ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES

SCHOOL OF ALLIED HEALTH SCIENCES

DEPARTMENT OF NURSING AND MIDWIFERY

ASSESSMENT OF KNOWLEDGE OF SELF-CARE AND ASSOCIATED FACTORS AMONG TYPE 2 DIABETIC PATIENTS ON FOLLOW UP VISITS IN GOVERNMENT HOSPITALS OF ADDIS ABABA, ETHIOPIA

BY: NATHAN DESALEGN (BSc)

A THESIS TO BE SUBMITTED TO SCHOOL OF GRADUATE STUDIES OF ADDIS ABABA UNIVERSITY, COLLEGE OF HEALTH SCIENCE, SCHOOL OF ALLIED HEALTH SCIENCES DEPARTMENT OF NURSING AND MIDWIFERY IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTERS OF SCIENCE IN ADULT HEALTH NURSING

May 2016

Addis Ababa, Ethiopia

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THIS THESIS BY **NATHAN DESALEGN DEGAGA** (B.Sc.) IS ACCEPTED IN ITS PRESENT FORM BY BOARD OF EXAMINERS AS SATISFYING THESIS REQUIREMENT FOR THE DEGREE OF MASTERS IN ADULT HEALTH NURSING.

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Acronyms and Abbreviations

AAU: Addis Ababa University

AOR: Adjusted Odds Ratio

CHD: Coronary Heart Disease

CI: Confidence Interval

COR: Crude Odds Ratio

DM: Diabetes Mellitus

DSCK: Diabetic Self-Care Knowledge

FBS: Fasting Blood Sugar

HbAIc: Glycosylated Haemoglobin

IDF:International Diabetic Federation

IRB: Institutional Review Board

PAS:Proportional Allocation to Size

SPSS: Statistical Package for Social Sciences

WHO: World Health Organization

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Abstract

Introduction: Diabetes mellitus is not a single disease entity but rather a group of metabolic disorders sharing the common underlying feature of hyperglycemia. Diabetes is a major growing health problem in the world. Poor awareness among diabetic patients about the disease and self-care activities is one of the important variables influencing the progression of diabetes and its complications, which is largely preventable.

Objective: The aim of this study was to assess self-care knowledge and associated factors among type 2 diabetes on follow up visits in government hospitals of Addis Ababa, Ethiopia.

Method: Institution based descriptive cross sectional study was employed from March 15 to April 15, 2016 using pre-tested, validated, structured interviewer-administered questionnaire. A total of 422 type 2 diabetic patients whose age was 18 year and above were included. Study participants were selected by systematic sampling technique after proportional allocation of samples to the hospitals. Furthermore, descriptive statistics, and binary and multivariate logistic regression analyses were employed to assess factors associated with diabetes self-care knowledge among type 2 diabetes.

Result: Out of 422 patients with type 2 DM intended to participate in the study, 412 patients actually responded for the interview making a response rate of 97.63%. More than half of the study sample, 239(58%) had a high (70% or over) overall knowledge while the rest 173(42%) showed low (<70%) overall knowledge level about self-care. Marital status, duration of DM, being member of diabetic association and exposure to diabetic health education showed a significant association with good knowledge at a 5% level of significance

Conclusion: This study reflects that there is a need to improve diabetic self-care knowledge among the patients. Overall knowledge about diabetes self-care among patients was not adequate; some critical knowledge gaps were also identified in specific areas.

Recommendation: Policy makers, hospital administrations and health care professionals should have to establish well organized diabetic self-care education program and they should strength the existing programs. Further research should be done in order to know the association between self-care knowledge and self-care practice adherence.

Key words: Self-care, self-care knowledge, type 2 diabetes

CHAPTER 1

Introduction

1.1 Back ground of the study

Diabetes mellitus is not a single disease entity but rather a group of metabolic disorders sharing the common underlying feature of hyperglycemia. Hyperglycemia in diabetes results from defects in insulin secretion, insulin action, or, most commonly, both. The chronic hyperglycemia and the ensuing metabolic dysregulation of diabetes mellitus may be associated with secondary damage in multiple organ systems, especially the kidneys, eyes, nerves, and blood vessels. It greatly increases the risk of developing coronary artery disease and cerebrovascular disease compare to the general population(1).

It also greatly increases the risk of developing coronary artery disease and cerebrovascular disease. In concert with great technologic advances, there have been pronounced changes in human behavior, with increasingly sedentary life styles and poor eating habits. This has contributed to the simultaneous escalation of diabetes and obesity worldwide, which some have termed the "disability" epidemic(2). Prevalence of both type 1 and type 2 DM is increasing worldwide, type 2 DM is rising much more rapidly, presumably because of increasing obesity, reduced activity levels as countries become more industrialized, and the aging of the population (3).

In concert with great technologic advances, there have been pronounced changes in human behavior, with increasingly sedentary life styles and poor eating habits. This has contributed to the simultaneous escalation of diabetes and obesity worldwide, which some have termed the "disability" epidemic(1). Developing countries, which are already overburdened by communicable diseases, have to muddle through with the additional challenges posed by the chronic non-communicable disease. Sub-optimal treatment, inadequate health education and follow up leads to poor glycemic control and increase the toll of unnecessary disabilities among the people(4).

Self-care is a multi-dimensional concept and has various definitions. Among the definitions, Orem's definition of self-care is more popular in nursing. According to her definition, self-care is a personal activity to take care and maintain of own health and prevention of disease related complications. This can be done through managing and continuing healthy lifestyle activities in areas of physical activity,

nutrition, medication, self-monitoring of blood glucose level, health coping and reduction of different risk behaviors. In line with this, Orem described that as a self-care agency- which is the ability of oneself to assess, monitor, and take decision on behalf of own life situation (5). Self-care is learned and an ongoing behavioral process that is more associated with the concept of self-care agency. This means the goal oriented (i.e., health and well-being) performance, maintenance, and self-regulation of a patient(5).The American Association of Diabetes Educators identified 7 key skills that will help the diabetic patients to take charge on their health. These self-care behaviors include healthy eating, being active, monitoring, taking medication, problem solving, reducing risks and healthy coping (6).

Different Scholars argued that self-care in diabetes is a critical factor to keep the disease under control and about 95 percent of care of the diseases usually carried out by the affected individual or their families (6,7). To accomplish self-care the patient requires physical skills, cognitive, and knowledge of how mental health affects self-care. Cognitive skills which directly implies knowledge of self-care are helpful in the problem solving settings of an individual which is applied through thoughts rather than in practical or action (8,9).

1.2 Statement of the problem

Diabetes is a major growing health problem in the world. In 2015, about 415 million people were living globally with diabetes, with figures expected to increase to 642 million by 2040 (10). Type 2 diabetes accounts for 85% to 95% of all diabetes in high-income countries and may account for an even higher percentage in low- and middle-income countries, and given the association between DM and unhealthy lifestyles, such as poor diet and physical inactivity, there are more people with DM in urban than in rural areas; this divide is estimated to reach 477.9 million and 163.9 million, respectively, in 2040. In 2015, DM-related complications are major cause of disability and reduced quality of life, and an estimated 5 million people aged 20–79 years worldwide died prematurely from the disease(10).

About 8.6% of all deaths in the Africa Region can be attributed to diabetes; in 2013 a staggering 76.4% of those deaths occurred in people under the age of 60. Furthermore, there were more than 50% more deaths from diabetes in women compared to men(11).

Statistics for medical complications from diabetes are also concerning. Proportions of patients with diabetic complications in sub Saharan region ranged from 7-63% for retinopathy, 27-66% for neuropathy, and 10-83% for nephropathy. Diabetes is likely to increase the risk of several important infections in the region, including tuberculosis, pneumonia and sepsis (12).

In Ethiopia the prevalence of diabetes mellitus is increasing with changes in people's lifestyles(13). Hospital based studies in Addis Ababa showed that the prevalence of diabetes has increased from 1.9 percent in 1970 to 9.5 percent in 1999(14). The overall prevalence of diabetes in the northern Ethiopia has been reported as approximately 0.3 percent (15). Even though the actual number was not known, World health organization has estimated the number of diabetic cases in Ethiopia to be 800,000 by the year 2000, and the number is expected to increase to 1.8 million by 2030 (16).

A systematic review of studies in Ethiopia from 1970 to 2011 suggested that DM prevalence in the country was about 2%, rising to >5% in persons aged >40 years in certain settings (17). A nationwide World Health Organization (WHO) STEPS survey among 2153 persons in Ethiopia found the DM prevalence to be 6.5% (18).

A previous study in two specialized hospitals in Addis Ababa documented the trend in DM admissions between 2005 and 2009, noting that admissions increased from 51 per annum to 245 over this period, and majority of those admissions were type 2 DM (19).

Poor awareness among diabetic patients about self-care activities is one of the important variables influencing the progression of diabetes and its complications, which is largely preventable. Diabetes education, with consequent improvement in knowledge, attitudes and skills, leads to better control of the disease, and is widely accepted to be an integral part of comprehensive diabetes care (20).

From review of the relevant literatures, it is evident that studies in self-care of diabetic patients are generally limited in Ethiopia. Besides, there are no studies available in the country, which directly addresses knowledge of self-care among diabetic patients, so that this study can contribute a lot as baseline information for future studies. Almost all of diabetic self-care related studies in Ethiopia focus on assessment self-care practice or self-management of diabetic patients, even existing little knowledge based studies focus on general knowledge of patients about diabetes.

Inadequate diabetic self-care remains a significant problem encountered by health care providers and populations in all settings. Inadequate self-care impacts on the patient's morbidity and mortality as well as on an increasing the costs of medication and laboratory tests and cost in time and effort of the care providers. In contrast, patients who have adequate self-care have better outcomes, live longer, enjoy a higher quality of life, and experience fewer symptoms & minimal complications (21). Literatures indicate that inadequate self-care is due to inadequate knowledge; this lack of awareness about self-care activities may be the underlying factor affecting attitudes , practices towards its care and occurrence of diabetic related complications (22).

1.3 Significance of the study

This study is important to identify type 2 diabetic patient's self-care knowledge level and associated factors which will guide the development of prevention programs in the country, contribute as baseline evidence for evaluating intervention programs and to design future programs and techniques for effective health education of diabetic patients. It will contribute a lot as baseline for future diabetic self-care studies.

CHAPTER 2

Literature review

2.1 Prevalence and consequences of diabetes

Globally in 2014, 387 million people were estimated to be living with diabetes, an alarming number that is set to rise to 592 million within the next twenty years. A further 316 million with impaired glucose tolerance are at high risk from the disease, with projections indicating that over 1 billion people will be living with or at high risk of diabetes in 2035(23).

According to 2015 IDF 7th edition 415 million people worldwide, or 8.3% of adults, are estimated to have diabetes. About 80% live in low- and middle-income countries. If these trends continue, by 2040, some 642 million people, or one adult in 10, will have diabetes. This equates to approximately three new cases every 10 seconds or almost 10 million per year. The largest increases will take place in the regions where developing economies are predominant(10).

The World Health Organization (WHO) estimates that diabetes mellitus affects at least 285 million people and causes 3.2 million deaths, six deaths every minute and 8700 deaths every day, and this figure will increase by 70% in developed countries, and by 42% in developing countries by 2030 (2).

A recent estimate suggested that diabetes mellitus is the 5^{th} leading cause of death worldwide and is responsible for almost 3 million deaths annually(24). Approximately 5.1 million people aged between 20 and 79 years died from diabetes in 2013, accounting for 8.4% of global all-cause mortality among people in this age group. This estimated number of deaths is similar in magnitude to the combined deaths from several infectious diseases that are major public health priorities, and is equivalent to one death every six seconds. Close to half (48%) of deaths due to diabetes are in people under the age of 60(10).

Currently, an estimated 19.8 million adults in the Africa Region have diabetes – a regional prevalence of 4.9%(10). The burden of diabetes and diabetic related mortality and disability are rising in Africa. Increasing sedentary lifestyle, coupled with rapidly growing urban culture and modified diets, are predicted to triple the prevalence of diabetes mellitus in the next 25 years(25).

WHO estimates the number of cases of diabetics in Ethiopia to be about 800,000 in 2000 and projected that it would increase to about 1.8 million by the year 2030(13).

In Ethiopia, national data on prevalence and incidence of diabetes are lacking. However, patient attendance rates and medical admissions in major hospitals are rising. The estimated prevalence of DM in adult population of Ethiopia is 1.9%(13).

A study done in Ayder Referal Hospital indicated that 1.3% of study participants had DM. Out of those 18% had type 1 DM and 82% had type 2 DM(26).

Finding from assessment of health care system in Addis Ababa, Ethiopia indicated that diabetes mellitus is associated with chronic complications like neuropathy, nephropathy, retinopathy and cardiovascular disease. Over time, diabetes mellitus can lead to blindness; kidney failure and nerve damage. It is also an important factor in accelerating hardening and narrowing of arteries (atherosclerosis) leading to stroke, coronary heart disease (CHD) and other large blood vessel diseases (27).

2.2 Diabetes self-care knowledge

General knowledge of diabetes does not necessarily indicate to knowledge of diabetic self- care, however knowledge of diabetes self-care is dependent on general knowledge of diabetes(28).

A study done in Anhui province of China indicated that two- thirds of respondents (65.4%) had knowledge of blood glucose. About half of respondents (51.4%) reported correct items for diet; one-third (37.7%) were aware of complications; 19.5% had a knowledge of insulin(29).

According to the study done in Pakistan mean of correct answers for glycemic control, risk factors and complications was 33.5%, 69% and 39% respectively. Only one sixth of all the patients could correctly answer question regarding nutrition. 92% recognized blood pressure as a risk factor while the correct answers for hyperlipedimia, cigarette smoking, sedentary life style and body weight were 42%, 70%, 76% and 66% respectively. Awareness about eye and renal complications was also quite low(30).

Finding from a study done in chronic diabetic patients in India indicated that 58% of study participants were aware that diabetes can affect eyes, 54% aware about renal complications of DM

and 44% knew that DM is a cardiovascular risk factor, 44 % knew that annual eye examinations were essential for early diagnosis and treatment. Only 14 % were aware of annual urine-protein check and only 30% got their lipids checked annually. 40% knew their target sugar levels. Only 5% were aware of HbA1C test. 84% patient knew about hypoglycemia and its treatment(31).

A study done to evaluate patients' knowledge of diabetes self-care, showed that participants to have inadequate knowledge. This was particularly significant in participants who had not attended any training programs. In this study even participants who claimed to have attended training programs did not demonstrate adequate knowledge or skills in any of the major areas of self-care (insulin administration, urine testing, diet, foot care and management of hypo or hyperglycemia). Knowledge of foot care was the least (15%), while urine testing knowledge was the highest (50%). Only 40% of the trained insulin dependent patients could not demonstrate competence in a single area of diabetes self-care(32).

A study done in two states of Nigeria showed that even the general performance of the self-care knowledge items is high among type 2 DM patients(79.5%), areas such as glycosylated hemoglobin (HbA1c), physical activities, hypoglycemic symptoms, and medication-related items performed relatively poorly(33).

A study done to assess self-care behavior among patients with diabetes in Harari, Eastern Ethiopia indicated that large proportion 88.3% of the respondents was knowledgeable about the sign and symptoms of diabetes. 93.2% of them were knowledgeable about diabetes self-care practices(34). In this study Substantial proportion (76.6%) reported that regular exercise increases blood glucose level. 41.9% of them replied that not having breakfast after taking drug increases blood glucose level. This study also showed that 99.1% had knowledge about honey and simple sugar that have high glycemic index. Among six different types of food which is recommended for patients with diabetes (vegetables, cereals, rice, wheat and its products, potatoes and sweet potatoes, and fruits), 39.6% replied that four of the food had high glycemic index. Less proportion 6.8% of them answered that all the recommended food increase blood glucose level; whereas, only 2.3% of the respondents agreed that all the six recommended food do not increase blood glucose level (34).

Another study done in Felege Hiwot Hospital showed that exercise and diet were reported as a life style modification for prevention of DM in 73.2 % and 47.6% respondents respectively. However,

less than 10 % of study participants knew weight reduction as life style modification for prevention of diabetes related complications. 31% study participants had knowledge on advisable dietary intake. They reported that 10-20% carbohydrate (grains and fruits), 40-60% proteins (meat, egg and fish), 20-30% fat, small amount vitamins and minerals are advisable food for diabetic patients. About 82.0% of study participants knew about the importance of control of blood glucose to reduce complication of DM. About 62.7% knew the importance of control of blood pressure for prevention of DM complications(35).

According to study done in Jimma University specialized hospital majority (70%) of the respondents had knowledge of the signs and symptoms of hypoglycemia and 68.4% knew what care should be taken in the event of hypoglycemia. However, only 48% of the respondents had knowledge about appropriate precautions for the prevention of hypoglycemia(36).

Institution based cross-sectional study done in South Gonder showed that from the total study participants only 25.5% were found to have good knowledge about hypoglycemia prevention. In general it was found that Knowledge on hypoglycemia prevention is poor(37).

A study in Harare, Ethiopia indicated that 85.6% of respondents have knowledge that non adherence to medication increases blood glucose level(34).

2.3 Factors associated with diabetic self-care knowledge

A study conducted in Anhui province, China to assess awareness and practices of self-management and influencing factors among individuals with type 2 diabetes in urban community settings found that significant associations were found between subject awareness about self-management activities and their education level (OR 2.096, 95% CI 1.578-2.784) and the length of disease (OR 1.307, 95% CI 1.016-1.681). Those with good self-management were influenced by greater knowledge, (OR 2.057,95% CI 1.228-3.445), strong self-efficacy in diabetes self-management (OR 1.899, CI 1.253-2.878), physical activity was influenced by knowledge ($p<0.01$ according to this study , there were no factors significantly related to healthy dietary practices. The finding indicate that best performance in self-management is achieved when those with type 2 diabetes have a high degree of knowledge of diabetes, positive attitudes toward diabetes, strong self-efficacy for self-management and perceptions of good social support(29).

A study done diabetes self-care knowledge among type 2 diabetic outpatients in south-eastern Nigeria indicated that older persons with diabetes had less education, worse cognitive functions and more barriers to practicing self-care than the younger age groups. Educational status was also associated with self-care knowledge. This association was only significant up to primary school level. Results showed the association to be different between secondary level and tertiary in terms of knowledge. Participants at secondary level were more knowledgeable than those at tertiary. No statistically significant associations were found between occupation economic status and knowledge of self-care(28).

Finding from other study in Nigeria showed negative attitude to disease condition is highly associated with knowledge of self-care among type-2 diabetic patients (chi-square value at one degree of freedom =6.215; p=0.013). For this factor, there is a significant difference between the patients' response and knowledge levels. However, no significant difference exists between patients' self-care knowledge level and their opinion regarding other likely causes of poor knowledge. This study also indicated that Self- care knowledge was associated with level of education ($p<0.001$), monthly income ($p<0.001$) and duration of diabetes (p=0.008)(33).

Institutional based study in hypoglycemia prevention in south Gonder showed that educational status and being a member of diabetic association were found to be positively associated with knowledge of hypoglycemia prevention in type 2 diabetic patients. Respondents who attained primary education (AOR=2.14, 95%CI: 1.19, 3.84), secondary education (AOR 3.02, 95%CI: 1.53, 5.98), college and above (AOR=2.35, 95%CI: 1.08, 5.13) were found to be more likely to have good knowledge compared with respondents who did not have formal education. Those who were members of Ethiopian diabetic association were about four times more likely to be knowledgeable (AOR=3.91, 95%CI: 2.26, 6.77) and six times more likely to practice hypoglycemia prevention (AOR=6.08, 95%CI: 3.34, 11.05)(37).

A cross sectional study in Addis Ababa, Ethiopia showed that not getting diabetic nutrition education at hospitals which brought dietary management knowledge deficit was one of the main factors that were identified to have association with the poor dietary practice of the patients (38).

Summary of literature review

Globally prevalence of type 2 diabetes and its complications are increasing. The burden of type 2 DM is increasing in developing countries including Ethiopia. Variety of studies showed that self-care among diabetic patients plays the dominant role to control morbidity and mortality as the result of the disease. For diabetic patients to care for them self; self-care knowledge plays important role. Most of reviewed literatures indicated that over all self-care knowledge of clients was inadequate and some critical self-care knowledge gaps in specific aspects. Variety of literatures found significant association between diabetes self-care knowledge and educational status, marital status, exposure to diabetic health education, duration of the disease, client's attitude towards the disease, family history of the disease, and other clinical factors. Review of literatures showed that there is no published study in Ethiopia which directly addresses knowledge of self-care among type 2 diabetic patients.

2.4 Conceptual framework.

This conceptual framework is developed by referring different literatures related to type 2 diabetes self-care knowledge and associated factors in order to indicate relationships between variables (28-39). It represents set of interrelated concepts that represent the association between type 2 diabetes self-care knowledge and factors affecting it. This framework will provide guidance for the study. In the diagram below, arrows indicate of proposed linkages among a set of concepts believed to be related to diabetes self-care knowledge.

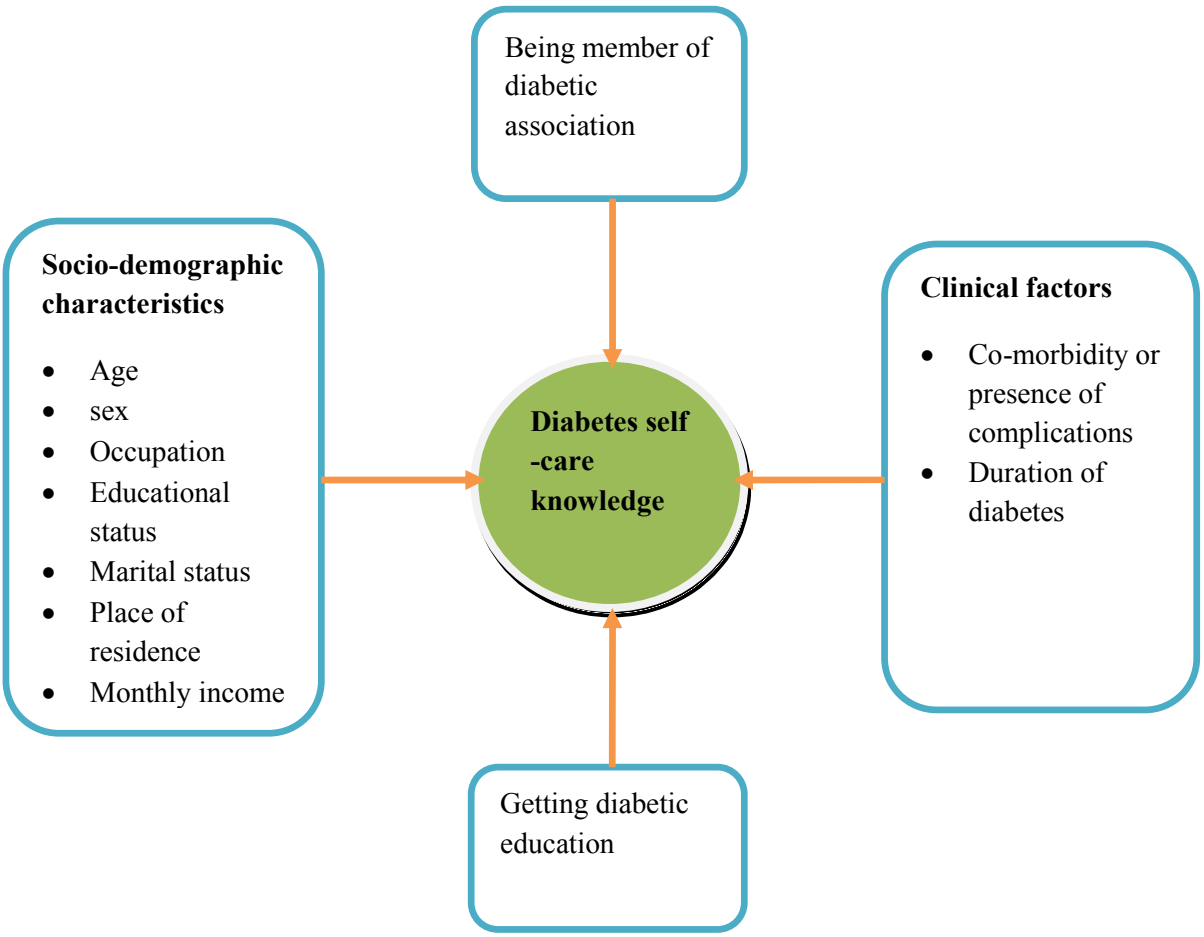


Figure 1: Conceptual framework of type 2 diabetes self-care knowledge and associated factors

CHAPTER 3

Objectives of the study

3.1 General objective

- To assess self-care knowledge and associated factors among type 2 diabetes on follow up visits in government hospitals of Addis Ababa, Ethiopia.

3.2 Specific objectives

- To determine level of self-care knowledge among type 2 diabetes on follow up visits in government hospitals of Addis Ababa.
- To assess factors associated with self-care knowledge among type 2 diabetes on follow up visits in government hospitals of Addis Ababa.

CHAPTER 4

Methods and Materials

4.1 Study area

The study was conducted in Addis Ababa, the capital city of Ethiopia and seat of African Union and the United Nations World Economic Commission for Africa. It covers an area of 527 square kilometers and has 10 sub cities. The city has a total population of 3,103,999 of these 1,479,000 (47.6%) are males and 1,624,999 (52.4%) are females. The city has 12 government hospitals(39).

The study was conducted in four governmental hospitals in Addis Ababa. They are Saint Paul's Millennium Medical Hospital, Menilik-II Memorial Hospital, Zewditu Hospital and Yekatit-12 Hospital.

Saint Paul's Hospital is the second largest hospital of the nation found in Gulele Sub City. It was built by Emperor Haile Selassie in 1969 with the help of the German Evangelical Church. In 2007 it became a medical college and its core services include the provision of medical care, teaching and research. It has 350 beds. The hospital provides service on average for 200,000 patients annually. Its catchment population is more than 5 million peoples. In diabetes unit approximately 480 type 2 diabetic patients are seen monthly.

Zewditu Hospital is a hospital in central Addis Ababa, Ethiopia. It was built, owned and operated by the Seventh-day Adventist Church, but was nationalized during the Derg regime in about 1976. The hospital is named after Empress Zauditu, the cousin and predecessor on the throne of Emperor Haile Selassie. Today the hospital is operated by the Ministry of Health. Zewditu hospital is Ethiopia's leading hospital in the treatment of ART patients and currently treats over 6,000 each month. Currently the hospital also provides follow-up and inpatient care for diabetic patients. In the chronic care follow up unit approximately 300 type 2 diabetic patients are seen monthly.

Yeketatit-12 Hospital is one of government hospitals found in Addis Ababa. This hospital is built in memory the indiscriminate massacre and imprisonment of Ethiopians by elements of the Italian occupation forces following an attempted assassination of Viceroy Rodolfo Graziani 19 February

1937. It provides diagnosis and treatment for variety of health problems and has different units. In the diabetic referral clinic approximately 380 type 2 diabetic patients are seen monthly.

Menelik II Memorial Hospital is one of government hospitals in Addis Ababa, which is located in Yeka sub city. It is the main training center for ophthalmology specialty in Ethiopia. It provides follow up approximately for 420 type 2 diabetic patients per month.

4.2 Study design

Institution based cross-sectional study design was used to assess self-care knowledge and associated factors among type-2 diabetic follow up patients. This study design was selected because it can examine type 2 diabetic mellitus patients in various stages of development, trends, & life style patterns with the intent to compare the phenomenon among groups. Study subjects were categorized by group and data on the selected variables was collected at a single point in time.The collected data was used to describe as well as to compare groups.

4.3 Study period

- The study period was from March 15 to April 15, 2016 during the routine working hours of the hospital.

4.4 Source population

- All type 2 diabetic mellitus patients in Addis Ababa

4.5 Study population

- All type 2 diabetic mellitus patients on follow up visits in government hospitals of Addis Ababa

4.6 Eligibility Criteria

4.6.1 Inclusion Criteria

- Diagnosed as type 2 diabetic patients for at least 6 month. It is difficult to address type 2 diabetic patients with less than 6 month diagnosis in the hospitals follow-up system except as newly diagnosed group of diabetic patients which directly implies that they have similar

knowledge level with non-diabetic population. Some of those categories of type 2 diabetic patients cannot be addressed with the hospitals follow-up system because in some hospitals diabetic patient has follow-up at least once within 3 to 6 month.

- Type 2 diabetic patients greater than 18 year.
- Capable of independent communication and giving informed verbal consent.

4.6.2 Exclusion Criteria

- Critically ill patients who cannot provide informed consent.

4.7 Sample size determination and sampling technique

4.7.1 Sample size determination

The sample size was determined using a single population proportion sample size estimation method by assuming that 50% of the patients have the recommended self-care knowledge (to obtain the maximum representative sample size since no similar study is found in the area) with 95% confidence interval**.**

$$n = \frac{(Z\alpha/2)2\ P(1-P)}{d2}$$

Where:

- n= required sample size
- z= critical value at 95% CI (1.96)
- p= prevalence rate (since the level of self-care knowledge not known, p is taken as 50% i.e 0.5
- Margin of error (d) to be 5% (d = 0.05)

$$n = \frac{(Z\alpha/2)^2\ P(1-P)}{d^2}$$

$$n = \frac{(1.96)2 * 0.5(1-0.5)}{(0.05)^2} \qquad n = 384$$

By considering 10% non-response rate the final sample size becomes **422**

4.7.2 Sampling technique

From 12 governmental hospitals, 4 hospitals were selected by simple random sampling because majority of hospitals have at least separate diabetic clinic or chronic diseases follow up unit which provide follow up treatment. After allocating type 2 diabetes from the 4-selected government hospitals by proportional allocation to size (PAS), the participants were selected by systematic sampling technique.

The total follow-up type 2 diabetes within four hospitals during the study period were 1580. The list of patients was obtained from the registration books of each follow up clinics of the hospitals. Follow up patients within one month were used because no availability of registry of total patients in some hospitals, appointment for some patients was based on the condition of the disease which may take extended time and tendency of many patient to discontinue or change follow up places. In addition to above conditions appointment period of some patients was gone beyond the time available to conduct the study.

4.7.3 Sampling procedure

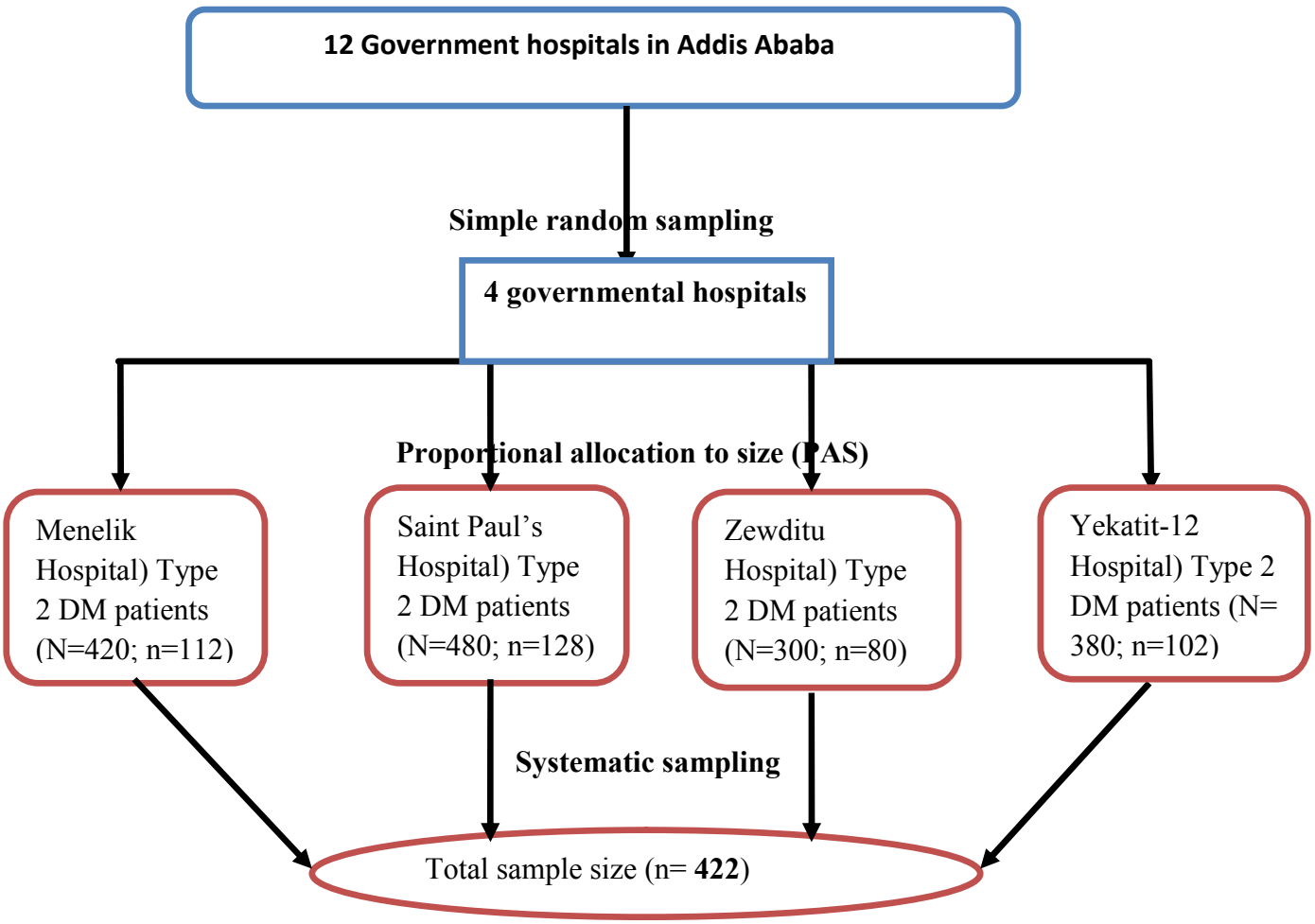


Figure 2 The schematic presentation of sampling procedure to select study participants from government hospitals in Addis Ababa

4.8 Variables

4.8.1 Dependent Variable

- Diabetes self-care knowledge

4.8.2 Independent Variables

- Demographic factors: Age, sex, ethnicity, educational status, marital status, monthly income, place of residence, occupation,
- Disease related factors: duration after diagnosis, presence of diabetic complication and co-morbidity
- Exposure to diabetic health education

4.9 Data collection methods

4.9.1 Data collection instrument

Interviewer administered, pre-tested, validated, standardized questionnaire was used. The instrument comprised three sections: the first section consisted of socio-demographic information; the second consists of respondent's clinical and other related conditions; while the last section included questions that measure respondent's knowledge of self-care – the DSCKQ-30(40) .

The DSCKQ-30 is a thirty-item tool validated by Adibe and colleagues that measures type 2 diabetes knowledge of self-care. It is a structured measure with response choices of 'yes' and 'No. Factor analysis identified three scales of knowledge of self-care. Chronbach's alpha of the 30 questionnaire items was found to be 0.89. The item-to-total correlation coefficients and ranges for component 1 - 3 were 0.36 (0.25 - 0.48), 0.28 (0.23 - 0.35), and 0.34 (0.23 - 0.41), respectively, with overall average of 0.33 (0.23 - 0.48). Items percent correctness (% C) ranged from 16.7 to 86.7 % with an overall average of 55.6 %. Item factor loadings averaged 0.62 for the total items; averages of the three scales ranged from 0.59 to 0.68(40).

4.9.2 Data collection procedure

The data was collected by 4 trained diploma nurses and was supervised by 2 BSc nurses having previous experience in data collection. Principal investigator was also make continuous follow up and supervision throughout the data collection period. Since the questionnaire was prepared in English, it was translated in to Amharic language for appropriate and easiness in interviewing the study subjects in Amharic language. The Amharic version was again translated back to English to check the consistency of meaning.

4.9.3 Pre-test

The questionnaire was pre-tested on 15 type-2 diabetic patients on follow up visit in Tirunish Beijing Hospital to assure quality of translation to Amharic and necessary correction and amendment was made.

4.10 Data quality Assurance

To assure data quality, training, and orientation was given for the data collectors by the principal investigator. Additionally, on each data collection day, the collected data was reviewed and checked for its completeness by principal investigator and appropriate design and sampling procedures were applied. Moreover, the exclusion criteria were considered.

4.11 Data processing and analysis

The data was entered in to EPI- data version 3.1, and then the data was cleaned and analyzed by using Statistical Package for Social Science (SPSS) version 22 statistical software. Categorical variables were described by frequencies and percentages, and continuous variables were described by means and standard deviations. Figures and tables were used to summarize the results. Descriptive statistics was used. Bivariate and multivariate logistic regression was computed to assess statistical association between the outcome variable and independent variables using Odds Ratio; significant of statistical association was assured or tested using 95% confidence interval (CI) and p value (<0.05).

4.12 Operational definitions

- **Good Self-Care Knowledge**: Refers for those study participants who answer more than or equal to 70% of knowledge questions correctly(33,40).
- **Poor Self-Care knowledge:** Refers for those study participants who answer less than 70% of knowledge questions correctly(33,40).
- **Exposure to diabetic health education :** If a client gets health education about diabetes and how to care for himself/herself then client is said to be exposed to diabetic health education
- **Duration after diagnosis:** it is the total period of time after the client has been medically confirmed of being diabetic patient.
- **Presence of diabetic complication and co- morbidity:** If a client has past or current history of the presence of one or more additional disorders given below then he/she is considered as having history of diabetic complication. These are: diabetic nephropathy, diabetic neuropathy, diabetic retinopathy, diabetic foot ulcer, diabetic related heart disease and others known acute or chronic complications of diabetes.

4.13 Ethical consideration

Formal letter was obtained from Research Ethics Committee of Addis Ababa University Collage of Health Science Department of Nursing and Midwifery and it was submitted to, Addis Ababa Health Bureau, Saint Paul's Mellinium Medical Collage Hospital, Menilik-II Memorial Hospital, Zewditu Hospital and Yekatit-12 Hospital. So the letter was given to the hospitals in order to obtain formal ethical clearance. Participation was voluntary and information was collected anonymously after obtaining verbal consent from each respondent by assuring confidentiality throughout the data collection period. In order to maintain confidentiality the participants were assured that the obtained information would not made available to anyone who was not directly involved in the study and their names were not be written on the questionnaire they were interviewed.

4.14 Dissemination of the result

Finally, the findings of the study will be presented to Addis Ababa University, Department of Nursing and Midwifery as partial fulfillment of master's degree in Adult Health Nursing.

It will be also communicated to Menilik-II Memorial hospital, Saint Paul's hospital, Zewditu Memorial hospital and Yekatit-12 hospital

The findings will be also presented in different seminars, meetings, and workshops as well as further effort will be made to publish the findings on peer reviewed journal. Hard and soft copies will be made available in the library of AAU, for graduate students as well as for other researchers and readers

CHAPTER 5

Result

5.1 Socio-demographic characteristics of respondents

Out of 422 patients with type 2 DM intended to participate in the study, 412 patients actually participated in the interview making a response rate of 97.63%. Among the total of respondents, 189(45.9%) and 223(54.1%) were males and females respectively. The mean age was 49.98 (SD ±12.28) years and majority of the patient's 115(27.9%) lies between 40 and 49 years. More than half of the participants 277(67.2%) were married and majority of respondents 156(38%) were Amhara and 130(31.6%) were Oromo. The result on educational status showed a large proportion of participants 111(26.9%) were achieved secondary education followed by read and write which accounts 92(12.1%). Regarding the religion of respondents, majority were Orthodox followed by Muslim that accounts 247(60%) and 92(22.3%) respectively. Table 1 provides details description of the socio-demographic variables.

Table 1: Socio-demographic characteristics of patients with type 2 diabetes in Addis Ababa Government hospitals, 2016.

Variable		**Frequency**	**%**
sex	Male	189	45.9
	Female	223	54.1
	Total	422	100
Age	<30	10	3.9
	30-39	70	17.0
	40-49	115	27.9
	50-59	112	27.2
	60-69	99	24
	Total	412	100
Education	Illiterate	50	12.1
	Read and write	92	22.3
	Primary (1-8)	78	18.9
	Secondary (9-12)	111	26.9
	Tertiary (above 12)	81	19.7
	Total	412	100

Religion	Orthodox	247	60
	Muslim	92	22.3
	Protestant	60	14.6
	Others	13	3.2
	Total	412	100
Ethnicity	Amhara	156	38
	Gurage	85	20.7
	Oromo	130	31.6
	Tigre	38	9.2
	Others specify	3	0.5
	Total	412	100
Marital status	Single	61	14.8
	Married	277	67.2
	Divorced	33	8.0
	Widowed	41	10.0
	Total	412	100
Occupation	Unemployed	158	38.3
	Employed	253	61.4
	Others	1	0.2
	Total	412	100
Residence	Urban	353	85.57
	Rural	55	13.3
	Total	412	100
Monthly income	<500	97	49.24
	500-100	81	41.11
	>100	37	18.78
	Total	197	100

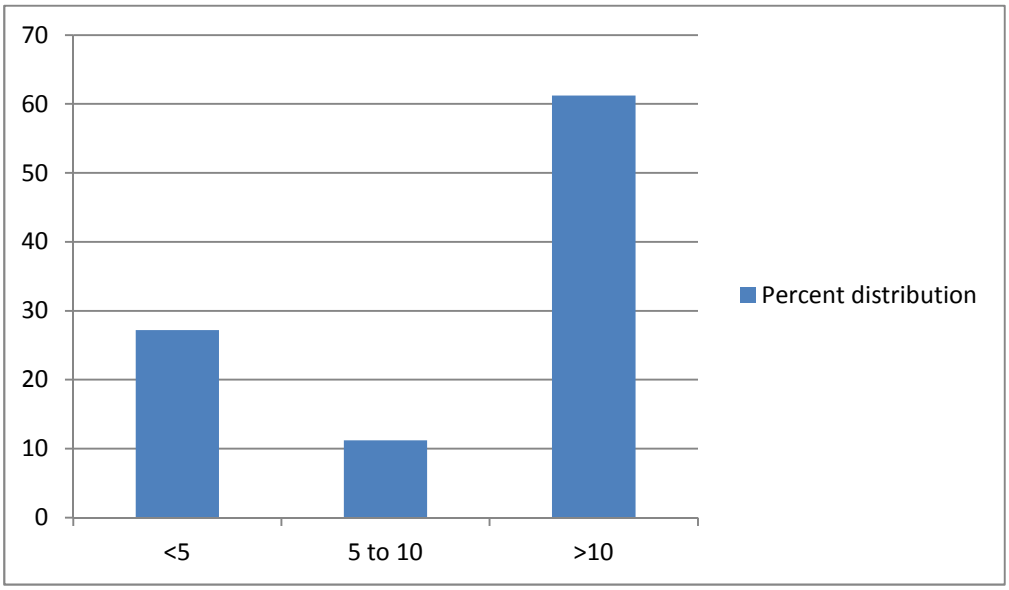
5.2 Clinical and other factors related to type 2 diabetes self-care

Most of the respondents 252(61.3%) had a duration of disease greater than 10 years where as 112 (27.2%) of the people were having duration between 5 to 10 years. The mean duration of diabetes was 11.85 with SD of 8.98 years with minimum of 1 year and maximum of 62 years. Of all

respondents, about 239 (58%) had long term diabetic complication confirmed medically. Majority 358(86.9%) respondents have been received at least once information about diabetes self-care. Among those who received information about diabetes self-care most of them 283 (84.22%) reported health care providers as their source of information followed by mass medias 40(11.9%). Majority 301(73.1%) of participants were not member of diabetic association found in their area. Table 2 provides details description of distribution of clinical and other related characteristics.

Table 2. Distribution of clinical and other related characteristics of type 2 diabetic patients, Addis Ababa government hospitals, 2016.

Variable		Number	%
How long you have been diagnosed with Diabetes Mellitus?	<5 years	112	27.2
	5-10 years	48	11.2
	>10 years	252	61.2
	Total	412	100
Do you have any diabetic related lon term complication	Yes	239	58
	No	173	42
	Total	412	100
Which type of complications do you have(multiple answer is possible)	Diabetic nephropathy	43	17.99
	Diabetic neuropathy	77	32.21
	Diabetic retinopathy	97	40.58
	Diabetic foot ulcer	36	15.06
	Diabetic related heart	77	32.21
	Total	330	100
Have you ever received any information about diabetes or diabetes self care?	Yes	336	81.8
	No	75	18.2
	Total	412	100
From where did you get the information about diabetes or diabetes self care	Heath personal	283	84.22
	Mass media's	40	11.9
	Friends or family	13	3.8
	Total	336	100
Are you a member of diabetic association?	Yes	111	26.9
	No	301	73.1
	Total	412	100



Duration of diabetes in year

Figure 3: Graphic description of duration of diabetes Diagnosis, Addis Ababa government hospitals, 2016.

5.3 Diabetes self-care knowledge level of respondents

More than half of the study sample, 239(58%) had a high (70% or over) overall knowledge while the rest 173(42%) showed low (<70%) overall knowledge level about self-care.

The overall self-care knowledge correct response on modifiable lifestyles, adherence and consequence of uncontrolled blood glucose level was 73.21%, 70.36% and 72.03% respectively. About 23.3% responded that fasting blood sugar (FBS) test can be used to monitor blood sugar control of 2-3 months. About 47.5% participants responded that no person should check blood sugar and blood pressure of a diabetic patient except qualified medical doctor and other health personnel in the hospital. Off all respondents only 26.2% of study participants responded that regular exercise reduces the need for insulin or other diabetic drugs

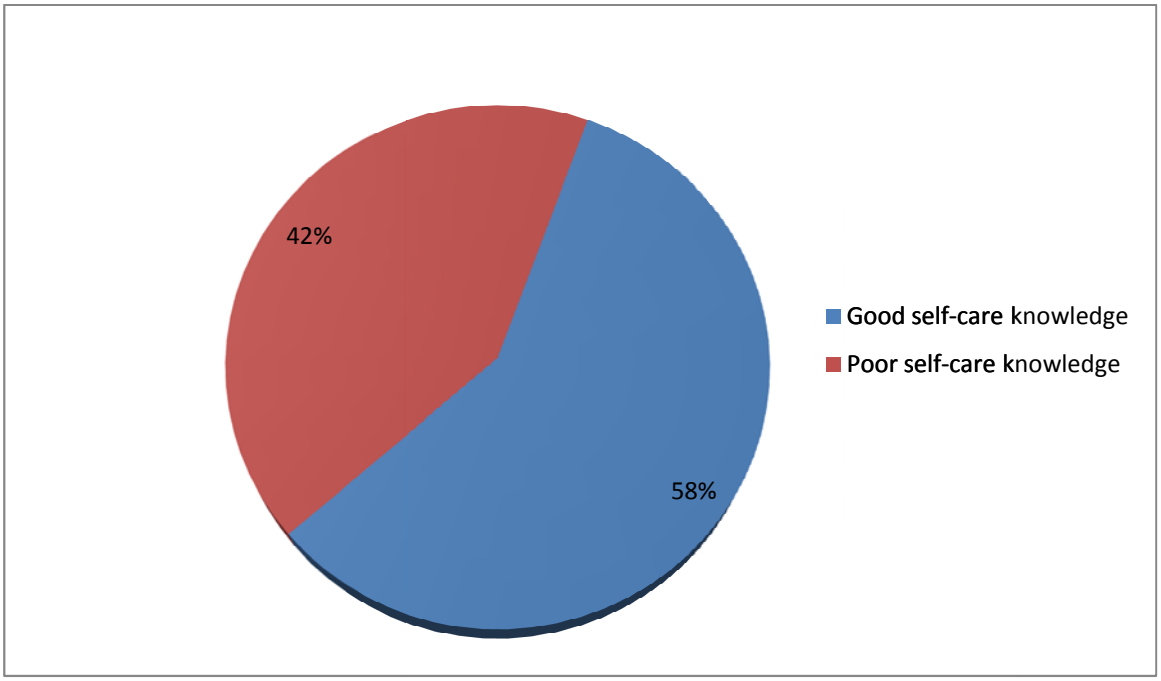


Figure 4: Pie-chart description of diabetes self-care knowledge at Addis Ababa Government Hospital, 2016.

Diabetes Self-care Knowledge (DSCK-30) item performance

Table 3: Overall performance of respondents on Modifiable Lifestyles in Addis Ababa government hospitals, 2016 (18 Items)

Questions	Yes	No	Correctness
Blood glucose level should be measured before and after every physical activity.(Yes)	328(79.6%)	84(20.4%)	328(79.6%)
Fasting blood sugar (FBS) test can be used to monitor blood sugar control of 2-3 months.(No)	254(61.7%)	158(38.3%)	158(38.3%)
A person with diabetes should take care of his/her teeth and brus and floss his/her teeth every day.(yes)	375(91%)	37(9%)	375(91%)
Tight elastic hose or socks are not bad for a person with diabetes.(No)	139(33.7%)	273(66.3%)	273(66.3%)
Self blood glucose monitoring (SBGM) enables a person with diabetes to monitor and react to changes in his/her blood sugar levels(Yes)	364(88.3%)	48(11.7%)	364(88.3%)
Only the doctors should make plans on how a person with diabetes can achieve his/her target goals.(No)	163(39.6%)	249(60.4%)	249(60.4%)
Maintaining a healthy weight is not important in management of diabetes.(No)	126(30.6%)	286(69.4%)	286(69.4%)
Self blood glucose monitoring (SBGM) allows doctor and other healthcare team to gather data for treatment planning(Yes)	356(86.4%)	56(13.6%)	356(86.4%)
No person should check blood sugar and blood pressure of a diabetic patient except qualified medical doctor and other health personnel in the hospital.(yes)	217(52.5%)	195(47.5%)	195(47.5%)

Having physical activity for 20-30 minutes per session at least 3 days per week is essential. (Example of physical activities: Brisk walking, house activities, climbing staircase)(Yes)	380(92.2%)	32(7.8%)	380(92.2%)
A person with diabetes should report any change in his eyesight to his doctor.(yes)	384(93.2%)	28(6.8%)	384(93.2%)
There should be mutual agreement between a person with diabetes and the doctor if he/she cannot change a particular lifestyle.(yes)	330(80.1%)	82(19.9%)	330(80.1%)
A person with diabetes should take extra care of his/her feet especially when cutting his/her toenails(yes)	383(93%)	29(7%)	383(93%)
Regular exercise does not reduce the need for insulin or other diabetic drugs.(No)	304(73.8%)	108(26.2%)	108(26.2%)
A person with diabetes should only ask for help when he/she fee sick from his/her healthcare team.(no)	151(36.7%)	261(63.3%)	261(63.3%)
At the initiation of insulin therapy for a person with diabetes wh may require it, appropriate advice on Self Blood Glucose Monitoring (SBGM) and diets should be given to the person.(yes)	387(93.9%)	25(6.1%)	387(93.9%)
Cigarette smoking can worsen diabetes(yes)	364(88.3%)	48(11.7%)	364(88.3%)
Monitoring blood pressure is not as important as monitoring blood glucose in a person with diabetes.(No)	248(60.2%)	164(39.8%)	248(60.2%)
Overall correct performance on modifiable lifestyles	73.21% (26.2%-93.2%)		

Table 4: Overall performance of respondents on knowledge of Adherence to diabetes self-care in Addis Ababa government hospitals, 2016 (8 Items)

Questions	**Yes**	**No**	**Correctness**
Regular medical checkups are not essential when a person with diabetes is feeling well.(No)	135(38.2%)	277(67.2%)	277(67.2%)
Dietary instructions should be written out, even if the person with diabetes is illiterate: someone at home should be available to interpre it for him/her.(yes)	270(65.5%)	142(34.5%)	270(65.5%)
Instructions about drugs and other self-care practices should not be strictly followed.(No)	134(32.5%)	278(67.5%)	278(67.5%)
Taking low dose Aspirin tablet every day decreases risk of having heart attack and stroke.(yes)	187(45.4%)	225(54.6%)	187(45.4%)
A person with diabetes taking medicines when he/she feels good is waste of money.(No)	70(17%)	342(83%)	342(83%)
Being drunk while on diabetic drugs is not a serious problem.(No)	58(16.3%)	345(83.7%)	345(83.7%)
Diet and exercise are not as important as medication in control of diabetes.(No)	88(21.4%)	324(78.6%)	324(78.6%)
Diabetes drugs are not taken throughout the life time of a person with diabetes.(No)	114(27.7%)	298(72.3%)	298(72.3%)
Overall correct response on Adherence of self-care practices	70.36% (45.4%-83.7%)		

Table 5: knowledge of respondents on consequences of uncontrolled blood sugar level in Addis Ababa government hospitals, 2016 (4 Items)

Questions	Yes	No	Correctness
If blood sugar is close to normal, a person with diabetes is likely to have more energy, feel less thirsty and urinate less often.(yes)	351(85.2%)	61(14.8%)	351(85.2%)
Prolonged high blood sugar level can cause eye problem or even blindness.	368(93.7%)	44(6.3%)	368(93.7%)
Prolonged uncontrolled blood sugar level can cause heart attack, stroke and kidney problems.	379(92%)	33(8%)	379(92%)
Shaking, confusion, behavioral changes and sweating are signs of high blood sugar	341(82.77%)	71(17.23%	71(17.23%)
Overall correct response on consequences of uncontrolled blood sugar level	72.03% (17.23%-93.7%)		

5.4 Factors affecting self-care knowledge

Out of socio demographic, clinical and other related factors mentioned age, marital status, education status, residence, duration of DM cases, exposure to diabetic education, and being DM association membership were significant at 0.2 and were entered into the final regression model. Then marital status, duration of DM, being member of diabetic association and exposure to diabetic health education showed a significant association with good self-care knowledge at a 5% level of significance**.** The rest of factors did not meet statistical significance level.

Participants with educational status of read and write, primary, secondary, and tertiary level were 1.680, 1.079, 1.478 and 1.990 times more likely to have good knowledge as compared to those who were illiterate respectively. Participants, who are married, divorced, widowed were 2.856, 10.322 and 13.11 times more likely to have good self-care knowledge than those who are single. Table 3 provides details description relationship between respondent's socio-demographic characteristics and self-care knowledge level.

Table 3: Relationship between respondent's socio-demographic characteristics and self-care knowledge level, Addis Ababa government hospitals, 2016.

Socio-demographic characteristics	Over all diabetes self-care knowledge			
	COR(95% CI)	p-value	AOR(95% CI)	p-value
Sex				
Male				
Female	1.112(0.65,1.443)	0.898	___	__
Age group				
<30	1	0	1	0
30-39	3.000(0.975,9.232)	0.055	1.795(0.429,7.506)	0.423
40-49	2.593(0.881,7.628)	0.084	0.745(0.181,3.059)	0.683
50-59	2.778(0.941,8.196)	0.064	1.745(0.433,7.032)	0.434
60-69	1.569(0.529,4.648)	0.417	0.599(0.138,2.609)	0.495
Educational level				
Illiterate	1	0	1	0
Read and write	2.416(1.188,4.915)	0.015	1.680(0.651,4.332)	0.283
Primary	1.778(0.858,3.683)	0.122	1.079(0.404,2.884)	0.879
Secondary	**2.921(1.460,5.842)**	**0.002**	1.478(0.570,3.835)	0.422
Tertiary	**5.079(2.371,10.881)**	**0.000**	1.990(0.693,5.716)	0.201
Marital status				
Single	1	0	1	0
Married	0.457(0.197,1.057)	0.067	2.856(1.214,6.720)	0.016
Divorced	0.503(2.47,1.027)	0.059	**10.322(2.807,37.955)**	**0.000**
Widowed	1.537(0.526,4.490)	0.432	**13.119(3.926,43.834)**	**0.000**
Occupation				
Unemployed	1	0	1	0
Employed	0.651(0.436,0.973)	0.036	0.825(0.423,1.610)	0.573
Residence				
Urban	1.956(1.102,3.470)	0.022	1.809(0.813,4.025)	0.146
Rural	1		1	
Monthly income				
<500	1	0	1	
501-1000	0.953(0.584,1.556)	0.848	1.007(0.487,2.085)	0.984
>1000	1.518(0.883,2.608)	0.131	1.340(0.586,3.064)	0.487

As shown below in the table self-care knowledge was associated with duration of diabetes (p=0.004), receiving education about diabetes self-care (p=0.000) and being member of diabetic association (p=0.000).

Duration of diabetes was found to be significantly associated with self-care knowledge. Respondents who have had diabetes over 10 years were found to be more knowledgeable than those who have had the disease for less than 5 years with p-value of 0.004.

Receiving Information diabetes self-care and being member of diabetic association had consistent significant association result in both bivariate and multivariate regression results (Table 4).Those who received information about diabetes self-care were 8.7 times (AOR=8.701 ((3.324, 22.780) , p=0.000) more knowledgeable about diabetic self-care than those who have not received self-care education.

As to being member of diabetic association, study participants who were members of diabetic association were 7.6 times more likely to have good knowledge of diabetic self-care as compared to those who were not been members of diabetic association (AOR=7.674 (2.979-25.723), p=0.000).

According to the current study no significant association was found between self-care knowledge and having diabetic long term complication. Table 4 provides details description relationship between respondent's clinical characteristics and self-care knowledge level

Table 4: Relationship between respondent's clinical characteristics and self-care knowledge level, Addis Ababa government hospitals, 2016.

Clinical characteristics of respondents	Over all diabetes self care knowledge			
	COR(95% CI)	**p-value**	**AOR(95% CI)**	**p-value**
Duration of diabetes				
<5 years	1	0	1	0
5-10 years	1.255(0.737,2.138)	0.404	0.666(0.322,1.378)	0.273
>10 years	0.683(0.410,1.135)	0.141	**0.33(0.158,0.704)**	**0.004**
Diabetic related long term Complications				
Yes	0.672(0,450,1.003)	0.052	0.792(0.452,1.387)	0.414
No	1	0	1	0
Information Diabetes self-care				
Yes				
No	**12.004(5.266,27.367)**	**0.000**	**8.701(3.324,22.780)**	**0.000**
	1	0	1	0
Being member of diabetic association				
Yes	**13.248(2.303,19.335**)	**0.000**	**7.674(2.979,25.723)**	**0.000**
No	1	0	1	0

CHAPTER 5

5.1 Discussion

It is essential that diabetic patients should possess good knowledge about how to care for themselves in order to improve their self-care skills and thereby prevent complications.

In Ethiopia, there is no study which intensively assessed self-care knowledge of type 2 diabetes. Thus this study has tried to assess the type 2 diabetes self-care knowledge level and associated factors among type 2 diabetes patients on follow up visit in government hospitals of Addis Ababa, Ethiopia.

In this study 27.9% respondents were found to be in the age group of 40-49 while 27.2% of them were in the age group of 50-59 years. A study done in Mekele showed that 94.0% respondents were found to be in the age group of 25 to 69 years and similar study in Nigeria indicated that majority of respondents were at age group of 50-59 years (38.9%) followed by those in the age range of 40-49 years(21.5%). This finding is in line with IDF diabetes atlas 2015 which reported that the greatest number of people with diabetes are between 40-59 years (10,26,33).

Over all self-care knowledge of participants in this study (58%) was lower than the findings from study carried out in Nigeria (79.5%) and India on knowledge type 2 diabetes self-care (33). The difference may be attributed to socio-economic status difference, educational level difference, access to diabetic information, and availability of diabetic educators within the countries.

In line with the study carried out in Nigeria only 47.5 % of respondents responded correctly for the item no person should check blood sugar and blood pressure of a diabetic patient except qualified medical doctor and other health personnel in the hospital (33). This may be due to lack of knowledge on blood glucose monitoring skill by persons other than health providers, or non-availability of blood glucose and blood pressure monitoring devices in the patient's home.

Only 17.23% of the patients in this study responded that shaking, confusion, behavioral changes and sweating are not signs of high blood sugar; this response is slightly lower than the study done in Nigeria (33.99 %)(33). A possible reason for this knowledge deficiency may be lack of clear diabetic education on the signs of hyperglycemia and hypoglycemia.

In the current study highest self-care knowledge scores were obtained for items of modifiable life styles and consequences of uncontrolled blood sugar Level while the least scores were reported for

items of adherence. This finding contradicts with similar study carried out in two states of Nigeria, in which highest scores were obtained for items of Adherence (33). This variation may be due to the fact that unlike the study in Nigeria in the current study most of participants have at least one diabetic related long term complications so that they would know about the complications they have and it may increase their knowledge seeking tendency.

In line with earlier studies in Nigeria, this research revealed that majority of the respondents thought that FBS test can be used to monitor 3 months blood sugar control. This may be due, in part, to the fact that most of the respondents in this research are given appointment by health care providers to come after 3 month and so they end up checking their blood glucose once in 3 months or more. Another possible reason would be in accessibility and in affordability of other tests like HbA1c test.

In the current study large proportion (72.03%) of patient population responded correctly self-care knowledge items on consequence of uncontrolled blood glucose level. It is slightly lower than study done in Nigeria which is 77.52% (33). A possible explanation for this could be because about large proportion of study participants already developed at least one chronic complication so they might have better knowledge on self-care.

A high proportion of study participants 92.2% did know that regular exercise is helpful to control type 2 diabetes and 78.6% of study participants responded in the way that diet and exercise are important as medication in control of diabetes. Similar result is reported to this finding in most of diabetic knowledge and self-care knowledge studies (28,31).

The current study showed that marital status, duration of diabetes, exposure to diabetic health education and being member of diabetic association were significantly associated with diabetes self-care knowledge. Previous studies have indicated similar findings in most of the variables (28,31).

In contrast to the report of two different studies in Nigeria which illustrated no relationship between marital status and knowledge, the results of this study indicated a significant association of both variables. Participants, who are married, divorced, widowed were 2.856, 10.322 and 13.11 times more likely to have good self-care knowledge than those who are single This might be due to the fact that those who have married might have influence from their partner to seek information about self-care activities(33).

Duration of diabetes was found to be significantly associated with self-care knowledge. Those with duration of diabetes for greater than 10 years were more knowledgeable than those with duration less than 10 years with p-value of 0.000. Similar findings have been recorded in other studies (29,31).The possible explanation for association of duration diabetes with self-care knowledge would be with longer duration, there are more opportunities for exposure to information regarding diabetes. Repeated information's about diabetes self-care will eventually be grasped no matter how 'complex'. In addition, patients who have had the diabetes for certain time might be experiencing some complications which will make them to seek help, and they may gain more knowledge in the process, patients with fewer years might not see the need to self-care until the symptoms are manifested, unlike patients who had lived with the disease for many years, whose symptoms have manifested and they go around seeking for treatments, through these exposures diabetes patients with longer duration may gain better self-care knowledge.

Those who received information about diabetes self-care were 8.7 times more knowledgeable about diabetic self-care than those who have not received self-care education. As to being member of diabetic association, study participants who were members of diabetic association were 7.6 times more likely to have good knowledge of diabetic self-care as compared to those who were not been members of diabetic association The possible reason for association of exposure to diabetic education and membership to diabetic association to high self-care knowledge is increased exposure of those group peoples for diabetic educations so that they would have better self-care knowledge.

5.2 Strengths and Limitations of the study

Strengths of the study

- Use validated structured standardized questionnaire
- High response rate
- Since there is no similar study conducted in the area, it can contribute a lot as baseline information for future studies.

Limitations of the study

- Limitation of related literatures to compare and discuss some of the findings
- Since the study design were cross-sectional method the direction of causal relationship between variables can't always be determined

5.3 Conclusion

This study reflects that there is a need to improve diabetic self-care knowledge among the patients. Overall knowledge about diabetes self-care among patients was not adequate; some critical knowledge gaps were also identified in specific areas. In particular, knowledge about adherence to self-care practices was relatively low. Marital status, duration of diabetes, exposure to diabetic health education, and diabetic association membership were significantly associated with diabetes self-care knowledge.

5.4 Recommendations

For policy makers

- In order to emphasize diabetic self-care education, policy makers should opening a program of professional diabetic educators on self-care of diabetic patients and they should strength existing programs.

For the hospitals

- The hospital administration should stress on educating clients more during follow up periods.
- Diabetic self-care should be incorporated in the health education program of the hospital.

For health care professionals

- They should educate patients individually about how the patients can care for themselves beyond prescribing medications by addressing the patients' age, educational status, occupational status, duration of diabetic therapy and other factors.

For the patients

- Patients should adhere to all diabetic self-care educations provided by health care providers.
- Patients should continue to update their knowledge on diabetic self-care practices.
- It is recommended if they become member of nearby diabetic association.

For future research

- Future researchers should conduct further studies on diabetes self-care practice and adherence of diabetic patients to self-care practice in order to know the association between self-care knowledge and self-care practice
- Since there are limited studies conducted on diabetes self-care it is recommended that further studies should be conducted in different parts of Ethiopia and largely in Africa
- Interventional studies are also recommended in order to determine the effect of diabetic educational programs on diabetes self-care knowledge and self-care practice of diabetic patients.

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Annex 1: Subject Information Sheet (English Version)

Addis Ababa University, College of Health Sciences, Department of Nursing and Midwifery

Graduate Studies

Dear participant!

Here, I the undersigned, at Addis Ababa University College of Health Sciences, School of Allied Health Science, Department of Nursing and Midwifery Graduate Study Program, currently I will be undertaking research on a topic entitled as assessment of type 2 diabetes self-care knowledge and associated factors on follow up visits in government hospitals of Addis Ababa .For this study, you will be selected as a participant and before getting your consent, you need to know all necessary information related to the study which will be detailed as follows.

Purpose of the study: the purpose of this study is assessment of type 2 diabetes self-care knowledge among patients attending government hospitals in Addis Ababa.

Participants to be included: all type 2 diabetes sampled by systematic random sampling technique will be included in the study

Benefits and risk of the study:

Benefits: For your participation in the study no payment will be granted or has no any special privilege to you. Your responses to the following questions are beneficial to you and other diabetic patients as input in improvement of diabetes self-care knowledge and to identify the factors which affect the knowledge of self-care so that recommendations will be made to responsible organizations to fill those gaps.

Risks: The study will be conducted through interviews and you are being asked for a little of your time, a maximum of 20 min, to help us in this study. There is no possible risk associated with participating in this study except the time spent for responding to the questionnaire.

Confidentiality: Your name will not be written in this form and any information you tell us will not be disclosed to third party. Your participation is voluntary and you are not obligated to answer any question you do not wish to answer. If you feel discomfort with the question, it is your right to drop it any time you want. If you have questions regarding this study or would like to be informed of the results after its completion, please feel free to contact the principal investigator.

Address of the principal investigator:

Nathan Desalegn

Cell phone: +2519174928, e-mail: nathandesalegn27@gmail.com

Are you satisfied with the information provided so far?

1. Yes…….. Continue to the next page

2. No …… I won't participate

Annex 2

Consent form (English Version)

In undersigning this document, I am giving my consent to participate in the study entitled as "assessment of diabetes self-care knowledge and associated factors among type 2 diabetic patients on follow up visits in government hospitals of Addis Ababa, Ethiopia" I have been informed that the purpose of this study is to asses diabetes self-care knowledge and associated factors among type 2 diabetic patients on follow up visits in government hospitals of Addis Ababa, Ethiopia. I have understood that participation in this study is entirely voluntarily. I have been told that my answers to the questions will not be given to anyone else and no reports of this study ever identify me in any way. I have also been informed that my participation or non-participation or my refusal to answer questions will have no effect on me. I understood that participation in this study does not involve risks. I understood that Nathan Desalegn is the contact person if I have questions about the study or about my rights as a study participant.

Respondent's signature_____

Interviewer

Name_____Signature_____Date_____

Annex 3

Questionnaire (English Version)

Addis Ababa University, College of Health Sciences, Department of Nursing and midwifery

Graduate Studies

Questionnaire ID No----------

Direction for Data Collectors: Put (√) mark on the boxes in front of options provided.

This questionnaire is designed to assess diabetes self-care knowledge and associated factors among type 2 diabetic patients on follow up visits in government hospitals of Addis Ababa, Ethiopia **Part I- Socio demographic characteristics**

S .no.	Questions	Response
Q 101.	What is your sex?	1. Male □ 2. Female □
Q 102.	Age?	_____Years
Q 103	What is the highest level of education you received?	1. Illiterate □ 2. Read and write□ 3. Primary (1-8) □ 4. Secondary (9-12) □ 5. Tertiary (above 12) □
Q 104	What is your religion?	1. Orthodox □ 2. Muslim □ 3. Protestant □ 4. Others (specify) _____
Q 105	What is your ethnicity?	1. Amhara □ 2. Gurage □ 3. Oromo □ 4. Tigre □ 5. Others specify_____
Q 106	What is your marital status?	1. Single □ 2. Married □ 3. Divorced □

		4. Widowed □
Q 107	What is your occupation?	1. Unemployed □ 2. Employed □ 3. Others (specify)_____
Q 108	Where is your residence?	1. Urban □ 2. Rural □
Q 109	How much money do you earn on monthly basis?	_____Ethiopian birr

Part II-clinical and other factors related to diabetes

S .no.	Questions	Response
Q 201	How long you have been diagnosed with Diabetes Mellitus?	_____years
Q 202	Do you have any diabetic related long term Complications?	1. Yes □ 2. No □
Q 203	If your answer is "yes" for question no. 111 which type of complications do you have?(Multiple answers are possible)	1. Diabetic Nephropathy □ 2. Diabetic Neuropathy □ 3. Diabetic Retinopathy □ 4. Diabetic foot ulcer □ 5. Diabetic related heart disease □ 6. Others (specify)_____
Q 204	Have you ever diabetic health education about diabetes self-care?	1. Yes □ 2. No □
Q 205	If your answer is yes to question 113 from where did you get health education?	1. Doctor or other heath personal □ 2. Mass Media's □ 3. Friends or family □ 4. Other (specify)_____
Q 206	Are you a member of diabetic association?	1. Yes□ 2. No □

Part III diabetic self-care knowledge questionnaire

Modifiable Lifestyles (18 Items)

Item #	Questions	No. of Resp.	
		Yes	No
Q 301	Blood glucose level should be measured before and after every physical activity.		
Q 302	Fasting blood sugar (FBS) test can be used to monitor blood sugar control of 2-3 months.		
Q 303	A person with diabetes should take care of his/her teeth and brush and floss his/her teeth every day.		
Q 304	Tight elastic hose or socks are not bad for a person with diabetes.		
Q 305	Self blood glucose monitoring (SBGM) enables a person with diabetes to monitor and react to changes in his/her blood sugar levels		
Q 306	Only the doctors should make plans on how a person with diabetes can achieve his/her target goals.		
Q 307	Maintaining a healthy weight is not important in management of diabetes.		
Q 308	Self blood glucose monitoring (SBGM) allows doctor and other healthcare team to gather data for treatment planning.		
Q 309	No person should check blood sugar and blood pressure of a diabetic patient except qualified medical doctor and other health personnel in the hospital.		
Q 310	Having physical activity for 20-30 minutes per session at least 3 days per week is essential. (Example of physical activities: Brisk walking, house activities, climbing staircase)		
Q 311	A person with diabetes should report any change in his eyesight to his doctor		

Q 312	There should be mutual agreement between a person with diabetes and the doctor if he/she cannot change a particular lifestyle.		
Q 313	A person with diabetes should take extra care of his/her feet especially when cutting his/her toenails		
Q 314	Regular exercise does not reduce the need for insulin or other diabetic drugs.		
Q 315	A person with diabetes should only ask for help when he/she feels sick from his/her healthcare team.		
Q 316	At the initiation of insulin therapy for a person with diabetes who may requi it, appropriate advice on Self Blood Glucose Monitoring (SBGM) and diets should be given to the person.		
Q 317	Cigarette smoking can worsen diabetes		
Q 318	Monitoring blood pressure is not as important as monitoring blood glucose i a person with diabetes.		

Adherence (8 Items)

Item #	Questions	No. of Resp.	
		Yes	No
Q 401	Regular medical checkups are not essential when a person with diabetes is feeling well.		
Q 402	Dietary instructions should be written out, even if the person with diabetes is illiterate: someone at home should be available to interpret it for him/her.		
Q 403	Instructions about drugs and other self-care practices should not be strictly followed.		
Q 404	Taking low dose Aspirin (Vasoprin®, Emprin®) tablet every day decreases risk of having heart attack and stroke.		
Q 405	A person with diabetes taking medicines when he/she feels good is waste of money.		
Q 406	Being drunk while on diabetic drugs is not a serious problem.		
Q 407	Diet and exercise are not as important as medication in control of diabetes.		
Q 408	Diabetes drugs are not taken throughout the life time of a person with diabetes.		

Consequences of Uncontrolled Blood Sugar Level (4 Items)

Item #	Questions	No. of Resp.	
		Yes	No
Q 501	If blood sugar is close to normal, a person with diabetes is likely to have more energy, feel less thirsty and urinate less often.		
Q 502	Prolonged high blood sugar level can cause eye problem or even blindness.		
Q 503	Prolonged uncontrolled blood sugar level can cause heart attack, stroke and kidney problems.		
Q 504	Shaking, confusion, behavioral changes and sweating are signs of high blood sugar		

Annex 4: Information Sheet (Amharic Version)

የጥናቱ አጠቃልይ ምንነት ማብራሪያ

በአዲስ አበባ ዩኒቨርሲቲ ጤና ሳይንስ ኮሌጅ የነርሲንግ እና ሚድዋይፈሪ ትምህርት ክፍል የድህረ ምረቃ መርሃ ግብር

የተከበሩ የጥናቱ ተሳታፊ!

እኔ ከዚህ በታች የማስፈርምዎት በአዲስ አበባ ዩኒቨርሲቲ ጤና ሳይንስ ኮሌጅ በነርሲንግ እና ሚድዋይፈሪ ትምህርት ክፍል የድህረ ምረቃ መርሃግብር ተማሪ ስሆን በአሁኑ ወቅት በአዲስ አበባ የመንግስት ሆስፒታሎች የሚከታተሉ የታይፕ 2 የስኳር ሕመም ተመላሽ ታካምዎች የራሣቸዉን ጠንነት በራሣቸዉ ስለመጠበቅ ያላቸዉን እዉቀትና ተጓዳኝ ነገሮች ላይ ጥናት እያካሄድኩ እገኛለሁ፡፡ በመሆኑም በዚህ ጥናት ዉስጥ እርስዎ እንዲሳተፉ የተመረጡ ሲሆን ከመሳተፍዎ በፊት ግን የጥናቱን ጠቅላላ ይዘት እና ዓላማ እንደሚከተለው አብራራለዎታለሁ፡፡

የጥናቱ ዓላማ፡ ይህ ጥናት የሚያተኩረው በአዲስ አበባ የመንግስት ሆስፒታሎች የሚከታተሉ የታይፕ 2 የስኳር ሕመም ተመላሽ ታካምዎች የራሣቸዉን ጠንነት በራሣቸዉ ስለመጠበቅ ያላቸዉን እዉቀትና ተጓዳኝ ነገሮችን ማጥናት ላይ ነው፡፡

የጥናቱ ተሳታፊዎች ማንነት፡ በአድስ አበባ የመንግስት ሆስፒታሎች የሚከታተሉ የታይፕ 2 የስኳር ህሙማን በዚህ ጥናት ውስጥ ይሳተፋሉ፡፡

በመሳተፍዎ የሚያገኙት ጥቅም እና ጉዳት፡ በጥናቱ ስለተሳተፉ ቀጥተኛ የሆነ ገንዘብም ሆነ ሌላ ጥቅም አያገኙም፡፡ ነገር ግን የእርስዎ ድምጽ የታይፕ 2 የስኳር ጎሙማን የራሣቸዉን ጠንነት በራሣቸዉ ስለመጠበቅ ያላቸዉን እዉቀትና ተጓዳኝ ነገሮችን እንዲናዉቅ ይረዳናል በዝሁም መሰረት ለምመለከተዉ አካል አስፈላጊዉ መልዕክት እነዲተላለፍና ማስተካከያ እነዲደረግ ያደረጋል፡፡ በሌላ መልኩ በጥናቱ ስለተሳተፉ ቢበዛ 20 ደቂቃ ከመስጠት ዉጭ ምንም አይነት የአካል ወያም የስነልቦና ጉዳት አይደርስብዎትም፡፡

የመረጃን ሚስጢር መጠበቅ፡ የእርስዎ ስም በመጠይቁ ወረቀት ላይ አይፃፍም፡፡ የሚሰጡን መረጃ በምንም መልኩ ለሶስተኛ ወገን አይታይም፡፡ በጥናቱ ዉስጥ የመሳተፍም ያለመሳተፍም እንዲሁም በፈለግዎት ጊዜ የማቋረጥ መብትዎ የተጠበቀ ነው፡፡ስለጥናቱ ማንኛውም ዓይነት ጥያቄ ቢኖርዎት ወይም ስለጥናቱ የመጨረሻ ውጤት ማወቅ ቢያስፈልግዎት በሚከተለው የዋናው ተመራማሪ አድራሻ ማግኘት ይችላሉ፡፡

የዋናው ተማራማሪ አድራሻ

ስልክ፡ 0929174928፣ ኢሜይል.nathandesalegen27@gmail.com

Annex 5: Consent Form (Amharic Version)

የስምምነት ቅጽ

እኔ ከዚህ በታች የምፈርመው ግለሰብ በአዲስ አበባ የመንግስት ሆስፒታሎች የሚከታተሉ የታይፕ 2 የስኳር ሕመም ተመላሽ ታካምዎች የራሣቸዉን ጠንነት በራሣቸዉ ስለመጠበቅ ያላቸዉን ዕዉቀትንና ተጓዳኝ ነገሮች ለማወቅ በሚጠናው ጥናት ውስጥ ተሳታፊ እንድሆን መስማማቴን አየገለጽኩ ጥናቱ በፈቃደኝነት ላይ የተመሰረተ መሆኑንም ተረድቻለሁ፡፡ ከዚህ ቀጥሎ በሚገኘው መጠይቅ የምሰጠው መረጃም ሚስጢርነቱ የተጠበቀ እንደሚሆንም በሚገባ ተነግሮኛል፡፡ በጥናቱ ውስጥ ተሳታፊ መሆኔም አለመሆኔም በግሌ ሕይወት ውስጥ ችግር እንደማያመጣብኝም ተነግሮኛል፡፡ በመጨረሻም ስለ ጥናቱ እና የጥናቱ ተሳታፊ እንደመሆኔ ባለኝ መብት ዙሪያ ጥያቄ ቢኖረኝ ናታን ደሳለኝ የተባለውን የጥናቱ ዋና ባለቤት ማነጋገር አንደምችልም ተረድቻለሁ፡፡

የተሳታፊው ፊርማ----------የመረጃ ሰብሳቢው ፊርማ----------

Annex 6: Questionnaire (Amharic Version)

መለያ ቁጥር----------

በአዲስ አበባ ዩኒቨርሲቲ ጤና ሳይንስ ኮሌጅ የነርሲንግ እና ሚድዋይፈሪ ትምህርት ክፍል የድህረ ምረቃ ፕሮግራም

መጠይቅ (ከእንግሊዘኛ የተተረጎመ)

ይህ መጠይቁ ግለሰብ በአዲስ አበባ የመንግስት ሆስፒታሎች የሚከታተሉ የታይፕ 2 የስኳር ሕመም ተመላሽ ታካምዎች የራሣቸዉን ጠንነት በራሣቸዉ ስለመጠበቅ ያላቸዉን ዕዉቀትንና ተጓዳኝ ነገሮች ለማጥናት የተዘጋጀ ቅፅ ነዉ።።

ለመረጃ ሰብሳቢዎች መመሪያ፡ በጥያቄዎቹ ፊት ለፊት በተዘጋጀዉ ሳጥን የ "√ " ምልክት ያድርጉ።።

ክፍል አንድ -ማህበራዊ እና ስነ ህዝብ መረጃ መጠይቅ

ተ.ቁ	መጠይቅ	ምላሽ
101	ፆታ?	1. ወንድ 2. ሴት
102	እድሜ?	_____አመት
103	የትምህርት ደረጃ?	1.ያልተማረ 4.ሁለተኛ ደረጃ ት/ቤት ያጠናቀቀ(9-12) 2 .ማንበብና መፃፍ 5. ከ12ኛ በላይ 3. አንደኛ ደረጃን ያጠናቀቀ(1-8)
104	ሐይማኖት ?	1.ኦርቶደክስ 2. ሙስሊም 3.ፕሮቴስታንት 4. ሌላ (ይገለፅ)___
105	ብሔር ?	1.አማራ 2. ጉራጌ 3. ኦሮሞ 4. ትግሬ 5. ሌላ (ይገለፅ)___
106	የጋብቻ ሁኔታ ?	1,ያገባ 2. ያላገባ 3.የፈታ 4.በሞት የተለየ
107	የስራ ሁኔታ ?	1.ሰራተኛ 2.ስራ የሌለው 3.ሌላ (ይገለፅ)_____
108	የመኖሪያዎ አካባቢ የት ነው?	1,ከተማ 2. ገጠር
109	የወር ገቢ መጠን?	_____ የኢትዮጵያ ብር

ክፍል ሁለት- ከስኳር ህመም ጋር የተገናኙ ነገሮች

ተ.ቁ	መጠይቅ	ምላሽ	እለፍ
201	በስኳር ጎመም ከተያዙ ምን ያህል ጊዜ ይሆኖታል?	_____አመት	
202	በስኳር ህመሙ ምክንያት ያጋጠምዎት ተጨማሪ ተያዥ የጤና እክል አለ ?	1. አለ 2. የለም	መልሱ 2 ከሆነ ወደ ጥያቄ ቁጥር 204
203	ለጥያቄ ቁጥር 202 መልስዎ ‹‹አለ» ከሆነ ያጋጠመዋትን የጤና እክል ምንድነው ? (ከአንድ በላይ መምረጥ ይችላሉ)	1. ከስኳር ህመም ጋር የተያያዘ የኩላሊት ህመም 2. ከስኳር ህመም ጋር የተያያዘ የነርቭ ህመም 3. ከስኳር ህመም ጋር የተያያዘ የአይን ህመም 4. ከስኳር ህመም ጋር የተያያዘ የልብ ህመም 5. ከስኳር ህመም ጋር የተያያዘ የእግር ቁስለት 6. ሌላ (ይገለፅ)_____	
204	ስለ ስኳር ህመምና የርስዎን ጠንነት እንደት መጠበቅ እንዳለብዎት የጤና ትምህርት አግኝተዉ ያዉቃሉ?	1. አወን 2. አላቅም	መልሱ 2 ከሆነ ወደ ጥያቄ ቁጥር 206
205	ለጥቄ ቁጥር 204 መልስዎ አወን ከሆነ ትምህርቱን ከየት አገኙት?	1. ከሀክም ወይም ከለላ ጤና ባለሙያ 2. ከምድያዎች 3. ከጓደኛ ወይም ከቤተሰብ 4. ሌላ (ይገለፅ)_____	
206	የስኳር መጎበር አባል ሆነዉ ያዉቃሉ?	1. አወን 2. አላዉቅም	

<u>መመርያ 2፦ በጥያቄዎቹ ፊት ለፊት በተዘጋጀዉ ሳጥን የ “√ “ ምልክት ያድርጉ፡፡</u>

ክፍል ሶስት፦ የስኳር ህሙማን የራሳቸዉን ጠና በራሳቸዉ የመጠበቅ ዕዉቀትን መመዘኛ መጠይቅ

ልስተካከሉ የምችሉ የህይዎት ዘይበዎች (18 መጠይቆች)

ተ.ቁ.	መጠይቆች	ምላሽ	
		አወን	አይደለም
301	የደም ስኳር መጠን ከእንቅስቃሰ በፊትና በኋላ መለካት አለበት		
302	የዖም የደም ስኳር መጠን ልከት የደም ስኳር መጠንን ከ2-3 ወር ለመቆጣጠር ልያገለግል ይችላል		
303	ስኳር ያለበት ሰዉ ለእግሩ ጥንቃቀ ማድረግ እና ሁልቀን ጥርሱን መፋቅና ማጉመጥመጥ አለበት		
304	እግረን ጥቢቅ የምያደረጉ ካልሲዎች ስኳር ህመም ላለበት ሰዉ መጥፎ አይደሉም		
305	የስኳር ህመምተኛ የራሱን የደም ስኳረ መጠን በራሱ ስከታተል የራሱን ስኳር መጠን እንዲቆጣጠርና በደም ዉስጥ ለምታዩ የስኳረ መጠን ለለዉቶች ቶሎ ምላሽ እንዲሠጥ ይረዳዋል		
306	ስኳር ታማሚ እቅዱን እንደት ማሳካት እንዳለበት እቅድ ማዉጣት ያለባቸዉ ሐኪሞች ብቻናቸዉ		
307	ጤናማ ክብደት እንዲኖረን ማድሬግ ስኳር ህመምን እንድንቆጣጠር አይሬዳንም		
308	የራስን የደም ስኳረ መጠን በራስ መከታተል ሐኪሞችና ለሎች ጤና ባለሙያዎች የሕክምና ዕቅድ ዕንድያዘጋጁ ይረዳቸዋል		
309	ከሐኪሞችና ከሠለጠኑ ጤና ባለሙያዎች በስተቀር ማንም የስኳር ታማምዎችን የደም ስኳር መጠንና የደም ግፊት መጠን መለካት የለበትም		
310	በሳምንት በትንሹ 3 ቀን በአንድ ጊዜ ከ20-30 ደቅቃ እንቅስቃሰ ማድረግ አስፈላጊ ነዉ፤ (የእንቅሲቃሰዎች አይነት፡ፈጣን ዕርምጃዎች ፤ የቤት ዉስጥ ዕንቅስቃሰዎች፤ከፍታዎችን መዉጣት)		
311	የስኳር ህመምተኛ ማናቼዉንም በሜይኑ ላይ የምታዩ ለዉጦችን ለምከታተለዉ ጤና ባለሙያ ወይም ለዶክተሩ ማሳወቅ አለበት		

312	የስኳር ህመምተኛ አንዲን የአጀጀር ዘይቤ መቀየር ካልቻለ በሀኪሙና በታመሚዉ መካከል የጋራ ስምምነት መኖር አለበት		
313	የስኳር ህመምተኛ ለዕግሮቹ/ቿ ከፍተኛ ጥንቃቄ ማድረግ አለበት በተለይ ጥፍሮቹን/ቿን ስያስተካክል /ስታስተካክል/		
314	ቋሚ እንቅስቃሴ የእንሱልንን ወይም የለሎችን የስኳር ጎመም መድሀንቶችን አስፈላግነት ይቀንሳል		
315	የስኳር ህመምተኛ ከጠና ተንከባካቢዎች ቡዲን እርዳታ መጠየቅ ያለበት/ባት የህመም ስመት ሲሰማዉ/ማት ብቻ ነዉ		
316	ለአንድ የስኳር ህመምተኛ የእንሱልን ህክምና ከመጀመሩ በፍት የራስን የደም ስኳረ መጠን በራስ ስለመከታተልና ስለአመጋገብ አስፈላጊ ምክር ልሰጠዉ ያስፈልገዋል		
317	ሲጋራ ማጨስ የስኳር በሽታን ያባብሳል		
318	ለአንድ የስኳር ህመምተኛ የደም ግፍት መጠንን መቆጣጠር የደም ስኳር መጠንን እንደመቆጣጠር ጠቃሚ አይደለም		

ዘላቂ ጥንቃቀን(Adherence) የምመዝኑ መጠይቆች(8 መጠይቆች)

ተራ ቁ.	መጠይቆች	ምላሽ	
		አወን	አይደለም
401	ለአንድ ጠንነት ለሚሰማዉ የስኳር ህመምተኛ ቋሚ የህከሚና ምርመራዎች(checkups) አያስፈልጉም		
402	አንድ ስኳር ህመምተኛ የልተማረ ብሆንም የምወስዳቸዉ የምግብ አይነቶች ተጽፈዉ መቀመጥ አለባቸዉ ፤ በነዝህ ነገሮች የምረዳ ሠዉ ቤት ዉስጥ ያስፈልገዋል		
403	የመድሀንት አጠቃቀም መረሆችንና የራስ ጤንነትን በራስ የመጠበቅ ተግባራትን በጥንቃቀ መከታተል አያስፈልግም		
404	አስፕሪንን በትንሽ መጠን መዉሰድ ለልብ ችግር የመጋለጥ ዕዲልን ይቀንሳል		

405	አንድ ስኳር ታማሚ ጠንካት እየተሰማዉ መድሀንት ምወስድ ከሆነ ገንዘቡን እያባከነ ነዉ		
406	የስኳር ታማሚ ሆኖ መጠጣት ከባድ ችግር የለዉም		
407	አመጋገብና እንቅስቃሴ ማድረግ እንደ መድሀንት የደም ስኳር መጠንን ለመቆጣጠር ጠቀመታ የላቸዉም		
408	የስኳር መድሀንቶች በህመምተኛዉ እድመልክ አይወሰዱም		

የደም ስኳር መጠንን በአግባቡ አለመቆጣጠር የምያስከትላቸዉ ነገሮች (4 መጠይቆች)

ተራ ቁ.	መጠይቆች	ምላሽ	
		አወን	አይደለዓ
501	የደም ስኳር መጠን ወደ ትክክለኛ ከተጠጋ የስኳር ህመምተኛዉ ከፍተኛ አቅም ማግኘት ፤ የዉሀ ጥም ስመት መቀነስ እነዲሁም ቶሎቶሎ አለመሸናት ይታይበታል		
502	የደም ስኳር መጠን ለረጅም ጊዜ ከፍ ብሎ ስቆይ ለዐይን ችግር እንዲሁም ለዐይኔ ስዉርነት ልያጋልጥ ይችላል፡፡		
503	የደም ስኳር መጠን ለረጅም ጊዜ ካልተቆጣጠርነዉ ለልብ ፤ ለዓዕምሮ ዕንዲሁም ለኩላልት ችግር ልያጋልጥ ይችላል		
504	ማንቀጥቀት፤ማዞር ፤የባሂሪ ለዉጦች አንዲሁም የሰዉነት ላበት የስኳር መጠን መጨርን ያመለክታሉ፡፡		

Annex 7: Declaration

The researcher, undersigned, declare that this is my original work and has not been presented in this or any other University and all sources of materials used for this research have been fully acknowledged.

Name: **Nathan Desalegn(BSc)**

Signature: _____

Date: _____

Place: Addis Ababa University, College of Health Sciences, Department of Nursing and midwifery

This proposal has been submitted for examination with my approval as University advisor

Mr. Fekadu Aga, MSc, Assistant Prof., PhD St.

Signature: _____

Date: _____

Place: Addis Ababa University, College of Health Sciences, Department of Nursing and midwifery