SUKAALI

Mu kitundu kino, ssaako akabonero k'okuddamu kwo okutuufu ku bibuuzo ebiri mu kipande oba YEE oba NEDDA.

	Ebibuuzo Ebikwata Ku Kumanya Ku bulwadde bwa sukaali	Okuddamu	
11.0	Obulwadde bwa sukaali kye ki?	Ye	Nedd
		e	a
11.1	Embeera eva ku butabeera na oba okuziyiza insulini mu mubiri		
11.2	Embeera bw'elekebwa nga tejjanjabiddwa eyinza okuvaamu ssukaali omungi ennyo mu musaayi		
11.3	Obulwadde buno buwonyezebwa n'eddagala okumala ekiseera		
11.4	Obulwadde bwa sukaali bukosa ebitundu by'omubiri bingi		
12.0	Bintu ki ebyongera obulabe bwokufuna obulwadde bwa sukaali?		
12.1	Abantu abakulu bali mu bulabe bwamaanyi obw'okufuna obulwadde bwa sukaali		
12.2	Bw'oba olina obulwadde bwa sukaali, abaana bo bali mu bulabe bwa maanyi okubeera ne sukaali		
12.3	Okusinga okugejja oba omugejjo kivaako obulwadde bwa sukaali		
12.4	Okubeera olubuto oba omuzito kyongera obulabe bwokufuna obulwadde bwa sukaali		
12.5	Obulamu bw'okutuula oba obutakola dduyiro w'omubiri kintu ekyongera obulabe bwokufuna obulwadde bwa sukaali		
12.6	Endya embi (okulya ebirungo ebizimba omubiri n'amasavu amangi) ekintu ekyongera obulabe bwokufuna obulwadde bwa sukaali		
13.0	Obubonero bw'obulwadde bwa sukaali?		
13.1	Okufulumya omusulo emirundi mingi kabonero ka sukaali		
13.2	Ennyonta esukkiridde kabonero ka sukaali		
13.3	Enjala esusse kabonero ka sukaali		

13.4	Okufiirwa obuzito kabonero ka sukaali		
13.5	Sukaali omungi mu musaayi kabonero ka bulwadde bwa sukaali		
13.6	Okulaba nga Alina olufu ku maaso kabonero ka bulwadde bwa sukaali		
13.7	Okulwaawo okuwona ebiwundu n'ebisale kabonero ka sukaali		
13.8	Okuwulira obunafu ssi kabonero ka sukaali.		
14.0	Ebiva mu kuba n'obulwaffe bwa sukaali		
14.1	Sukaali asobola okuleeta obuzibu mu maaso oba n'okuziba amaaso		
14.2	Obulwadde bwa sukaali bwoonona ekibumba		
14.3	Sukaali asobola okuleeta okukendeeza ku buwulize bw'emikono, engalo n'ebigere		
14.4	Sukaali aleeta omutima okulemererwa		
14.5	Sukaali aleeta endwadde z'obwongo nga Stroke		
15.0	Okuziyiza obulwadde bwa sukaali		
15.1	Okwongera okukola emirimu gy'omubiri kiyinza okuziyiza obulwadde bwa sukaali		
15.2	Endya ennungi etangira ssukaali		
15.3	Okukendeeza ku mugejjo kiyinza okuziyiza sukaali		
15.4	Okwekebejjebwa buli kiseera obulwadde bwa sukaali kiyamba mu kuziyiza ekizibu kya sukaali		

Source: adopted from (Menino, Maria , & Clarisse, 2017).

EKITUNDU C: ENKOZESA Y'OKUKEBERA OBULWADDE BWA SUKAALI

16. Wali okebeddwaako obulwadde bwa sukaali?

1. Yee
2. Nedda

17. Bw'oba ozeemu nti "YEE" ku kibuuze 16 waggulu, ddi lwe wasembayo okwekebejjebwa obulwadde bwa sukaali.....

18. Lwaki wasalawo okwekebejjebwa obulwadde bwa sukaali?

1. Okusemba omukozi w'ebyobulamu
2. Okwekebeza okwabulijjo oba
3. Nalina obubonero bwa sukaali
4. Nnina ab'enganda abalina sukaali

19. Bw'oba ozeemu nti NEDDA ku kibuuze 16 waggulu, lwaki tokeberwanga sukaali?

1. Obutaba na bwiino akwata ku kwekebejja sukaali
2. Ensimbi nnyingi ez'okukebera sukaali
3. Sirina bulabe bwa sukaali
4. Si kikulu kwekebejja sukaali

Enkomerero!

Mwebale nnyo okwetaba mu kunoonyereza

APPENDIX NINE: CONSENT FORM LUGANDA VERSION

EKYOKUGATTAKO EKYOKUSATU: FFOMU Y'OKUKKIRIZA

Ffoomu y'okukkiriza

Omutwe gw'okunoonyereza okutegekeddwa: Okumanya n'enkola y'okukebera obulwadde bwa sukaali mu bakozi ba yunivasite y'e Kyambogo, Kampala

Omunoonyereza omukulu:

Oscass Jimmy Ruva, omuyizi wa Bachelor Science mu Nursing (BSN) IV Yunivasite y'e Makerere mu Kampala.

Okutuukirira: Essimu 0782071242 oba 0752070577; Email: jimoscass2007@gmail.com

Omuwabuzi ku kitongole

Mr. Tom Ngabirano Email; tomngabirano@gmail.com

Okunoonyereza kuno kujja kuba kwa muyizi okweyambisa ssente

Ensibuko n'ensonga lwaki okunoonyereza kuno kukolebwa

Ssukaali bulwadde obusinga obutasiigibwa nga mu bujjanjabi bweyoleka n'okulinnya kwa sukaali oba olw'obutaba na insulini (ssukaali ow'ekika kya 1) oba okuziyiza insulini (ssukaali ow'ekika eky'okubiri). Obulwadde buno bweyongera nnyo mu nsi yonna. Ensi ezirina ssente entono n'eza wakati ze zisinga okwetikka omugugu gw'obulwadde olw'okweeyisa nga amawanga g'obugwanjuba n'enkyukakyuka mu bulamu. Mu mwaka 2021, obukadde 537 bw'abantu abakulu (1 ku buli 10) ab'emyaka 20-79 baali baalina ssukaali nga bano baali mu mawanga agalina ssente entono n'aga wakati era kigambibwa nti gaalina 3 ku buli 4 (75%) ku miwendo egy'omugugu gw'ensi yonna ogwa ssennyiga omukambwe (IDF, 2021). Okusinziira ku kitongole ky'ebyobulamu eky'ensi yonna, obulwadde bwa sukaali bwokka bwe bwaaleeta okufa kw'abantu abaaweza obukadde 1.5 mu nsi yonna.

Okunoonyereza kuno kujja kuwa bwiino ow'omugaso ku bigenda mu maaso n'okukola okusomesa obulungi era okwesigamiziddwa ku bujulizi ku bantu abalina ssukaali, ekijja okuyamba okulongoosa okumanya n'enkola y'okukebera obulwadde bwa sukaali. Ebiwandiiko ebifunibwa okuva mu kunoonyereza kuno bijja kukozebwa okukola enkola ennungamu ey'okusomesa ebikwata ku sukaali n'enkola y'okukebera sukaali era bijja kukola ekitundu ku nkola oba y'okusomesa n'okukebera obulwadde bwa sukaali.

Ebiwandiiko ebikoleddwa okuva mu kunoonyereza kuno bijja kukozebwa abakola ku by'obulamu okumanya ebisingawo ku kumanya kwa ssukaali n'eneeyisa oba enkola z'okukebera basobole okuyamba okuteeka mu nkola ebinaayamba okungonjoola ensonga eyo.

Ekgendererwa ky'okunoonyereza

Ekgendererwa ky'okunoonyereza kuno kwekuzuula okumanya n'enkola y'okukebera obulwadde bwa sukaali mu bakozi ba Kyambogo University, Kampala, Uganda

Enkola y'okunoonyereza

Ojja kusabibwa okuddamu ebibuuzo ebitegekeddwa (semi structured questionnaire) ebikuweereddwa okujjuza nga wooli era eby'okuddamu byo bijja kukuumbwa nga bya kyaama. Okukkiriza okutegeezeddwa kugenda kufunibwa okuva gyoli ng'ekikolwa eky'empisa mu kunoonyereza kuno. Enkola yonna ejja kutwaala eddakiika nga 15.

Ani agenda okweetaba mu kunoonyereza kuno era okunoonyereza gye kugenda okubeera?

Tusuubira okugaba ebibuuzo eri abantu 333 abeetabye mu kunoonyereza kuno nga beebakoziba Kyambogo University, Kampala.

Obulabe/obutabeera bulungi

Wajja kubaawo akabi katono nnyo ne/oba obuzibu obutonotono nga okukulwiisa mu mpeereza yo mu togyetegekede nga oddamu ebibuuzo. Mu mbeera nga omulwadde tasobola kugenda mu maaso olw'embeera eno, okunoonyereza kujja kuyimirizibwa era omulala ayingizibwe. Abeetabye mu kunoonyereza kuno bayinza okukisanga nga kizibu okusinziira ku budde okunoonyereza kwe kutwaala.

Emigaso gy'okunoonyereza kuno

Tewali mugaso gwa butereevu eri eyeetabye mu kunoonyereza. Wabula ebizuuliddwa mu kunoonyereza kuno bijja kuyamba mu biwandiiko ebiriwo ebikwata ku kumanya obulwadde bwa sukaali n'enkola y'okukebera obulwadde buno. Ebinaava mu kunoonyereza kuno bigenda kukozesebwa abakozi b'ebuyobulamu n'abalungamy enkola enkola n'amateeka okusobola okusomesa obulungi era okw'obujulizi ku sukaali naddala okutunuulira ebibinja ebiri mu bulabe okuyamba okukendeeza ku bungi bw'obulwadde buno.

Ebisaale

Okwetaba kwo mu kunoonyereza kuno kijja kukutwalako eddakiika nga 15-20.. Tojja kusasula ssente ndala yonna nga bwekiri nti ojja kusabibwa okwetaba mu kusoma mu ssaawa zo eza bulijjo eza ofiisi.

Okuliyirira olw'okwetaba mu kunoonyereza

Okwetaba kwo mu kunoonyereza kuno tekujja kusikiriza kuliyirirwa kwonna mu ngeri ya ssente.

Okuddizibwa ssente

Tewajja kubaawo kuddizibwa ssente yonna.

Ebibuuzo

Bw'oba olina ky'oyagala ku kunoonyereza kuno, tuukirira Oscass Jimmy Ruva ku...
+256782071242

Ebibuuzo ebikwata ku ddembe ly'abeetabye mu kunoonyereza

Bwofuna ekibuuzo kyonna ekikwata ku bulamu bwo n'eddembe lyo, wulira nga oli wa ddembe okutuukirira... Ag. Chairperson School of Health Sciences IRB (MakSHSIRB), Dr. Kalidi Rajab ku namba y'essimu +256 776798978 or +256 0200903786)

Okusaasaanya ebizuuliddwa mu kunoonyereza

Abeetabye mu kunoonyereza bajja kusobola okufuna ebizuuliddwa mu kunoonyereza ebigenda okutegezebwa abaddukanya Yunivasite ya Kyambogo. Kopi za kuweebwa ne ku Makerere University Department of Nursing, Albert Cook medical Library College of Health Sciences ne School of Health Sciences Research and Ethics Committee (MakSHSREC).

Ekiwandiiko ky'okukkiriza okutakakiddwa

Okwetaba kwo mu kunoonyereza kuno kwa kyeyagalire ddala era oli wa ddembe okweetaba oba okuvaamu ekiseera kyonna awatali kukosa mulimu gwo. Okwetaba Kwa kyeyagalire nga kino kitegeeza nti osobola okusalawo okukwetabamu oba nedda. Okugaana okwetaba oba

okuva mu kunoonyereza tekijja kukosa mbeera yo ey'omulimu oba okukuviirako envumbo yonna okuva mu Yunivasite.

Okukkiriza okunoonyereza mu mpisa

Okunoonyereza kuno kugenda kuyisibwa akakiiko akakwasisa empisa mu Makerere University College of Health Sciences Research and Ethics Committee nga kano kaakakasibwa okukola emirimu gino mu Uganda aka Research and Ethics Committee.

Okukuuma ebyama

Bwiino anakung'aanyizibwa ajja kukuumbwa nga wa kyaama okusinziira ku mutindo gw'empisa ogw'ensi yonna n'ogw'omu kitundu ogufuga okunoonyereza okuzingiramu abantu ng'abeetabye mu kunoonyereza. Ebikwaata ku muntu eyeetabye mu kunoonyereza bijja kukwekebwa era amannya gaabwe tegajja kulabika wonna ku foomu. Ttiimu y'okunoonyereza ye yokka egenda okuba n'obuyinza okufuna ebikwata ku biwandiiko ebikung'aanyiziddwa. Wabula akakiiko akavunaanyizibwa ku kunoonyereza n'empisa mu ssomero lya ssaayansi w'ebyobulamu wamu n'olukiiko lwa Uganda National Council for Science and Technology (UNSCT) kayinza okuba ne bwiino ow'ekyaama alaga abeetabye mu kunoonyereza nga bakozesa amannya bwe kiba nga kituufu.

Bwofuna ebibuuzo ebirala byonna, osobola okutuukirira Ssentebe w'akakiiko k'okunoonyereza n'empisa mu ssomero lya ssaayansi w'ebyobulamu (MakSHSREC) ku... (+256 776798978 / (+256) 0200903786 oba Uganda National Council of Sciences and Technology ku Tel: (+256)-041- 4705500).

EKIWANDIIKO KY'OKUKKIRIZA

Obulabe, emigaso, n'eddembe lyange ebikwata ku kunoonyereza kuno binnyonnyoddwa bulungi. Bwiino akwaata ku nze ng'omuntu ajja kukuumbwa nga wa kyaama era nkimanyi nti nsobola okumuggyayo ekiseera kyonna.

Silekulira ddembe lyange lyonna ery'amateeka wabula ntegeeza bulaga nti ntegeezeddwa ku kunoonyereza kwenzikirizza okwetabamu kyeyagalire. Nga nzisa omukono wansi, nzikirizza okwetaba mu kunoonyereza kuno.

Erinnya

Omukono gw'omuntu eyeetabye mu kunoonyereza/engalo ensajja

Olunaku olw'omweezi

Erinnya

Omukono gw'omuntu eyeetabye mu kunoonyereza/engalo ensajja

Olunaku olw'omweezi