ADDIS ABABA UNIVERSTY

COOLEGE OF HEALTH SCIENCE

SCHOOL OF PUBLIC HEALTH

Assessment of Knowledge of Diabetes, its Treatment and Complications Amongst Adult Diabetic Out patients in selected Health Institutions of Addis Ababa, Ethiopia

By

Yemesrach Abeje

Advaiser

Dr Getnet Mitike (MD, MPH, PHD)

A Thesis submitted to the School of Graduate Studies of Addis Ababa University in Partial Fulfillment of the Requirements for the Degree in Master of Public Health

April, 2012

Addis Ababa, Ethiopia

Acknowledgement

First and for most, I would like to express my deepest gratitude and appreciation to my primary advisor Dr. Getnet Mitike for his unreserved, all rounded support and enriching comment from the stage of proposal development to the end.

I would also like to extend my thanks to my co-advisors Dr Ahmed Reja and Dr Tedla Kebede for their invaluable suggestions throughout the thesis work.

I am also grateful to the Addis Ababa Regional Health Bureau, Tikure Anbesa Hospital, and St 'Paul Hospital, Yekatit 12 Memorial Hospital, Ras Damtew Desta Hospital and Universal Higher Clinic for their contribution to the success of the data collection.

My special thanks and sincere appreciation also go to supervisors, data collectors and study participants.

I sincerely thank my beloved family, especially my father Mr. Abeje Tefera, my mother Mrs.Tensae Berhanu and my sister Miss. Muludesta Abeje .I am grateful to forward special thanks for their support throughout my days.

I would like to extend my thanks to my best friends who put contribution in any ways in my study; especially Mr. Molalign Tesfaye, Miss. Mesrach Ayalew and Miss. Merry Nebeyu.

TABLE OF CONTENTS

Acknowledgement ....- 1 -
TABLE OF CONTENTS....................- 2 -
Acronyms....................- 3 -
List of Tables ....- 5 -
List of Figures....................- 6 -
Abstract....................- 7 -
1. Introduction....................- 8 -
1.1 Background Information....................- 8 -
1.2 Statement of the Problem....................- 10 -
1.3 Significance of the Study ....- 10 -
2. Literature Review....................- 11 -
2.1. Knowledge about Diabetes ....- 11 -
2.2. Knowledge about Preventive Measures ....- 14 -
2.3 Knowledge about Complication....................- 14 -
2.4. Knowledge about the Treatment ....- 16 -
2.5. Factors Associated with dependent Variables ....- 17 -
3. Objective of the Study ....- 19 -
3.1 General Objective ....- 19 -
3.2 Specific Objectives ....- 19 -
4. Methodology....................- 20 -
4.1 Study Area ....- 20 -
4.2 Study Period....................- 20 -
4.3 Study Design....................- 21 -
4.4 Population ....- 21 -
4.4.2 Study Population....................- 21 -
4.4.3 Study Subjects....................- 21 -
4.5 Sample Size Determination....................- 22 -
4.6 Sampling Technique ....- 23 -
4.7 Data Collection and Management ....- 24 -
3.7.1 Instrument of Data Collection....................- 24 -
3.7.2 Ensuring Data Quality....................- 24 -

4.8 Data Processing and Analysis - 25 -
4.9 Study Variables - 26 -
4.10 Operational Definitions - 26 -
4.11 Ethical Considerations - 27 -
4.12 Dissemination and Utilization of Results - 27 -
5. Results - 28 -
5.1 Univariate Analysis - 28 -
5.2 Knowledge Score about Diabetes mellitus - 44 -
5.3 Bivariate and Multivariate Analysis - 45 -
6. Discussion - 56 -
6.1. Knowledge about Diabetes - 56 -
6.2. Factors Associated with dependent Variables - 59 -
7. Strength - 62 -
8. Limitations - 62 -
9. Conclusion - 63 -
10. References - 66 -
Annex I: Conceptual Framework - 72 -
Annex II .English version of the questionnaire - 73 -
I. Study Information Sheet - 73 -
Annex III. Guide for Focus Group Discussion (FGDs) - 81 -

Acronyms

AAHB	Addis Ababa Health Bureau
BP	Blood Pressure
DKA	Diabetic ketoacidosis
DM	Diabetes mellitus
DSME	Diabetes Self-management Education
FBG	Fasting blood glucose
FGD	Focus group discussion
GDM	Gestational Diabetes Mellitus
HbA1C	Glycosylated hemoglobin
HHS	Hyperosmolar hyperglycemic state
NGO	Nongovernmental organization
OGTT	Oral glucose tolerance test
OHG	Oral hypoglycemic
UN	United Nations
WHO	World Health Organization

List of Tables

Table 1: Socio-demographic characteristics of diabetes patients……………………………….22

Table 2: Diabetes related health information of diabetes patients………………………………25

Table 3: Knowledge about Diabetes…………………………………………………………….28

Table 4: Knowledge about Complication of Diabetes…………………………………………..31

Table 5: Knowledge about treatment of diabetes……………………………………………….33

Table 6: Knowledge about Prevented measures of diabetes…………………………………….35

Table 7: The mean scores for general knowledge about diabetes, complication, and treatment of DM in Addis Ababa, Ethiopia…………………………………………………………………...37

Table 8: Logistic regression model for socio demographic associated with good knowledge of DM……………………………………………………………………………………………….39

Table 9: Logistic regression model for factors associated with good knowledge of DM………42

Table 10: Socio demographic characteristics of qualitative study………………………………43

Table 11: Theme, category and code of qualitative study……………………………………… 47

List of Figures

Figure 1: Sampling Technique ………………………………………………………………23

Figure 2: Percentage of complications…………………………………………………………… 31

Figure 3: Kind of medication/control method…………………………………………………41

Figure 4: Type of information about DM………………………………………………………43

Figure 5: Participants' source of information about DM……………………………………43

Abstract

Diabetes Mellitus (DM) is a clinical syndrome comprising a heterogeneous group of metabolic diseases that are characterized by chronic hyperglycemia and disturbances in carbohydrate, fat and protein metabolism secondary to defects in insulin secretion, insulin action or both. The findings of the study will help in identifying knowledge gap among diabetes patients.

Objective: To determine the level of knowledge of diabetes, its treatment, complication and factors associated with adult diabetic patients attending in selected health facilities in Addis Ababa.

Methodology: Facility based cross sectional study design was used among diabetic patients attending health facilities in Addis Ababa. The study was supplemented by qualitative method. The calculated sample size was 356. For calculation of mean knowledge score of diabetes; the correct answer was given one point, while incorrect and unsure answers were given zero. The interpretation of scores was performed by a Delphi panel of experts (A Survey of Knowledge on Diabetes in the Central Region of Thailand) and defined as poor (<50%), fair (50–80%), and good (>80%).

Results: Three hundred twenty five DM patients participated in the quantitative study making the response rate at 91.3%. Mean age of respondents was 44.2 years (SD 15.5), with 52.9% being female. With a score range of 0 to 54, the mean (%) score of the respondents was 28.8 (54.4%) (SD11.4). Data showed that having high education seems to have positive effect on increasing knowledge about DM and those who are Amhara in ethnicity were nearly 2.4 times to have good knowledge (OR2.6; 95% CI 1.12 to 5.23). In addition data showed that, those who knew their last FBS level and patients who had glucometer were more likely to have good knowledge about DM. In qualitative study knowledge about diabetes was poor especially due to socio-cultural beliefs, personal etiology, communication barrier and by being self-oriented.

Conclusion: In conclusion, knowledge about DM throughout the study was fair; these were associated with illiteracy, ethnicity, knowing last FBS level and having glucometer. It will be beneficial if a diabetic clinic and information center for teaching diabetic patients is established (In addition to the existing facilities) because they still need patient-specific education on diabetes and its management.

1. Introduction

1.1 Background Information

Diabetes Mellitus (DM) is a clinical syndrome comprising a heterogeneous group of metabolic diseases that are characterized by chronic hyperglycemia and disturbances in carbohydrate, fat and protein metabolism secondary to defects in insulin secretion, insulin action or both (1).DM is one of the mounting health problems in the current era (2) and its complications have a significant economic impact on individuals, families, health systems and countries (3). The United Nation recognized that "…diabetes is a chronic, debilitating and costly disease associated with severe complications, which poses severe risks for families, UN Member States and the entire world and serious challenges to the achievement of internationally agreed development goals including the Millennium Development Goals"(4). The International Diabetes Federation has predicted that there will be 380 million individuals with diabetes in 2025 compared with an estimated 240 million in 2007, with a higher disease burden in low and middle income nations (5).The available evidence suggests that non communicable diseases currently contribute substantially to the burden of mortality and morbidity in adult (3).

There are three types of diabetes: type I, type II, and gestational diabetes mellitus (GDM) each of which presents its own clinical manifestations. Type I diabetes is a condition where the body's immune system destroys beta cells in the pancreas (cells responsible for insulin production) and as a result the pancreas produces little or no insulin . This type of diabetes is most likely to be diagnosed among children and young adults, in fact, three out of every four people with type I diabetes develop it before they reach 30 years of age. It should be noted, however, that Type 1 diabetes may be developed at any age (6) .Type 1 diabetes accounts for approximately 5-10% of diabetes cases (5).

The most common form of diabetes mellitus, Type II, occurs when the pancreas produces limited amounts of insulin or the cells are resistant to insulin action. Type II diabetes is related to age, family history, physical inactivity, ethnicity, and in some cases results from GDM (6). About 80 percent of people with type 2 diabetes are overweight or obese. This type of diabetes accounts for about 90-95% of all diabetes cases (5).

Gestational diabetes mellitus (GDM) affects pregnant women "who don't have the common form of diabetes, but for some reason can't metabolize sugar normally during their pregnancy" .The majority of women who develop GDM during pregnancy do not suffer any permanent problems (6).

The manifestations of diabetes cause considerable human suffering and enormous economic costs. Both acute and late diabetic complications are commonly encountered. Long-term complications represented by cardiovascular diseases, cerebrovascular accidents, end-stage renal disease, retinopathy and neuropathies are already major causes of morbidity, disability and premature death. (7)

Age-specific levels of diabetes and hypertension in many urban areas of Sub-Saharan Africa are as high as, or higher than, those in most Western European countries This situation is a result of demographic change (populations with older age structures), increasing urbanization , and associated changes in risk-factor levels, such as tobacco smoking, obesity, and physical inactivity (2). Assessing the prevalence (the percentage of the population with diabetes) and incidence (the number of new cases) in sub-Saharan Africa is extremely difficult because of the lack of data in many countries. The limited data available shows that prevalence varies from 3- 14.5% with an overall prevalence for sub-Saharan Africa in 2010 of 3.2%, predicted to rise to 3.7% in 2030 (3).

Population-based prevalence study does not exist in Ethiopia but from hospital based studies, it can be seen that the prevalence of diabetes admission has increased. World health organization estimated the number of diabetics in Ethiopia to be about 800,000 cases by the year 2000 and the number is expected to rise to 1.8 million by 2030 Years (8).

Preventive actions have been shown to be cost-effective for low and middle-income countries (1).Eighty percent (80%) of cases of Type II diabetes can be prevented, and even once diabetes has set in, many serious diabetes complications can be prevented or delayed (5) to prevent complications, good control of diabetes is essential and the management of diabetes should therefore aim to improve glycemic control beyond that required to control its symptoms. Intensified therapy and maintaining near-normal blood glucose levels can result in considerable reduction in the risk of development of retinopathy, nephropathy and neuropathy (7). Giving

people the information to understand the importance of a healthy lifestyle can help them to avoid developing impaired glucose tolerance or diabetes. Even if diagnosed with diabetes, helping people to manage their diabetes with lifestyle advice and medication helps to delay or prevent disabling complications (9). Although Type I diabetes(Refer Section 4.12 of Operational Definition) is not caused by the adverse effects of lifestyle, as type II can be, the chronic complications of both type I and Type II diabetes on the eyes, cardiovascular system, nerves, and kidneys are similar(10).

Even though resources vary widely within the region, the primary resource in diabetes care is now recognized to be the people with diabetes themselves, supported by well trained and enthusiastic health care professionals. This resource can be strengthened nearly everywhere by education (7).

1.2 Statement of the Problem

Knowledge is the greatest weapon in the fight against DM. It is well understood that diabetes management requires patient involvement for a better disease control. Information can help people assess their risk of diabetes, motivate them to seek proper treatment and care, and inspire them to take charge of their disease (11).The primary resource in diabetes care is now recognized to be the people with diabetes themselves, supported by well trained and enthusiastic health care professionals. This resource can be strengthened nearly everywhere by education (7).A situation where diabetic patients visit clinics regularly and their blood glucose levels still remain high despite the treatment they receive is a problem that calls for attention (11). It has been reported that proper guidance and education reflect in significant improvement in diabetes management (Q). However, education is likely to be effective if the characteristics of the patients in terms of their knowledge about diabetes are known. Therefore, this study is conducted to assess the level of patient's knowledge of diabetes in prevention and control of the disease.

1.3 Significance of the Study

DM is one of the major non communicable health problems in the world. The findings will help in identifying knowledge gap among diabetes patients and it might give some clues to the clinical care and counseling and also for Ethiopian public health policy .It will also contribute a lot in minimizing the problem of shortage of evidences related to the issue under study.

2. Literature Review

2.1. Knowledge about Diabetes

Diabetes was once considered a rare disease in Sub-Saharan Africa. But in 2010, over 12 million people in Sub-Saharan Africa are estimated to have diabetes, and 330,000 people will die from diabetes-related conditions. Over the next 20 years, it is predicted that Sub-Saharan Africa will have the highest growth in the number of people with diabetes of any region in the world and the 2010 estimate is predicted to almost double in 20 years, reaching 23.9 million by 2030 (4).The study conducted in Jimma shows, the blood glucose level of 28 out of 526 participants was in diabetic range making the prevalence of Type II diabetes to be 5.3% and 15.4% had elevated blood glucose level. It was observed that the prevalence of Diabetes Mellitus, impaired glucose tolerance and impaired fasting glucose were higher among older age groups, subjects with higher monthly income, male subjects and those who were overweight. Type II diabetes was significantly associated with age, income, sex and nutritional status as determined by body mass index ($P< 0.05$) (8).

The study conducted on KAP of diabetic in Qatari patients, the percentage of knowledge about DM was 49.8%.(12).Studies on randomized controlled trials of the effectiveness of self-management training in people with type II show that there are significant knowledge and skill deficits in 50–80% of individuals with diabetes (13).
The study in Nigeria on knowledge of diabetes management and control by diabetic patient's shows that majority of them stated that they did not receive any organized education/counseling on diabetes (14).

2.1.1 Knowledge about Monitoring Tests

A study found that patients not only avoid complications, but also feel better, even over the short term, when their glucose levels are closer to normal (7). The study in Turkey on knowledge of diabetic patients, when a value of 110mg/dl was assigned as plasma glucose regulation, 86.9% had a level higher than this criterion and the average glucose level was 169.12±67.11 (18).

The study conducted on KAP of diabetic in Qatari patients showed that, 51.1% of the respondents didn't know the normal FBS level (12) and the study conducted in India on Patients in a tertiary care hospital shows, number of the patients who did not have the results of urine, cholesterol, and lipid analyses were 41.2%, 41.6% and 45.1%, respectively, and this was found to be quite high and 50.5% did not know that kidney function tests should be performed in diabetes(11).

Glycemic control should always be monitored and self-monitoring should be encouraged. The absence of symptoms alone should not be taken as an indicator of good control. Urine glucose testing may be an effective tool for monitoring diabetes control in situations where frequent blood glucose testing is not possible, although it is less informative and safer than blood glucose testing (7).The study conducted in Nigeria on knowledge of diabetes management and control by diabetic patient's shows that, more than two-thirds of the respondents did not know how to take care of themselves in terms of testing their urine (14) .One of the most optimum tests for evaluating long term blood sugar control is glycosylated hemoglobin (HbA1c) (7). Studies have shown that patients with a better knowledge of HbA1c were able to more accurately regulate their diabetic status (19). However, the study in India shows, 94.1% patients did not know about HbA1c in order to control further complication and only 14.5% of the patients were able to check their plasma glucose levels by themselves (11). The study conducted on Gain in Patients' Knowledge of Diabetes Management, the target HbA1C achievement was higher in knowledge gainers versus non gainers (46 vs. 29%, $P = 0.032$) after adjusting other factors (20). Knowledge gain remained an independent predictor of target A1C achievement with an odds ratio of 2.3 (95% CI of 1.1–5.0%, $P = 0.028$) after adjusting other factors. The study on an assessment of the health care system for diabetes in Addis Ababa only 5% and 1.4% of the total number of diabetic patients were able to do self-blood glucose monitoring and urine sugar determination respectively at home (21).

2.1.2 Knowledge about the Symptoms

Study conducted in Thailand on knowledge about diabetes, majority of the respondents did not know that unexplained weight loss is a symptom of diabetes (22).The study conducted in

Western Nepal on knowledge about DM among diabetes patients, 62.91% of the patients did not know any symptom of diabetes (16).

2.1.3 Knowledge about the Risk Factors and Causes

Increasing prevalence of diabetes can be attributed largely to changes in lifestyle resulting in reduced physical activity and increased calorie intake and subsequent weight gain. Such changes have important implications for the provision of health care and for health education to promote behavioral change in order to control the emergence of diabetes (2). Study conducted in Western Nepal on knowledge about diabetes among diabetes patients, only 25.82% of the patients knew the lifestyle modification(s) required for diabetics (16).

The study in India, 71% of the patients did not know risk factors involved in the development of diabetes. Forty one percent (41%), of the respondents did not indicate any willingness to adopt these healthier lifestyles. Forty one percent (41%) of all respondents had good practices while the rest 59% had bad practices in relation to diabetes prevention. Seventy five percent of the people interviewed had poor dietary practices, 72% did not participate in regular exercise and over 80% did not monitor their body weights (11).The study conducted in Nigeria on knowledge of diabetes management and control by diabetic patient's shows that, more than two-thirds of the respondents didn't know which types of food to eat (14).

The study conducted in Pakistan on standard of knowledge about their disease among diabetes patients indicated that, 43% of the patients believed that diabetes is caused by eating too much sugar and other sweet foods (15). Study conducted in Western Nepal on knowledge about diabetes among diabetes patients, only 20.33% of the patients knew the major cause of diabetes and 37.91% respondent answered correctly that a higher level of sugar in the blood than normal define diabetes (16).Similarly the study in Kenya shows. 71% of respondents had poor knowledge on what diabetes is and 73.9% could not correctly identify the probable causes of DM (17).The study in India shows, of the 101 diabetic patients, 50.5% thought that diabetes to be incurable and the study conducted on KAP of diabetic in Qatari patients showed that, 81.5% of the respondents didn't know about types of DM (11). The study conducted in Nigeria on knowledge of diabetes management and control by diabetic patient's shows that, over 75.0% of

the subjects did not know the major causes of diabetes and more than half of the respondents thought that herbs could cure diabetes (14).

2.2Knowledge about Preventive Measures

A study conducted in India on patients in a tertiary care hospital show, only 30.7 % of patients stated that losing excess weight is one of the preventive measures. Majorities, 70.3% of patients said that they would either definitely or probably have taken preventive measure seriously had they known that diabetes was preventable (11).

2.3 Knowledge about Complication

Diabetes mellitus leads to acute and chronic complications (6) and the seriousness of diabetes is largely a result of its associated complications, which can be serious, disabling, and even fatal (2).The American Association of Clinical Endocrinologists states that the cause of complications in both acute and chronic diabetes is either a lack of understanding with regard to the long- and short-term regulation of blood glucose or the patient refusing to control the blood glucose levels (23).The study conducted in Nigeria on knowledge of diabetes management and control by diabetic patient's shows that 88.5% and 74.0% did not know how to avoid complications and prevent/control diabetes respectively. Only less than half respondents stated that engage in regular exercise 7.3% and take drug therapy judiciously 29.2% are diabetes self-care measures to avoid complications (14).The study on an assessment of the health care system for diabetes in Addis Ababa stated that, Out of the total number of diabetic patients, it was found that only 32.8% knew that blood sugar control decreases complications of diabetes and admissions because of uncontrolled diabetes were 49.2 % (21).

The acute complications include diabetic ketoacidosis (DKA), hyperosmolar hyperglycemic state (HHS), and hypoglycemia during treatment (4).The study conducted in India on Patients in a Tertiary Care Hospital, of the 101 diabetic patients, 48.5% did not know about the symptoms of hypoglycemia (11). Metabolic control may deteriorate during infections stressful conditions and other inter current illnesses. The person with diabetes should recognize symptoms and signs of ketoacidosis (vomiting and other gastrointestinal symptoms) and take action to avoid

complications and early referral to a specialist (7)**.**The study on an assessment of the health care system for diabetes in Addis Ababa, diabetes-related of admissions as a result of diabetic ketoacidosis was 25.5 % (21).

The chronic complications are neuropathy, nephropathy, retinopathy, ischemic heart disease, myocardial infarction, stroke, peripheral arterial disease, impotence and so on (4).Similarly the study conducted in India on patients in a tertiary care hospital, shows only 57.4% of the patients, however, knew that the feet are affected in diabetes and only 64.4% of the subjects knew that diabetes affects the heart(11) and the study conducted in Pakistan 34.6% of subjects cannot identify that heart is damaged and 42.6% can't identify that foot is damaged by diabetes (24).Diabetes is the most common cause of non-traumatic lower limb amputations (7).The study conducted in Nigeria on attitude; diabetic foot care, of the foot care measures that were known, 25.5% patients knew to wash their feet daily and dry in between the toes thoroughly 22.6% knew not to go outdoors barefooted, 19.7% checked their feet daily, 19.7% checked inside their shoes daily, 5.8% consciously made an effort to avoid injuries to their feet and 2.9% clipped their toenails with care (25).The study conducted in India on patients in a tertiary care hospital, shows only 41.6% of patients identifying regular inspection of feet are important for DM patients (11). The study conducted at Jimma University on patterns of diabetic complication, diabetic foot ulcer was documented in 4.5% patients (26).

Hypertension is commonly associated with diabetes and may complicate it**.** Both conditions are important independent risk factors for cardiovascular, renal, cerebral and peripheral vascular diseases. Hypertension should be detected early and treated aggressively if its contribution to increased morbidity and mortality in diabetes is to be avoided (7).Similarly the study conducted on KAP of diabetes in Nepal, showed that only 6.59% stated that a diabetic patient should measure his/her blood pressure (16). The study in Addis Ababa, show that hypertension was found to be the major associated illnesses observed among the diabetic patients (21).

Annual eye examination with assessment of the retina is recommended (7) however the study conducted in Thailand on knowledge about diabetes shows that, approximately 40% of the respondents did not know the regular eye checkup in diabetes monitoring. (22).The study

conducted on KAP of diabetes in Nepal, showed that only 48.4% stated that diabetic patient should be checked their eye (16). The study conducted on the level of diabetic patient's knowledge of DM in South Africa shows 58% and 56% of the respondents respectively did not know that DM could result in diabetic retinopathy or cataracts. When asked they had their last eye examination, 14.5% reported between 0-6 months, 16.4% 7-12 months, and 20.8% reported between 13-18 months. Nearly half (48.3%) of the respondents had their last eye examination more than a year and a half ago (27).The study conducted at Jimma University on patterns of diabetic complication, large proportion (42.9%) of patients with DM had diabetic retinopathy (26). Similarly study on an assessment of the health care system for diabetes in Addis Ababa show that, diabetes related eye diseases was found to be the major associated illnesses observed among the diabetic patients (21).

2.4. Knowledge about the Treatment

Study conducted on Turkey on evaluation of awareness of diabetes mellitus and associated factors in four health center areas, showed 63.4% patients correctly said that the treatment continues throughout their lifetime (28). Study conducted in Western Nepal on knowledge about diabetes among diabetes patients, only 8 (4.4%) of the patients knew what treatment of diabetes comprise insulin (16).The study conducted in Pakistan on standard of knowledge about their disease among patients with diabetes, 70% answered 'do not know' to a question that sulfonylurea tablets work by stimulating pancreas to make and release insulin (15).

The study conducted in Pakistani on effect of sex, literacy skills, known diabetic complications and place of care on diabetic knowledge, showed only 24% knew how to manage persistent hypoglycemia (29). Similarly study conducted in Western Nepal on knowledge about diabetes among diabetes patients, 63.74% did not know how to manage hypoglycemic symptoms less and 42.9% knew that upon control of diabetes (16).However the study conducted in India on patients in a tertiary care hospital, and 76.2% knew that sweets should be consumed if they were hypoglycemic (11).Similarly the study in Pakistan found 76.9% knew that the home treatment for hypo glycaemia is to take any sugared drink or food but only 21.1% of the participants were aware of the target control levels for fasting blood sugar (30).

The study conducted in Ethiopia on medication adherence in diabetes mellitus and self-management practices among Type II diabetics shows 36.6% of patients sometimes missed either daily dose or didn't take their drugs on the right time and 12.1% missed either dally dose or time of taking. Among those who had missed their medication the reasons for missing medications were side effects of drugs, disappearance of the symptoms and perceived inefficacy of the prescribed anti diabetic drugs and others 33.8% (31).The study conducted in Addis Ababa Menelik hospital on patterns of chronic complications of diabetic patients, on 283 diabetics, 39% of Type I and 13.4% 0f Type II cases presented with poor control with oral hypoglycemic agents and were transferred to lend insulin during the study period (32).

2.5. Factors Associated with dependent Variables

Different literatures show the relationship between socio demographic factors and good knowledge of diabetes. A conceptual frame work also shows the interaction between factors and diabetes outcome (Annex I).

The study conducted on the level of diabetic patient's knowledge of DM in South Africa shows, all the respondents with good knowledge were analyzed according to level of education. A direct relationship between level of education and good knowledge of diabetes was demonstrated. Fifty two percent (52%) of those who had good knowledge had tertiary education, 25% had secondary education, and 14% had primary education while 9% had no formal education (27) .Similarly study conducted in Thailand on knowledge about diabetes ,in multiple linear regression analyses shows that, only age and education level remained statistically significant in the final model(22),study conducted in Nigeria, where education attainment was significantly associated with lower the knowledge score in this study (33) and the study in Jamaica showed, positive correlations between knowledge scores, educational level suggest that those with a higher level of education were better able to understand their disease (34).

The study in India showed that literacy, language (ethnicity) and religion are interdependent factors associated with knowledge of diabetes and diabetic complication (35). And the study on non DM patients in Saudi Arabia show that those who involved in health professional services were 6.97 times more likely to have good knowledge of DM (OR 6.968; 95% CI 3.282 to 14.791) followed by housewives and employees (36). The study in Nigeria found that patients

having poor low socioeconomic status significantly had lower knowledge of DM (37). Poor education attainment and low socioeconomic status were significantly associated with lower the knowledge and practice score in this study (38).

Study conducted in Thailand on knowledge about diabetes also shows that, sex was not a determinant of knowledge of diabetes (22) and the study conducted on KAP of diabetic in Qatari patient's shows that, gender did not seem to affect knowledge about DM. (12). Although the study conducted in Southern Asia community indicated, one of the most striking findings from this study was the overwhelming lack of knowledge about diabetes mellitus among study participants. Data from this study show that 85% of all study participants did not know anything about diabetes. Differences were found among males and females with 91% of females and 70% of males responding that they did not know what diabetes were (39).

The study in Jamaica on knowledge, motivation and barriers of diabetes shows that the elderly had low knowledge (34) and the study in Pakistan indicate, the mean knowledge scores decreased with increasing age (30).

The study on an assessment of the health care system for diabetes in Addis only 5% and 1.4% of the total number of diabetic patients were able to do self-blood glucose monitoring and urine sugar determination respectively at home (21). Self-monitoring of blood glucose is considered a key element in diabetic care, and it is widely recommended. This activity helps patients adjust their insulin dosage, die, and exercise regimens, and it aids in detecting and preventing hypoglycemia (40). Education intervention that involved patient's collaboration may be more effective than diabetic interventions in improving glycemic control, weight and lipid profile (11).

Although one study showed significant association of family history with diabetes awareness (41) but the study in Pakistan, found no association with family history diabetes (38).

3. Objective of the Study

3.1 General Objective

- To determine the level of knowledge of diabetes, its treatment, complication and factors associated with adult diabetic patients attending in selected health facilities in Addis Ababa.

3.2 Specific Objectives

- To asses diabetic patient's knowledge about risk factors, symptoms, treatment and preventive measures of diabetes.
- To identify factors that affect knowledge of diabetic patients.

4. Methodology

4.1 Study Area

Based on the preliminary 2007 census results, Addis Ababa has a total population of 2,738,248. The city is fully urban, with no rural dwellers within the city's administrative boundaries. Addis Ababa contains 22.9% of all urban dwellers in Ethiopia. With an estimated area of 530.14 square kilometers the city has an estimated density of 5,165.1 inhabitants per square kilometers. The city has three layers of administration: City Government at the top, 10 Sub City Administrations in the middle and 116 Wereda Administrations at the bottom.

This study is therefore conducted in Addis Ababa where there are 38 hospitals, of which 5 are owned by Addis Ababa Regional Health Bureau (AAHB), 5 by Federal Ministry of Health, 2 by Non-Governmental Organizations (NGO) 3 by Defense and Police and 23 by the Private Owners. There are 30 Health Centers of which 27 are owned by the City Administration 2 by NGO's and 1 by the Public. There are also 442 clinics of which 94 are special, 99 are higher, 146 are medium, and 103 are lower.

Addis Ababa is selected mainly because it accommodates people with different cultural backgrounds, norms & values and it have a considerable diversity of socio-economic status.

4.2 Study Period

This study was conducted from November, 2011 to December, 2012.

4.3 Study Design

Facility based cross sectional, study design method was used among diabetic patients. The study was supplemented by qualitative method with the objective of assessing knowledge about diabetes among adult diabetic patients.

4.4 Population

4.4.1 Source Population

All diabetic patients who had outpatient follow up in Addis Ababa.

4.4.2 Study Population

All diabetics who had outpatient follow up in Addis Ababa's selected health institution at the time of the study were the study population for the study. .

4.4.3 Study Subjects

Quantitative: Selected diabetic patients by applying systematic random sampling, who were available in the follow up registration book during the survey period and who were willing to participate in the study are the study subjects.

Qualitative: Selected diabetic patients who were available during the study and who were willing to participate in the study are the study subjects.

Inclusion Criteria

- Who were willing to participate in the study
- Both adult male and female DM patients in follow up
- Type I and Type II diabetic patients

Exclusion Criteria

- Women who developed DM during the course of their pregnancy were, excluded from the study, because in this group of DM patients the diabetic condition usually subsides after delivery of the baby. In addition, the health institutions don't have out patient's follow-up in diabetes units after delivery.

4.5 Sample Size Determination

Sample size was calculated using EPI info version statistical software. To determine the sample size for the quantitative data, diabetes knowledge score (30.2 %) was taken from a study conducted in Nigeria (33).

Assumptions to calculate the sample size:

- Confidence Level = 95%
- Margin of Error (d) = 5%
- Percentage score (p) = 30.2 %
- Non- response rate = 10%

Accordingly the calculated sample size was 323; adding 10% non-response gives the final (required sample size) which is 356. This result is equivalent to computing manually using single population proportion formula.

$n = (z\alpha/2)\,{}^{2}\frac{p(1-p)}{d2}$ Where n= Sample size

Qualitative: A total of four focus group discussions (two groups from each sex) containing 6 to 8 participants, each were purposively selected from both sexes. One group from each sex was selected from selected government hospital and one group from each sex was selected from selected private health institutions.

.

4.6 Sampling Technique

Quantitative: From the total governmental hospitals; St Paul, Tikure Anbesa and Memorial Yekatit12 hospitals, from three private hospitals that have diabetic follow up; Landmark hospital and from five higher clinics that have diabetic follow up; Universal higher clinic were randomly selected after preparing a list of health institutions. In consultation with Addis Ababa Regional Health Bureau, health centers, medium and lower clinics were excluded from being a sample since they don't have diabetes follow up units.

Patients number were distributed proportionally to health facilities and systematic random sampling method was used to select diabetic patients on follow-up who were eligible to participate and the diabetic registration book was used as a sampling frame with interval of 5.

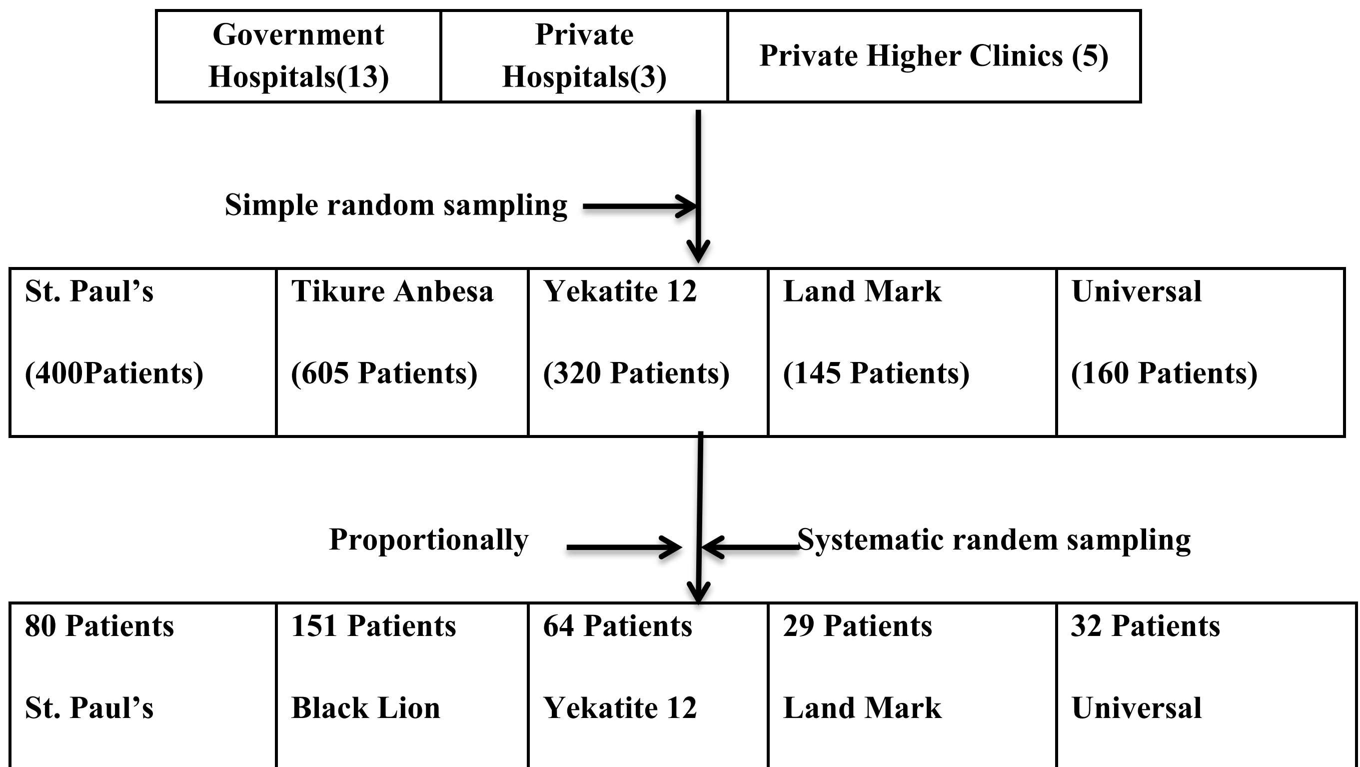


Figure 1.Sampling Technique

Qualitative: purposively selected female and male diabetic patients who can express and able to share their ideas freely from selected health institutions were used.

4.7 Data Collection and Management

Quantitative: Seven data collectors (health officer and nurse) were recruited and trained for four days. The training addressed issues such as the content of the questionnaire, basic skills of interviewing and filling out the questionnaire following the training. The questionnaire was pre-tested on 35 DM patients before going into data collection at Ras Desta Damtew government hospital. Issues related to participation in the study were dealt during the pre-testing phase. It was pre-coded before the actual data collection.

Qualitative: The principal investigator moderates the discussion and was assisted by a note-taker and focus group discussions (FGD) were tape-recorded which were held with four groups consisting of six to eight individuals. Efforts were made to make the discussants as homogeneous as possible. Each focus group discussion was facilitated by two members of the research team (one facilitating and the other tape-recording the discussion). The focus group discussion was aiming at exploring factors which were responsible for the existing low knowledge about DM. The discussions were tape recorded with full consent of the research subjects.

3.7.1 Instrument of Data Collection

Quantitative: Anonymous, interviewer-administered structured questionnaire was used to get high response rate. The questionnaire was prepared in English and translated into Amharic (the local language by researcher which is used by all in the study area). The questionnaire accommodates variables related to DM knowledge in addition to the demographic and socio-economic variables.

Qualitative: The focus group moderator followed a series of questions which were developed based on an extensive literature review to gather detailed information on the issues under study from diabetic patients..

3.7.2 Ensuring Data Quality

Quantitative: Data quality assurance was in place during questionnaire design, data collection, and data entry. Questionnaire was objective based, logically sequenced, free of scientific terms, non-leading and pretested. The questionnaire comprised seven sections: socio-demographics (9

items), diabetic health information (13 items), general knowledge of diabetes (13 items), and complication (9 items), treatment (4 items), prevention (3 items) and source of information (3 items). The response options were "Yes," "No,", "Don't know" and multiple response. The "Don't know" and multiple response option were included to reduce the amount of guess work from respondents. The data collectors and supervisors were provided with intensive training. The collected data was checked by the Principal investigator on daily basis for any incompleteness and/or consistency. The questionnaire was tested for clarity, flow and time requirement among 10% of sample size before the actual data collection started. Data entry was performed using two computers for validation (similarity) then cleaning by using simple frequency.

Qualitative: In all the qualitative procedures, the principal investigator takes the major role. Interviewers asked participants repeatedly as many times as possible until questions were understood

4.8 Data Processing and Analysis

Quantitative: The collected data were manually checked for completions of responses. Data were entered using Epi-info version 3.1(18) and exported to SPSS version 16 for analysis. Frequencies were used to check for missed variable and errors using Epi-info. For calculation of mean knowledge score of diabetes (general knowledge about DM); the correct answer was given one point, while incorrect and unsure answers were given zero. The mean score for general knowledge about DM was calculated based on the total possible score; then it was expressed as mean ± standard deviation (SD) and also as percentage. The interpretation of scores was performed by a Delphi panel of experts (A Survey of Knowledge on Diabetes in the Central Region of Thailand) and defined as poor (<50%), fair (50–80%), and good (>80%). Bivariate analysis was calculated using SPSS (version 16) to find the association between socio-demographic variables and some important factors with dependant variables. Multivariate logistic regression analysis was done to see the effect of independent variables that showed association on bivariate analysis with outcome variables after controlling other factors. The data was summarized in percentages, tables and graphs as appropriate.

Qualitative: Analysis of the qualitative data begun with the translation and transcription of interviews into English by the moderator. All transcribed notes and audio tape recordings were first codded then categorized and finally themes were identified using open code soft wair. Finally themes were developed according to the objectives. In order to gain a deeper understanding of the general results, quantitative data were compared and supplemented with qualitative findings and vice versa using the process of triangulation methods.

4.9 Study Variables

4.9.1 Dependent Variables: is knowledge about diabetes.

4.9.2 Independent Variables: are socio demographic states, duration of illness, presence or absence of family support, attending health education, having glucometer, knowing their last FBS, family history of DM and having regular follow up of diabetes.

4.10 Operational Definitions

Knowledgeable Diabetic Patients: Those participants who answer above the mean to specific knowledge questions on diabetes.

Family Support: This involves all family members of the diabetic patients who understand how to support diabetic patient in terms of the standard management; healthy diet, self-monitoring, administration of insulin or oral drugs, care of the feet, nails and personal hygiene.

Diabetes Education: This is an interactive process that facilitates and supports the individual and/or their families, careers or significant social contacts to acquire and apply the knowledge confidence, practical problem-solving and coping skills needed to manage their life with diabetes to achieve the best possible outcomes within their own unique circumstances.

Personal ethology: are perceived causes of diabetes by patients like accidents, habits and reckless behaviors affecting knowledge of diabetes mellitus.

Socio-cultural beliefs: religious and spiritual beliefs that affect the knowledge of diabetic patients.

Communication barrier: factors that have influence on diabetes patients not to get the adequate information like language, poor counseling and others.

Regular follow up: patients who have consistent follow up in their appointment in hospitals having a diabetic unit.

Elite deviants: patients who are aware of health life style choices but are not practicing it due to different reasons.

Elite practitioners: those patients who are aware of the health life style choices and are practicing it.

Self-oriented: patients who only know those symptoms they have experienced before.

Fasting Blood Glucose: Blood glucose estimation obtained from a subject who has undergone an overnight fast from any food or drink (excluding water or clear, plain tea) for least 8 hour.

Last FBS level: Measured FBS level for their follow up at the time of data collection.

4.11 Ethical Considerations

Ethical clearance was obtained from the research ethics committee of School of Public Health College of Health Science, Addis Ababa University official letter of co-operation was written for respective health facility and for Addis Ababa Regional Health Office by the Faculty. Individuals were enrolled into the study after obtaining an informed and written consent. Information was provided on the objective of the study. Privacy was maintained during interviews and confidentiality of information was assured by omitting names of the study subjects from the questionnaires or other study materials.

4.12 Dissemination and Utilization of Results

The output of this study is to Addis Ababa University College of Health Sciences / School of Public Health as Partial Fulfillment of Master's Degree in Public Health. It shall also be disseminated to Federal Ministry of Health, Addis Ababa Health Office and other concerned governmental and non-governmental organizations. Attempts will be made to publish the article in peer reviewed journals and to make presentations in scientific conferences.

5. Results

5.1 Univariate Analysis

5.1.1 Socio-Demographic Characteristics

Three hundred twenty five DM patients participated in the quantitative study making the response rate at 91.3% while 30 (8.45%) refuse to participate. Among these, males were 153 (47.1%) .This included 146(44.9%) patients from Tikure Anbesa Hospital, 78(24%) from St. Paul's Hospital, 61(18.8%) from Yekatit 12 Memorial Hospital, 32(9.8%) from Universal Higher Clinic and 8(2.5%) Landmark Hospital.

The ages of the subjects ranged from 18 to 85 years, with mean (SD) 44.2± 15.5 and the median 45 years. Majority of the respondents 175 (52.9%) are female and 59.1% were married .Among all patients (31.7%) of the respondents had private business and had monthly income >1050 birr. From the total, 179 (55.1%) of the respondents educational level were secondary and above. Majority (70.2%) of the subjects were Orthodox Christian and 159(48.9%) are Amhara in ethnicity.

Table 1: Socio-demographic characteristics of diabetes patient .Addis Ababa town, Ethiopia, 2012

Variable	Frequency	Percent (%)
AGE		
18-20	19	5.8
21-30	66	20.3
31-40	53	16.3
>40	187	57.5
Sex		
Female	172	52.9
Male	153	47.1
Marital Status		
Married	192	59.1
Separate	13	4.0
Widowed	23	7.1
Divorced	7	2.2
Educational status		
Tertiary education	78	24.0
Secondary education	101	31.1
Primary education	91	28.0
No school	55	16.9
Occupation		
Student	27	6.8
Private work	103	31.7
Housewives	88	27.1
Gov'/private employee's	57	17.5
Unemployed	22	6.8
Retailer	28	8.6

Religion		
Orthodox	228	70.2
Protestant	45	13.8
Muslim	39	12.0
Catholic	13	4.0
Ethnicity		
Oromo	83	25.5
Amhara	159	48.9
Tigre	32	9.8
Gurage	46	14.2
Others	5	1.5
Income		
<350	47	15.6
350-750	86	28.6
750-1050	57	18.9
>1050	111	36.9
Area		
In A.A city	283	87.1
Outside A.A	42	12.9

5.1.2. Diabetes Related Health Information

Of the total respondents, 202(62.2%) had no family history of DM and 255(78.5%) get support from their family. From all respondents 213(65.5%) participants were diagnosed by medical doctors and 154 (48.1%) were diagnosed recently with in five years. Two hundred fifty one (77.2%) participants knew their last fasting blood glucose level from this 173(68.9%) respondents had values greater than 120 mg /dl and the recent mean fasting blood sugar (FBS) value was168.9± 75.5 mg/dl. Majority (98.5%) had regular follow up. One hundred fifty participants (46.2%) had complications among this 105(70%) had diabetes related eye disease. Those who don't own self-monitoring glucometer were 197(60.6%) and 183(56.3%) had never been in any health education about diabetes.

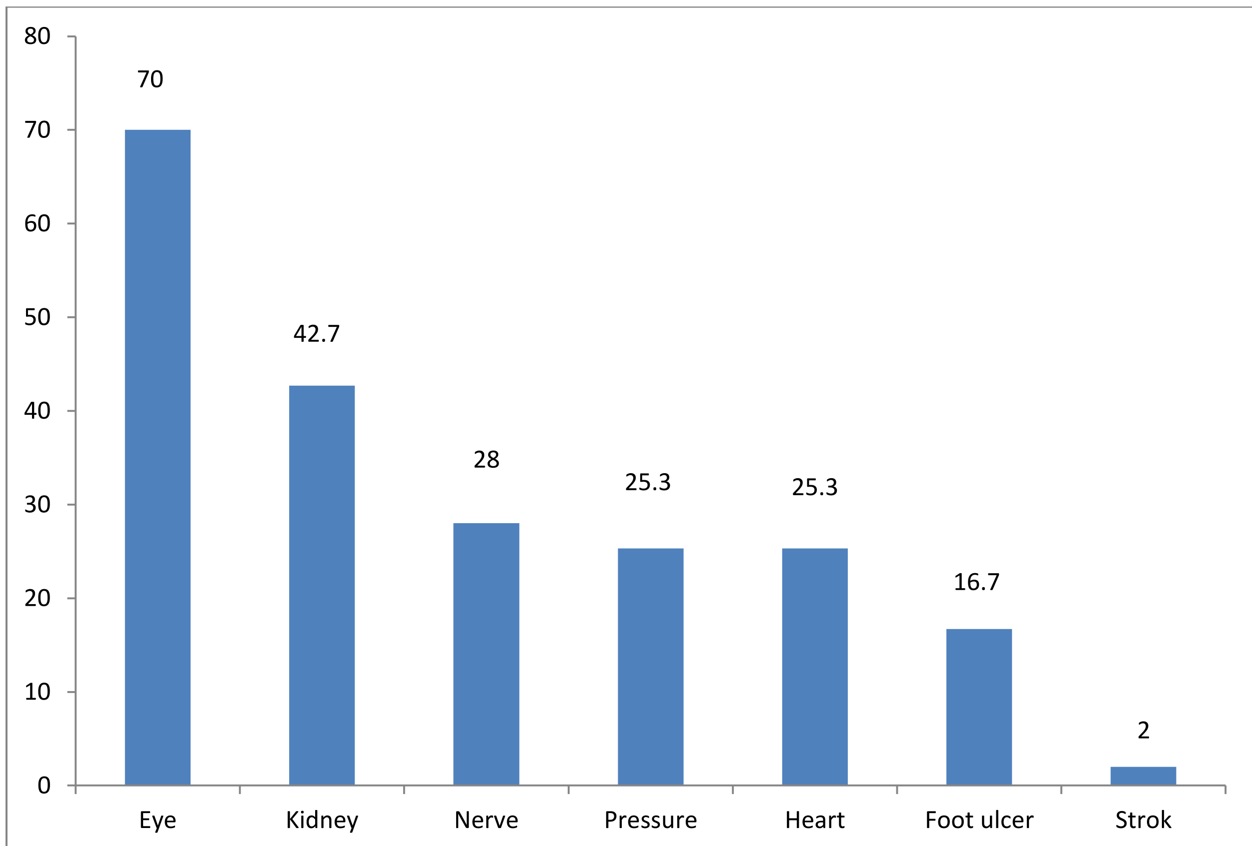


Figure.2 Percentage of participants who had complications

Table 2: Diabetes related health information of diabetes patient's .Addis Ababa town, Ethiopia, 2012

Variables	Frequency	Percent (%)
Duration of diagnosis		
1-5	154	48.1
6-10	86	26.9
11-15	47	14.7
16-20	19	5.9
>20	14	4.4
Family history of DM		
Yes	108	33.2
No	202	62.2
I don't know	hj15	4.6
Who diagnosed them		
Specialist	33	10.2
Doctor	213	65.5
Health officer	18	5.5
Nurse	48	14.8
I don't know	6	1.8
Other	7	2.2
Type of DM they have		
Type I	73	22.5
Type II	66	20.3
Don't know	186	57.2
Follow up		
Yes	320	98.5
No	5	1.5
Know last FBS		
Yes	251	77.2

No	74	22.8
Last value of FBS*		
<120	78	31.1
>120	173	68.9
Family support		
Yes	255	78.5
No	70	21.5
Having glucometer		
Yes	128	39.4
No	197	60.6
DM education		
Yes	142	43.7
No	183	56.3
Complication		
Yes	150	46.2
No	131	40.3
I don’t know	44	13.5

*Variables that don’t add up to 100%

5.1.3 Knowledge about Diabetes

From the total respondents, only 79 (24.3%) respondents answered a higher level of sugar in the blood than normal define diabetes. Regarding the cause of DM,38 (11.7%) patients answered diabetes is decreased amount of insulin in the body.

Two hundred twenty five (69.2%) of respondent thought that diabetes is incurable, 60 (18.5%) thought that diabetes is curable and 40 (12.3%) didn’t know diabetes either it is curable or not. Less than half of respondent knew unexplained weight loss and low blood sugar could be symptoms of diabetes i.e. 150 (40%), 101 (31.1%) respectively.

From all study subjects, less than half of the respondents 98 (30.2%), 57 (17.5%) respectively are aware of RBS and HbAlc laboratory tests will be performed in diabetic patients. Two hundred twenty (67.7%) respondents answered correctly that the most accurate method of monitoring diabetes is checking blood glucose levels and 123 (37.5%) answered correctly that regular urine tests will help to know and control diabetes.

Two hundred eleven 64.9% respondents knew well-balanced diet is essential for diabetics and 273 (84%) knew well balanced diet include green leafy vegetables. Majority of respondents (62.2%) didn’t know the normal fasting blood sugar level.

Table 3: Knowledge about diabetes .Addis Ababa, Ethiopia, 2012

Variables	Frequency	Percent (%)
Define diabetes		
High sugar level	79	24.3
Low sugar level	8	2.5
Both	139	42.8
I don't know	99	30.5
Cause of DM		
Decrease insulin	38	11.7
Increase insulin	134	41.2
I don't know	153	47.1
Type of DM *		
Type I DM	174	53.5
Type II DM	174	53.5
I don't know	151	46.5
Symptoms*		
Frequency of urination	277	85.2
Thirst	265	81.5
Hunger	177	54.5
Loss of weight	150	40.0
High blood sugar	101	31.1
I don't know	28	8.6
Laboratory test*		
FBS	296	91.1
RBS	98	30.2
HbA1c	57	17.5
Urine	217	66.8
I don't know	36	11.1
Accurate laboratory test		
Blood glucose	220	67.7

Urine sugar	41	12.6
I don't know	64	19.7
Urine tests will help		
Status of liver	46	14.2
Status of kidney	45	13.8
Control of diabetes	123	37.8
I don't know	109	33.5
Well-balanced diet*		
Green leafy vegetables	273	84.0
Fiber-rich food	156	48.0
Low sugar	210	64.6
I don't know	22	6.8
Lifestyle modification*		
Loss of Weight	181	55.7
Quitting smoking	161	49.5
Quitting alcohol intake	175	53.5
Diet control	211	64.9
I don't know	66	20.3
Factors in controlling blood*		
Planned diet	238	73.2
Regular exercise	182	56.0
Medication	251	77.2
I don't know	28	8.6
Know normal FBS		
Yes	123	37.8
No	202	62.2

*Variables that don't add up to 100%

5.1.3 Knowledge about Complication

The findings show that 126 (38.8%) didn’t know risk factors that are important in the development of complications. As shown in table 4, 118(36.3%) stated that, if diabetes is untreated it will result in heart problem. Of the 325 diabetic patients, 76(23.4%) respondents suggested incorrectly about the symptoms of DKA and 152(46.8%) didn’t know that numbness and tingling could be sign of nerve problem.

One hundred twenty five (38.5%) respondents didn’t know a diabetic patient should be checked their eye and 148 (45.5%) didn’t know a diabetic patient should be measured for blood pressure. Among the participants in the study population, 133 (40.9%) patients didn’t know high blood pressure can increase and/or worsen any risk.

Table 4: Knowledge about complication of diabetes .Addis Ababa, Ethiopia, 2012

Variables	Frequency	Percent (%)
Factor of complication*		
Duration of illness	92	28.3
Uncontrolled blood glucose	102	31.4
No follow up	117	36.0
Not taking medicine	116	35.7
I don't know	126	38.8
DM complication*		
Eye	250	76.9
Kidney	214	65.8
Foot ulcer	155	47.7
Heart	118	36.3
I don't know	58	17.8
Numbness and Tingling		
Kidney	23	7.1
Nerve	173	53.2
Eye	0	0.0
Liver	2	0.6
I don't know	127	39.1
Sign of DKA		
Shakiness	54	16.6
Sweating	15	4.6
Vomiting	133	40.9
Low blood glucose	7	2.2
I don't know	116	35.7
Symptoms of hypoglycemia*		
Weakness	214	65.8
Confusion	180	55.4
Visual disturbances	180	55.4

Sweating	213	65.5
I don’t know	40	12.3
Eyes checked		
In a Year	179	55.1
Six month	20	6.2
No need	1	0.3
I don’t know	125	38.5
BP checked		
In a year	18	5.5
Six month	21	6.5
Two month	5	1.5
One month	123	37.8
No need	10	3.1
I don’t know	148	45.5
BP Complication*		
Heart attack	135	41.5
Stroke	79	24.3
Eye	55	16.9
Kidney	50	15.4
I don’t know	133	40.9
Foot Care*		
Washing	261	80.3
Safe shoes	244	75.1
Not barefooted	206	63.4
I don’t know	29	8.9

*Variables that don’t add up to 100%

5.1.4. Knowledge about Treatment of Diabetes

As shown in figure 2, 179 (55.1%) patients were on insulin and 16 (4.9%) on both oral hypoglycemic and insulin.

Two hundred thirty seven (72.9%) participants knew that the medicine should be taken for lifelong and 194(59.7%) the medicine include insulin. Of the 325 diabetic patients, 267 (78.2%) knew that sweets should be consumed if they were hypoglycemic.

Table 5: Knowledge about treatment of diabetes .Addis Ababa, Ethiopia, 2012

Variables	Frequency	Percent (%)
Medication Includes		
Antibiotic	2	0.6
Blood transfusion	2	0.6
Insulin	194	59.7
Better vegetables	0	0.0
I don't know	127	39.1
About Medicine		
Can stop immediately	4	1.2
Stop after a month	4	1.2
Life long	237	72.9
Herbal medicine	4	1.2
I don't know	76	23.4
Hypoglycemia at the time of medication		
Yes	254	78.2
No	71	21.8
Treatment of hypoglycemia		
Sugar	267	82.2
Medicine	18	5.5
Insulin	2	0.6
I don't know	32	9.8

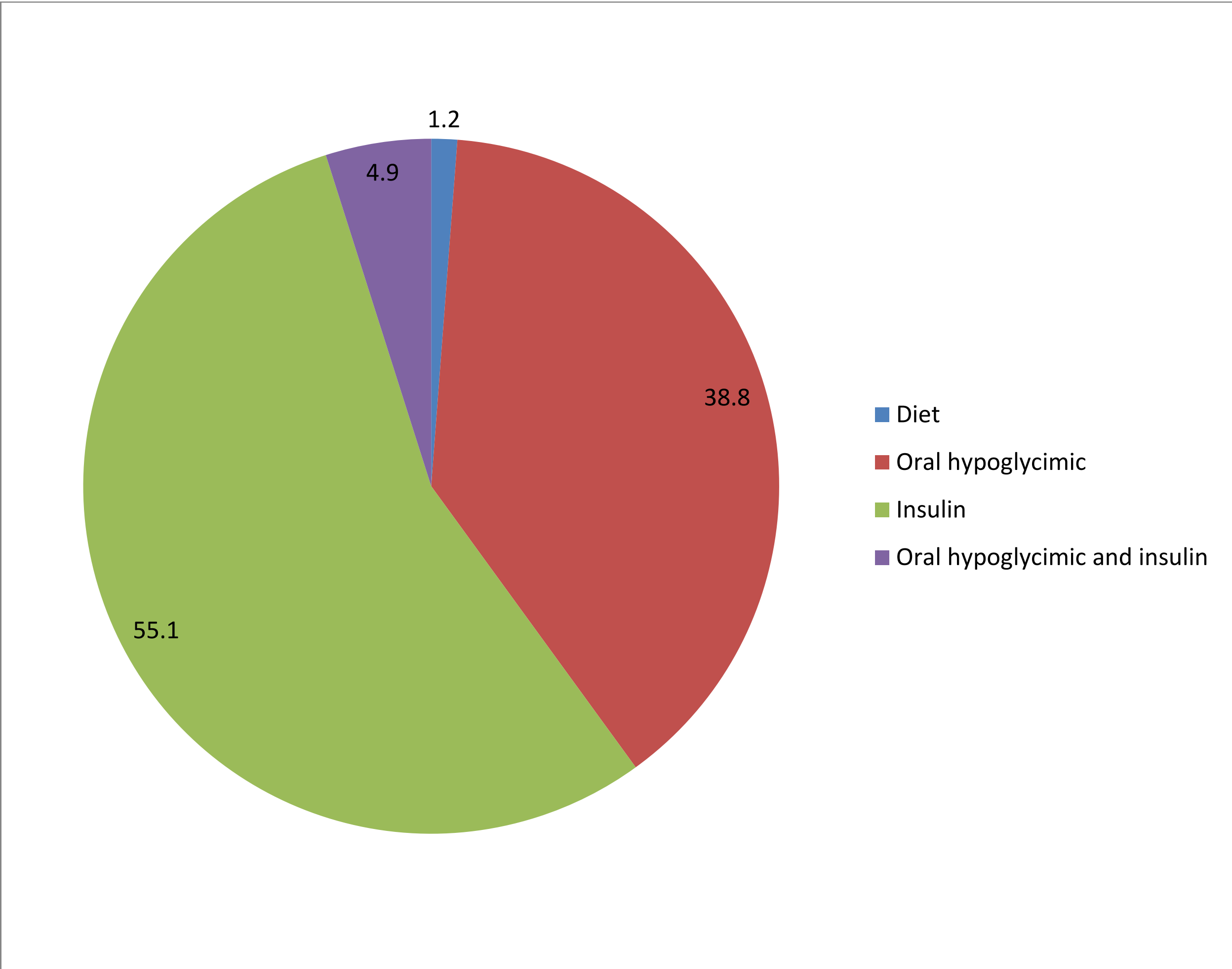


Figure 3: Kind of medication/control method

5.1.5. Knowledge about Preventive Measures

From the total, 273(83.7%) of them thought that diabetes can't be prevented and of the 303 patients who answer no and I don't know about taking preventive measure, 262 (86.8%) said that they would definitely have taken preventive measures seriously if they had known earlier that diabetes could be prevented .One hundred six 32.6% of them didn't know any preventive measures for diabetes.

Table 6: Knowledge about Prevented measures of diabetes .Addis Ababa town, Ethiopia, 2012

Variables	Frequency	Percent (%)
DM preventable		
Yes	23	7.1
No	272	83.7
I don't know	30	9.2
Taken preventive Measures*		
Yes	262	86.8
No	40	13.2
Preventive measures*		
Blood sugar check up	139	42.5
Maintaining body weight	144	44.3
medical check ups	131	40.3
Dietary control	163	50.2
I don't know	106	32.6

*Variables that don't add up to 100%

5.1.6. Source of Information

Two hundred eighty five of the respondents i.e. 87.7% stated that they would like to get general information on DM from their clinicians.

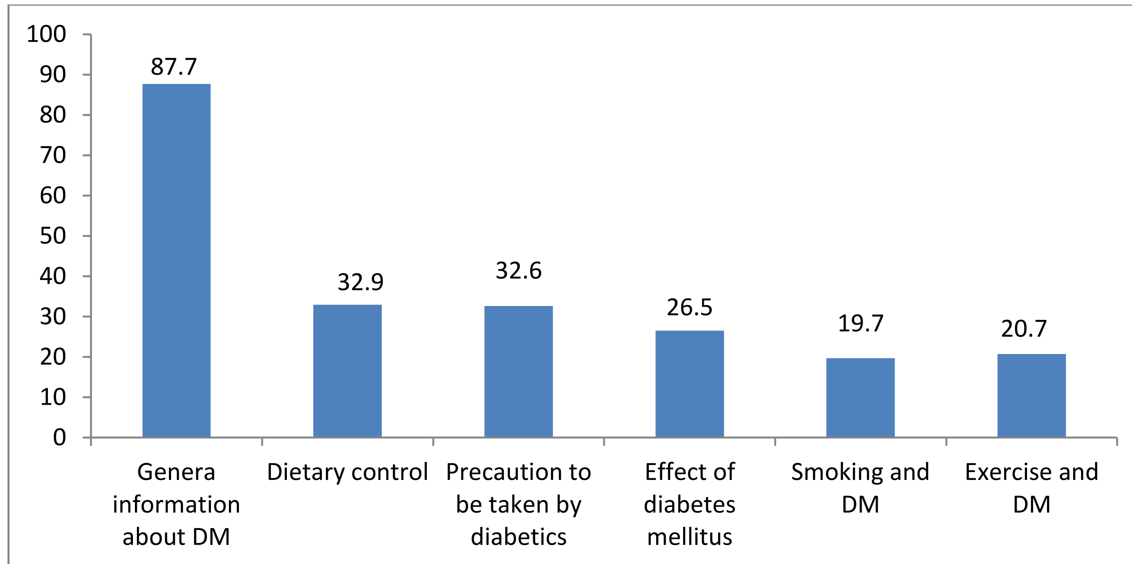


Figure 4: Type of information about DM

Of 325 participants (84.6%) would like DM information given by radio/TV, (58.5%) by videos or tapes and (44.3%) would like to get DM information by pamphlets.

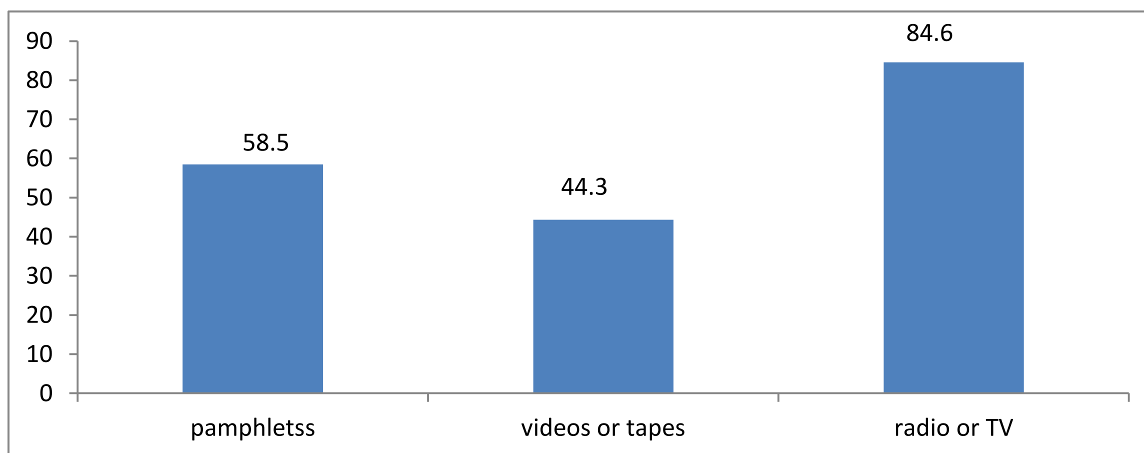


Figure 5: Participants' source of information about DM

5.2 Knowledge Score about Diabetes mellitus

With a score range of 0 to 54, the mean (%) score of the respondents was 28.8 (54.4%) (SD11.4).

Table 7: The mean scores for general knowledge about diabetes Addis Ababa, Ethiopia, 2012 (n = 325), (values expressed as Mean ± SD and as percentage).

	Knowledge about diabetes	**Knowledge about complication**	**Knowledge about treatment**	**Total score**
Total possible score	27	23	4	53
Mean ±SD	15.3±6.3	11±5.4	2.9± 1.3	28.8±11.4
percentage	56.6%	47.8%	72.5%	54.4%

5.3 Bivariate and Multivariate Analysis

5.3.1 Association of Socio Demographic Variables with Good Knowledge about Diabetes

In Table 8, bivariate and multivariate analyses were calculated to asses association between socio demographic variables (gender, age, educational level, marital states, area, income, religion, ethnicity and occupation) and adequate knowledge about DM.

Data Showed that having high education seems to have positive effect on increasing knowledge about DM, secondary education and above were 30.6 times (OR 30.68; 95% CI 11.51 to 81.77) followed by primary education 5.9 times (OR 5.96; 95% CI 2.17 to 16.42) to have good knowledge about DM and this was also significant when adjusted. Those who are Amhara in ethnicity were nearly 2.6 times to have good knowledge compared to those who are Oromo in ethnicity (OR2.6; 95% CI 1.48 to 4.42) and this were also significant when adjusted.

Analysis also revealed that, age that range from 31-50 were nearly 1.8 times more likely to have good knowledge about DM (OR 1.78;1.00 to 3.17).Those who had income <350 birr and income that range from 350-750 birr nearly 80% less likely to have good knowledge about DM compared to those who had income >1050.Those who were Muslims in religion were nearly 50% less likely to have good knowledge of DM compared to Orthodox in religion (OR 0.49; 95% CI 0.24 to 0.98). Those who live in Addis Ababa were nearly 3.8 times to have good knowledge about DM compared to those who lived outside Addis Ababa (OR 3.83; 95% 1.85 to 7.92).However religion, age ,income ,occupation and area of living were not significant when adjusted.

None of the selected socio demographic variables such as marital states and gender showed a significant association with the knowledge of DM.

Table 8: Logistic regression model for factors associated with good knowledge* of DM among participants in Addis Ababa, 2012 (n = 325)

Variable	Knowledge about DM		OR95%CI	AOR(Adjusted OR)
	Poor	Good (%)		
Gender				
Male	69	84	1	1
Female	83	90	0.90(0.58-1.39)	1.02(0.45-2.33)
Age				
18-30	57	53	1	1
31-50	32	53	1.78(1.00-3.17)*	2.27(0.84-6.11)
>51	62	68	1.18(0.71-1.96)	0.46((0.65-3.28)
Education				
No school	50	5	1	1
Primary	57	34	5.96(2.17-16.42)*	7.17(1.89-27.18)*
>Secondary	44	135	30.68(11.51-81.77)*	13.46(3.82-47.46)*
Income				
<350	31	16	0.16(0.08-0.35)*	0.41(0.14-1.17)
350-750	55	31	0.18(0.09-0.34)*	0.50(0.21-1.21)
750-1050	25	32	0.41(0.21-0.81)*	0.59(0.23-1.47)
>1050	27	84	1	1
Marital states				
Single	41	49	1	
Married	85	107	1.05(0.64-1.74)	
Separate	6	7	0.98(0.30-3.13)	
Windowed	14	9	0.54(0.21-1.37)	
Divorce	5	2	0.34(0.06-1.82)	
Occupation				
Student	7	20	1	1
Private worker	47	56	0.42(0.16-1.07)	0.24(0.04-1.23)

Unemployed	14	8	0.20(0.06-0.68)*	0.18(0.02-1.35)
Housewives	54	34	0.22(0.08-0.78)*	0.29(0.05-1.45)
Employ	17	40	0.82(0.29-2.31)	0.54(0.09-5.29)
Retire	12	16	0.47(0.15-1.46)	0.69(0.09-5.29)
Religion				
Orthodox	106	122	1	1
Catholic	5	8	1.39(0.44-4.38)	3.93(0.36-42.95)
Protestant	15	30	1.74(0.89-3.40)	1.45(0.57-3.68)
Muslim	25	14	0.49(0.24-0.98)*	0.52(0.18-1.49)
Ethnicity				
Oromo	51	32	1	1
Amhara	61	98	2.56(1.48-4.42)*	2.42(1.1-5.36)*
Tigre	13	19	2.33(1.01-5.36)*	2.43(0.75-7.88)
Gurage	26	20	1.23(0.59-2.55)	1.69(0.55-5.19)
Area				
In A.A	120	163	3.83(1.85-7.92)*	1.24(0.43-3.52)
Outside A.A	31	11	1	1

***=P<0.05**

5.3.2 Association of Factors with Good Knowledge about Diabetes

In Table 9, bivariate and multivariate analysis were calculated to assess association between factors (Duration of illness, Family support, Diabetes educational , Knowing last FBS, Having glucometer and Having regular follow up) and adequate knowledge about DM .

Data showed that, those who knew their last FBS were nearly 3.6 times more likely to have good knowledge about DM compared to those who didn't know their last FBS (OR 3.63; 95% CI 2.06 to 6.35)**.** Patients who had glucometer were nearly 5.2 times more likely to have good knowledge about DM compared to those who hadn't glucometer (OR 5.20; 95% CI 3.16 to 8.51). These variables were significant when adjusted.

Those who had duration of illness that range from 16-20 years were nearly 90% less likely to have good knowledge on DM compared to those who had duration of illness >20 years (OR 0.19; 95% CI 0.05 to 0.69). Those who had family supports were nearly 2.7 times more likely to have good knowledge about DM compared to those who hadn't family support (OR 2.74; 95% CI 1.56 to 4.76) and having health education about DM seem to have positive effect on increasing knowledge compared to those who hadn't health education about DM (OR 3. 14; 95% CI 1.98 to 4.98). However these variables were not significant when adjusted.

Binary logistic regressions analysis were calculated to assess association between factors and knowledge about DM but having regular follow up and family support didn't show any association.

Table 9: Logistic regression model for factors associated with good knowledge* of DM among participants in Addis Ababa, Ethiopia, 2012 (n = 325)

Variables	Knowledge about DM		OR 95% CI	AOR(Adjusted OR)
	Poor	Good (%)		
Duration of diagnosis				
1-5	60	69	0.43(0.16-1.17)	0.41(0.09-1.73)
6-10	48	51	0.34(0.14-1.10)	0.37(0.09-1.56)
11-15	23	31	0.50(0.17-1.49)	0.61(0.13-2.84)
16-20	14	7	0.19(0.05-0.69)*	0.16(0.22-1.17)
>20	6	16	1	
Support from family				
No	46	24	1	1
Yes	105	150	2.74(1.56-4.76)*	1.14(0.51-2.57)
Know last FBS				
No	52	22	1	1
Yes	99	152	3.63(2.06-6.35)*	3.41(1.42-8.20)*
DM education				
No	107	76	1	1
Yes	44	98	3.14(1.98-4.98)*	1.65(0.85-3.19)
Have glucometer				
No	121	76	1	1
Yes	30	98	5.20(3.16-8.57)*	3.22(1.57-6.62)*
Follow up				
No	3	2	1	
Yes	148	172	1.74(0.29-10.57)	
Family history				
Yes	42	66	1	
No	101	101	0.64(0.39-1.02)	
I don't know	8	7	0.56(0.19-1.65)	

***=P<0.05**

5.5 Qualitative Results

Demographic characteristics for the study participants are shown in Table 14. From 24 study participant 12 were women. The majority of respondent 14 were orthodox in religion, had no school (11). The vast majority of study participants 18 hadn't glucometer.

Table 10: Socio demographic Characteristics of qualitative study

Sample Demographic Characteristics Gender	
Male	12
Female	12
Religion	
Orthodox	14
Muslim	6
Protestant	4
Level of Education	
No School	11
Primary	6
Secondary	5
Tertiary	3
Occupation	
Student	2
Private work	3
Housewives	6
Gov/private employee	6
Unemployed	3
Retire	4
Marital Status	
Married	12
Divorced	3
Widowed	3
Single	6
Have a glucometer	
Yes	6
No	18

The first major theme in qualitative study was lack of knowledge about diabetes mellitus among study participants due to personal etiology, socio cultural belief, and communication barrier and by being self-oriented. The second major theme was diabetic have awareness about DM but they can either be elite deviants or elite practitioner. Differences were found among males and females that majority female respondents did not know about diabetes.

Responses to a question **"What do you think is the cause of diabetes?"** Provided two distinct responses, the first type of response indicated some understanding of the condition. A typical response was from a male participant who indicated

"The way I see it the main cause of DM is when there is a problem with the pancreas." Another female indicated *"Well, as it was said, it is hereditary. Other than that is not having a good diet. These are the things I know. "*

The second type of response indicated many respondents relate the cause with their spiritual belief. A male respondent indicated

"From the way I see it, it is the work of the devil. It is not caused by from eating too much sweets but the devil itself."

A second respondent, a female, said

"I know that anger makes the part of your body called pancreas to be out of use. That's why I have the illness. I have four kids and the father of my kids refused to help me to raise our kids (crying…) I was very angry and disappointed and at that time then I got diabetes." Another respondent indicated "I still don't understand how people can become diabetics"

Study participants answered the question **"Are there different types of DM that you know?"** The majority of respondents indicated they didn't know about types of DM and some respondents were misinformed. One male respondent gave a response to this question

"I don't know anything about the diffident types unless you tell me (laughing) I only knew, there is an illness called DM" and the second respondent said*: "I am not sure about the different types but I have heard that there are ten types." Only one male respondent indicate "the types, eeeee…that I know and heard is two major types; Type I and Type II, mine is type I ."*

Participants were asked to describe the symptoms related to diabetes. **"What are the symptoms?"** The majority of respondents indicated they did know the symptoms but only knew the symptom they had experienced before. The male indicated

"I only know my symptom and I had frequency of urination and weight loss."

Study respondents answered questions regarding cures for diabetes. Respondents answer the question **"Can diabetes be cured?"** The first one revealed that some respondents knew that DM can't be cured. One female respondent indicated

"I agree with her that it is not curable but can only be minimized." In addition some participant knew about this information due to the duration of their illness. One male participant indicates that "*It is not curable. It is almost 20 years since I had this agley disease and here I am."*

A second one indicated that many participants had faith in GOD using holly water to be cured. One female respondent indicated that

"I believe one day I will be cured with the help of GOD and holly water." And only one male answered *"As for me, If it is controlled it is curable."*

The third one indicates that it can be cured when blood glucose level is well controlled and only one respondent said

"I had diabetes recently for about three years, two years before my glucose level was high but now on this year it is much lower. I have checked it in my follow up in the past three month and it was 70-90 and today it is 95 and now I have this doubt that I might actually be cured from this illness."

Study participants answered the question **"What are the life style choices you have to make to control your diabetes and the barriers not to practice?"** most respondents knew the life style choices however they didn't apply those measures in their life due to different problems. one female participant indicated

"I don't take the life style measures seriously because I live in rural area…. for example I know that DM patients should avoid any ulcer but I usually clean cow's shit with my hand

because that is my responsibility." Another male respondent said "I know that I shouldn't eat foods that are forbidden but it is difficult because my wife prepare food for all family."

Participants were asked about the complication **"What are the complications?"** most of respondent knew about it after they had the complication and only knew the complication that they experienced before. One female respondent indicated

"It is after I had DM that I have nerve problem it stayed with me for long time and I thought it was 'Bered'. I was hospitalized and my relative was helping me because I couldn't walk by myself. " another participant indicated "Yes it has complication but I only know my Owen, like eye problem and nerve" and some answered *"I don't know anything about the complication .How will I know, if no one told me about complication."*

Participants were asked about hypoglycemia management **"How do you manage hypoglycemia?"** most discussant knew about the management of hypoglycemia but they were carless. Female participant indicated:

"People told me that to carry candy or sugar when we are going far but I don't take that because I have never had lower glucose level plus I don't travel far away." And some patients said *"I didn't know about hypoglycemia."*

Study participants answered the question **"Do you think diabetic treatment can be stopped?"** most respondent believe that the treatment should be taken always but some respondent think this way after they learn from their experience.one female patient indicate

"*I discontinue for one year thinking that I got cured and my daughter told me that it was a waste of time plus it was difficult for me to come for follow up because of the transportation cost but it was silly .....(Smiling).It is after I lost a lot of weight, my FBS rises to 450 and when I got hospitalized I knew it was a life time medication."* and another male respondent said *"I discontinue for six months hoping to be cured by herbal medication, my friends told me that there was a person around Merckato who can cure DM then we went together, he told me to stop medication and to avoid the glucometer. I just did what he told me. I went to his place three times a week (for six months) early in the morning then he wipes some oil around my umbilicus area. Finally I started to feel the symptoms and one day I found myself in ICU."*

And some think that they can stop medication relating it with religious believes. Female patient said

"We need to take or medication together with holly water and it will be GOD's will after that."

Only one female patient thinks the treatment should not be discontinued but she had associated it with income.

"I don't think the treatment can be stopped and I believe I need to take my medication properly but it is expensive and it may be difficult for me to continue like this because of financial problem so I think the government should give the treatment freely for all patients since it is lifelong disease like HIV/AIDS."

The other question asked study participants **"Do you think DM is preventable?"** the majority of participants didn't know whether DM is preventable or not before getting sick. But they did have some specific recommendations for preventing it. A female participant indicated

"How would I prevent it when I first don't know how it come .I didn't even know there is an illness called DM before I got the disease .I still don't know if it can be prevented but those who don't have the illness can learn from us and that might help them." And some participant said *"I think we can prevent it and I realized this after I got the disease. I used to drink alcohol and eat high cholesterol foods a lot. If you avoid eating these foods you can definitely prevent DM."*

The other question asked study participants **"Do you feel like you have sufficient knowledge about DM? What are the barriers**" Almost all respondent think that they don't have enough knowledge about DM because they didn't know how to read and write; one male .respondent indicated *that*

"I don't think I have enough knowledge but if I was educated and was able to read and write I would have had the information plus I didn't get any health education in the hospital."

Table 11: Theme, Category and Code of Qualitative Study

Theme: Personal etiology ,socio-cultural belief ,communication barriers and being self-oriented affect knowledge about DM.

Category	**Personal Etiologies**	**Socio-cultural belief**	**Communication barriers**	**Self-oriented**
Code	Ignorance	Spirits or devil	Misinformed	Experienced symptom
	Carelessness	Stress	Illiterate	Experienced complication
	Habits	Halt medication(holly water)	Poor services quality	
		Herbal medication	Lack of information	
		Stigma	Lack of DM education	
		Curses	Confusion	
		Disease of riches	Language	
			Work load	
			Busy clinic	

Theme: Diabetic have awareness about DM but they can either be elite deviants or elite practitioner.

Category	**Awareness**	**Elite deviant**	**Elite practitioner**
Code	Hereditary	Financial constraints	Family support
	Know types	Food insecurity	Income
	Preventable	Lack of family support	
	Relative and family history of DM		
	Duration of illness	Similar diet	
	Metaphysical imbalance	Women responsibility	
		Fasting	

6. Discussion

6.1. Knowledge about Diabetes

Out of 325 DM patients, this study assesses the level of knowledge of diabetes among the DM patients who had regular follow up in the Addis Ababa city and it shows that from the total respondents the mean (%) score was 28.8 (54.4%) (SD11.4) which is found to be fair. Similarly the study also conducted on KAP of diabetic in Qatari patients, the mean percentage of knowledge about DM was 49.8 % (12). This suggests a need to further strengthen knowledge of diabetes among the patients.

In addition, this study sought to identify areas of knowledge deficiency about the cause of diabetes, laboratory tests, preventive measures complication and treatment to inform future educational effort.

From the total respondents, only 79 (24.3%) answered correctly that a higher than normal level of sugar in the blood define diabetes in terms of blood sugar level in the body and 38 (11.7%) responded correctly stated that a decreased amount of insulin in the body is major cause of diabetes. Similarly the study conducted in Western Nepal on knowledge about diabetes among diabetes patients, only 37.91% respondent answered correctly that a higher level of sugar in the blood defines diabetes and 20.3% patients knew the major cause of diabetes (16). It is also consistent with a study in Kenya among DM patients, 73.9% of respondents could not correctly identify the probable causes of DM (17). The study conducted on knowledge of diabetes and management in Nigeria, showed that (78.1%) respondents stated that diabetes was caused by poison while only 14.6% had knowledge of the main cause of diabetes- lack of insulin (14).Qualitative study also indicated that, many respondents relate the cause with their spiritual belief. A male respondent said

"*From the way I see it, it is the work of the devil. It is not caused by unhealthy life style but the devil itself*".

The belief of the respondents that diabetes is caused by "devil or curses" was surprising. This is likely to have grave consequences on their health seeking behavior as well as on the general population because people might be dying of this diabetes, while seeking cultural treatment in a bid to rid themselves of the so-called by "devil or curses".

From all study subjects, only 57(17.5%) participants are aware HbA1c laboratory tests will be performed in diabetic patients and 36(11.1%) didn't know any major tests. The study in India shows, ninety-four (94.1%) patients didn't know about glycosylated hemoglobin (HbA1c) (11). One of the most optimum tests for evaluating long term blood sugar control is HbA1c (7) and studies have shown that patients with a better knowledge of HbA1c were able to more accurately regulate their diabetic status. (19,20). This study suggests that patients with low baseline knowledge about laboratory tests should receive special attention in diabetes self-management education (DSME) programs, as knowledge gain in this group can significantly improve glycemic control.

One hundred eighty three of the study subjects (56.3%) of them have never been in any health education about diabetes and health education. Qualitative study also shows almost all respondent didn't take health education. One male .respondent indicated that

"I am practically illiterate about diabetes due to the fact that the doctors and nurses are reluctant to respond to my questions."

The findings were actually demoralizing because doctors and nurses were the irreducible pair that has the highest contact time with the patients, so they are expected to take the lead in providing relevant information to the patient/client. However, they have neglected this important aspect of their service. This agrees with the study conducted in Nigeria on Knowledge of diabetes management and control by diabetic patient's shows that majority of them stated that they did not receive any organized education/counseling on diabetes and nurses were the least followed by the doctors to teach them anything on DM. (14). Education intervention that involved patient's collaboration may be more effective than diabetic interventions in improving glycemic control (12). This fact illustrates lack of health information about DM therefore a greater effort is needed to spread health education about DM for diabetes patients.

The findings show that, 92 (28.3%) patients thought the duration of illness is a factor of complication, 102 (31.4%) uncontrolled blood glucose, 117 (36%) having irregular follow up, 116 (35.7%) taking medicine irregularly and 126 (38.8%) didn't know any risk factors that are important in the development of complications. Similarly the study conducted on knowledge of diabetes and management in Nigeria, showed that less than half respondents stated that engage in regular exercise (7.3%) and take drug therapy judiciously (29.2%) are diabetes self-care

measures to prevent/control diabetes and avoid complications (14). The study on an assessment of the health care system for diabetes in Addis Ababa, out of the total number of diabetic patients, it was found that only 32.8% knew that blood sugar control decreases complications of diabetes and admissions because of uncontrolled diabetes were 49.2 % (21). This will also place diabetics at risk of doing those things that might predispose them to complications.

The most common cause of death amongst diabetics is cardiovascular disease. Only 118 (36.3%) of the participant knew that DM affects the heart and 25.3% respondents had diabetes related heart problem. The American Association of Clinical Endocrinologists states that the cause of complications in both acute and chronic diabetes is either a lack of understanding with regard to the long and short-term regulation of blood glucose or the patient's refusal to control the blood glucose levels (23). Qualitative study also indicates that most of respondent knew after they had the complication. This fact suggests that lack of awareness about the complications may lead to long term outcome and patient need information before they experienced in order to prevent complication.

Two hundred thirty seven of respondents i.e. (72.9%) knew that the medicine should be taken for life time. Also in qualitative study most respondents believe that the treatment should be taken always but they thought this way after they learned from their previous experiences. One male respondent said

"I discontinue for six months hoping to be cured by herbal medication, my friends told me that there was a person around Merckato who can cure DM then we went together, he told me to stop medication and to avoid the glucometer. I just did what he told me. I went to his place three times a week (for six months) early in the morning then he wipes some oil around my umbilicus area. Finally I started to feel the symptoms and one day I found myself in ICU."

The study in Pakistan also found that around 25% of the participants thought that regular use of plants, herbs and vegetables could cure diabetes (30). There is, therefore, a need for increased effort towards developing and making widely available diabetes education program which focuses on empowering the person with diabetes, not only by providing them information and skills, but also by building their ability to make decisions and take ownership of controlling diabetes

Only 23(7.1%) respondents thought that diabetes can be prevented. This fact along with 262 (86.8%) said that they would definitely have taken preventive measures seriously if they had known earlier that diabetes could be prevented, means that imparting knowledge regarding prevention should be a major thrust in the future. Similarly the study conducted in India on patients in a tertiary care hospital, 71 of the 101(70.3%) patients said that they would either definitely or probably have taken preventive measure seriously had they known that diabetes was preventable (11). In qualitative study majority of participants didn't know whether DM is preventable or not before getting sick. But they did have some specific recommendations for preventing it. A female participant indicated

"I didn't even know there is an illness called DM before I got the disease how would I prevent it when I don't know how it causes in the first place. Those who don't have the illness can learn from us and that might help them."

This indicates a significant lack of the knowledge of primary and primordial prevention of diabetes in the population.

6.2. Factors Associated with dependent Variables

The finding of the study indicates out having high education seems to have positive effect on increasing knowledge about diabetes after controlling other factors. The relationship between education and knowledge among DM patients has been observed in similar studies in Nigeria; where education attainment was significantly associated with lower the knowledge score in this study (37). The study conducted on the level of diabetic patients knowledge of diabetes in South Africa shows a direct relationship between level of education and good knowledge of diabetes was demonstrated (27) and the study in Jamaica showed, positive correlations between knowledge scores and educational level suggest that those with a higher level of education were better able to understand their disease (34). The qualitative study also indicates illiteracy was the major setback to have good knowledge about DM. The association between education and knowledge may be due to the fact that, literate patients were able to read and understand additional supportive materials.

By applying multivariate analysis those who are Amhara in ethnicity were nearly 2.4 times to have good knowledge about DM treatment. In addition bivariate analyses also indicate those who

were Muslim in religion were nearly 50% less likely to have good knowledge about DM. Similarly the study in India showed that literacy, language (ethnicity) and religion are interdependent factors associated with knowledge of diabetes and diabetic complication (35). Qualitative study also finds that language is a barrier to have good knowledge about DM. This variation of language (ethnicity) may lead to an increased number of diabetes complications over the coming years, especially due to lack of information due to communication barrier. This may be achieved by preparing audio-visual aids, as well as posters in different languages to show patients about diabetes complications and their consequences. Thus, it will be clear to the general population to see the ugly face of DM.

Most of the respondents don't own self-monitoring glucometer thus, the multivariate analysis also showed that, those who have glucometer were 3.2 times more likely to have good knowledge about diabetes. Similarly those who knew their last FBS have good knowledge about diabetes after controlling other factors. The study on an assessment of the health care system for diabetes in Addis Ababa shows only 5% diabetic patients were able to do self-blood glucose monitoring at home (21). Self-monitoring of blood glucose is considered as a key element in diabetic care, and it is widely recommended. This activity helps patients adjust their insulin dosage, diet, and exercise regimens, and it aids in detecting and preventing hypoglycemia (40). According to this finding the association between having glucometer and knowing last FBS and knowledge about DM is due to the fact that, those patients who had glucometer were able to know their current states of FBS level.

The literature evaluating the relationship between sex and knowledge of diabetes yielded mixed findings, with a few reporting that sex was a determinant of knowledge of diabetes (11,27) whereas the studies conducted in Qatar and Thailand did not (12,22). In this study, sex was not associated with knowledge of diabetes. Despite this, qualitative part of the study revealed that a very small proportion of women were knowledgeable about DM. Similarly in some third world countries due to socio-cultural beliefs women are not allowed to attain higher educational status compared with their male counterpart in the family, eventually resulting in women having less knowledge of DM. This level of knowledge is very alarming, considering the complication and socioeconomic consequences of diabetic short term and long term outcome.

The study couldn't find any significant association with family history of diabetes. Similarly the study in Pakistan, found no such association (38).But in qualitative study relatives and family history of DM had positive effect to have awareness about DM.

7. Strength

The quantitative study was supplemented by qualitative methods to explore factors which were responsible for the existing low knowledge about DM.

Source of information that respondents preferred had been identified. Knowledge of these sources of information would be useful in identifying the appropriate media for delivery of health promotion interventions and the validity of the information delivered through such media.

8. Limitations

Limitation of the study was that it was conducted only among the outpatients through a short period of time and hence may not be generalized to the overall diabetic population.

The study also found that the responses depended on the memory and truthfulness of the respondents which was assumed to be reliable. The entry of responses into the questionnaire depended on the interviewers' interpretation on the response and was subject to misrepresentation. However it was reduced due to training of interviewers and use of people with medical background.

This study did not include the analysis between those who had follow up in private and government hospitals among the respondent due to small sample size as a result of one private hospital was not cooperative after the data collection begun. Patients who had follow up in private health institutions would have higher knowledge due to the health education provided at the clinic.

Another limitation of this study was that the use of patient registration book to select respondents but there was poor documentation practices in the governmental hospitals.

Even though the above mentioned constraints limit the research, it did not hinder it to achieve its objectives.

9. Conclusion

In conclusion, knowledge about DM throughout the study was fair; these were associated with illiteracy, ethnicity, knowing last FBS level and having glucometer.

Knowledge about the causes, control, self-monitoring and other self-care measures especially with regard to preventive measures were specific aspects of diabetes that need to be further strengthened among the diabetic patients.

In addition, knowledge about diabetes in qualitative study was poor especially among women due to socio-cultural beliefs, personal etiology, by being self-oriented and communication barriers. Furthermore, diabetes patients can be elite deviants and these were associated with lack of family support, food insecurity, women responsibility and financial constraints.

The result of this study highlighted major drawbacks in knowledge about diabetes, the need to empower patients to build their capacity in order to obtain maximum benefit from their medication as well as to avoid drastic events due to DM.

10. Recommendations

A well-organized and structured education/counseling programs should be established (In addition to the existing facilities) by the Federal Ministry of Health as quickly as possible for diabetic patients. It will be beneficial if a diabetic clinic, information and excellence center is established to satisfy the basic needs of patient-specific education on diabetes and its management.

Outreach programs should be organized in schools, civil service centers and other rural communities. Awareness creation on preventive measures before getting the illness is important so as to heighten the need for disease prevention and early diagnosis among the general public.

Health care providers should take time to explain in depth on the causes, complications and prevention/control through health and self-care measures to prevent complications and eventual death hence deficiency in knowledge is due to poor communication between health care providers and patients in addition to compacted consultation periods as well as busy clinic schedule.

Programs such as exercise and self-care monitoring should be organized to equip them to effectively monitor their blood glucose level as well as control their diet accordingly.

A multidisciplinary approach which includes ophthalmologists, medical practitioners, optometrist, nurses, dieticians and other health team members should be advocated to help these diabetic patients live healthy lives by providing the right information at every available opportunity. Health institutions should also have major laboratory tests like HbA1c.

In addition, this study suggests that socio-cultural beliefs, literacy, language and religion are interdependent factors associated with knowledge of diabetes. Brochures, handouts and other available materials should be prepared in different languages. Religious, community and other significant leaders as well as celebrities should be involved in diabetes education programs.

Poor documentation will affect researchers to get the right data at the right time and to take the right action so it is recommended that awareness should be given to health professional and others supplementary stuffs in order to get good documentation practice.

Studies on similar context but with wider scope and much larger sample size are recommended to confirm findings of this study and evaluate diabetic knowledge among the private and government health institutions as well as in other provinces among rural diabetic and health care providers so that comparative inferences can be drawn. This will assist in empowering patients and health care workers with knowledge of DM and the importance of understanding treatment and management options.

10. References

1. Dereje A, Yayehirad T, Jemal A, Nejmudin R, Sintayehu D. Guidelines Diabetes Mellitus module for the Ethiopian Health Center Team. Debub university collaboration with FMOH 2005:1-127

2. Victoria H , Reimar W, Ole H and Nicolai L. Diabetes in Sub Saharan Africa Epidemiology and public health implications a systematic review. Bio Med Central Ltd 2011; 3(3):104-212

3. Silvia P, Eberhard S, Malgorzata B, Markku L, Francesco C. Guidelines Diabetes,pre-diabetis,and cardiovascular diseases: executive summery. European heart journal 2007; 28:88-136

4. Motala A, Ramaiya K R.Diabetes: Diabetes leadership forum Africa. South Africa, Johannesburg. World Diabetes Found;ation report 2010:1-48

5. WHO. Diabetic action now. Geneva, Switzerland .WHO report 2003:1-18

6. American Diabetes Association. (2004) All about diabetes. Retrieved December 10, 2011, from http://www.diabetes.org/about-diabetes.jsp

7. WHO. Management of diabetes mellitus standard of care and clinician practice guidelines, Switzerland .WHO report 994:32-118

8. Tilahun Y, Bekalu A, Tefera B. Type 2diabetes mellitus in jimma town, southwest Ethiognpia. Ethiopia health journal health sic 2007; 17(2):50-110

9. Slaven K, Maja R. comparative assessment of the treatment of type 2 diabetes mellitus.Annals of Saudi Medicine 2004; 22 (3):162-166

10. Syed S, Mohammad A. Risk factors, knowledge and health status in diabetic patients. Saudi Med Journal 2003; 24 (11): 1219-1224

11. Michell G, Mary J, and Rajesh I. Knowledge of Diabetes, its Treatment and Complications amongst diabetic Patients in a Tertiary Care Hospital. Indian Journal of Community Medicine 2008; 33(3):204-206

12. Hajer A , Randa A, Bill G, Adil Y, Nadir K. Living with Diabetes Mellitus: Evaluating Knowledge ,Attitude, and Practices of Diabetic Qatari Patients. Sidra Medical & Research Centre 2005; 2:16-22

13. Michael M, Venkat N. Effectiveness of Self-Management in Type2 Diabetes. Diabetes care 2001; 24(3): 561–587

14. Okolie V,Uchenna M, Ehiemere O, Ijeoma S, Iheanacho N. Knowledge of diabetes management and control by diabetic patients at Federal Medical Center Umuahia Abia State, Nigeria. International Journal of Medicine and Medical Sciences 2009; 1(9): 353-358.

15. Ebrahim A, Jabbar Z, Mahmood K. Standard of Knowledge about their Disease among Patients with Diabetes in Pakistan. Pharma Journal 2001; 5(1):216

16. Dinesh K, Subish P. Knowledge, Attitude and Practice about Diabetes among Diabetes Patients in Nepal. P & T Journal 2007; 2:1-12

17. William K, Zachary M, Eva W.Knowledge, attitude and practices related to diabetes among community members in four provinces in Kenya: a cross-sectional study. The Pan African Medical Journal 2010; 7(2):1-55

18. Didem A, Aleattin U, Selma M .Knowledge of diabetic patients about diabetes at the primary stage in Eskisehir, Turkey .Journal of Medical Science 2008 ;24(2) :263-268

19. .Heisler M, Pietee JD, Spencer M, Kieffer E, Vijan S. The relationship between knowledge of recent HbA1c values and diabetes care understanding and self-management .Diabetes Care 2005; 28:816-822.

20.Padmalatha B, Peter M., Rasa K ,Barbara S ,Kelly K and Leon F. Gain in Patients' Knowledge of Diabetes Management Targets Is Associated with Better Glycemic Control .Diabetes Carecare.diabetesjournals.org 2007:30(6):1587-1589

21. Yeweyenhareg F, Fikre E.An assessment of the health care system for diabetes in Addis Ababa, Ethiopia. Ethiopia journal Health Dev2005; 19(3):203-210

22. Tipaporn P, Shu-Chuen L, Hwee L. Survey of Knowledge on Diabetes in the Central Region of Thailand. ISPOR 2009; 12:111-113

23. Bruce DG, Davis WA, Cull CA, Davis TM. Diabetes education and knowledge in patients with type 2 diabetes from the community: The Fremantle Diabetes Study. J Diabetes Comp 2003; 17:82-9.

24. Hakeem R, Fawwad A. Diabetes in Pakistan: Epidemiology, Determinants and Prevention. Journal of Diabetology 2010; 3(4):1-11

25. Ekore R, Ajayi I, Arije A, Ekore J. Knowledge of and attitude to foot care amongst Type 2 diabetes patients attending a university-based primary care clinic in Nigeria. Afr J Prm Health Care Fam Med 2011; 2(10):55-82

26. Dawit W, Leja H, Kifle W .Patterns of Diabetic Complications at Jimma university . Ethiop J Health Sci 2010; 20(1):33-39

27. Mashige K, Notshweleka A.An assessment of the level of diabetic patients' knowledge of diabetes mellitus, its complications and management in Durban, South Africa. The South African Optometrist 2008; 67(3):95-105

28. Deniz C, Oya O.Evaluation of awareness of Diabetes Mellitus and associated factors in four health center areas in Turkey. Journal of Medical Science 2005; 1: 223-258

29. Hawthom K, Tomlinson S. effect of sex, literacy skills, known diabetic complications and place of care on diabetic knowledge, reported self-monitoring management and glycaemic control. Diabet Med 1999; 16(7):1-48

30. Rafique S.I. Azam F Diabetes knowledge, beliefs and practices among people with diabetes attending a university hospital in Karachi, Pakistan. Eastern Mediterranean Health Journal, 2006; 12(5), 590-596

31. Nasir T, Wabe1, Mulugeta T ,Angamo1, Sadikalmahdi H. Medication adherence in diabetes mellitus and self-management practices among type-2 diabetics in Ethiopia .North American Journal of Medical Sciences 2011; 3(9):418-423

32. Abera E .Patterns of cronic Complications of Diabetic patients in menelik hospital. Ethiopian journal health development 2000; 14(1):113-116

33. Puepet F, Mijinyawa B, Akogu I, Azara I. Knowledge, attitude and practice of patients with Diabetes Mellitus before and after educational intervention in Jos, Nigeria. The Journal of Medicine in the Tropics 2007; 9(1): 3-10

34. Wint YB; Duff EM. Knowledge, motivation and barriers to diabetes control in adults in Jamaica. West Indian medical journal 2006; 55(5)

35. Rani P, R Raman, S Subramani, G Perumal, G Kumaramanickavel, T Sharma Knowledge of diabetes and diabetic retinopathy among rural populations in India, and the influence of knowledge of diabetic retinopathy on attitude and practice.The international electronic jornal 2008:2-9

36. Abdelmarouf HM, Mohammad A , Alzohairy H. Awareness of diabetes mellitus among Saudi non diabeticpopulation in Al-Qassim region, Saudi Arabia. Journal of Diabetes and Endocrinology 2011; 2(2): 14-19

37. Desalu O, Salawn K, Jimoh A.Diabetic foot care: self-reported knowledge and practice among patients attending three tertiary hospitals in Nigeria .Ghana medical journal 2011; 45(2):60-63

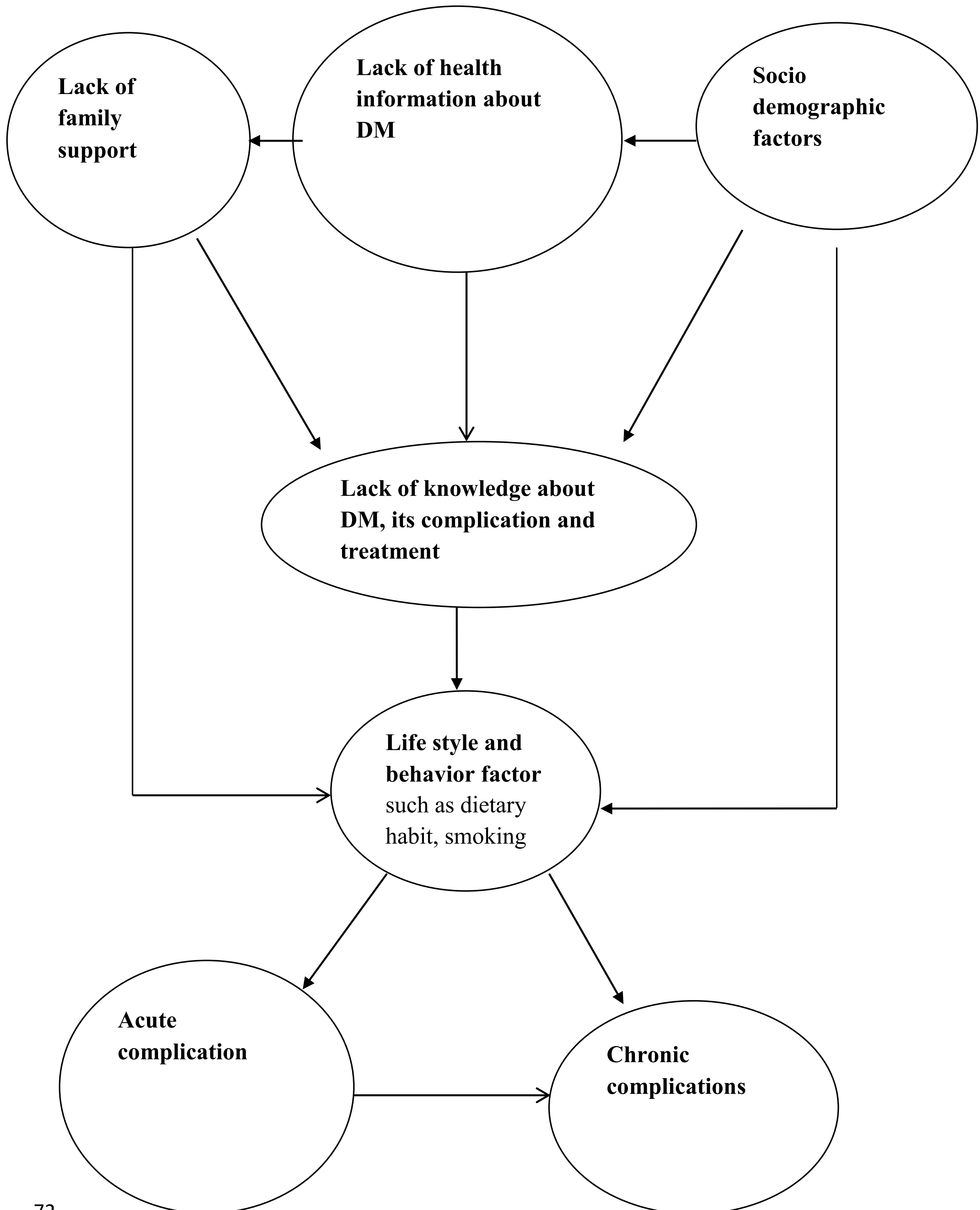
38 Farooq MD, Sadia Mohyud DC. Awareness about diabetes risk factors and complications in diabetic patients . Nishtar Medical Journal 2010; 2(3):84-88

39. Miguel A, Diabetes Knowledge, Beliefs, and Treatments in the Hmong Population: An Exploratory Study. Hmong Studies Journal 2003; 8: 1-21

40. Larme AC, Pugh JA. Attitudes of primary care providers toward diabetes. Barriers to guideline implementation. Diabetes Care 1998; 21(9):1391-6

41. Ulvi OS, Chaudhary RY, Ali T, Alvi RA, Khan MF, Khan M, et al. Investigating the awareness level about diabetes mellitus and associated factors in Tarlai (rural Islamabad). J Pak Med Assoc. 2009 Nov; 59(11):798-811. Annex

Annex I: Conceptual Framework



Annex II .English version of the questionnaire

I. Study Information Sheet:

Good morning/afternoon, my name is yemesrach abeje and I am one of the data collectors for the study being conducted by Addis Ababa University College of Health Sciences School of Public health. You are selected scientifically to be participant of this study if you give me consent after you have understood the following information.

The aim of this study: To determine the level of knowledge to diabetes, its treatment and complication and factor associated with among adult diabetic patients.

Benefit of the study: the participant will not get any direct benefit for being participant but the information obtained through this study will be help full for the study population (diabetic patients) by identifying knowledge gap for a better disease control. And also the result of the study might give some clues for Ethiopian public health policies and will contribute a lot in minimizing the problem of shortage of evidences related to the issue under study.

Harm of the study: the study has no harm except that participants will spend up to 30 minutes in the interview.

Rights of the participant: participants has full right Not to participate, The participant can stop participating in the study at any time , can skip question which she/he does not want to respond During the interview and the participant can also ask questions which are not clear .

Confidentiality: I am going to ask you a question which will help us, to gather information about the above mentioned issue. All the information which you are being asked to provide in this questionnaire will be kept strictly confidential (your personal information including your name) and the information will be used only for study purposes.

If you have any problem my contact address is

Mobile phone ___0911924269,

II Consent Form for Study Subject

I have been informed about the purpose of this particular research project and the information I gave will be used only to the purpose of the study. In addition I am also informed that my identity as well as the information I will be providing will be kept confidential. Based on this I agree to participate in the research voluntarily.

To be voluntary ⟶ sign below and conduct interview

Not to be voluntary ⟶ thank and stop'

Signature of the study subjects ----------------------------

Questionnaire identification number __________

Name of the Interviewer _____________Signature_________ date _______

Name of the supervisor ______________Signature _______date _________

Identification number-----------------------

Name of institution --------------------------------

Part 1) Socio demographic characteristics			
NO	**Questions**	**Categories**	**Coding**
101	Age-	----------------	
102	Sex	1.Female	
		2. Male	
103	Marital status	3. Single never married	
		4. Widowed	
		5. Separate	
		6. Married	
		7. Divorced	
104	What is your highest level of Education?	1.No school attended	
		2. Primary	
		3 Secondary	
		4. Tertiary	
		5. Others	
105	What is your occupation?	1.Student	
		2.Private business	
		3.Unemployed	
		4.House wife	
		5.Employee	
		6.Others	
106	Which type of area you come from?	1.In A.A	
		2.Out A.A	
107	What is your religion?	1.Orthodox Christian	
		2.Catholic Christian	
		3.Protestant Christian	
		4.Muslim	
		5. Others (Specify) …………..	
108	What ethnic group do you belong to?	1.Oromo	
		2.Amhara	
		3.Tigre	
		4.Gurage	
		5. Other (Specify)……………………..	
109	What is your (family) total monthly income?	(Approximately)------------- Eth.Birr	

Part 2) Diabetes related health information			
201	How many years/months ago were you first diagnosed with this condition of diabetes mellitus?	1.-------------------years/months	
		2.I don't remember	
202	Do you have family history of diabetes?	1.Positive history	
		2.No history	
		3.I don't know	
203	Who first diagnosed you with diabetes mellitus?	1.Specialist	
		2.Doctor	
		3.Health officer	
		4.Nurse	
		5.I don't remember	
		6. Other……………	
204	Which type of diabetes mellitus do you have?	1.Type I (insulin dependent)	
		2.Type II (non-insulin dependent)	
		3.Don't know	
		4.Other (please specify)	
205	Do you have regular diabetes follow up?	1.Yes	
		2.No **-Skip 207**	
206	If yes, for how long?	1.-------------------years/months	
207	Do you know your last fasting glucose level?	1.Yes	
		2.No **-Skip 209**	
208	What was your last fasting blood glucose level?	------------------------ mg/dL	
209	Do you get support from your family?	1.Yes	
		2.No	
210	Do you have complication?	1.Yes	
		2.No **-skip 212**	
		3.I don't know **-skip 212**	
211	Which complication or diseases do you have?	1.Loss of vision	
		2.Kidney failure	
		3.Heart failure	
		4.Stroke	
		5.Diabetic foot ulcer	
		6.Diabetic neuropathy	
		7.Hypertension	
		8. Others………………………….	
212	Do you have self-monitoring glucometer?	1.Yes	
		2.No	

213	Have you ever been in any health education about diabetes?	1.Yes	
		2.No	
		3.I don't remember	
Part 3) About diabetes mellitus			
301	What is diabetes in terms of blood sugar level in the body?	1. A higher level of sugar in the blood than normal.	
		2. A lower level of sugar in the blood than normal.	
		3. Either a higher or a lower level of sugar in the blood than normal.	
		4.I don't know	
		5.Other	
302	Which types of diabetes mellitus do you know?	1.Type I(insulin dependent)	
		2.Type II(non-insulin dependent)	
		3.I don't know	
		4.Others	
303	What is major cause of diabetes?	1. An increased availability of insulin in the body.	
		2. A decreased availability of insulin in the body.	
		3. I don't know	
		4. Others	
304	Do you think diabetes is curable?	1.Yes	
		2. No	
		3.I don't know	
305	What is/are the major symptom(s) of diabetes?	1. Increased frequency of urination.	
		2. Increased thirst and hunger	
		3. Increased tiredness	
		4. Slow healing of wounds	
		5. I don't know	
		6. Others	
306	Which lab test do you know that is performed in diabetes?	1.Fasting blood glucose (FBS)	
		2.Random blood sugar (RBS)	
		3.HbA1c (Glycosylate hemoglobin)	
		4.Urinalysis	
		5.I don't know	
		6.Others	
307	What is the most accurate method of monitoring diabetes?	1.Checking blood glucose levels	
		2. Checking urine sugar.	
		3. I don't know	

		4. Others	
308	What is the advantage of regular urine test?	1. The status of liver function.	
		2. The status of kidney function.	
		3. The control of diabetes.	
		4. I don't know	
		5.Others	
309	The well-balanced diet includes:	1. Green leafy vegetables.	
		2. Fiber-rich food.	
		3. Low sugar, oil, and fat.	
		4. I don't know	
		5.Others	
310	The lifestyle modification(s) required for diabetic patients is/are:	1. Weight reduction.	
		2. Stopping smoking.	
		3. stopping alcohol intake	
		4. I don't know	
		5. Others	
311	The important factors that help in controlling blood sugar are	1.A controlled and planned diet	
		2. Regular exercise	
		3. Medication	
		4.I don't know	
		5. Others	
312	Do you know the normal fasting blood sugar level?	1Yes	
		2.No	
Part 4) About Prevention			
401	Do you think diabetes can be prevented? .	1.Yes	
		2. No **_ Skip to403**	
		3.I don't know/not sure **_ Skip to403**	
402	Identify the preventive measures that you know.	1.Blood sugar check up	
		2.Maintaining an ideal body weight	
		3. Routine medical check ups	
		4. Dietary control	
		5. I don't know	
		6. Others…………………	
403	Would you definitely have taken preventive measures seriously had you known earlier that diabetes could be prevented?	1.Yes	
		2. No	
Part 5) About diabetes mellitus complication			
501	Which risk factors are	1.Duration of illness	
		2. Uncontrolled blood glucose level	

	important in the development of complications?	3. Not having regular follow up	
		4.Not taking medicine regularly	
		4. I don't know	
		5.Other	
502	What are diabetes complication?	1.Can lead to eye problems	
		2.Can lead to kidney problems	
		3. Can lead to foot ulcers.	
		4. Can lead to heart problems	
		5. I don't know	
		6. Others……………	
503	Numbness and tingyling may be symptom of:	1.Kidney disease	
		2. Nerve disease	
		3. Eye disease	
		4. Liver disease	
		5. I don't know	
		6. Others	
504	What is a sign of ketoacidosis?	1.Shakiness	
		2. Sweating	
		3. Vomiting	
		4. Low blood glucose	
		5. I don't know	
		6.Others……………	
505	What are the symptoms of hypoglycemia?	1.Weakness	
		2. Confusion	
		3. Visual disturbances	
		4. I don't know	
		5. Others……………	
506	At what interval duration a diabetic patient should have his or her eyes checked?	1. Once a year.	
		2. Once every six months.	
		3. Need not check at all	
		4. I don't know	
		5. Others……………	
507	At what interval duration a diabetic patient should measure his or her blood pressure?	1. Once a year.	
		2. Once every six months	
		3. Once every two months	
		4. Once every month.	
		5. Need not check at all	
		6. I don't know	
		7. Others……………	
508	In a diabetic patient, high blood pressure can increase or worsen	1.The risk of heart attack	
		2. The risk of stroke	
		3. The risk of eye problems	

		4. The risk of kidney problems	
		5. I don't know	
		6. Others……………	
509	Which proper foot care measures do you know?	1.Washing your feet daily	
		2.Safe shoes	
		3. Not going outdoors barefooted	
		4. I don't know	
		5. Others	
Par6) About Treatment			
601	What kind of medication/control method are you taking now?	1.Diet alone	
		2. Oral hypoglycemic	
		3. Insulin	
		4. OHG and insulin	
		5. Others	
602	Treatment of diabetes comprise:	1. Antibiotic therapy.	
		2. Blood transfusions	
		3. Substituting insulin.	
		4. Taking more bitter vegetables	
		5. I don't know	
		6. Others	
603	Upon control of diabetes, the medicines:	1.Can be stopped immediately	
		2. Can be stopped after one month	
		3. Should be continued for life.	
		4. Herbal drugs are better	
		5. I don't know	
		6. Others	
		6. Others	
604	Are you aware of blood sugar levels may fall below normal when you are taking drugs?	1.Yes	
		2. No	
605	How do you manage hypoglycemic symptoms?	1.By taking sugar	
		2. By taking medicines	
		3. By taking insulin	
		4. I don't know	
		5. Others	
Par7) About Type of Information			
701	Do you feel that you have	1.Yes	

	sufficient knowledge about the management of your diabetic condition?	2. No	
702	What information with regards to diabetes mellitus would you like to get from your clinicians?	1.General information on diabetes mellitus	
		2. Dietary control	
		3. Precautions to be taken by diabetics	
		4. Effects of diabetes mellitus	
		5. Smoking and diabetes mellitus	
		6. Exercise and diabetes mellitus	
		7. Others (please specify)	
703	How would you like this information given to you?	1.Handouts or pamphlets	
		2. Videos or tapes	
		3. Others(please specify)	

Thank you

Annex III. Guide for Focus Group Discussion (FGDs)

Focus Group Discussions with diabetic patients 6-8 participants; 1hrs in length

1. Introduction

Greeting: my name is Yemesrach Abeje and I am one of the data collectors for the study being conducted by Addis Ababa University, College of Health Sciences, and School of Public health.

The aim of this study: To determine the level of knowledge to diabetes, its treatment and complication and factor associated with among adult diabetic patients the information obtained through this study will be help full for the study population by identifying knowledge gap for a better disease control. And also the result of the study might give some clues for Ethiopian public health policies and will contribute a lot in minimizing the problem of shortage of evidences related to the issue under study.

Description of the focus group: You have been invited to participate in this FGD due to your involvement and knowledge on the issues. We have developed a list of questions to discuss with you that we hope will remind constructive and informative conversation on this topic. The focus group meeting will last about 60 to 90 minutes.

Ground rules: We would like to ask you to respect your colleagues while others are speaking and to maintain confidentiality. Also, we would like to request that for you to please adhere to the moderators directions to move on to the next topic when indicated, etc. In this discussion we will use tape-recorder in addition to note taking. We are doing this so that we store the information for report writing and future use or reference. Once we have transcribed the data from the audio cassette records, we assure you that we will destroy the cassettes ensuring that identification of respondents is not possible. If you agree to participate, please check yes below.

Yes ☐ No ☐

If they agree to participate continue discussion, but if not stop here

Name of the moderator. -------------------------------- Signature--------------.

(Signature of the moderator certifies that consent has been obtained verbally). Date------------ Time-----

2. Semi structured discussion guide prepared assesses knowledge about diabetes among diabetic patients.

Sex____ Occupation-------- Education------------------

Age----------- Religion ----------- Marital States---------------------

Have Glucometer-----------------

Introduction

At this point, we would like to ask you to introduce yourself to the rest of the group, let us start with the research team (Name, age, education status) and each of you please tell me your name.

1. All of you have diabetes mellitus. When do we say that one has diabetes?

Probes 1. Would you explain further?

2. Would you give me an example?

3. Has anyone else had similar experience?

4. Is there anything else?

5."I don't understand."

2. Are there different types of DM that you know? What are the different types?

3. What happens when a person get DM? What other symptoms do you have?

4. Do you think DM is curable? How?

5. What are the life style choices you have to make to control your diabetes? Do you practice this life style?

6. Do you think DM has complication? What are the complications?

7. How do you manage hypoglycemia?

8. Do you think diabetic treatment can be stopped? If no, why? If yes, when or why?

9. Do you think DM complication is preventable? What do you think the mechanisms of prevention are?

10. Do you feel like you have sufficient knowledge about the management of your diabetic condition? From whom do you want to get the information? What are the barriers?

Ending questions

Are there any issues, questions, comments that you would like to raise or points to you wanted to add?

Debriefing

I would like to thank you for your participation. I also want to restate that what you have shared with us is confidential. No part of our discussion that includes names or other identifying information will be used in any reports, displays or other publicly accessible media coming from this research. Finally, I want to provide you with a chance to ask any questions that you might have about this research. Do you have any questions for me?

በአዲስ አበባ ዩንቨርስቲ ህክምና ፋክልቲ በህብረተሰብ ጤና ትምህርት ክፍል የስኳር ህመምተኞች ስለበሽታው ያላቸውን ግንዛቤ ለማጥናት የተዘጋጀ መጠይቅ በአዲስ አበባ ከተማ

የሚስጥር አጠባበቅ ስምምነት

ጤና ይስጥልኝ ስሜ----------------------ሲሆን በአዲስ አበባ ዩንቨርስቲ ህክምና ፋክልቲ በህብረተሰብ ጤና ትምህርት ክፍል ለሚደረገው ጥናት አንዱ/ዷ መረጃ ሰብሳቢ ነኝ።

የጥናቱ ዋና አላማ-የስኳር ህሙማን ስለ ስኳር በሽታ፣ስለ መድሀኒቱ እንዲሁም የስኳር በሽታ ስለሚያመጣው ጠንቅ ያላቸውን እውቀት ለመለካት ነው።

የጥናቱ ጥቅም-ተሳታፊዎቹ በመሳተፋቸው ምንም አይነት ጥቅም ባያገኙም በጥናቱ የተገኙት መረጃዎች ግን በተሻለ ሁኔታ ህመሙን ለመቆጣጠር እና ያሉትን ችግሮች ለይቶ ክፍተቶችን ለማጥበብ ይረዳል።በተጨማሪም በዚህ ዙሪያ ያለውን መረጃ እጥረት ይቀርፋል።

የጥናቱ ጉዳት- ተሳታፊዎቹ መረጃ ለመስጠት 30 ደቂቃ ከመቆየታቸው በስተቀር ጥናቱ ምንም አይነት ጉዳት የለውም።

የተሳታፊዎቹ መብት- ተሳታፊዎቹ ያለመሳተፍ፣የማቋረጥ፣የማይፈልጉትን ጥያቄ የመዝለል እንዲሁም ያልገባዎትን የመጠየቅ ሙሉ መብት አለዎት።

ሚስጥራዊ አጠባበቅ- ለዚህ ጥናት የሰጡት መረጃ በሙሉ በሚስጥር የተጠበቀ ሲሆን መረጃው ለዚህ ጥናት ብቻ ይውላል።

ምንም አይነተት ችግር ካለ በዚህ አድራሻ ያገኙናል ።

ስልክ ቁጥር 0911 92 42 69

የፈቃደኝነት ማረጋገጫ

የጥናቱ ዋና አላማ እና የሰጠሁት መረጃ በሚስጥር እንደሚጠበቅ ባገኘሁት መረጃ መሰረት በጥናቱ ልሳተፍ ተስማምቻለሁ።

ተሳታፊ በመሆነዎ ይፈርሙ------------------------------------

የመረጃ ሰብሳቢው ስም---ፊርማ------------------ቀን-----------

የተቆጣጣሪው ስም--ፊርማ----------------------ቀን-----------

መለያ ቁጥር-- የጤና ተቋዋሙ ስም------------------------------

ተራ ቁጥር	ጥያቄዎች	ምርጫዎች	መለያ ቁጥር
101	ክትሜ ------------------------		
102	• ëተ	ሴት	1
		ወንድ	2
103	የትዳር ሁኔ•	ጸላቁባ/ጸላገባች	1
		ያገባ/ች	2
		የተለያየ/ች	3
		አግብቶ/• ¾ሞተበት/ባት	4
		አግብቶ/• ¾ô• /ች	5
104	የትምህርት ደረጃዎ ምንድነው ?	ጸልተማረ	1
		አንደኛ ደረጃ ት/ት	2
		ሁለተኛ ደረጃ ት/ት	3
		ሶስተኛ ደረጃ ት/ት	4
		ሌላ ከሆነ ይጥቀሱ	5
105	¾ሚሰሩት ስራ ምንድነው ?	ተማሪ	1
		¾Óል ስራ	2
		ጸልተቀÖረ	3
		የቤት • መቤት	4
		ተቀ× ሪ	5
		ሌላ ከሆነ ይጥቀሱ	6
106	ከየት አካባቢ ነው የመጡት ?	ከከተማ	1
		ከገጠር	2
		አላውቀውም	3
107	ሃይማኖትዎ ምንድን ነው?	ኦርቶዶክስ ክርስቲያን	1
		ካቶሊክ ክርስቲያን	2
		ፕሮቴስ• ንት	3
		ሙስሊም	4
		ሌላከሆነ ይጥቀሱ	5
108	ብሔርዎት ምንድነው?	ኦሮሞ	1
		አማራ	2
		ትግሬ	3
		ቶራቴ	4
		ሌላከሆነ ይጥቀሱ	5
109	¾ቤተሰብ- ¨ ርሃዊ ቁ. ምንያህል ነው?	-------------------------------------- በቁዓ ር	
ክፍል ሁለት ከስኳር ህመም ጋር የተያያዙ የጤና መረጃዎች			
201	ህመሙ እንዳለብዎት ያወቁት ከስንት ዓመት (ወር) በፊት ነበር?	ዓመት(¨ ር)	1
		አላስ• ¨ ሱ¨ ም	2

202	በቤተሰብ- ውስጥ ¾ስኳር ህመም ያለበት ሰው አለ ?	አዎ አለ	**1**
		¾ለም	**2**
		አላውቀውም /• ርÒÕኛ አይደለሁም/	**3**
203	¾ስኳር ህመም • ንዳለብዎት መËመሪጸ ጸቶኘልዎት የጤና ባለሙያ ማእረግ ምንድን ነው ?	• ስፔሻሊስት Ë¡ ተር	**1**
		Ë¡ ተር	**2**
		የጤና መኮንን	**3**
		ነርስ	**4**
		አላስ• ¨ ›ሰ¨ ›ም	**5**
		ሌላ ከሆነ ይጥቀሱ	**6**
204	የትኛ¨ › ዓይነት የስኳር ህመም ነው ያለብዎት?	የመጀመሪያው ዓይነት የሥኳር ህመም	**1**
		ሁለተኛው ዓይነት የስኳር ህመም	**2**
		አላውቀውም	**3**
		ሌላ ከሆነ ይጥቀሱ	**4**
205	መÅበኛ ¾ስኳር ህመም ¡ ትትል አለዎት?	አዎ አለኝ	**1**
		የለኝም -¨ Å **207 ኛ ዓጸቂ ÅሂÆ**	**2**
206	መÅበኛ የህክምና ምርመራ ከጀመሩ ስንት ዓመት/¨ ር Ãሆንም• ል?	ዓመት(¨ ር)	
		አላስ• ¨ ›ስም	
207	¾መሀጨረሻውን ¾Åም ¨ ›ስዓ የስኳር መጠን ውጤትዎን ጸ¨ ›ቁ• ል?	አዎ	**1**
		አላ¨ ›ቀ¨ ›ም-¨ Å **209ኛ ዓጸቂ ÅሂÆ**	**2**
208	ካወቁት መጠኑ ስንት ነበር?	ሚግ/ዴሲ	
209	ከቤተሰብዎ ለስኳር ህመምዎ አስፈላጊውን ትÒአ ጸቶኛሉ?	አዎ አገኛለሁ	**1**
		አላገኝም	**2**
210	በስኳር ህመሞ ምክንያት ¾ሚመጡ የጤና ጠንቆች/ህመሞች/ አለብዎት?	¾ለብኝም -¨ Å **212ኛ ዓጸቂ ÅሂÆ**	**2**
		አዎ	**1**
		አላ¨ ›ቀ¨ ›ም -¨ Å **212ኛ ዓጸቂ ÅሂÆ**	**3**
211	ከተዘረዘሩት ውስጥ የትኞቹ በስኳር ህመሞ ምክንያት የመጡ የጤና ጠንቆች/ህመሞች/ አለቦዎት/ነበረብዎት?	የአይን ችግር	**1**
		የኩላሊት ችግር	**2**
		የልብ ችግር	**3**
		ጭንቅላት ስራውን በአግባቡ አለመሰራት	**4**
		¾ Òር መቁሰል	**5**
		የነርብ ችግር	**6**
		የደም ግፊት	**7**
		ሌላ ካለ Åዓቀሱ	**8**
212	ቤትዎ በÅም ¨ ›ስዓ ¾ሚቶኛ ውን የስኳር መጠን ለማወቅ የሚያስችል መለኪያ መሳሪያ አለዎት ?	አዎ	**1**
		የለኝም	**2**
213	ስለስኳር ህመሞ ¾ሚጸስተምር የጤና ትምህርት ውስዓ ተሳትፈው ጸ¨ ›ቃሉ?	አዎ	**1**
		አላውቅም	**2**
		• ርÒÕኛ አይደለሁም	**3**
ክፍል ሶስት	**- ስለ ስኳር ህመም**		
301	ከሚከተሉት ውስጥ የትኛ¨ › ነው ¾ስኳር ህመምን ¾ሚቶልç¨ ›?	በÅም ¨ ›ስዓ ¾ሚቶኛ¨ › የስኳር መጠን ከልክ ያለፈ ሲሆን	**1**
		በÅም ¨ ›ስዓ በሚቶኛ¨ › የስኳር መጠን ከልክ ያነሰ ሲሆን	**2**
		በÅም ¨ ›ስዓ በሚቶኛ¨ › የስኳር መጠን ከልክ ያለፈ ወይም ያነሰ ሲሆን	**3**
		አላውቅም	**4**

		ሌላ ካለ Ãዓቀሱ	5
302	¸ስንት ዓይነት የስኳር ህመም ጸ¨‑ቃሉ?	አንድ ዓይነት	1
		ሁለት አይነት	2
		አላውቅም	3
		ሌላ ካለ Ãዓቀሱ	4
303	ለስኳር ህመም ዋነኛ ምክንጸት ከተጠቀሱት ውስጥ የትኛ¨‑ Ãመስለ‑ • ል?	¾ኢንሱሊን መጠን ከፍተኛ ሲሆን	1
		¾ኢንሱሊን መጠን እጅግ አነስተኛ ሲሆን	2
		አላውቅም	3
		ሌላ ካለ Ãዓቀሱ	4
304	የስኳር ህመም የሚድን Ãመስለ‑ • ል?	አዎ ይመስለኛል	1
		አይመስለኝም	2
		አላውቅም	3
305	ዋና ¾ስኳር ህመም ምልክቶችን ይጥቀሱ?	ቶሎ ቶሎና በብዛት መሽናት	1
		የማያቋርጥ እና የማይረካ ¾‑ሃ ዓም	2
		ከፍተኛ የረሃብ ስሜት	3
		የሰውነት የክብደት መቀነስ	4
		በደም ውስጥ የስኳር መጠን መብዛት	5
		አላውቀውም	6
		ሌላ ካለ Ãዓቀሱ	7
306	ለአንድ የስኳር ህመምተኛ አስፈላጊ የሆኑ ተጨማሪ ምርመራዎች ውስጥ የሚያውቁትን Ãዓቀሱ?	ምÓብ ሳÃ¨ ሰት ¾ሚÅረÓ ¾Åም ምርመራ	1
		ምግብ ከተወሰደ በኋላ ¾ሚÅረÓ ¾Åም ምርመራ	2
		አማካይ የሶስት ወራት የስኳር ምርመራ (HbA1c)	3
		የሽንት ምርመራ	4
		በደም አማከኝነት የሚታወቅ የኩላሊት ምርመራ (ክርያቲኒን)	5
		የደም ቅባት ምርመራ (ኮሌስትሮል)	6
		አላውቅም	7
		ሌሎች ካሉ ይጥቀሱ	8
307	ከሚከተሉት ውስጥ ¾ስኳር ህመምን የበለÖ ለማ¨ ቅ ¾ሚስችለን ምርመራ ¾ትኛ¨‑ ነው?	¾Åም ¨‑ስጥ የስኳር መጠን ምርመራ	1
		የሽንት ምርመራ(ስኳር)	2
		አላውቅም	3
		ሌላ ካለ Ãዓቀሱ	4

308	ለስኳር ህመም መÅበኛ የሽንት ምርመራ ማትረÖ በሰውነታችን ውስጥ ምን ለማወቅ ያስችለናል?	¾ፆበታችንን ሁኔታ ለማወቅ ያስችለናል	1
		¾ኩላሊታችንን ሁኔ• ለማወቅ ያስችለናል	2
		ስኳራችንን ለመቆ× ÖR ያስችለናል	3
		አላ¨‑ቅም	4
		ሌላ ካለ Ã ዓ ቀሱ	5
309	አንድ የስኪር ህመምተኛ መውሰድ የሚገባውን ¾ተመ× Öነ ምግብ ይጥቀሱ?	አረንጓÈ ቅÖል ጸላቸው አታክልቶች	1
		አሰር የበዛባቸው ምግቦች(Fiber-rich)	2
		አነስተኛ ስኳር እና ቅባት ጸላቸው	3
		አላውቅም	4
		ሌላ ካለ Ã ዓ ቀሱ	5
310	መደበኛ የሰውነት እንቅስቃሴ ማድረግ ከሚከተሉት ውስጥ ለምን ይረዳናል?	የደም ዝውውራችንን ይጨምራል	1
		የኢንሱሊን ተግባርን ያግዛል	2
		አላውቅም	3
		ሌላ ካለ Ã ዓ ቀሱ	4
311	አንድ ¾ስኳር ህመምተኛ መከተል ካለበት ያኗኗር ዘዴ ውስጥ የሚያውቁትን ይጥቀሱ?	ክብደት መቀነስ	1
		ሲጋራ አለማጨስ	2
		አልኮል አለመÖ× ት	3
		¾ተስተከከለ አመጋገብ	4
		አላውቅም	5
		ሌላ ካለ Ã ዓ ቀሱ	6
312	በÅም ¨‑ስዓ ¾ሚኖ'ውን ¾ስኳር መጠን ለመቆ× ÖR ከሚረዱን ዋና ዋና ምክንያቶች ውስጥ የሚያውቁትን Ã ዓ ቀሱ?	¾ተስተከከለ አመጋገብ	1
		መÅበኛ ¾ሰውነት እንቅስቃሰሴ	2
		ህክምና	3
		አላውቅም	4
		ሌላ ካለ Ã ዓ ቀሱ	5
313	ትክክለኛውን የደም ውስጥ የስኳር መጠን ስንት እአአአንደሆነ ያውቃሉ ?	አዎ	1
		አላውቀውም	2
ክፍል አራት -. አስቀድመን መከላከል			
401	¾ስኳር ህመም ከመያዝዎ በፊት ህመሙን አስቀድሞ መከላከል እንደሚቻል ያውቁ ነበር?	አውቃለሁ→ ¨ Å 403ኛ ዓ ጸቂ ÃሂÆ	1
		አላውቅም → Å 403ኛ ዓ ጸቂ Ãሂ Æ	2
		አሁንም አላውቅም	3
402	የስኳር ህመምን አስቀድሞ መከላከል •ንደሚቻል ቢያውቁ ኖሮ አስፈላጊውን ዓ ንቃቂ ያደርጉ ነበር?	አዎ አደርግ ነበር	1
		አላደርግም	2
		አላውቅም	3
403	የስኳር ህመምን አስቀድመን ለመከላከል ከሚጸስችሉን ቅድመ ሁኔታዎች ውስጥ የሚያውቁትን Ã ዓ ቀሰ?	የስኳር መጠን ምርመራ	1
		¾ሰውነት ክብደትን መቆ× ÖR	2
		መÅበኛ ¾ሆነ Öቅላላ ምርመራ	3
		¾ተስተንከለ አመጋገብ	4
		አላውቅም	5
		ሌላ ካለ Ã ዓ ቀሱ	6

ክፍል አምስት - ከስኳር ህመም ጋር ተያይዘው ስለሚመጡ የጤና ጠንቆች			
501	ከስኳር ህመም ጋር ተያይዘው ለሚመጡ የጤና ጠንቆች አስተዋጾ ከሚጸÅርቶ ምክንያቶች ውስጥ የሚያውቁትን Ãዓ ቀሰ?	ከህመምዎ ጋር ¾ቆየበት ጊዜ	1
		ያልተስተከከለ ¾Åም ¨ˉስጥ የስኳር መጠን	2
		መÅበኛ ¾ሆነ ከስኳር ህመም ክትትል አለማድረግ	3
		መድሀኒትን በአግባቡ አለመውሰድ	4
		አላውቅም	5
		ሌላ ካለ Åዓ ቀሱ	6
502	በቁጥጥር ላይ ያልዋለ የስኳር ህመም ለምን አÃነት የጤና ጠንቆች Ãዳርገናል?	አÅናችን ላÅ ¾ሚከሰት የጤና ችግር	1
		ኩላሊታችን ላÅ ¾ሚከሰት የጤና ችግር	2
		¾እግር ቁስለት	3
		ልባችን ላÅ ¾ሚከሰት የጤና ችግር	4
		አላውቅም	5
		ሌላ ካለ Åዓ ቀሱ	6
503	¾መደንዘዝ እና ¾መንቀዓ ቀዓ ስሜቶች ¾ምን ህመም ምልክተቶች ናቸው?	¾ኩላሊት ህመም	1
		¾ነርቭ ህመም	2
		¾አÅን ህመም	3
		¾ልብት ህመም	4
		አላውቅም	5
		ሌላ ካለ Åዓ ቀሱ	6
504	ከሚከተሉት ውስጥ ¾ስኳር መጠን በደም ውስጥ ከልክ በላÃ በ×ም መፊ መር ምልክት የትኛው ነው?	ማንቀጥቀጥ	1
		ማላብ	2
		ትውከት	3
		በÅም ¨ˉስዓ በሚቶኘውን የስኳር መጠን ከልኩ ሲያንስ	4
		አላውቅም	5
505	የስኳር መጠን በደም ውስጥ ከልክ በታች መቀነስ ምልክቶች ውስጥ የትኛውን ጸ¨ˉቃሉ?	¾ድከም ስሜት	1
		ግራ መጋባት	2
		የአይን •Ä• ችግር	3
		ማላብ ፣ማንቀጥቀጥ	4
		አላውቅም	5
		ሌላ ካለ Åዓ ቀሱ	6፣
506	¾ስኳር ህመም ያለበት ሰው የአይን ህክምና ማድረግ ያለበት/ባት ቢያንስ በየስንት ጊዜ ነው?	በአመት አንዴ	1
		በስድስት ወር አንዴ	2
		የአይን ህክምና አያስፈልጋቸውም	3
		አላውቅም	4
		ሌላ ካለ Åዓ ቀሱ	5
507	¾ስኳር ህመም ያለበት ሰው የደም ግፊቱን መለካት ያለበት/ባት ቢያንስ በየስንት ጊዜ ነው?	በአመት አንድ	1
		በስድስት ወር አንዴ	2
		በሁለት ወር አንዴ	3
		በአንድ ወር አንዴ	4
		አያስፈልጋቸውም	5
		አላውቅም	6
		ሌላ ካለ Åዓ ቀሱ	7

508	¾ስኳር ህመም ላለበት/ባት ሰው የደም ግፊት መጨመር የሚያመጣው ጠንቅ ምን Ãመስል- • ል?	የልብ ችግር	1
		ጭንቅላ በትክክል ስራውን ለመስራት አለመቻል	2
		የአይን ችግር	3
		የኩላሊት ችግር	4
		አላውቅም	5
		ሌላ ካለ Äዓቀሱ	6
509	ለ• ግር መወሰድ ካለባቸው ጥንቃቄዎች መሃል የሚያውቁትን ይጥቀሱ?	• ግርዎትን በቀን በቀን መ• Öብ •ና መመልከት	1
		በተቻለ መጠን የሚመች ጫማ መጫማት	2
		ከቤት ውጭም ሆነ ውስጥ ሲሄÆ በባË • ግር አለመሄድ	3
		አላውቅም	4
		ሌላ ካለ Äዓቀሱ	5
¡አል ስትስት - ስለ ስኳር በሽተ• ህክምና			
601	የስኳር ህመሞን ለመቆጣጠር የሚወስዱት መድሃኒት አይነት ምንድን ነው?	ምግብን በመቆጣጠር ብቻ	1
		በአፍ የሚዋጥ የስኳር ህመም እንክብሎች	2
		ኢንሱሊን ወይም መርፌ	3
		ኢንሱሊን ወይም መርፌ •ና በአፍ ¾ሚª ዓ የስኳር ህመም እንክብሎች	4
		ሌሎች ካሉ ይጥቀሱ	5
602	ከሚከተሉት ውስጥ ለስኳር ህመም ¾ሚሰጥ መድሀኒት ምን ¾ሚጸካተት ወይም የሚተካ Ãመስል- • ል?	ጸረ ባክቴሪያ መድሀኒት (Antibiotic therapy)	1
		ደም መተካት	2
		በቆሽት ውስጥ የሚፈጠረውን ንጥረ ቅመም(ኢንሱሊን) መተካት	3
		መራራ ቅጠላ ቅጠሎችን	4
		አላውቅም	5
		ሌላ ካለ Äዓቀሱ	6
603	ከሚከተሉት ውስጥ ለስኳር ህመም ስለሚሰጡ መድሃኒቶች የሚያውቁትን ይጥቀሱ?	መድሃኒቱን ወዲያው ማቋረጥ ይቻላል	1
		መድሃኒቱን ከአንድ ወር በሁዋላላ ማቋረዓ ይቻላል	2
		መድሃኒቱን እድሜልክ መወሰድ አለበት	3
		የባህል ህክምና የተሸለ አማራጭ ነው	4
		አላውቅም	5
		ሌላ ካለ Äዓቀሱ	6
604	¾ስኳር ህመምን ለመቆጣጠር የማያስችለን መድሀኒት በሚወስዱበት ጊዜ በደምዎ ውስጥ ያለው የስኳር መጠን ሲቀንስ እንደሚችል ጸ¨ ቃሉ?	አውቃለሁ	1
		አላውቅም	2
606	በÅም- ¨ ስዓ ጸለ¨ ¾ስኳር መጠን ሲቀንስ ምን ማድረግ አለብዎት?	ስኳር መ¨ ሰት	1
		መድሀኒት መውሰድ	2
		ኢንሱሊን መውሰድ	3
		አላውቅም	4

		ሌላ ካለ Äዓ ቀሱ	5
¡ አል ስትስት መረጽ			
701	የስኳር ህመሞን ለመቆጣጠተር የሚያስችል በቂ • ውቀት ያለዎት Ãመስሎ• ል?	አዎ Äመስለኛል	1
		አይመስለኝም	2
702	¾ስኳር ህመሞን በተመለከተ ከሃኪምዎ ማግኘት የሚፈልጉት መረጃ ምንን በተመለከተ ቢሆን ይመርጣሉ?	ስለስኳር ህመሞ አጠቃላይ መረጃ	1
		ስለአመጋገብ ጥንቃቄ	2
		በስኳር ህመምተኛ መወሰድ የሚገባቸው ጥንቃቄዎች	3
		የስኳር ህመም አይን ላይ የሚያመጣው ችግር	4
		ማጨስና የስኳር ህመም	5
		የሰውነት • ንቅስቃሴና የስኳር ህመም	6
		ሌሎች ካሉ ይጥቀሱ	7
703	በምን ዓይነት መልኩ • ነዚህን መረጃዎች ማግኘት Ãðልዕሉ?	በበራሪ ወረቀቶች	1
		በፊልም ወይም በካሴት	2
		በሬዲዮ/በቴሌቪዥን	3
		ሌላ ካለ Äዓ ቀሱ	4

• • • • • • • • • እናመሰግናለን::

በአዲስ አበባ ዩንቨርስቲ ህክምና ፋክልቲ በህብረተሰብ ጤና ትምህርት ክፍል የስኪር ህመምተኞች ስለበሽታው ያላቸውን ግንዛቤ በቡድን ውይይት ለማጥናት የተዘጋጀ መጠይቅ በአዲስ አበባ ከተማ

ከ 6-8 ተሳታፊዎች ለቡድን ውይይቱ ያስፈልጋሉ

የሚፈጀው ጊዜ 1 ሰአት ገደማ ነው

የሚስጥር አጠባበቅ ስምምነት

ጤና ይስጥልኝ ስሜ-----------------------ሲሆን በአዲስ አበባ ዩንቨርስቲ ህክምና ፋክልቲ በህብረተሰብ ጤና ትምህርት ክፍል ለሚደረገው ጥናት አንዱ/ዷ መረጃ ሰብሳቢ ነኝ።

የጥናቱ ዋና አላማ-የስኪር ህሙማን ስለ ስኪር በሽታ፣ስለ መድሀኒቱ እንዲሁም የስኪር በሽታ ስለሚያመጣው ጠንቅ ያላቸውን እውቀት ለመለካት ነው።

የጥናቱ ጥቅም-ተሳታፊዎቹ በመሳተፋቸው ምንም አይነት ጥቅም ባያገኙም በጥናቱ የተገኙት መረጃዎች ግን በተሻለ ሁኔታ ህመሙን ለመቆጣጠር እና ያሉትን ችግሮች ለይቶ ክፍተቶችን ለማጥበብ ይረዳል።በተጨማሪም በዚህ ዙሪያ ያለውን መረጃ እጥረት ይቀርፋል።

የጥናቱ ጉዳት- ተሳታፊዎቹ መረጃ ለመስጠት 1 ሰአት ከመቆየታቸው በስተቀር ጥናቱ ምንም አይነት ጉዳት የለውም።

የተሳታፊዎቹ መብት- ተሳታፊዎቹ ያለመሳተፍ፣የማቋረጥ፣የማይፈልጉትን ጥያቄ የመዝለል እንዲሁም ያልገባዎትን የመጠየቅ ሙሉ መብት አለዎት።

ሚስጥራዊ አጠባበቅ- ለዚህ ጥናት የሰጡት መረጃ በሙሉ በሚስጥር የተጠበቀ ሲሆን መረጃው ለዚህ ጥናት ብቻ ይውላል።

ለውይይቱ መሳካት የሚረዱን ህጎች-አብረውን ያሉትን ተሳታፊዎች በሚናገሩበት ጊዜ ማክበር ይኖርብናለ በተጨማሪም አወያያችን መከተል ይኖርብናል።ለውይይቱ እንዲጠቅመን የቴፕ ማጫወቻ እነደምንጠቀም እየገለጽን ሪፖርቱን ከጻፍን በኋላ መረጃዎቹን እንደምናሶግድ በትህትና እንገልጻለን።ፈቃደኛ ከሆኑ ይሳተፉ።

የፈቃደኝነት ማረጋገጫ-የጥናቱ ዋና አላማ እና የሰጠሁት መረጃ በሚስጥር እንደሚጠበቅ ባገኘሁት መረጃ መሰረት በጥናቱ ልሳተፍ ተስማምቻለሁ።

ተሳታፊ በመሆነዎ ይፈርሙ-----------------------------------

የመረጃ ሰብሳቢው ስም---ፊርማ-------------------ቀን-----------

የተቆጣጣሪው ስም---ፊርማ-----------------------ቀን-----------

የስኳር ህመምተኞች ስለበሽታው ያላቸውን ግንዛቤ በቡድን ውይይት ለማጥናት የተዘጋጀ መጠይቅ

ወንድ------------ ሴት-------------- ቁጥር----------

መግቢያ

ውይይቱን ከመጀመራችን በፊት በመጀመሪያ አወያዮቻችን እራሳቸውን ያስተዋውቁናል በመቀጠል ተሳታፊዎቹ እራሳቸውን ያስተዋውቁናል

1. ለስኳር ህመም ዋነኛ ምክንያት ምን Ãመስለ- ተል?

2. ስንት ዓይነት የስኳር ህመም ያውቃሉ?

3. ዋና ዋና ¾ስኳር ህመም ምልክቶችን ይጥቀሱ?

4. የስኳር ህመም የሚድን ይመስለዎተል?

5.አንድ የስኳር ህመምተኛ ጤናማ ያኗኗር ዘይቤ ንዲከተል የማያስችሉትን/እንቅፋት የሚሆኑበትን ነገሮች ይጥቀሱ ?

6. በቁጥጥር ላይ ያልዋለ የስኳር ህመም ለምን አይነት የጤና ጠንቆች ይዳርገናል?

7. ¾ስኳር መጠን ከልክ በተች ሲሆን እንደዴት ይቆጣጠሩታል?

9. የስኳር ህመም መድኀኒት ¾ሚቆም Ãመስል- ል ?

10. ¾ስኳር ህመም ከመያዝዎ በፊት አስቀድመን ለመከላከል ከሚያስችሉን ቅድመ ሁኔዎችን ይወስዱ ነበር?እንዴት?ለምን?

11. የስኳር ህመሞን ለመቆጣጠተር የሚያስችል በቂ •ውቀት ያለዎት ይመስሎል? ¾ስኳር ህመሞን ለመቆጣጠተር የሚያስችል በቂ •ውቀት ከሌለዎት እንዳይኖረዎት ተጽኖ የሚያደርግብዎት ነገሮች ምን ይመስልዎ• ል? ለስኳር ህመምዎ ክትትል በሚያደርጉበት የጤና ተቋª ም በሚሰጥዎ አገልግሎት ደስተኛ ነዎት?

የመዝጊያ ጥያቄዎች

በመጨረሻ መጨመር የምትፈልጓቸው አስተያየቶች ጥያቄዎች ካሉ መናገር ትችላላችሁ?

ለተሳትፏችሁ እጅግ በጣም እናመሰግናለን ስለጥናቱ የምትጠይቁኝ ነገር ካለ መጠየቅ ትችላላችሁ

እናመሰግናለን