POOR DIETARY PRACTICE AND ASSOCIATED FACTORS AMONG TYPE 2 DIABETIC PATIENTS IN ARBA MINCH GENERAL HOSPITAL, SOUTHERN ETHIOPIA

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THESIS SUBMITTED TO JIMMA UNIVERSITY INSTITUTE OF HEALTH, FACULTY OF PUBLIC HEALTH, DEPARTMENT OF NUTRITION AND DIETETICS, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE MASTER DEGREE IN HUMAN NUTRITION

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Abstract

Background: Diabetic patient's dietary practice is critical to improve glycemic, lipid, and blood pressure control, thus contributing to reduced risk for potential long-term complications and to improve the quality of life for individuals with diabetes. However, A significant number of patients had poor dietary practice. In Ethiopia, more than half of diabetic patients were not practicing a healthy dietary approach. Therefore, this study was assessed variables such as food taboo, household food insecurity, fasting status, current medication, depression and anxiety, which were hardly addressed in previous studies.

Objective: The aim of this study was to assess the proportion poor dietary practice and associated factors among type 2 diabetes patients.

Methods: Facility-based cross-sectional study was done among type 2 diabetes patients in Arba Minch General Hospital from 21st April to 20th May 2020. A systematic sampling technique was used to select 352 patients. Dietary practice was assessed using Modified Morisky scale. The data were entered into Epi data version 3.1 and exported to SPSS version 21 for cleaning and analysis. Descriptive statistics was done to all variables. All variables in bivariable analysis with p-value <0.25 were entered into a multivariable logistic regression model and statistical significance was declared at a p-value less than 0.05.

Results: A total of 352 participants were included in the study with 100% response rate. The proportion of poor dietary practice was found to be 40.6% (95%CI: (35.76%, 46.0%)). In multivariable analysis after adjusting variables, not having formal education [AOR=3.0; 95%CI: (1.6, - 5.5)], primary education [AOR=2.2; 95%CI: (1.1, - 4.4), being moderately food insecure [AOR=5.3; 95%CI: (2.8, - 9.9)] ,depression [AOR=5.9; 95%CI: (3.0, – 11.4)] and having nutrition education[AOR=2.2; 95%CI:(1.1, – 4.6)] were significantly associated with dietary practice.

Conclusion: Substantial proportions of patients had poor dietary practice. Poor dietary practice was significantly higher on those with no formal education, secondary educated, food insecure, depressed patients, and having nutrition education. The results imply the need for strengthening health information dissemination concerning healthy dietary practice in the form of a package needs to be provided through already established community structures.

Keywords: poor dietary practice, type 2 DM, patients, Arba Minch, Ethiopia.

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List of Acronyms and Abbreviations

AOR- Adjusted Odds Ratio

BMI- Body Mass Index

BP – Blood pressure

COR- Crude Odds Ratio

CHF – Congestive Heart Failure

CVD- Cardiovascular Disease

DM – Diabetes mellitus

EB – Ethiopian Birr

FANTA - Food and Nutrition Technical Assistance

FBS- Fasting Blood Glucose

FFQ – Food frequency questionnaire

GPAQ - Global Physical Activity Questionnaire

HADS - Hospital Anxiety and Depression Scale

HDL – High-density lipoprotein

HFIAS - Household Food Insecurity Access Scale

IRB - Institutional Review Committee

JMC - Jimma Medical Center

KMO - Kaiser-Meyer Olkin

LDL – Low -density lipoprotein

LMICs – Low- and Middle-Income Countries

MMAS – Morisky Medication Adherence Scale

NCD – Non-communicable disease

NNP - National Nutrition Program

PCA – Principal component analysis

SD – Standard Deviation

SNNPR – Southern Nations and Nationalities Peoples Region

SPSS – Statistical Package for Social Science Software

SSA – Sub Saharan Africa

SSB - Sugar-sweetened beverages

USA – United States of America

WHO - World Health Organization

WC – Waist circumference

Introduction

1.1. Background

Diabetes mellitus is a metabolic disorder manifested by increased blood glucose level and caused by a complex interaction of genetics and environmental factors; these range from autoimmune demolition of the beta-cells of the pancreas. Long-lasting hyperglycemia is accompanied by disturbances of carbohydrate, fat and protein metabolism, and subsequent low insulin secretion, reduced glucose consumption, and a high amount of glucose production. Symptoms of noticeable hyperglycemia include the poly symptoms; polyuria, polydipsia, weight decrement, and increased appetite (1-3).

Diabetic patients usually experience acute, chronic, or both complications, acute complications of poorly managed diabetes are hyperglycemia with ketoacidosis, hyperglycemic hyperosmolar state, and hypoglycemia. The chronic complications are associated with long-standing impairment, malfunction, and failure of different organs, especially the eyes, kidneys, nerves, heart, and blood vessels. Diabetic patients are at high risk of cardiovascular, peripheral vascular and cerebrovascular disease (2-4).

Dietary shifts occur almost concurrently with demographic and epidemiologic shifts, motorized ways of life, and mechanization and together contribute to increased prevalence of nutrition-related non-communicable disease. Although, limited pieces of evidence on effective strategies to prevent the onset of poor nutritional status in LMICs (5-7).

Incidence of diabetes was increasing in most age groups with an importantly magnificent increase in mortality as well (8). Currently, fast-food restaurants in a nation were significantly associated with mortality and morbidities. Opening 10 new fast-food restaurants in a country would have an extra 748 CVD deaths, 567 stroke deaths and 390 new cases of type 2 DM over the next 10 years (9).

Nutrition is crucial in the prevention or delay and management of type 2 diabetes, even if on medications. Primary goals of nutrition therapy for diabetes are to improve glycemic, lipid, and blood pressure control, thus contributing to reduced risk for potential long-term complications of diabetes and heart disease, and to improve the quality of life for individuals with diabetes. A diet that is diverse in food groups is independently associated with lower type 2 diabetes risk. People

who reported consuming diversified diet had a 30% reduced incidence of type 2 diabetes. Low-calorie eating patterns, specifically higher intakes of nuts, berries, yogurt, coffee, and tea are associated with reduced diabetes risk. On the other hand, red meats and sugar-sweetened beverages are associated with a high risk of type 2 diabetes (10-14).

Developed nations were also experiencing poor dietary practices in charge of impaired glucose tolerance. A significant number of patients were consuming food reach in Saturated fat, total fat, and mono-unsaturated fatty acids. The health condition became worst on an individual with smoking, not physically active, and metabolically deranged DM patients (15).

Evidence strongly agrees that good dietary practices and dietary education on a healthy diabetes diet had a significant reduction almost by half of diabetes incidence within a single year intervention. This is true for developing countries regarding implementing chronic disease management against complications and maintaining recommended blood sugar level. It was shown that significant decrease in trends of mean FBG and HbA1c with good glycemic controls just in six-month periods of intervention (16, 17).

1.2. Statement of the problem

Globally, in 2019, half a billion people are estimated to be living with diabetes, representing 9.3% of the global adult population. This figure increase to 578 million (10.2%) in 2030 and 700 million (10.9%) in 2045 (18).DM causes about 7% of deaths among men and 8% among women aged 20–69. The percentage of premature deaths attributable to DM is higher in low- and middle-income countries than in high-income countries (14).

Mortality and morbidity associated with Non-Communicable Diseases (NCDs) has increased surprisingly in middle-income and low-income countries. In 2016, 78% of all NCD deaths, and 85% of premature adult NCD deaths, happened Low- and Middle-Income Countries (LMICs). Adults in low-and lower-middle-income countries tackled the highest risk of dying from an NCD (21% and 23% respectively) almost two times the rate for adults in high-income countries(19-21). This burden is more observed in the working-age (15-64 years of age) of the regions (22). In Africa, the prevalence of DM was increased from 3.1%(4 million) in 1980 to 7.1 % (25 million) in 2014 which was more than six times increment (23). With this trend, Africa is out of track in realizing the NCDs pointers by the set target (24). In Ethiopia NCD alone responsible for 39% of all deaths and DM was attributed to 2% of all deaths. Tobacco use, poor diet, harmful use of alcohol, and obesity were dominant risk factors (21).

In the contemporary world, the secondary burden due to non-communicable disease was steeply observed Diabetic complications such as retinopathy, nephropathy, metabolic syndrome, impotence, and depression were the main outcomes among diabetic patients and becoming acute headache in counties like Ethiopia. It is because of the increased duration of the diseases, lower socio-economic level, the existence of other complications, old age, attributed to the diabetic complications (10).

In addition to medical sequelae due to diabetes, the long-term economic implications were also straight forward and becoming a handicap in the country's development. Evidently, both the direct and indirect medical costs per individual diabetic patient increase with the number of microvascular and macrovascular complications. The problem became worse and complicated on subjects who had financial constraints as well as on poor countries' health sector (11). World economic imbalance among countries precipitated the increase in overall food market size among

low- and middle-income countries, but the level of food importation significantly shifts the content of markets such that a greater proportion in foods composed of sugar and related sweeteners to poor and healthy foods to the rich (12).

DM patients' dietary practice is the key to the management of Type 2 DM and the prevention of complications related to hyperglycemia (13, 25). However, the patient's dietary practice was poor and underemphasized in the DM management component (26). According to WHO, shifts in eating behavior towards diets containing energy-dense foods, high in fat and sugars due to the sedentary way of life of people made the DM management worse (21). Individuals on an unhealthy diet were strongly positively related with development of type 2 diabetes, they had 41% increased risk of developing type 2 diabetes compared to healthy diets (27).

There were extensive works that had been done by governments of low-income countries addressing the increasing prevalence of obesity and type-2 diabetes via various health strategies and policies. The second Ethiopian National Nutrition Program (NNP-II) was given a place for NCDs through numerous initiatives. However, the burden was still high (28, 29). In Sub Saharan Africa (SSA) DM patients hardly self-monitored their glucose levels and discreetly practicing to advised diet and also 33% to 87% of patients had a poor level of knowledge about diabetes-related complications (30). As a result, sugar-sweetened beverages (SSB) were highly consumed and contribute pointedly to total sugar and energy consumption in SSA (28).

In Ethiopia, DM is a major public health problem in the contemporary era. Concomitantly more than half of diabetic patients were not practicing the perceived healthy dietary approach, gathering with family and friends and eating out of home were the major reasons for not being in line with this.

Studies have revealed that attending diabetic nutrition education and having the disease for more than 10 years were major suggestive factors (31). Additionally, facing difficulty to choose foods, non- availability of fruits and vegetables, worrying about the high cost of foods were the factors significantly associated with the poor dietary practice (32).

It was agreed that dietary management had a central role in diabetic management, but little is known about the dietary practice and associated factors in Ethiopia in general and in the study area in particular in comparing to the rapid increase in the burden of type 2 DM and related

complications even death and also very crucial variables were not address in the past studies regarding their dietary practice. Therefore, this study was aimed to assessed variables such as food taboo, household food insecurity, fasting status, current medication, depression and anxiety, that were hardly addressed in previous studies done both in Ethiopia and study area particularly, concerning dietary practice among type two DM patients.

1.3. Significance of the study

Poor dietary practice usually related to elevated glucose levels, increased blood pressure, and impaired lipid abnormalities which are responsible for micro and macro-vascular complications of diabetes. Various personal and external factors influence dietary practice and these factors are not typically stable for all patients. Identification of those factors may strengthen the health care system and the physician to individualize dietary approaches toward improving diabetes management.

The result from this study will help in developing strategies for intervention targeting the identified factors which makes patients not healthy dietary practices thereby improving quality of life. It could also help in the counseling and advice for patients which will be a great help in reducing the progression of diabetes and related morbidity and mortality.

1.4. Dietary practice among type 2 diabetes

Dietary control had a very crucial role in the management of type 2 DM and related complications. Especially, diets with low glycemic index, minimal total cholesterol, LDL, and high HDL cholesterol had a significant effect against prevention and complication of type 2 DM patients. Diet therapy for adults having type 2 DM better be continuing process during the individual's full diabetes care plan. A huge number of type 2 diabetes are overweight or obese. As a result, 5–7% weight reduction from initial weight should be achieved by consuming a reduced energy intake combined with planned physical activity (4, 13, 33).

A cross-sectional study conducted on adult Hungarian type 2 diabetic patients, showed that 86.3% were not in line with the expected diet(34).A similar study done by a three-day dietary recall method in Nepal on 385 adult type 2 DM patients also showed that 87.5% were not practicing the healthy dietary advice (35).

A study done in Shifa International Hospital, Islamabad, Pakistan, s in 2017 among type 2 diabetics aimed to determine dietary practices. The finding revealed that, more than one-third (36.1%) of the patients were practicing strictly to the recommended dietary plan (36).

A study conducted in South Asia among 1849 diabetic patients aimed to identify patient's practice towards their diet by using Supplemental Online Material developed to assess patients' diet revealed that, more than half (53%) of DM patients were not following a diabetic diet (37).

An observational study conducted in both Military Hospital belonging to the Ministry of Defense Adhadhe and Al-Amal Hospital, a private hospital in Hodeidah City port on the Red Sea of Yemen showed that from 210 type 2 DM patients the proportion of patients not following the recommended diet were 32.4% (38).

A study finding from Botswana among 105 type 2 diabetes mellitus patients who were attending Extension II Clinic for DM showed, the proportion of patients who were not following the recommended diet for diabetic patients were more than one third (37%) (39).

Similarly, a finding aimed to assess the practices of non-medical management of diabetes mellitus on type 2 diabetes patients who were attending the diabetic clinic of the University of Benin

Teaching Hospital, Benin City, Nigeria depicted that from 216 type 2 DM patients 24% were not practicing their diet based on the planned diet regimen (40).

A study done on Dietary Adherence Pattern in the Situation of type 2 diabetic management under Clinical Situation Jaramogi Oginga Odinga Teaching and Referral Hospital Kenya, showed that among 240 diabetics age of 35 years and above, 26.1% hadn't adhered to their diabetic diet as per the recommendation of the health providers (41).

According to hospital-based study conducted in Addis Ababa on dietary practice and associated factors among type 2 diabetic patients by using an eight-item Morisky medication scale (MMAS-8) of 11 items showed that from 403 type 2 DM patients the level of poor dietary practice was 51.4% (32).

A study done in Felege Hiwot Referral Hospital, Bahir Dar City on Type 2 DM patients who had follow-up visit in the diabetes referral clinic by using modified Morisky scales of fourteen items indicated that from 401 type 2 DM patients about 64.1% had poor dietary practice (42). A similar study conducted in Jimma Medical Center (JMC), Jimma, showed that the proportion of type 2 DM patients who did not adhere to their diet were 36% (43).

2.2. Factors Associated with Dietary Practices of Diabetes Patients

2.2.1. Socio-demographic and Socio-economic factors

An analytical cross-sectional study conducted in a teaching hospital, Koholpur, Banke, Nepal among type 2 diabetic patients using a three-day dietary recall method showed that males follow their advised diabetic diet than females. But a community-based cross-sectional study conducted in Florianopolis, Santa Catarina, Brazil showed that women's had better dietary practices than men (35, 44).

An observational study conducted in US on adult Type 2 diabetes patients showed that food security status had shown a statistically significant association with diet adherence. Those food-insecure patients had 10% less likely to adhere to their diet as compared to the secured ones (45).

A finding from Hodeidah city, west of Sana'a, capital of Yemen showed that residency status had a statistically significant association with that of patient's dietary Practice. Good dietary practice

was significantly higher among urban residents than rural residents. Similarly, patient's employee status had been significantly associated (38).

A cross-sectional study done on 153 type 2 DM patients in Kiambu County, Kenya indicated that monthly income had been associated with the dietary practice of type 2 DM patients. Odds of good dietary practice on those having monthly income of above 40,000 Shilling(12700EB) had six times more than those lower than 20,000shilling (6350EB, $244). In the same study patient's occupation had shown a strong association with dietary practice. The odds of good dietary practice among self-employed were two times more than those unemployed patients (46).

A study conducted in Jimma Medical Center (JMC), Jimma, Ethiopia showed that age had a significant association with patients' dietary habit. Patients with an age greater than 60 were six times more likely to have poor dietary practice compared to those who attended less than age of fewer than 40 years (43).

A study done in Southern India showed that Poor family support had a significant association with low type 2 diabetes medication compliance (47). Similarly, findings from Bahir Dar and Southwest Ethiopia showed that those patients who had family support were 2 and 2.4 times high good dietary practice compared to no family support respectively (42, 43).

An observational study conducted in Felege Hiwot Referral Hospital, Bahir Dar City, North-west Ethiopia, by using modified Morisky with fourteen item scales showed that patients educational status had a significant association with their dietary practice. Patients who attended secondary education and above were two times more likely to have good dietary practice compared to those who attended less than secondary education (42). Similarly, in Kenya, patients who had tertiary education were five times more likely to attain good dietary practice than those who had no formal education (46).

2.2.2. Health and treatment-related conditions

A facility-based study conducted in Poland indicated that type of medication had shown an association with patients' dietary practice. Patients preserved on a combination of diet and oral hypoglycemic agents and those on a combination of diet and insulin showed positive association adherence to dietary recommendations then dietary treatment alone (48).

A study done in Yemen showed that duration of the disease in years had an association with the practice of the recommended diet. The odds of good dietary practice among patients who had the disease for less than and equal to five years were two times high than those with greater than five years (38).

But, a study from Ethiopia showed that patients who had the disease for more than 10 years were statistically significant association with three times more adhered to diet compared to those who had less than ten years (31). Similarly, a study done in Northern Nigeria showed that there was an association observed among patient's adherence to diet and patient's increased diabetes duration (40).

2.2.3. Dietary related factors

A study done in Karnataka Institute of Diabetology, India on 677 type 2 DM patients aiming to assess dietary practice showed that skipping meals had a significant association with patients' dietary practice. Skipping meals before and after developing diabetes had an association with dietary practice (49).

A finding from Nepal among 385 type 2 diabetic patients showed that knowledge about diabetes mellitus had a significant association with patients' dietary practice. Knowledge about diabetes mellitus had positively correlated with poor dietary practice (35). Similarly, a study done by Demilew showed that patient's awareness on diabetes had a significant association with dietary practice, patients who had awareness on diabetes diet were three times more likely to have good dietary practice compared to those who had no awareness (42)**.**

A finding from Kikuyu Mission Hospital in Kiambu County, Kenya, among 153 type 2 diabetic patients revealed that dietary knowledge had a statistically significant association with patients' dietary practice. Patients who had moderate dietary knowledge were two times more likely to have good dietary practice compared to those who low dietary knowledge (46). Similarly, a study done Botswana showed that lack of information about diet and eating out of home had a significant association with poor practice to the recommended diabetic diet (39). Additionally, getting nutrition education at hospital on diabetes diet had also a significant association with good dietary practice, and also not getting nutrition education in hospitals had a significant association with poor dietary practice (32, 42)**.**

An observational study conducted in Addis Ababa on 403 type 2 diabetes showed that lack of fruits and vegetables, thinking about the high fee of foods and despondency were the factors statistically significantly associated with the poor dietary practice. Those who had lack of fruits and vegetables were three times higher in poor dietary practice than their counterpart. Similarly, patients who thought about the high cost of food were two times higher in poor dietary practice than those don't thought about the cost (32).

2.2.4. Mental and behavioral related factors

A finding from Republic of Korea showed that type 2 diabetes patient's depression status had a significant association with patients' dietary practice. Those patients with depression had 11% more likely to practice poor diet as compared to no depressed one's (51). Additionally, a study done in Ghana and Saudi Arabia showed that distressed patients less likely to adhere to their medications (52, 53). But an institution based cross-sectional study done in Bangladesh Institute of Health Sciences Hospital showed that patients Anxiety/depression status had a no significant association with patients' dietary practice (54).

A study conducted in Jimma Medical Center (JMC), Jimma, Ethiopia showed that Khat chewing had a significant association with patients' dietary habits. Patients who chew Khat were eight times more likely to have poor dietary habit compared to those who did not chew Khat (43). Similarly, evidence generated from Iran indicated that smoking had shown a significant association with patients' dietary habit. Patients smoking status had a direct relationship with poor dietary habits (50).

2.3. Conceptual Framework

Dietary practice among diabetic patients was associated with many factors. Factors that were assessed in this study include socio-demographic/economic factors including gender, age, residency, occupation, wealth index, educational status, household food insecurity, and family Support. Dietary practice-related factors include eating out of home, availability of fruits, worry about high cost of foods**,** difficulty of food selection and fasting**.** Health and treatment-related factors include disease duration**,** knowledge about diabetes**,** current medication, despondency and nutrition education. Mental and behavioral related factors include food taboo, depression, anxiety and Substance use.

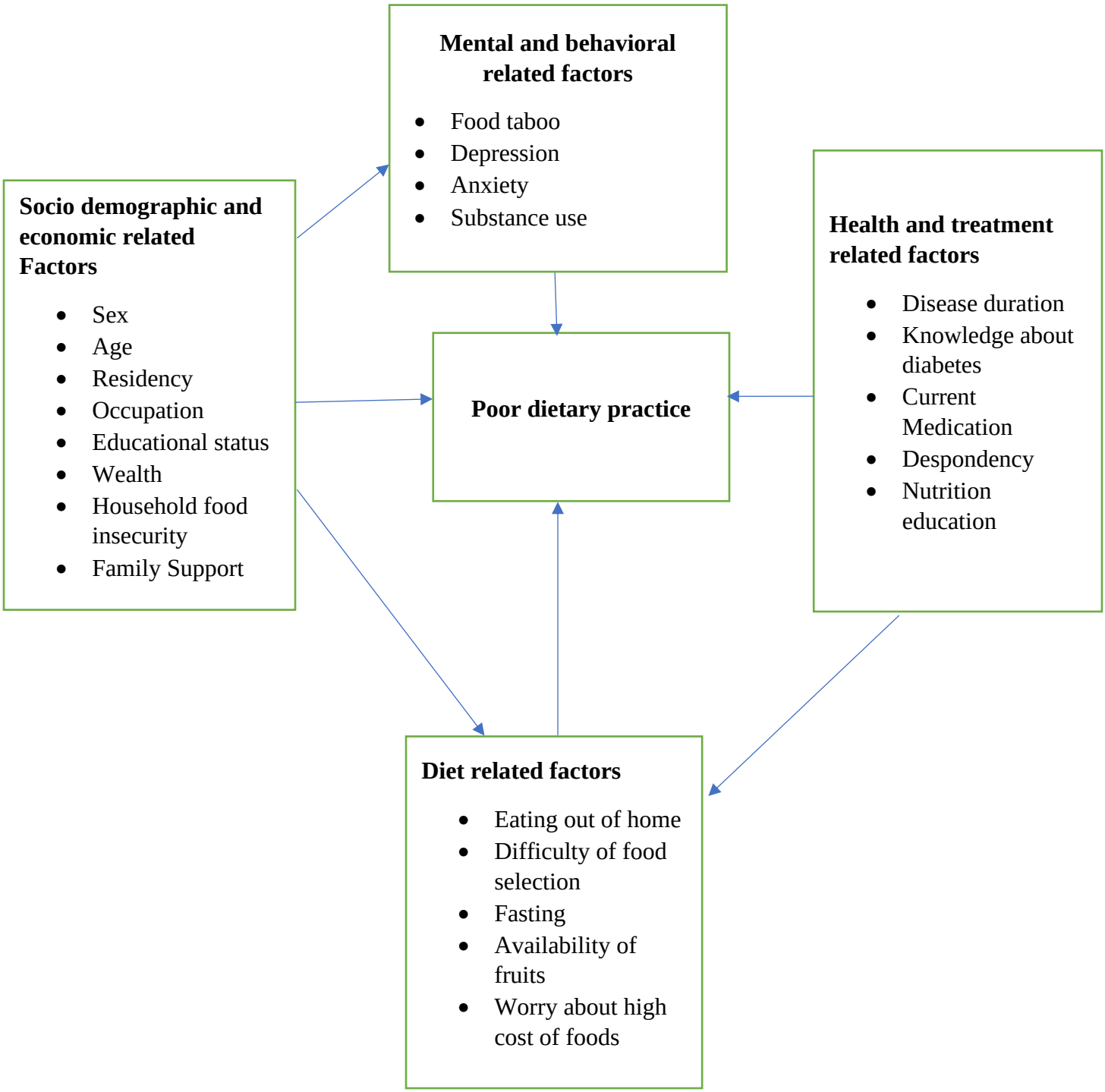

Figure 1 Conceptual framework of factors affecting poor dietary practice among type two diabetes patients.

Source: developed after reviewing literatures (31, 32, 35, 39, 40, 42, 44, 46, 49)

Objectives

3.1 General objective: -

- To assess poor dietary practice and associated factors among Type 2 DM patients in Arba Minch General Hospital, Southern Ethiopia.

3.2. Specific objectives: -

- To determine the proportion of poor dietary practice among Type 2 DM patients.
- To identify factors associated with poor dietary practice among Type 2 DM patients .

Methods and Materials

1.5. Study area and period

The study was conducted from 21st April to 20th May 2020 in Arba Minch General Hospital. Arba Minch is the capital town of Gamo zone. Arba Minch is located 505kms far to the south of Addis Ababa and 280 Km from Hawassa, center of Southern Nation's Nationality and People Regional State (SNNPR). The town is one of the low lands in the SNNPR having a hot climate with an average temperature of 29^0c and annual mean rainfall of 900mm. The town has 2 subdivisions; Secha and Sikela, 5kms apart, and the town has a total estimated population of 128,721, has one general hospital & two health centers operating currently (55). The area is well known for its fruit production such as Banana, Mango, Apple, Avocado, Orange, Papaya, and vegetables like Moringa, Cabbage, and Carrot. Additionally, the area is also familiar in production and consumption of Fish (56-58).

Arba Minch General Hospital is the only general hospital in the zone and also gives service for most parts in the southern part of SNNPR from Arba Minch up to the border of Kenya. The hospital is also a teaching hospital for Arba Minch University health and medical science students. It has 10 specialists, 26 general practitioners, 15 health officers, 100 nurses, 6 pharmacists, 7 druggists, 10 laboratory technologists, 10 laboratory technicians, and 2 environmental health professionals. There were about 2000 registered diabetes patients receiving diabetes follow-up care at the hospital. The diabetic clinics provide services on average for 50 patients per day i.e.1000 patients per month the clinic provides diabetic services at one OPD for all working days of a week. The service is delivered by one senior, two general practitioners and nurses (55).

4.2. Study design

Facility-based cross-sectional study was employed

4.3. Population

4.3.1. Source population: -

All adults diagnosed with type 2 diabetes mellitus that were on regular follow up at Arba Minch General Hospital, Diabetic follow up Clinic.

4.3.2. Study population

Those randomly selected adult type 2 DM patients who had regular follow up and fulfilled the inclusion criteria.

4.4. Inclusion and Exclusion criteria:

4.4.1.Inclusion criteria

All adult type two diabetes patients who had follow up for at least six months at Arbaminch General Hospital.

4.4.2.Exclusion criteria

Pregnant mothers and mentally ill patients who were unable to respond were excluded from the study.

4.5. Sample size determination and sampling technique

4.5.1.Sample size calculation

For the first objective (outcome): -

The sample size was determined using a single population proportion formula. The assumptions considered in determination of the sample size were: -

- ✓ P= 51.4 %, the proportion of poor dietary practice taken from a study done in Addis Ababa on type 2 diabetic patients (32).
- ✓ 95% confidence level--1.96
- ✓ d= margin of error ---5%
- ✓ Based on this assumption, the calculated sample size was **383.85 ≈ 384**, Since the source population was less than 10,000, using correction formula ($\frac{n_o}{1+\frac{n_o}{N}}$) and by considering 10% non-response rate, n = **352**

For the second objective (factors): -

The sample size for the second objective was calculated using Epi –info software version 7. (Table1).

Table 1: Sample size for Objective two of dietary practice among type 2 diabetes patients in Arba Minch General Hospital 2020

Variables	P1 (proportion of outcome among unexposed)	P2 (proportion of outcome among exposed)	Confidence interval	Power	Calculated sample size (Epi info)	Reference
Despondency	42.3%	66.6%	95%	80%	146	(32)
Non- Availability of fruits and vegetables	30.4%	46.1%	95%	80%	324	(32)
Have family support	70.6%	48.7%	95%	80%	174	(42)
Think of high cost of foods	56.3%	34.8%	95%	80%	186	(32)

Finally, after comparing both objectives, and using population correction formula and 10% non-response, the final required sample size for the research was **352**.

4.5.2. Sampling procedure:

A systematic random sampling technique was used. The diabetic clinics provide services on average for 50 patients per day (1000 per month). The sampling interval was calculated by dividing the expected number of diabetic patients average per month (1000) by the sample size because of one month the data collection period, and the interval was 2 (1000/352=2.84). Thus, every other patient coming to the clinics for follow-up services was interviewed until the total sample size fulfilled. The first respondent was selected by lottery method.

4.6. Data collection tool and procedure

4.6.1. Data collection tools

The data were collected by interviewer-administered a semi-structured pretested questionnaire. The questionnaire had different parts. The first part of the questionnaire contains socio-demographic and socio-economic questions including household wealth index (59).

The second part of the questionnaire contains health and treatment -related information, including fasting blood sugar and anthropometry. The third part contains questions to assess social support adopted from the modified Social Support Questionnaire-Family Version (42, 60, 61). The fourth part assesses dietary practice by using the modified form of Morisky medication adherence scale (MMAS-8). poor dietary practice was assessed using the modified form of the nineteen item scales from different literatures (32, 42, 62). The fifth part contains questions that assess dietary related questions including patient's fasting status (63, 64). Part six contains questions about diabetes knowledge adapted from literature (65). Part seven contains questions about household food insecurity and measured using the FANTA tool (HFIAS) developed by FANTA Project through the Academy for Educational Development(66). The respondents were asked an occurrence question – that was, whether the condition in the question happened at all in the past four weeks (yes or no). For respondents answered “yes” to an occurrence question, a frequency-of occurrence question was asked to determine whether the condition happened rarely (once or twice), sometimes (three to ten times) or often (more than ten times) in the past four weeks.

Part eight was about Mental and behavioral related questions and adapted and modified from different literatures, it includes food taboo (67, 68), depression and anxiety were assessed by using Hospital Anxiety and Depression Scale (HADS), the items rated on a four-point scale range from 0 to 3 (69, 70). Finally, part nine was about substance use which was taken and modified from the WHO STEPS instrument (71).

4.6.2. Data Collection Procedure

Anthropometric measurements were taken using standardized techniques and calibrated equipment. Height was measured using a stadiometer at the Frankfurt plane; participants stood in an erect posture with their shoulder level hand at their side, thighs and hells comfortable together,

buttocks, scapula, and head positioned in contact with vertical stand of stadiometer respondents took off their shoes and the result was recorded to the nearest 0.1 cm (72).

Weight was measured three times by digital scale (Seca Germany), to the nearest 0.1 kg in light indoor clothing with bare feet. The scale was calibrated to zero before and after each measurement. Body Mass Index (BMI) will be calculated as (BMI; body weight (kg)/body height (m2).

Waist circumference (WC) was measured midway between the inferior angle of the 10th ribs and the iliac crest at the end of normal expiration to the nearest 1 cm using a non-stretchable rubber measuring tape, participants in an upright position, with arms relaxed at the side, feet evenly spread apart (72, 73).

Blood pressure was measured by standard adult arm cuff of mercury type sphygmomanometer at sitting position. The measurements had a gap of five minutes, recorded and the average of the BP records was taken for analysis (71, 74).

4.7. Study Variables

4.7.1. Dependent variable: -

poor dietary practice

4.7.2. Independent variables: -

- ✓ **Socio-demographic and Economic variables**: - Sex, Age, Residency, Occupation, wealth, educational status, household food insecurity, and family support.
- ✓ **Diet-related Variables**: eating out of home, difficulty of food selection, fasting, availability of fruits and worry about high cost of foods.
- ✓ **Health and treatment-related variables: -** Disease duration, diabetes knowledge, current medication, despondency, nutrition education.
- ✓ **Mental and behavioral related variables**: - food taboo, depression, anxiety, and substance use.

4.8. Operational and standard definition

Good dietary practice: - For those who scored the mean and above from dietary practice items (32).

Poor dietary practice: - For those who scored below the mean score from dietary practice items (32).

Adequate glycemic control for DM: FBS measurement 70mg/dL - 126 mg/dL. **Inadequate glycemic control for DM**: FBS measurement ≥126 mg/dL.

Nutritional Status: - Categorized into 4 groups: Chronic energy deficiency (CED)with BMI <18.50 kg/m2, Normal if BMI 18.50 - 24.99 kg/m2, overweight 25 – 29.99 kg/m2, obese>=30 kg/m2 (75).

Abdominal obesity: - Waist circumference of > 102 cm for male and > 88 cm for female (72, 75).

High blood pressure: - For diabetes systolic blood pressure greater than 130 and diastolic blood pressure greater than 85 (76, 77).

Normal blood pressure: - For diabetes systolic blood pressure less than and equals 130 and diastolic blood pressure less than and equals 85 (76, 77).

Despondency: Patients feeling of hopelessness.

Wealth index; scores given to households based on the number and kinds of consumer goods and addition to housing characteristics. These scores were derived using principal component analysis and classified into low, middle, and high wealth index (59).

Diabetic knowledge: Patients who answered knowledge assessment questions below the average labeled as poor and those scored average and above were good knowledge (78, 79).

Food taboo: - diabetes patients' abstinence from the food and/or beverage consumption due to religious and cultural reasons (67, 80).

Alcohol consumer: participants who consume at least one unit using local conventional measures at least once per week.

Khat chewers: participants who had been chewing khat for 6 days in a month (59).

Cigarette smoker's: participants who had been smoking a cigarette for more than 6 months and smoke a minimum of one packet of cigarette per week.

Food secure: household experiences none of the food insecurity (access) conditions, or just experiences worry, but rarely (66).

Mildly food insecure: household worries about not having enough food sometimes or often, and/or was unable to eat preferred foods, and/or eats a more monotonous diet than desired and/or some foods considered undesirable, but only rarely. But it does not cut back on quantity nor experience any of three most severe conditions (running out of food, going to bed hungry, or going a whole day and night without eating) (66).

Moderately food insecure: household sacrifices quality more frequently, by eating a monotonous diet or undesirable foods sometimes or often, and/or has started to cut back on quantity by reducing the size of meals or number of meals, rarely or sometimes. But it does not experience any of the three most severe conditions (66).

Severely food insecure: household has graduated to cutting back on meal size or number of meals often, and/or experiences any of the three most severe conditions (running out of food, going to bed hungry, or going a whole day and night without eating), even as infrequently as rarely(66).

Anxiety: those patients with HADS score of 8 and above for anxiety were considered as having anxiety (81).

Depression: those patients with HADS score of 8 and above for depression were considered as having depression (81).

Family support: support for the patients from the family and relatives. who score above the mean score had family support (Yes) and below the mean score had no support (No) (42).

Fasting: Willful refrainment from eating for a period of time usually due to religious reasons.

Adult: A patient with age of greater than or equals 18 years old (32).

4.9. Data Processing and analysis procedures

The data were entered into Epi data manager version 3.1 then exported to SPSS window version 21 for data cleaning and analysis. Descriptive statistics including frequency, percentages, and summary measure (mean values, and standard deviations) was done. Chi-square assumption was checked for variables for Binary logistic regression model. Bivariable logistics regression was done to select candidate variables. All variables that had p-value <0.25 in bivariable analysis were entered into the multivariable logistic regression model to assess the association between dependent and independent variables. Odds Ratio along with 95%CI estimate were used to measure strength of the association.

Principal Component Analyses (PCA) was done for the household wealth index from 34 items and assumptions of PCA were checked and fulfilled, sample size adequacy (352), ratio of cases to variables(10:1), correlation matrix(28 correlations of greater than 0.30), anti-image (all variables with greater than 0.50), KMO(0.74), Bartlett test of sphericity($p<0.001$), communality (all variables had scored > 0.5) and complex structure (No variable with correlations of 0.40 or higher for more than one component) and the factor score was taken and ranked into tertials. Dietary practice status score was computed by taking the mean score of 19 questions and labeled as good and poor dietary practice for above and below the mean value respectively. Family support was calculated as, the scores of 12 items under family support were summed up then mean was calculated, to come up with a single scoring for every respondent and labeled as yes and no for presence and absence of family support respectively based on the mean value. Patients Diabetes knowledge was calculated similarly by taking the mean values of 24 questions and labeled as good and poor knowledge for above and below the mean value respectively.

Food security status was computed by using the HFIAS occurrence and frequency questions and Insecurity Access Scale Score was analyzed based on the HFIAS criteria and categorized into food secured, mildly food insecure, moderate food insecure, and sever food insecure (66).

Anxiety was computed by taking the mean score of seven questions and labeled as yes and no for presence and absence of anxiety for above and below the median score respectively. Depression was computed by taking the mean score of seven questions and labeled as yes and no for presence and absence of depression for above and below the median score respectively.

Multi-collinearity was checked by Variance Inflation Factors and maximum VIF was 2.04 and model goodness-of-fit by Hosmer-Lemeshow with p-value = 0. 94. A multivariable logistic regression model was used for factors associated with dietary practice and statistical significance was defined at a p-value of less than 0.05.

4.10. Data quality control

Data quality was assured by proper designing of the questionnaire. The tool was prepared in English and translated to Amharic and back-translated to English to see its consistency. The questionnaire was pretested on 5% of the sample size in the nearby hospital, Chencha hospital.

Cronbach's alpha was checked for wealth index and dietary practice with value of 0.85 and 0.74, respectively. Two BSc nurse data collectors and a Health officer supervisor were recruited and trained for one day on how to conduct the data collection and supervision, respectively, and for experienced data collector's priority was given. After completion of the data collection, each questionnaire was checked for completeness and consistency on a daily basis. Anthropometric measurements were standardized by giving training for data collectors and instruments was calibrated each day. EPI data version 3.1 was used to improve data quality.

4.11. Ethical Consideration: -

Before the study begins ethical clearance was obtained from the institutional review committee of Jimma University with reference number of IRB 00060/2020. Official permission was secured from Arba Minch General Hospital. Participants were provided verbal consent before the interviews. Confidentiality were ensured throughout the process of the study. The study participants were informed that refusal to consent or withdrawal from the study does not alter or put at risk their access to care.

4.12. Dissemination plan

The findings of the study will be presented to Jimma University department of Nutrition and Dietetics staff and will be submitted to the Department of Nutrition and Dietetics. It will also be sent SNNPR bureau, Gamo zone health department, Arba Minch General Hospital, and Ethiopian Diabetic Association.

Finally, the finding will be presented at different seminars and training organized by the Ministry of Health, partners, professional associations and regional health bureau. Efforts will also be made to publish in a reputable peer-reviewed journal.

5. Result

5.1. Socio-demographic characteristics

A total of 352 participants were included in the study with 100% response rate. More than half of the respondents, 197 (56.0%) were male. The mean age of the respondents was 51.3 (+ 11.8) year. More than two-thirds of the respondents (72.4%) were married and nearly half (49.1%) of participants were Secondary and above educational status. About one third (33.2%) of participants were government employed and found in the lowest wealth category. Regarding family support two hundred forty-one (68.5%) respondents had not had family support (Table 2)

Table 2: Socio-demographic characteristics of diabetic patients attending follow-up at Arba Minch General Hospital, South Ethiopia, 2020. (n=352)

Variables	Categories	Frequency(n=352)	Percent
Age	<40	75	21.3
	40-60	211	59.9
	>60	66	18.8
Sex	Male	197	56.0
	Female	155	44.0
Ethnicity	Gamo	173	49.2
	Amhara	68	19.3
	Gofa	55	15.6
	Wolaita	35	9.9
	Others*	21	6.0
Residence	Urban	287	81.5
	Rural	65	18.5
Marital status	Single	26	7.4
	Married	255	72.4
	Widowed	33	9.4
	Divorced	38	10.8
Educational status	No formal education	106	30.1
	Primary education	73	20.7
	Secondary and above	173	49.1
Occupation	Unemployed	133	37.8
	Government employed	117	33.2

	Private employed	102	29.0
Household wealth	Low	117	33.3
	Middle	118	33.5
	High	117	33.2
Family support	Yes	111	31.5
	No	241	68.5

*Other: - Oromo, Tigre, Konso

Among respondents reside in households with moderate food insecurity, more than half (57.7%) were practicing poor diet. (Figure 2)

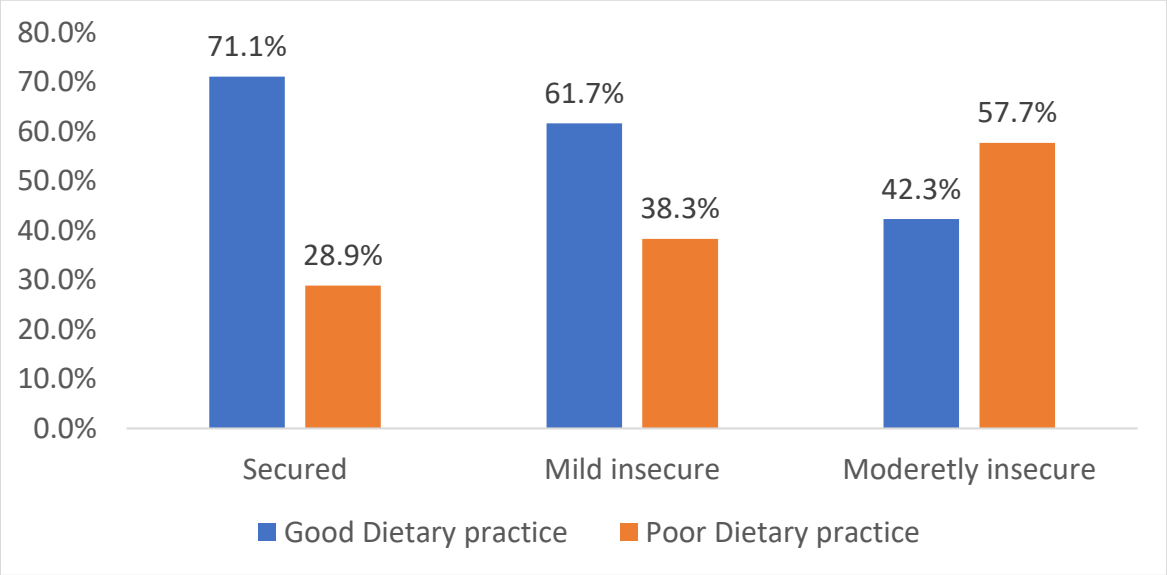

Figure 2: Household food security status by dietary practice of diabetic patients attending follow-up at Arba Minch General Hospital, South Ethiopia, 2020. (n=352)

5.2. Health and treatment-related characteristics of type 2 DM patients

More than half of respondents (54.8%), diagnosed with the disease less or equal to 5 years back. 39.2% of the respondents had comorbidity among those hypertension and CHF accounts 126(91.3%) and 9(6.5%), respectively. Regarding the medication regimen, more than two-thirds (69.3%) of the respondents were on oral medication and 27(7.7%) were on both oral and Insulin injection. One hundred fifty-four (43.8%) respondents had a family history of diabetes. Nearly two-thirds (64.8%) of the respondents attended diabetes education regularly. Most of the

respondents (88.6%) received nutrition education related to diabetes and 21.8%, 65.1% and 22.1% received education from doctors, nurses, and radio/TV programs, respectively. The mean BMI was 26.6 (+4.5) and also 34.9%, 38.1%, and 23.9% of the respondents were normal, overweight, and obese, respectively. Likewise, 71.3 % were abdominally obese

More than half (51.7%) of the respondents were members of the Ethiopian Diabetes Association. Most (82.1%) of the respondents had inadequate glycemic control (Table 3)

Table 3 Health and treatment-related characteristics of diabetic patients attending follow-up at Arba Minch General Hospital, South Ethiopia, 2020.(n=352)

Variables	**Categories**		**Frequency(n=352)**	**Percent**
Duration of DM	<=5 year		193	54.8
	> 5 year		159	45.2
Comorbidity	Yes		138	39.2
	No		214	60.8
Type of Comorbidity (n=138)	HTN		126	92.0
	CHF		7	5.1
	Others*****		4	2.9
Current Medication	Insulin injection		74	21.0
	Oral medication		244	69.3
	both		27	7.7
	Diet alone		7	2.0
Family history of diabetes	Yes		154	43.8
	No		198	56.2
Attended a diabetic education regularly	Yes		228	64.8
	No		124	35.2
Got nutrition education	Yes		312	88.6
	No		40	11.4
Source of nutrition education (n=312)	Doctor	Yes	68	21.8
		No	244	78.2
	Nurse	Yes	203	65.1
		No	109	34.9
	Radio/TV	Yes	69	22.1
		No	243	77.9

	Other**	44	14.1
Despondency	Yes	184	52.3
	No	168	47.7
Member of Ethiopian diabetic association	Yes	182	51.7
	No	170	48.3
Body mass index	Chronic energy deficiency	11	3.1
	Normal	123	34.9
	Overweight	134	38.1
	Obese	84	23.9
Waist circumference (Abdominal obesity)	Normal	101	28.7
	Obese	251	71.3
FBS	Adequate glycemic control	63	17.9
	Inadequate glycemic control	289	82.1
Blood pressure	Normal	179	50.9
	High	173	49.1

*****Other: - Asthma, CKD, ******Other: - Friend, Patients, Newspapers

5.3. Mental and behavioral related characteristics of type 2 DM patients

According to the present study, there was no diabetes related food taboo among the respondents. Seventy-eight (22.2%) respondents had experienced anxiety. Among the respondents who had experienced depression in the past week, more than half (54.7%) had poor dietary practice (Figure 3).

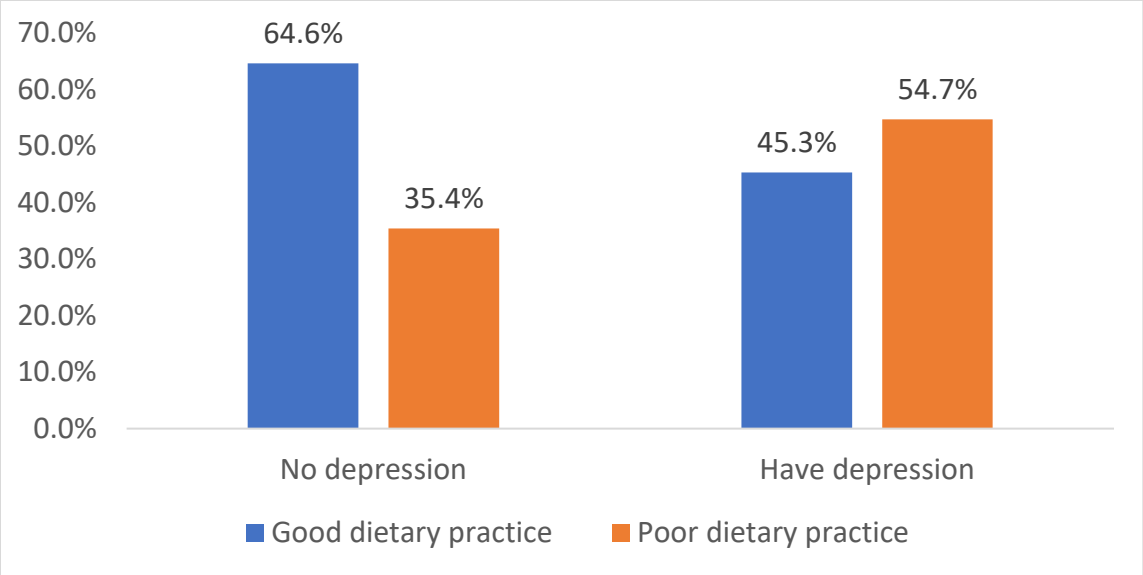

Figure 3: Depression status by dietary practice of diabetic patients attending follow-up at Arba Minch General Hospital, South Ethiopia, 2020

Regarding alcohol consumption forty-four (12.5%) respondents used to drink alcohol, and eight (2.3%) of the respondents were smoker. Similarly, 2.3% of the respondents reported that they chewed khat (Table 4)

Table 4: Substance using status of diabetic patients attending follow-up at Arba Minch General Hospital, South Ethiopia, 2020 (n=352).

Variables	**Categories**	**Frequency(n=352)**	**Percent**
Ever drunk Alcohol	Yes	44	12.5
	No	308	87.5
Currently Alcohol drinking	Yes	32	72.7
(n= 352)	No	12	27.3
Ever smoked cigarette	Yes	8	2.3
	No	344	97.7
Currently Smoking cigarette	Yes	3	37.5
(n= 352)	No	5	62.5
Ever chewed khat	Yes	8	2.3
	No	344	97.7
Currently chewing khat	Yes	4	50.0
(n= 352)	No	4	50.0

5.4. Dietary practice and other related characteristics of type 2 DM patients

Among the respondent's majority (82.4%) did not consume food outside their home. Two hundred ninety-five (83.8%) respondents answered that vegetables were available in their area among those the commonest one was cabbage (64.1%). Similarly, two hundred ninety-one (82.7%) of respondents replied that fruits were available in their area, and among those, the commonest one was banana (62.9%).

From the respondents, fifty (14.2%) respondents had faced difficulty to choose foods. More than one third (34.1%) of the respondents had fasting history before the diagnosis of diabetes and seventy-two (20.5%) respondents had fasted after the diagnosis of diabetes. More than half (57.7%) of the respondents had poor knowledge about diabetes (Table 5).

Table 5: Dietary related characteristics of diabetic patients attending follow-up at Arba Minch General Hospital, South Ethiopia, 2020 (n=352).

Variables	**Categories**	**Frequency(n=352)**	**Percent**
Eating out of home	Yes	62	17.6
	No	290	82.4
Availability of vegetables	Yes	295	83.8
	No	57	16.2
Commonest vegetables **Not mutually Exclusive) (n=295)**	Cabbage	189	64.1
	Moringa	124	42.0
Availability of fruits	Yes	291	82.7
	No	61	17.3
Commonest fruits? **(Not mutually Exclusive) (n=291)**	Banana	183	62.9
	Mango	78	26.8
	Lemon	52	17.9
	Avocado	9	3.1
Faced difficulty in choosing food?	Yes	50	14.2
	No	302	85.8
Worry about high cost of foods	Yes	188	53.4
	No	164	46.6
Consume Moringa	Yes	281	79.8
	No	71	20.2

Consume Fish	Yes	61	17.3
	No	291	82.7
History of fasting before DM	Yes	120	34.1
	No	232	65.9
History of fasting after DM	Yes	72	20.5
	No	280	79.5
Diabetic Knowledge	Good	203	57.7
	Poor	149	42.3

The present study indicated that two hundred nine [40.6%, 95%CI (35.76%, 46.0%)] of respondents had poor dietary practice. Among those with poor dietary practice sixty-six (46.2%) were females (Figure 5)

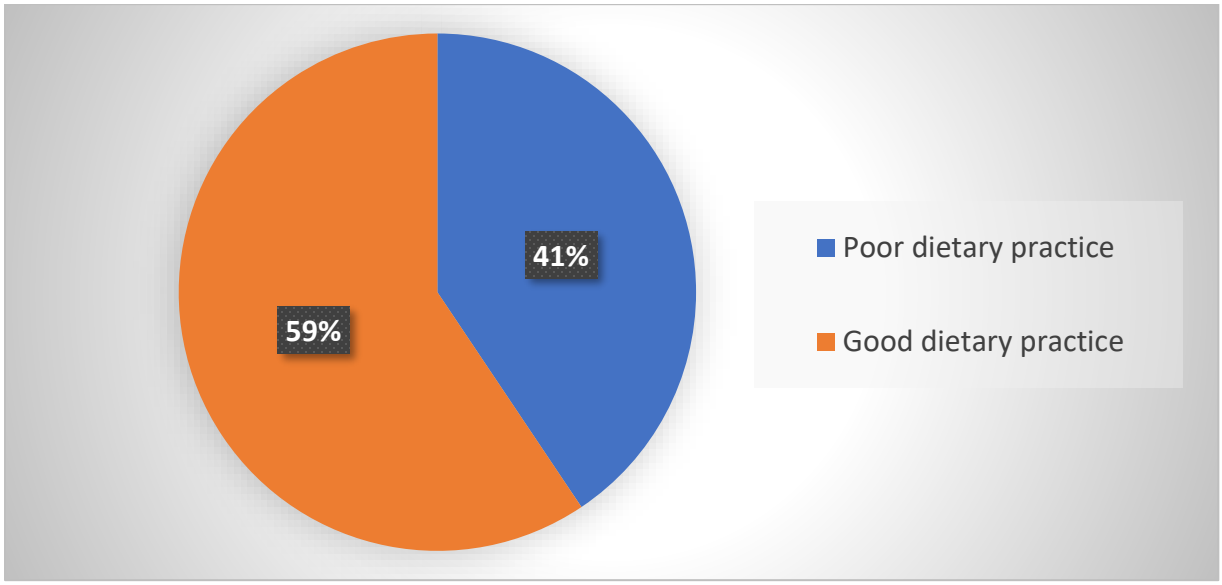

Figure 4: Dietary practice of diabetic patients attending follow-up at Arba Minch General Hospital, South Ethiopia, 2020 (n=352).

5.5 Factors associated with dietary practice of Type 2 diabetes patients

Bivariable and multivariable logistic regression analysis was done to identify factors associated with dietary practice of type 2 diabetes patients. On the bivariate analysis, educational status, residence, household food security status, duration of DM, diabetes knowledge, despondency, depression, and nutrition education, showed a p-value of <0.25 and became a candidate for multivariable analysis (Table 7).

Except two variables, all other variables had fulfilled chi-square assumption. Smoking and Khat chewing had violated the assumption, so fisher's exact test was done and showed no association with dietary practice with p – value of 0.9, 0.14 and 0.67 respectively.

On multivariable analysis, by taking other variables constant, respondents with no formal education and primary education were 3.0 and 2.2 times more likely to have poor dietary practice as compared to secondary educated and above [AOR=3.0; 95%CI (1.6 – 5.5)] and [AOR=2.2; 95%CI (1.1 – 4.4)] respectively.

Participants from moderately food insecure households were 5.3 times more likely to have poor dietary practice as compared to food secure ones [AOR=5.3; 95%CI: (2.8, – 9.9)]. Those with depression were 5.9 times more likely to have poor dietary practice than not depressed ones [AOR=5.9; 95%CI: (3.0, – 11.4)]. Patients who did not got nutrition education were 2.2 times more likely to have poor dietary practice compared to those who did not get nutrition education [AOR=2.2; 95%CI: (1.1, – 4.6)] (Table 6)

Table 6: Multivariable logistic regression model showing factors associated with poor dietary practice of type two diabetes patients in Arba Minch General Hospital, Southern Ethiopia, 2020(n=352).

Variables	**Category**	**Dietary practice**		**COR (95%C. I)**	**AOR (95%C. I)**
		Poor (%)	**Good (%)**		
Educational status	No formal education	51(48.1)	55(51.9)	1.7(1.1 – 2.7)	**3.0(1.6– 5.5)**
	Primary education	30(41.1)	43(58.9)	1.2(0.7 – 2.2)	**2.2(1.1– 4.4)**
	Secondary and above	62(35.8)	111(64.2)	1	**1**
Residence	Urban	112(39.0)	175(61.0)	1	1
	Rural	31(47.7)	34(52.3)	1.4(0.8 – 2.4)	1.6(0.8 – 2.9)
Food security status	Secure	37(28.9)	91(71.1)	1	1
	Mildly insecure	46(38.3)	74(61.7)	1.5(0.9 - 2.6)	1.4(0.8 - 2.6)
	Moderately insecure	60(57.7)	44(42.3)	3.4(1.9 - 5.8)	**5.3(2.8– 9.9)**
Duration of DM in years	<=5 year	87(45.1)	106(54.9)	1	1
	> 5 year	56(35.2)	103(64.8)	0.7(0.4- 0.9)	0.7(0.4 – 1.1)
Diabetes knowledge	Good knowledge	76(37.4)	127(62.6)	1	1
	Poor knowledge	67(45.0)	82(55.0)	1.4(0.9 – 2.1)	1.7(0.9 – 2.9)
Despondency	Yes	66(35.9)	118(64.1)	0.6(0.4 – 1.1)	0.6(0.4 – 1.1)
	No	77(45.8)	91()54.2	1	1
Depression	No depression	91(35.4)	166(64.6)	1	1
	Have depression	52(54.4)	43(45.3)	2.2(1.4 - 3.6)	**5.9(3.0–11.4)**
Nutrition education	Yes	121(38.8)	191(61.2)	1	**1**
	No	22(55.0)	18(45.0)	2(1.1-3.9)	**2.2(1.1-4.6)**

Hosmer Lemeshow ‘s goodness-of-fit test produce chi-square of 2.962 with p-value of 0.94 and 8 degree of freedom hence the model was good for the data.

6. Discussion

In the present study reveal that a significant proportion (40.6%) of diabetic patients had poor dietary practice. Important factors responsible for patients' poor dietary practice were respondents education status, moderately food insecure, depression and nutrition education.

The findings of the present study reveal that a significant proportion (40.6%) of diabetic patients had poor dietary practice. Which is higher than study finding from Kenya, Nigeria, and Yemen which was 26.1%, 24.0%, and 32.4%, respectively (38, 40, 41). The disparity might be attributed to the socio-demographic and economic domain of the study participants. Additionally, in the current study substantial proportion of patients (57.7%) had poor knowledge regarding diabetes and which might be made the patients to consume monotonous and undiversified diets as a result their dietary habit is poor. In the present study, almost one-fifth of patients eat out of home, which might hinder the patient's dietary practice to step back. Concurrently, in this study huge proportion of individuals had no family support which may play a great role in poor dietary habits.

The finding of the current study is comparable with other available study findings, studies done in Botswana, Pakistan, and Jimma resulted in 37.0%, 36.1%, and 36 %, respectively (36, 38, 43). But in some other studies, the proportion of poor dietary practice was much higher than the current study, studies done in Bahir Dar, Addis Ababa, Nepal, South Asia, and Hungary revealed that 64.1%, 51.4%, 87.5%, 53.0%, and 86.3%, respectively (32, 34, 35, 37, 42). The difference is might be accounted for differences in, study period and measurement**.** Furthermore, the sedentary and motorized way of life on those areas might increase the exposure to the consumption of fast and energy-dense foods, subsequently made the patients' dietary practice to be more deprived(82).

The current study also showed that patients educational status had a significant association with dietary practice. Patients who were not attended formal education and those with primary education were more likely to have poor dietary practice as compared to college graduates and above respectively. The finding is consistent with a study conducted in Kenya and Bahir Dar(42, 46). This is might be because the patient's educational status had a direct relation with their dietary practice. Patients with higher educational status further likely gave due attention for healthy and quality diet b/c education give an opportunity for patients to have better health literacy, which may intern improve dietary practice. Moreover, those with lower education might have a limited chance of dietary information communication.

According to the current study poor dietary practice was higher among patients reside in food-insecure households. Similarly, a study done in USA showed that food insecurity had a negative effect on patients' dietary habits (45). It's apparent that patients from food-insecure households likely had economic constraints that adversely affect household's access to diversified food. Similarly, evidences reported less expensive and calorie-dense food consumptions among food insecure households might also be played a crucial role (83, 84). Additionally, patients might be engaged in negative coping strategies used to tackle the food insecurity these interns might play a key role in their poor dietary practice (85, 86). Furthermore, more than half of the patients in the present study were faced difficulty to choose foods this is might be because of a limited resource since one-third of the patients in the current study were wealth index of the lower category.

The finding of the current study indicated that patients who had depression were more likely (6.4) to have poor dietary practice than not depressed ones. Similarly, a finding from Ghana, Saudi Arabia, and Republic of Korea showed that depression status was a higher on patients with poor dietary habits (51-53). Depression might pose an adverse effect on a patient's decision-making ability to their general health and towards wise food choices and self- care. Additionally, the association might be because of depressed patient's less preference for social interaction, and they might not disclose their medical history and seek social support from their family and the current study revealed that more than two-thirds (68.5%) of patients did not have family support. This might be the reason why poor glycemic control is recorded among most (82.1%) of patients. Also, more than one-third of patients had comorbidities other than diabetes thus also create another burden for the patients and play a great role in not keeping the intended healthy dietary habit in the study area.

In the current study poor dietary practice was higher among diabetic patients who did not attend nutrition education The finding is consistent with a study conducted in Bahir Dar, Ethiopia (32) but not with a study done in the capital Addis Ababa. It's evident that dissemination of appropriate information is the vital and the first step to making healthy choices, a study done in Kenya reported good dietary practice and higher dietary diversity among patients with better nutrition knowledge (46).

The result of this study implied that diabetic patient's dietary practice was undesirably colossal. As a result, there is a need to run on healthy diet centered diabetic care and focusing the identified factors for the poor dietary practice in the study area.

Limitations of the study

There might be a chance for recall bias especially for diabetes duration and substance use questions and also social desirability bias regarding diabetes knowledge related questions. BMI cutoff used in this study was the international cutoff point, thus it needs caution at interpretation because it may under-estimate obesity and overweight for Ethiopians.

7. Conclusion and Recommendations

7.1 Conclusion

The current study finding showed that the proportion of poor dietary practice among type 2 diabetes patients on follow up attending at Arba Minch General Hospital was high. The study also revealed that participant's educational status, food security status, depression, and nutrition education were statistically significantly associated with type 2 DM patients' poor dietary practice.

7.2. Recommendations

Local government administration

- The agricultural office and financial institutions should work in collaboration to address the food insecurity access domain of the patients by incorporating them in the safety need programs under the agricultural platform which is already available in the area.

Health care Sector and professionals

- Strengthening health information dissemination concerning healthy dietary practice in the form of a package needs to be provided through already established community structures, community forums, using media especially locally available FMs via local language by increasing the involvement of health extension workers.
- Health professionals should have a common understanding and follow patient's adherence to the dietary recommendation and should also deliver patient-oriented nutrition education in every follow-up visits

For Arba Minch General Hospital

- The hospital should prepare and deliver patient-oriented nutrition education materials during follow-up visits consistently

For Researchers

- Community-based follow up studies may provide strong and adequate information regarding what diabetic patient's dietary practice look like and its possible predictor's.
- A qualitative study is desirable to comprehend the reasons for the patient's poor dietary practice in addition to the quantitative findings.

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Annex I

Table 7: Bivariate logistic regression showing that factors associated with dietary practice of type two diabetes patients in Arba Minch General Hospital, Southern Ethiopia, 2020 (n=352).

Variables	**Category**	**Dietary practice**		**COR (95% C.I)**	**P-value**
		Poor (%)	**Good (%)**		
Sex	Male	77(39.1%)	120(60.9)	0.9(0.6-1.3)	0.508
	Female	66(42.6%)	89(57.4)	1	
Age	<40	34(45.3)	41(54.7)	1	
	40-60	82(38.9)	129(61.1)	0.8(0.5 - 1.3)	0.328
	>60	27(40.9)	39(59.1)	0.9(0.4 - 1.6)	0.597
Occupation	Unemployed	56(42.1)	77(57.9)	1.1(0.6 - 1.8)	0.768
	Government employed	46(39.3)	71(60.7)	0.9(0.6 - 1.7)	0.894
	Private employed	41(40.2)	61(59.8)	1	
Educational status	No formal education	51(48.1)	55(51.9)	**1.7(1.1 – 2.7)**	**0.043**
	Primary education	30(41.1)	43(58.9)	1.2(0.7 – 2.2)	0.437
	Secondary and above	62(35.8)	111(64.2)	1	
Residence	Urban	112(39.0)	175(61.0)	1	
	Rural	31(47.7)	34(52.3)	**1.4(0.8 – 2.4)**	**0.200**
Household wealth	Low	51(43.6)	66(56.4)	1.2(0.8 - 2.0)	0.507
	Middle	46(39.0)	72(61.0)	1.0(0.6 - 1.7)	0.958
	High	46(39.3)	71(60.7)	1	
	Secure	37(28.9)	91(71.1)	1	

Food security status	Mildly insecure	46(38.3)	74(61.7)	**1.5(0.9 - 2.6)**	**0.117**
	Moderately insecure	60(57.7)	44(42.3)	**3.4(1.9 - 5.8)**	**0.001**
Duration of DM in years	<=5 year	87(45.1)	106(54.9)	1	
	> 5 year	56(35.2)	103(64.8)	**0.7(0.4- 0.9)**	**0.061**
Current medication	Insulin injection	35(47.3)	39(52.7)	1.2(0.3 - 5.7)	0.822
	Oral medication	95(38.9)	149(61.1)	0.9(0.2 - 3.9)	0.834
	both	10(37.0)	17(63.0)	0.9(0.1 - 4.2)	0.778
	on diet	3(42.9)	4(57.1)	1	
Diabetes knowledge	Good knowledge	76(37.4)	127(62.6)	1	
	Poor knowledge	67(45.0)	82(55.0)	**1.4(0.9 – 2.1)**	**0.156**
Despondency	Yes	66(35.9)	118(64.1)	**0.6(0.4 – 1.1)**	**0.058**
	No	77(45.8)	91()54.2	**1**	
Depression	No depression	91(35.4)	166(64.6)	1	
	Have depression	52(54.4)	43(45.3)	**2.2(1.4 - 3.6)**	**0.001**
Anxiety	No anxiety	110(40.1)	164(59.9)	1	
	Anxiety	33(42.3)	45(57.7)	1.1(0.7 – 1.8)	0.70
Family support	Yes	45(40.5)	66(59.5)	1	
	No	98(40.7)	143(59.3)	1.0(0.6 - 1.6)	0.983
Eating out of home	Yes	22(35.5)	40(64.5)	0.8(0.4 - 1.4)	0.365
	No	121(41.7)	169(58.3)	1	
Availability of fruits	Yes	120(41.2)	171(58.8)	1	
	No	23(37.7)	38(62.3)	0.9(0.5 - 1.5)	0.610
Worry about high cost of foods	Yes	77(41.0)	111(59.0)	1.0(0.7 - 1.6)	0.892
	No	66(40.2)	98(59.8)	1	
Got nutrition education	Yes	121(38.8)	191(61.2)	1	
	No	22(55.0)	18(45.0)	**2.0(1.1 - 3.9)**	**0.052**

Difficulty to choose foods?	Yes	23(46.0)	27(54.0)	1.3(0.7 - 2.4)	0.404
	No	120(39.7)	182(60.3)	1	
History of fasting after DM	Yes	26(36.1)	46(63.9)	0.8(0.5 – 1.3)	0.383
	No	117(41.8)	163(58.2)	1	
Current Alcohol drinking	Yes	12(37.5)	20(62.5)	0.8(0.2 - 3.2)	0.801
	No	5(41.7)	7(58.3)	1	

Annex II

Jimma University

Institute of health, public health faculty, department of nutrition and dietetics

Annex 1: Subject Information Sheet

My name is ……. I am working as a data collector for the study being conducted in Arba Minch General Hospital. The principal investigator is Kidus Temesgen who is studying for his Master's degree at Jimma University the institute of Health department of Nutrition and Dietetics. He is conducting research on 'dietary practice and predictors among type 2 diabetic patients in Arba Minch General Hospital. He received permission from Jimma university institute of health science and Arba Minch General Hospital to conduct this study.

You are selected by a systematic random sampling method to participate in this study because you currently attending diabetic patient follow up. The information will be collected by using face to face interview questionnaire for type 2 diabetic patients and also the Weight, waist circumference and height of patients will be measured. The interview will take 15-20 minutes. I kindly request you to give me your patients

If you agree to participate in the study, you will be asked to answer some questions about yourself and your household environment. The information that you provide will be kept confidential by using only code numbers to exclude showing names. Your willingness and active participation is very important for the success of this study. Participation in this study is fully voluntary. The participants have the right to declare to participate or not in this study. If they decide to not participate, they have the right to withdraw from the study at any time. They do not have to answer any question that they do not want to answer. And the institution has the right to stop this study from being conducted in the institution if any misdeeds and unethical procedures are observed.

Contact address: If there are any questions or inquiries at any time about the study or the procedures, please contact: Kidus Temesgen (kidusteme05@gmail.com) or Mobile -0961449004**.**

Consent Form

Considering the information you get from the general information sheet; we would be Thankful if you spend some time with us solving questions related to the issues. Are you Comfortable to participate in this study?

1. If yes, continue to the next page

2. If no, skip to another participant

Informed consent certified by

Questionnaire collector: Code_____ Name_____ Signature_____ Date_____

Checked by: Supervisor Signature_____

Part 1: I) Socio-Demographic Questions

S. No	Questions	Responses	Skip to
Q101	Age in years?	_____	
Q102	Sex?	1. Male 2. Female	
Q103	Educational level?	1. Illiterate 2. Can read and write 3. Primary school 4. Secondary school 5. Technical school 6. College graduate or above	
Q104	Marital status?	1. Single 2. Married 3. Widowed 4. separated 5. Divorced	
Q105	Occupation?	1. Student 2. Private-employed 3. Government Employed 4. Unemployed 5. House wife 6. Merchant 7. Farmer 8. Other (Specify)_____	
Q106	Ethnicity?	1. Gamo 2. Amhara 3. Gofa 4. Wolaita 5. Other (Specify)____	
Q107	Family size?	_____	
Q108	Residency?	1. Urban 2. Rural	

II) Household Wealth index

SN	Does the household have any of the following properties?	options
Q109	Functioning radio/Gipass	1.Yes 2. No

Q110	Electricity	1.Yes	2. No
Q111	Boat with a motor or ‘wogolo’	1.Yes	2. No
Q112	A kerosene lamp/pressure lamp	1.Yes	2. No
Q113	Solar lamp	1.Yes	2. No
Q114	Computer	1.Yes	2. No
Q115	Functioning Television	1.Yes	2. No
Q116	Refrigerator	1.Yes	2. No
Q117	Gas Stove	1.Yes	2. No
Q118	Kerosene stove	1.Yes	2. No
Q119	Electric stove	1.Yes	2. No
Q120	An electric mitad	1.Yes	2. No
Q121	Bicycle	1.Yes	2. No
Q122	Motor Cycle	1.Yes	2. No
Q123	Bajaj	1.Yes	2. No
Q124	Car or truck	1.Yes	2. No
Q125	Cart/Gari	1.Yes	2. No
Q126	Beehives	1.Yes	2. No
Q127	Watch (Hand/Wall)	1.Yes	2. No
Q128	Mobile phone	1.Yes	2. No
Q129	Non-mobile telephone	1.Yes	2. No
Q130	Plough	1.Yes	2. No
Q131	Sofa	1.Yes	2. No
Q132	Spring mattress	1.Yes	2. No
Q133	Sponge/foam, cotton, grass mattress	1.Yes	2. No
Q134	Mattress	1.Yes	2. No
Q135	Table	1.Yes	2. No
Q136	Chair	1.Yes	2. No
Q137	Generator	1.Yes	2. No
Q138	Milling	1.Yes	2. No
Q139	Water pump	1.Yes	2. No

Q140	Oxen, Cows	1.Yes 2. No
Q141	Horse/mules, Donkey	1.Yes 2. No
Q142	Goats/Sheep	1.Yes 2. No
Q143	Chickens	1.Yes 2. No

Part Two: 5.2 Health related and Anthropometric Questions

SN	**Questions**	**Options**
Q201	Duration of DM in year?	_____
Q202	Co morbidities?	1.Yes 2. No 3. don't know
	If yes mention the type	
Q203	Current Medication?	1. Insulin injection 2. Oral medication 3. both 4. Diet alone
Q204	Do you have family history of diabetes?	1.Yes 2. No 3.don't know
Q205	Have you attended a diabetic education regularly?	1. No 2. Yes
Q206	Is yes, what is your source of information (multiple answer is possible)?	1. Media 2. Doctors 3. Nurses 4. Family 5. Friend 6. Diabetic patients 7. Non diabetic patients 8. Neighbors 9. Other
Q207	Are you despondent (hopeless) due to DM	1.Yes 2. No
Q208	Are you a member of diabetic association?	1.Yes 2. No 3. I don't know there is diabetes association.
Q209	Last fasting blood sugar?	_____
Q210	Weight in kg (three times)?	_____ kg, _____ kg _____kg Average ---------- kg
Q211	Height in cm (three times)?	_____ cm, _____ cm, _____ cm, Average ---------- cm
Q212	Waist circumference in cm (three times)?	_____ cm, _____ cm, _____ cm, Average ---------- cm
Q213	Blood pressure (three times)?	_____mmHg, _____ mmHg, _____ mmHg,

		Average ---------- mmHg

Part 3 The Diabetes Social Support Questionnaire

SN	Questions	Options
Q301	How often does a family member encourage you to eat the right foods?	1. Never 2. Not very often 3. Sometimes 4. Very often 5. Almost Always
Q302	How often does a family member ask if certain foods are okay for you to eat, before serving them?	1. Never 2. Not very often 3. Sometimes 4. Very often 5. Almost Always
Q303	How often does a family member remind you about sticking to your meal plan?	1. Never 2. Not very often 3. Sometimes 4. Very often 5. Almost Always
Q304	How often does a family member tell you not to eat something you shouldn't?	1. Never 2. Not very often 3. Sometimes 4. Very often 5. Almost Always
Q305	When eating out or eating at other people's houses, how often do your friends provide emotional (verbal) support to help you eat in a way that helps you maintain good blood sugar level?	1. Never 2. Not very often 3. Sometimes 4. Very often 5. Almost Always
Q306	How often does a family member do grocery shopping for your meals?	1. Never 2. Not very often 3. Sometimes 4. Very often 5. Almost Always
Q307	How often does a family member suggest foods you can eat on your meal plan?	1. Never 2. Not very often 3. Sometimes 4. Very often 5. Almost Always
Q308	How often does a family member join you in eating the same food as you?	1. Never 2. Not very often 3. Sometimes 4. Very often 5. Almost Always

Q309	How often does a family member cook meal for you that fit your meal plan?	1. Never 2. Not very often 3. Sometimes 4. Very often 5. Almost Always
Q310	When eating out or eating at other people's houses, how often do your friends provide active support by choosing to eat healthily along with you?	1. Never 2. Not very often 3. Sometimes 4. Very often 5. Almost Always
Q311	Say nice things about the sweet or high fat foods you are eating?	1. Never 2. Not very often 3. Sometimes 4. Very often 5. Almost Always
Q312	Encourage you to eat high-fat foods or sweets?	1. Never 2. Not very often 3. Sometimes 4. Very often 5. Almost Always

Part 4 Dietary practice questions

SN	**Questions**	**Options**
Q401	Forgetting to plan the meals you eat ahead?	1.Yes 2. No
Q402	Took meal based on dietary plan yesterday?	1.Yes 2. No
Q403	Took meal based on dietary plan over the past 2 weeks?	1.Yes 2. No
Q404	Always eat based on dietary plan?	1.Yes 2. No
Q405	Always eat based on dietary plan, even when she/he feels her/his blood glucose level is controlled?	1.Yes 2. No
Q406	Did you eat fish yesterday?	1.Yes 2. No
Q407	Did you eat fish in the past two weeks?	1.Yes 2. No
Q408	Always ate fish?	1.Yes 2. No
Q409	Did you eat moringa yesterday?	1.Yes 2. No
Q410	Did you eat moringa in the past two weeks?	1.Yes 2. No
Q411	Always ate moringa?	1.Yes 2. No
Q412	Never feel hassled to stick on dietary plan?	1.Yes 2. No
Q413	Have no feelings of dietary deprivation?	1.Yes 2. No
Q414	Follow flexible eating plan?	1.Yes 2. No

Q415	Eat fruits daily?	1.Yes 2. No
Q416	Eat vegetables daily (other than Moringa)?	1.Yes 2. No
Q417	Cut down fat and butter intake?	1.Yes 2. No
Q418	Cut down sweet and soft drink intake?	1.Yes 2. No
Q419	Always follow regular meal time?	1.Yes 2. No

Part 5: Other diet related questions

SN	**Questions**	**Options**
Q501	Eating out of home?	1.Yes 2. No
Q502	If yes, how many days in a week?	_____
Q503	Have you got nutrition education?	1 Yes 2. No (If no skip to 505)
Q504	If yes for the Q503 where you got nutrition education?	1) Doctor 4. Journal 2) Nurse 5. Friends 3) Radio/TV 6. Other _____
Q505	Are vegetables available in your area?	1.Yes 2. No
Q506	If yes what are the commonest vegetables?	_____
Q507	Are fruits available in your area?	1.Yes 2. No
Q508	If yes what are the commonest?	_____
Q509	Did you faced difficulty to choose foods?	1.Yes 2. No
Q510	If yes what would be the reason?	_____
Q511	Have you worry about the high cost of foods (both cooked and raw materials) ?	1.Yes 2. No
Q512	Did you consume Moringa?	1.Yes 2. No
Q513	If yes, did you consume Moringa in the past two weeks?	1.Yes 2. No
Q514	If yes, how many days in a week?	_____days
Q515	Did you consume Fish?	1.Yes 2. No

Q516	Did you consume fish in the past two weeks?	1.Yes 2. No
Q517	If yes, how many days in a week?	---------- days
Fasting		
Q518	Have you experienced any fasting before diagnosis of DM?	1.Yes 2. No
Q519	If yes, for how much hour did you fasted	-------- hr.
Q520	Have you experienced any fasting after diagnosis of DM? **Not for FBS**	1.Yes 2. No
Q521	If yes, for how much hour did you fasted?	--------- hr.
Q522	Are you fasted in the past three months?	1.Yes 2. No
Q523	If Yes to A5, how are you fasting?	1. All animal source foods <u>but not</u> Fish 2. All animal source foods only 3. All animal source foods <u>but not fish</u>+ all foods up to lunch 4. All animal source foods + all foods up to lunch 5. All anima source foods <u>but not fish</u>+ All foods up to 3:PM 6. All Animal source foods + All foods up to 3:PM 7. Throughout the day 8. Other specify

Part 6: Diabetes Knowledge Questionnaire

SN	Questions	Options
Q601	Eating too much sugar and other sweet foods is a cause of diabetes.	1.Yes 2. No

Q602	The usual cause of diabetes is lack of effective insulin in the body.	1.Yes 2. No
Q603	Diabetes is caused by failure of the kidneys to keep sugar out of the urine.	1.Yes 2. No
Q604	Kidneys produce insulin	1.Yes 2. No
Q605	In untreated diabetes, the amount of sugar in the blood usually increases.	1.Yes 2. No
Q606	If I am diabetic, my children have a higher chance of being diabetic.	1.Yes 2. No
Q607	Diabetes can be cured.	1.Yes 2. No
Q608	A fasting blood sugar level of 210 is too high.	1.Yes 2. No
Q609	The best way to check my diabetes is by testing my urine.	1.Yes 2. No
Q610	Regular exercise will increase the need for insulin or other diabetic medication.	1.Yes 2. No
Q611	There are two main types of diabetes: Type 1 (insulin-dependent) and Type 2 (non-insulin-dependent).	1.Yes 2. No
Q612	An insulin reaction is caused by too much food.	1.Yes 2. No
Q613	Medication is more important than diet and exercise to control my diabetes.	1.Yes 2. No
Q614	Diabetes often causes poor circulation.	1.Yes 2. No
Q615	Cuts and abrasions on diabetics heal more slowly.	1.Yes 2. No
Q616	Diabetics should take extra care when cutting their toe nails.	1.Yes 2. No
Q617	A person with diabetes should cleanse a cut with iodine and alcohol.	1.Yes 2. No
Q618	The way I prepare my food is as important as the foods I eat.	1.Yes 2. No
Q619	Diabetes can damage my kidneys.	1.Yes 2. No
Q620	Diabetes can cause loss of feeling in my hands, fingers, and feet.	1.Yes 2. No
Q621	Shaking and sweating are signs of high blood sugar.	1.Yes 2. No
Q622	Frequent urination and thirst are signs of low blood sugar.	1.Yes 2. No
Q623	Tight elastic socks are not bad for diabetics.	1.Yes 2. No

Q624	A diabetic diet consists mostly of special foods.	1.Yes 2. No

Part Seven: Food Insecurity Assessment Questions

SN	Question	Options	
701	Over the past four weeks did you worry that your House hold would not have enough food?	1. Yes 2. No 3. Don't know	If No, skip to Q.702
701a	How often did this occur?	1. Once or twice (rarely) 2. Three to 10 times (sometimes) 3. More than ten times (often) 9. Refuse to respond	
702	Over the past four weeks were you or any household Member not able to eat the kinds of foods you preferred because of a lack of resources?	1. Yes 2. No 3. Don't know	If No, Skip to Q.703
702a	How often did this occur?	1. Once or twice (rarely) 2. Three to10times (sometimes) 3. More than ten times (often) 9. Refuse to respond	
703	Over the past four weeks did you or any household Members have to eat a limited variety of foods due to a lack of resources?	1. Yes 2. No 3. Don't know	If No, Skip to Q.704
703a	How often did this occur?	1. Once or twice (rarely) 2. Three to 10 times (sometimes)	

		3. More than ten times (often) 9. Refuse to respond	
704	Over the past four weeks did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to Obtain other types of food?	1. Yes 2. No 3. Don't know	If No , Skip to Q.705
704a	How often did this occur?	1. Once or twice (rarely) 2. Three to 10 times (sometimes) 3. More than ten times (often) 9. Refuse to respond	
705	Over the past four weeks did you or any house hold member have to eat a smaller meal than you felt you needed because there was not enough food?	1. Yes 2. No 3. Don't know	If No, Skip to Q.706
705a	How often did this occur?	1. Once or twice (rarely) 2. Three to 10 times (sometimes) 3. More than ten times (often) 9. Refuse to respond	
706	Over the past four weeks did you or any house hold member have to eat fewer meals in a day because there was not enough food?	1. Yes 2. No 3. Don't know	If No, Skip to Q.707
706a	How often did this occur?	1. Once or twice (rarely)	

		2. Three to 10 times(sometimes) 3. More than ten times (often) 9. Refuse to respond	
707	Over the past four weeks was there ever no food to eat of any kind in your household because of lack of resources to get food?	1. Yes 2. No 3. Don't know	If No, Skip to Q.708
707a	How often did this occur?	1. Once or twice (rarely) 2. Three to 10 times(sometimes) 3. More than ten times (often) 9. Refuse to respond	
708	Over the past four weeks did you or any house hold member go to sleep at night hungry because there was not enough food?	1. Yes 2. No 3. Don't know	If No, Skip to Q.709
708a	How often did this occur?	1. Once or twice (rarely) 2. Three to 10 times(sometimes) 3. More than ten times (often) 9. Refuse to respond	
709	Over the past four weeks did you or any household member go a whole day and night without eating anything because there was not enough food?	1. Yes 2. No 3. Don't know	
709a	How often did this occur?	4. Once or twice (rarely)	

		5. Three to 10 times(sometimes) 6. More than ten times (often) 9. Refuse to respond	

Part 8: Mental and behavioral related questions

SN	Questions	Options	Skip
I) Food Taboo questions			
801	Are there any Food prohibited for Diabetic patients in your district?	1.Yes 2. No	If No skip to 809
802	If yes list them?	----------	
803	Should diabetes patients adhere to these prohibitions?	1.Yes 2. No	If No skip to 805
804	If yes Why?	----------	
805	What is the reason for prohibition of those food?	----------	
806	Do non diabetes individuals eat these foods?	1.Yes 2. No	
807	Do you know a diabetic patient who do not adhere to these Food Taboo?	1.Yes 2. No	If yes go to 809
808	If yes, what happen to him?	----------	
II) Depression and Anxiety Scale			
809	I feel tens or wound up 1A	0- Not at all 2. More than half the days to 1- Several days 3. Nearly every day	
810	I still enjoy the things I used to enjoy (2D)	0- Not at all 2. More than half the days to 1- Several days 3. Nearly every day	
811	I get a sort of frightened feeling as if something awful is about to happen (3A)	0- Not at all 2. More than half the days to 1- Several days 3. Nearly every day	

812	I can laugh and see the funny side of things (4D)	0- Not at all the days to 1- Several days	2. More than half 3. Nearly every day
813	Worrying thoughts go through my mind (5A	0- Not at all the days to 1- Several days	2. More than half 3. Nearly every day
814	I feel cheerful (6D)	0- Not at all the days to 1- Several days	2. More than half 3. Nearly every day
815	I can sit at ease and feel relaxed (7A)	0- Not at all the days to 1- Several days	2. More than half 3. Nearly every day
816	I feel as if I am slowed down (8D)	0- Not at all the days to 1- Several days	2. More than half 3. Nearly every day
817	I get a sort of frightened feelings like butterflies in the stomach (9A)	0- Not at all the days to 1- Several days	2. More than half 3. Nearly every day
818	I have lost interest in my appearance (10D)	0- Not at all the days to 1- Several days	2. More than half 3. Nearly every day
819	I feel restless as if I have to be on the move (11A)	0- Not at all the days to 1- Several days	2. More than half 3. Nearly every day
820	I look forward with enjoyment to things (12D)	0- Not at all the days to 1- Several days	2. More than half 3. Nearly every day
821	I get sudden feelings of panic (13A)	0- Not at all the days to 1- Several days	2. More than half 3. Nearly every day

822	I can enjoy a good book or radio or TV program (14D)	0- Not at all 2. More than half the days to 1- Several days 3. Nearly every day

Part 9: Substance Use

1 drink = 1/2 pint (1 bottle) of beer or 1 glass of wine, „Tela", "Tej" or 1 single spirits

alcohol consumption

Alcohol Consumption

SN	**Questions**		**Remark**
Q901	Have you ever consumed alcohol (such as beer, wine, spirits whiskey, 'Arekey', 'Tej', 'Cheka' other---)?	1. Yes 2. No	If No, jump to Q906
Q902	If yes, which type?	1.Beer, 2. wine, 3. spirits, 4. whiskey, 5'Arekey', 6. 'Tej', 7. 'Cheka' 8. other specify----	
Q903	If yes, do you drink alcohol currently?	1. Yes 2. No	
Q904	How often do you have a drink Containing alcohol?	1. Daily 2. 5-6 days per week 3. 1-4 days per week 3 4. 1-3 days per month 5. Less than once a month	
Q905	How many drinks containing alcohol do you have on a typical day when you are drinking?	----------	

Smoking

No	Questions	Response	Remark
Q906	Have you ever smoked cigarette?	1.Yes 2. No	If no jump to Q911

Q907	Do you smoke cigarettes currently?	1.Yes 2. No	If no jump to Q911
Q908	Do you currently smoke tobacco products daily?	1.Yes 2. No	
Q909	For how long you have been a smoker?	----------	
Q910	On average, how many sticks of cigarettes do u smoke per day?	----------	
Khat chewing			
Q911	Have u ever chewed khat?	1.Yes 2. No	
Q912	Do you chew khat currently?	1.Yes 2. No	
Q913	For how long u have been chewing khat?	1.less 6-month 2.1 year 3.2-5 years 4. more than 5 years	
Q914	Have you chewed khat in the past 30 days?	11.Yes 2. No	

Thank you

የመረጃና የስምምነት ቅጽ
ጅማ ዩኒቨርሲቲ
ጤና ኢንስቲትዩት
የሕብረተሰብ ጤና ፋካሊቲ
ስነ ምግብ ት/ት ክፍል
በአርባ ምንጭ ጠቅላላ ሆስፒታል ሕክምና ክትትል ክፍል የስኳር ታካሚዎች
/የአመጋገብ ሁኔታ እና ተያያዥ ጉዳዮች ቃለ መጠይቅ 2012ዓ.ም

እንደምን አደሩ/ዋሉ? እኔ _____እባላለሁ፤ ከጅማ ዩኒቨርሲቲ ስነ ምግብ ት/ት ክፍል የአመጋገብ ሁኔታ እና ተያያዥ ጉዳዮች በአርባ ምንጭ ጠቅላላ ሆስፒታል የረዥም ጊዛ ሕክምና ክትትል ክፍል የስኳር ህመም ታካሚዎች ላይ ለሚደረገው ጥናት መረጃ ሰብሳቢ ነኝ፡፡ የጥናቱ ዋና መሪ ቅዱስ ተማስገን ይባላል፡፡ በጅማ ዩኒቨርሲቲ ስነ ምግብ ትምሕርት ክፍል የድኅረ ምረቃ ተማሪ ነው፡፡ ይህንን ጥናት ለማካሄድ ከጅማ ዩኒቨርሲቲ እና ከአርባ ምንጭ ሆስፒታል ፍቃድ አግኝቷል፡፡የጥናቱ ዓላማ የአመጋገብ ሁኔታ እና ተያያዥ መንስኤዎች በስኳር ህመም ታካሚዎች ላይ መለየት ነው፡፡ ስለዚህ ይህ ጥናት በስኳር በሽታ መከላከልና ቁጥጥር ላይ ከፍተኛ አስተዋጽዖ ያበረክታል፡፡ በተጓዳኝም ጥናቱ የግልና የመንግስት ተቋማት በችግሩ ላይ የበኩላቸውን ተሳትፎ እንዲያደርጉ ይረዳል፡፡ በተጨማሪም ክብደትዎን ፤ ቁመትዎንና የደም ግፊት መጠንዎን ይለካሉ፡፡ ይህ ጥናት በጤናዎት ላይ የሚያመጣብዎት ጉዳት የለም፡፡ ከተሳቀቁ ፡ ካልተመቸዎት ወይም ጥሩ ስሜት ካልተሰማዎት በማንኛውም ሰዓት ማቋረጥ ይችላሉ፡፡

ጠቅላላ ሒደቱ 15-20 ደቂቃ ይወስዳል፡፡ የእርሶ ፍቃደኝነት እና ንቁ ተሰትፎ ለጥናቱ መሳካት ጉልህ አስተዋጾ አለው፡፡ በመጨረሻ ላረጋግጥልዎ የምፈልገው በዙህ ጥናት ስምዎ ወይም አድራሻዎ አይጠቀስም ነገር ግን የጥናቱ ውጤት ተደራጅቶና ተመዜግቦ ወደሚመለከታቸው የጤና ተቋማት እና ባለድርሻ አካላት ሊገባ ይችላል፡፡

አድራሻ፡- ማንኛውም ጥያቄ ካሎት በሚከተሉት የመገናኛ መስመሮች ማግኘት ይችላሉ፡፡ (kidusteme05@gmail.com) or Mobile -0961449004

የፍቃደኝነት ቅጽ

1. በጥናቱ ለመሳተፍ ፍቃደኛ ነኝ
2. በጥናቱ ለመሳተፍ ፍቃደኛ አይደለሁም

የመረጃ ሰብሳቢው መለያ ቁጥር------ስም---------- ፊርማ----------ቀን----

ያረጋገጠው ተቆጣጣሪ ስም----------ፊርማ ----------ቀን----------

ክፍል አንድ፡ I) የማኅበራዊ ስነ ህዘብ ና ምጣኔ ሀብት መጠይቆች

ተ.ቁ	ጥያቄ	መልስ	ምርመራ
ጥ101	እድሜ	------- ዓመት	
ጥ102	ጾታ	1. ሴት 2. ወንድ	
ጥ103	የትምህርት ደረጃ/ እስከ ስንት ተምረዋል?	1.ማንበብና መጻህፍ የማይችል 2.ማንበብና መጻህፍየምችል 3 አንደኛ ደረጃ የጨረሰ 4.ሁለተኛ ደረጃ የጨረሰ 5 ቴክኒክ እና ሙያ የጨረሰ 6. ኮለጅና ከዛ በላይ	
ጥ104	የትዳር ሁኔታ	1. ያላገባ/ች 2. ያገባ/ች 3. የሞተችበት/ባት 4. የተለያየ/ች 5. የተፋታ/ች	
ጥ105	ሥራዎት ምንድነው?	1. ተማሪ 2. የግል 3. የመንግስት ሰራተኛ 4. ስራአጥ 5. የቤት እመቤት 6. ሌላ ከሆነ ይጥቀሱ-------	
ጥ106	ብሔር	1. ጋሞ 2 አማራ 2 ጎፋ 4 ወላይታ 5 ሌላ ከሆነ ይጥቀሱ-------	
ጥ107	የቤተሰብ ብዛት	----------	
ጥ108	የሚኖሩት የት ነው?	1. ከተማ 2. ገጠር	

II) የብልጽግና ነክ ጥያቄዎች

ጥ109	የሚሰራ ራድዮ/ጂፓስ አለዎት	1. አዎ 2. የለም	
ጥ110	መብራት አለዎት	1. አዎ 2. አይደለም	
ጥ111	ጀልባ አለዎት	1. አዎ 2. አይደለም	
ጥ112	የጋዝ መብራት አለዎት	1. አዎ 2. አይደለም	

ጥ113	ሶላር አለዎት	1. አዎ 2. አይደለም	
ጥ114	ኮመፒተር አለዎት	1. አዎ 2. አይደለም	
ጥ115	የሚሰራ ቲቪ አልዎት	1. አዎ 2. የለም	
ጥ116	ፍሪጅ አለዎት	1. አዎ 2. አይደለም	
ጥ117	ጋዝ (ኦክስጊን)ሰቶቭ አልዎት	1. አዎ 2. የለም	
ጥ118	ቡታጋዝ አልዎት	1. አዎ 2. የለም	
ጥ119	ኤሌክትሪክ ሰቶቭ አልዎት	1. አዎ 2. የለም	
ጥ120	ኤሌክትሪክ ምጣድ አለዎት	1. አዎ 2. አይደለም	
ጥ121	ሳየክል አልዎት	1. አዎ 2. የለም	
ጥ122	ሞተር አልዎት	1. አዎ 2. የለም	
ጥ123	ባጃጅ አልዎት	1. አዎ 2. አይደለም	
ጥ124	መኪና አልዎት	1. አዎ 2. አይደለም	
ጥ125	ጋሪ አልዎት	1. አዎ 2. የለም	
ጥ126	የንብ ቀፎ አልዎት	1. አዎ 2. አይደለም	
ጥ127	የእጅ ሰዓት አልዎት	1. አዎ 2. የለም	
ጥ128	ሞባይል አልዎት	1. አዎ 2. የለም	
ጥ129	የቤት ስልክ አልዎት	1. አዎ 2. አይደለም	
ጥ130	ማረሻ አልዎት	1. አዎ 2. የለም	
ጥ131	ሶፋ አልዎት	1. አዎ 2. የለም	
ጥ132	ሰፕሪንግ ፍራሽ አልዎት	1. አዎ 2. የለም	
ጥ133	ስፖንጅ ፍራሽ አልዎት	1. አዎ 2. የለም	
ጥ134	የሳር ፍራሽ አልዎት	1. አዎ 2. የለም	

ጥ135	ጠረጴዛ አልዎት	1. አዎ 2. አይደለም	
ጥ136	ወንበር አልዎት	1. አዎ 2. የለም	
ጥ137	ጀነሬተር አልዎት	1. አዎ 2. የለም	
ጥ138	መቁረጫ አልዎት	1. አዎ 2. የለም	
ጥ139	የዉሃ መሳቢያ አልዎት	1. አዎ 2. የለም	
ጥ140	በሬ/ላም አልዎት	1. አዎ 2. የለም	
ጥ141	ፈረስ/በቅሎ/አህያ አልዎት	1. አዎ 2. የለም	
ጥ142	ፍየል/በግ አልዎት	1. አዎ 2. የለም	
ጥ143	ዶሮ አልዎት	1. አዎ 2. የለም	

ክፍል ሁለት፡ ህክምና ነክ ጥያቄዎች እና አካላዊ ልኬት

ጥ201	የስኳር ህመሙ የታወቀሎት ከመቼ ጀምሮ ነው/ ምን ያክል ዓመት /ወር ሆነው?	----------	
ጥ202	ተጓዳኝ በሽታዎች አሉቦት	1. አዎ 2. የለም 3 አላውቅም	
ጥ203	አሁን እየወሰዱ ያሉት መድኃኒት	1 መርፌ(ኢንሱሊን) 2 ብአፍ የሚወሰድ(Oral medication) 3 ሁለቱንም 4 ምግብ ብቻ	
ጥ204	በቤተሰብዎ ስኳር በሽታ የሚታመም ነበር	1. አዎ 2. የለም 3 አላውቅም	
ጥ205	ባለፉት 3 ወራት ምን ያህል ጊዜ የህክምና ክትትሎዎን አቋርጠዋል	1 ምንም 2 አንዴ 3 ሁለቱ 4 ሦስት እና ከሦስት በላይ	
ጥ206	የስኳር በሽታ ትምሕርት ተከታትለዋል	1 አልተከታተልኩም 2 አልፎ አልፎ 3 ሁል ጊዚ	
ጥ207	የስኳር በሽታ ራስ አገዝ እንክብካቤ የመረጃ ምንጮ ምንድነው	1 ሚዲያ 2 ሀኪም 3 ነርስ 4 ስነ ምግብ አማካሪ 5 ማህራዊ ሚድያ 6 የስኳር በሽታ ታካሚ 7. የስኳር በሽታ ታካሚ ካልሆነ ሰው 8 ጎረቤት	

ጥ208	የሰውነት እንቅስቃሴን በተመለከተ ከጤና ባለሙያ የተሰጠ በቂ መረጃ አለ	1. አዎ 2. የለም	
ጥ209	ጤናማ አመጋገብን በተመለከተ ከጤና ባለሙያ የተሰጠ በቂ መረጃ አለ	1. አዎ 2. የለም	
ጥ210	በስኳር ህክምና ኪሊኒክ የሚያደጉት የህክምና ክትትል ረክተዋል	1. አዎ 2. አይደለም	
ጥ211	ከሆስፒታሉ እስከ ቤቶ ያለው ርቀት	------	
ጥ212	የስኳር ሕመማን ማኅበር አባል ኖት	1. አዎ 2. አይደለሁም 3 አላውቅም	
ጥ213	የሶስት ወር አማካይ የስኳር መጠን	----------	
ጥ214	ክብደት	----------	
ጥ215	ቁመት	----------	
ጥ216	የወገብ ለኬት	----------	
ጥ217	የደም ግፊት መጠን	----------	

ክፍል 3 የስኳር በሽተኞች ማሕበረሰብ ነክ ጥያቄች

ጥ301	ቤተሰቦችህ ምን ያህል ጊዜ ትክክለኛውን ምግብ እንድትመገብ ያበረታቱሃል	1 በፍጹም አያበረታቱኝም 2 ጥቂት ጊዜ 3 አልፎ አልፎ 4 ብዙ ጊዜ 5 ሁል ጊዜ	
ጥ302	ቤተሰቦችህ ምን ያህል ጊዜ ትክክለኛውን ምግብ ከማብሰላቸው በፊት የጠይቁሃል	1 በፍጹም አያበረታቱኝም 2 ጥቂት ጊዜ 3 አልፎ አልፎ 4 ብዙ ጊዜ 5 ሁል ጊዜ	
ጥ303	ቤተሰቦችህ ምን ያህል ጊዜ ትክክለኛውን ምግብ እንድትመገብ ያስታውሱሃል	1 በፍጹም አያበረታቱኝም 2 ጥቂት ጊዜ 3 አልፎ አልፎ 4 ብዙ ጊዜ 5 ሁል ጊዜ	
ጥ304	ቤተሰቦችህ ምን ያህል ጊዜ የተከለከሉ ምግቦችን እንዳትመገብ ይከለክሉሃል	1 በፍጹም አያበረታቱኝም 2 ጥቂት ጊዜ 3 አልፎ አልፎ 4 ብዙ ጊዜ 5 ሁል ጊዜ	
ጥ305	ከቤትህ/ሽ ውጪ ስትመገቢ ዓደኞችህ/ሽ ምን ያህል ጊዜ ትክክለኛውን ምግብ እነድትመገብ ያበረታቱሀል	1 በፍጹም አያበረታቱኝም 2 ጥቂት ጊዜ 3 አልፎ አልፎ 4 ብዙ ጊዜ 5 ሁል ጊዜ	

ጥ306	ቤተሰቦችህ ምን ያህል ጊዜ ምግብህን ከ ሆቴል ያመጡልሀል	1 በፍጹም አያበረታቱኝም 2 ጥቂት ጊዜ 3 አልፎ አልፎ 4 ብዙ ጊዜ 5 ሁል ጊዜ	
ጥ307	ቤተሰቦችህ ምን ያህል ጊዜ የምግብ እቅድህን እንድትከተል ያደርጉሃል	1 በፍጹም አያበረታቱኝም 2 ጥቂት ጊዜ 3 አልፎ አልፎ 4 ብዙ ጊዜ 5 ሁል ጊዜ	
ጥ308	ቤተሰቦችህ ምን ያህል ጊዜ የምትመገበውን ምግብ አብረው የመገባሉ	1 በፍጹም አያበረታቱኝም 2 ጥቂት ጊዜ 3 አልፎ አልፎ 4 ብዙ ጊዜ 5 ሁል ጊዜ	
ጥ309	ቤተሰቦችህ ምን ያህል ጊዜ በምግብ ዕቅድህ መሰረት ምግብ ያዘጋጁልሃል	1 በፍጹም አያበረታቱኝም 2 ጥቂት ጊዜ 3 አልፎ አልፎ 4 ብዙ ጊዜ 5 ሁል ጊዜ	
ጥ310	ከቤትህ/ሽ ውጪ ስትመገቢ ጓደኞችህ/ሽ ምን ያህል ጊዜ ትክክለኛውን ምግብ እነድትመገብ አብረው በመብላት ያበረታቱሀል	1 በፍጹም አያበረታቱኝም 2 ጥቂት ጊዜ 3 አልፎ አልፎ 4 ብዙ ጊዜ 5 ሁል ጊዜ	
ጥ311	ቤተሰቦችህ ምን ያህል ጊዜ ጣፋጭ ምግቦችን አና ስብ የበዛባቸውን ምግቦች ስትመገብ ያደንቁሃል	1 በፍጹም አያበረታቱኝም 2 ጥቂት ጊዜ 3 አልፎ አልፎ 4 ብዙ ጊዜ 5 ሁል ጊዜ	
ጥ312	ቤተሰቦችህ ምን ያህል ጊዜ ጣፋጭ ምግቦችን አና ስብ የበዛባቸውን ምግቦች ስትመገብ ያበረታቱሃል	1 በፍጹም አያበረታቱኝም 2 ጥቂት ጊዜ 3 አልፎ አልፎ 4 ብዙ ጊዜ 5 ሁል ጊዜ	

ክፍል 4፡ የምግብ ሁኔታን በተመለከተ

ጥ401	የምግብ እቅድ ማዘጋጀትን መዘንጋት	1. አዎ 2. አይደለም	
ጥ402	በምግብ እቅድህ መሰርት ነው ትናንት የተመገበከው/ሽው	1. አዎ 2. አይደለም	
ጥ403	በምግብ እቅድህ መሰርት ነው ባለፉት ሁለት ሳምንታት የተመገበከው/ሽው	1. አዎ 2. አይደለም	
ጥ404	ሁሌም በምግብ እቅዴ መሰረት እመገባለው	1. አዎ 2. አይደለም	
ጥ405	የደሜ ስኳር መጠን ትክክል ቢሆንም፤ ሁሌም በምግብ እቅዴ መሰረት እመገባለው	1. አዎ 2. አይደለም	
ጥ406	ትናንት አሳ ተመግቢያልው	1. አዎ 2. አይደለም	
ጥ407	ባለፉት ሁለት ሳመንታት አሳ ተመግቢያልው	1. አዎ 2. አይደለም	
ጥ408	ሁል ጊዜ አሳ እመገባለው	1. አዎ 2. አይደለም	

ጥ409	ትናንት ሞሪነጋ ተመግቢያልው	1. አዎ 2. አይደለም	
ጥ410	ባለፉት ሁለት ሳመንታት ሞሪነጋ ተመግቢያልው	1. አዎ 2. አይደለም	
ጥ411	ሁል ጊዜ ሞሪነጋ እመገባለው	1. አዎ 2. አይደለም	
ጥ412	በምግብ እቅዴ ተሰላችቼ አላውቅም	1. አዎ 2. አይደለም	
ጥ413	የምግብ እጥረት ሃሳብ የለኝም	1. አዎ 2. አይደለም	
ጥ414	ተለዋዋጭ የምግብ እቅድ እከተላለው	1. አዎ 2. አይደለም	
ጥ415	ፍራፍሬ በየእለቱ እመገባለው	1. አዎ 2. አይደለም	
ጥ416	አትክልት በየእለቱ እመገባለው	1. አዎ 2. አይደለም	
ጥ417	ቅቤ/ስብ አልጠቀምም	1. አዎ 2. አይደለም	
ጥ418	ጣፋጭ ምግቦችን እና ጣፋጭ መጠጦች አልጠቀምም	1. አዎ 2. አይደለም	
ጥ419	ሁሌም በትክክል ጊዜውን ጠብቄ እመገባለው	1. አዎ 2. አይደለም	

ክፍል 5 ሌሎች ከአመጋገብ ጋር ተያያዥ ጥያቄዎች

ጥ501	ከቤት ዉጭ መመገብ	1. አዎ 2. አይደለም	
ጥ502	አዎ ከሆን በሳምንት ምን ያህል ጊዜ የመገባሉ	----------	
ጥ503	የስነ ምግብ ትምህርት ተከታትለዋል	1. አዎ 2. አይደለም	
ጥ504	አዎ ከሆነ ከየት ተከታተሉ	1.ሀኪም 2 ነርስ 3 ራድዮ/ቲቪ 4 መጽሔት 5 ሌላ ካለ ይጠቀስ-------	
ጥ505	በአካባቢያችሁ አትክልት አለ	1. አዎ 2. አይደለም	
ጥ506	በአካባቢያችሁ ፍራፍሬ አለ	1. አዎ 2. አይደለም	
ጥ507	ምግብ ለመምረጥ ተቸግረህ ታውቃለህ	1. አዎ 2. አይደለም	
ጥ508	ስለ ምግብ ዋጋ መናር አስበህ ታውቃለህ	1. አዎ 2. አይደለም	
ጥ509	ሞሪንጋ (ሀለኮ) ተጠቅመህ ታውቃለህ	1. አዎ 2. አይደለም	
ጥ510	አዎ ከሆነ ባለፉት ሁለት ሳምንታት ተጠቅመዋል	1. አዎ 2. አይደለም	
ጥ511	አዎ ከሆነ በሳምንት ምን ያህል ቀን	----------ቀን	

ጥ512	አሳ ተጠቅመው ያውቃሉ	1. አዎ 2. አይደለም	
ጥ513	አዎ ከሆነ በሳምንት ምን ያህል ቀን	----------ቀን	
ጥ514	ስኳር በሽታ ከመታመሞ አስቀድሞ ምግብ ይዘሉ ነበር	1. አዎ 2. አይደለም	
ጥ515	አዎ ከሆነ ምክንያት ይጥቀሱ	----------	

ክፍል 6 የስኳር በሽታ እውቀትን በተመለከተ

ጥ601	ስኳር እና ጣፋጭ ምግቦችን አብዝቶ መመገብ የስኳር በሽታ መንስዔ ነው	1. አዎ 2. አይደለም	
ጥ602	የኢንሱሊን እጥረት የስኳር በሽታ መንስዔ ነው	1. አዎ 2. አይደለም	
ጥ603	የኩላሊት በሽታ የስኳር በሽታ መንስዔ ነው	1. አዎ 2. አይደለም	
ጥ604	ኩላሊት ኢንሱሊንን ያመነጫል	1. አዎ 2. አይደለም	
ጥ605	የስኳር ህመም ካልታከሙት የደም ውስጥ የስኳር መጠን ይጨምራል	1. አዎ 2. አይደለም	
ጥ606	እኔ የስኳር ህመም ካለብኝ ልጆቼም ሊኖርባቸው ይችላል	1. አዎ 2. አይደለም	
ጥ607	የስኳር ህመም ሊድን ይችላል	1. አዎ 2. አይደለም	
ጥ608	የደም ውስጥ የስኳር መጠን 210 በጣም ከፍተኛ ነው	1. አዎ 2. አይደለም	
ጥ609	የሽንት ውስጥ የስኳር መጠን የተሻለ የስኳር መጠን መናገር ይችላል	1. አዎ 2. አይደለም	
ጥ610	መደበኛ የአካል ብቃት እንቅስቃሴ የኢንሱሊን ወይም መዲሀኒት ፍላጎትን ይጨምራል	1. አዎ 2. አይደለም	
ጥ611	ሁለት አይነት የስኳር ህመም አሉ	1. አዎ 2. አይደለም	
ጥ612	ምግብ አብዝቶ መመገብ የኢንሱሊን ስራን ያስጀምራል	1. አዎ 2. አይደለም	
ጥ613	መድኃኒት ከምግብ እና ከ እንቅስቃሴ የተሻለ የስኳር ህመምን ይቆጣጠራል	1. አዎ 2. አይደለም	
ጥ614	የስኳር ህመምን የደም ዝውውርን የጎዳል	1. አዎ 2. አይደለም	
ጥ615	የስኳር ህመምተኞች ላይ ቁስል በቶሎ አያገግምም	1. አዎ 2. አይደለም	
ጥ616	የስኳር ህመምተኞች ጥፍራቸውን በጣም በጥንቃቄ መቁረጥ አለባቸው	1. አዎ 2. አይደለም	
ጥ617	የስኳር ህመምተኞች ቁስላቸውን በአልኮል/አዮዲን ማጽዳት አለባቸው	1. አዎ 2. አይደለም	
ጥ618	ምግብ ሳዘጋጅ ምግብ እንደ መመገብ እጠነቀቃለው	1. አዎ 2. አይደለም	

ጥ619	የስኳር ህመም ኩላሊትን ይጎዳል	1. አዎ 2. አይደለም	
ጥ620	የስኳር ህመም የእጅና የእግር መዳፍ እና ጣቶች ስሜት ማጣት ያመጣል	1. አዎ 2. አይደለም	
ጥ621	ማንቀጥቀጥ እና ማላብ የከፍተኛ የስኳር መጠን ምልክቶች ናቸው	1. አዎ 2. አይደለም	
ጥ622	ቶሎ ቶሎ መሽናት እና የውሃ መጥማት የዝቅተኛ ስኳር መጠን ምልክቶች ናቸው	1. አዎ 2. አይደለም	
ጥ623	ታይት ካለሲዎች ለስኳር ህመምተኞን የመከራሉ	1. አዎ 2. አይደለም	
ጥ624	የስኳር ህመምተኞች ምግብ በጣም ልዩ ምግብ ነው	1. አዎ 2. አይደለም	

ክፍል 7 የምግብ ዋስትና ጥያቄዎች

ጥ701	ባለፉት አራት ሳምንታትእርሶ/ በቤተሰብዎ በቂ ምግብ የለም ብለው ተጨንቀው ያውቃሉ	1. አዎ 2. አይደለም 3. አላውቅም	
ጥ702	አዎ ከሆነ ምን ያህል ጊዜ	1 አንዴ/ሁለቴ 2 ከሦስት - አሥር ጊዜ 3 አሥር ጊዜ በላይ 4 መመለስ አለመፈለግ	
ጥ703	ባለፉት አራት ሳምንታት እርሶ/በቤተሰብዎ ውስጥ የሚፈልገውን ምግብ በአቅም ማጣት ምክንያት ያልተመገበ አለ	1. አዎ 2. አይደለም 3. አላውቅም	
ጥ704	አዎ ከሆነ ምን ያህል ጊዜ	1 አንዴ/ሁለቴ 2 ከሦስት - አሥር ጊዜ 3 አሥር ጊዜ በላይ 4 መመለስ አለመፈለግ	
ጥ705	ባለፉት አራት ሳምንታት እርሶ/በቤተሰብዎ ውስጥ የተለያዩ ምግቦችን በአቅም ማጣት ምክንያት ያልተመገበ አለ	1. አዎ 2. አይደለም 3. አላውቅም	
ጥ706	አዎ ከሆነ ምን ያህል ጊዜ	1 አንዴ/ሁለቴ 2 ከሦስት - አሥር ጊዜ 3 አሥር ጊዜ በላይ 4 መመለስ አለመፈለግ	
ጥ707	ባለፉት አራት ሳምንታት እርሶ/በቤተሰብዎ ውስጥ መመገብ የማይፈልገውን ምግብ በአቅም ማጣት ምክንያት ያልተመገበ አለ	1. አዎ 2. አይደለም 3. አላውቅም	
ጥ708	አዎ ከሆነ ምን ያህል ጊዜ	1 አንዴ/ሁለቴ 2 ከሦስት - አሥር ጊዜ 3 አሥር ጊዜ በላይ 4 መመለስ አለመፈለግ	
ጥ709	ባለፉት አራት ሳምንታት እርሶ/በቤተሰብዎ ውስጥ መመገብ የሚፈልገውን ምግብ በቂ ምግብ ባለመኖሩ ምክንያት ከበቂ በታች የተመገበ አለ	1. አዎ 2. አይደለም 3. አላውቅም	

ጥ710	አዎ ከሆነ ምን ያህል ጊዜ	1 አንዴ/ሁለቱ 2 ከሦስት - አሥር ጊዜ 3 አሥር ጊዜ በላይ 4 መመለስ አለመፈለግ	
ጥ711	ባለፉት አራት ሳምንታት እርሶ/በቤተሰብዎ ውስጥ አነስተኛ መጠን ምግብ በቂ ምግብ ባለመኖሩ ምክንያት የተመገበ አለ	1. አዎ 2. አይደለም 3. አላውቅም	
ጥ712	አዎ ከሆነ ምን ያህል ጊዜ	1 አንዴ/ሁለቱ 2 ከሦስት - አሥር ጊዜ 3 አሥር ጊዜ በላይ 4 መመለስ አለመፈለግ	
ጥ713	ባለፉት አራት ሳምንታት እርሶ/በቤተሰብዎ ውስጥ ምንም አይነት ምግብ በአቅም ማጣት ምክንያት ያልተመገበ አለ	1. አዎ 2. አይደለም 3. አላውቅም	
ጥ714	አዎ ከሆነ ምን ያህል ጊዜ	1 አንዴ/ሁለቱ 2 ከሦስት - አሥር ጊዜ 3 አሥር ጊዜ በላይ 4 መመለስ አለመፈለግ	
ጥ715	ባለፉት አራት ሳምንታት እርሶ/በቤተሰብዎ ውስጥ ምንም አይነት ምግብ በአቅም ማጣት ምክንያት ሳይመገበ ያደር አለ	1. አዎ 2. አይደለም 3. አላውቅም	
ጥ716	አዎ ከሆነ ምን ያህል ጊዜ	1 አንዴ/ሁለቱ 2 ከሦስት - አሥር ጊዜ 3 አሥር ጊዜ በላይ 4 መመለስ አለመፈለግ	
ጥ717	ባለፉት አራት ሳምንታት እርሶ/በቤተሰብዎ ውስጥ ምንም አይነት ምግብ በአቅም ማጣት ምክንያት ቀንም ማታም ያልተመገበ አለ	1. አዎ 2. አይደለም 3. አላውቅም	

ክፍል 8 የስነ ልቡና እና ማህበራዊ ነክ ጥያቄዎች

8.1. ማህበረሰብ የተከለከለ ምግቦችን በተመለከተ			
ጥ801	በአከባቢያችሁ ለስኳር ህመምን የተከለከሉ ምግቦች አሉ	1 አሉ 2 የሉም	
ጥ802	ካሉ ይጠቀሱ	----------	
ጥ803	እነዚህን ምግቦች ያልታመሙት ይመገባሉ	1. አዎ 2. አይደለም	
ጥ804	ምግቦቹን ለመከልከል ምክንያቱ ምንድነው	----------	
ጥ805	የስኳር ህመምን እነዚህን ምግቦች መመገብ አለባቸው	1. አዎ 2. አይደለም	
ጥ806	አዎ ከሆነ ለምን	----------	
ጥ807	በአከባቢያችሁ የተከለከሉ ምግቦችን የሚመገብ የስኳር ህመምተኛ አለ	1 አሉ 2 የሉም	

ጥ808	ካለ ምን አጋጠመው	----------	
8.2. የድብርት እና የጭንቀት ጥያቄዎች			
ጥ809	የመጨነቅ የመወጠር ስሜት ምን ያህል ጊዜ ይሰማሀል	0 ምንም አይሰማኝም 1 ብዙ ቀን 2 እኩለ ቀን 3 ቀኑን ሙሉ	
ጥ810	ቀደም ሲል ያስደስትዎ የነበሩ ነገሮች አሁንም ያስደስቶታል	0 ምንም አይሰማኝም 1 ብዙ ቀን 2 እኩለ ቀን 3 ቀኑን ሙሉ	
ጥ811	መጥፎ ነገር ሊገጥመኝ የተቃረበ የሚመስል የፍርኃት ስሜት ይሰማኛል	0 ምንም አይሰማኝም 1 ብዙ ቀን 2 እኩለ ቀን 3 ቀኑን ሙሉ	
ጥ812	እስቃለው የነገሮችን አስቂኝ ጎን ማየት እችላለው/ይሰማኛል	0 በፍጹም 1 ብዙ ቀን 2 እኩለ ቀን 3 ቀኑን ሙሉ	
ጥ813	ጭንቀትን የሚያጭሩ ነገሮች በአእምሮየ ውስጥ ይሰማኛል	0 ምንም አይሰማኝም 1 ብዙ ቀን 2 እኩለ ቀን 3 ቀኑን ሙሉ	
ጥ814	የደስተኝነት ስሜት	0 ምንም አይሰማኝም 1 ብዙ ቀን 2 እኩለ ቀን 3 ቀኑን ሙሉ	
ጥ815	ተረጋግቶ መቀመጥ እና ዘና ማለት እችላለው	0 ምንም አልችልም 1 ብዙ ቀን 2 እኩለ ቀን 3 ቀኑን ሙሉ	
ጥ816	ስራየን ሳከናውን ፍጥነቴ የቀነሰ ይመስለኛል	0 በፍጹም 1 ብዙ ቀን 2 እኩለ ቀን 3 ቀኑን ሙሉ	
ጥ817	ሆድ አካባቢ የመሸበር ወይም የመደንገጥ ስሜት ይሰማኛል	0 በፍጹም 1 ብዙ ቀን 2 እኩለ ቀን 3 ቀኑን ሙሉ	
ጥ818	ለአለባበሴ ትኩረት መስጠት ያቆሙኩ ይመስለኛል	0 በፍጹም 1 ብዙ ቀን 2 እኩለ ቀን 3 ቀኑን ሙሉ	
ጥ819	አንድ ቦታ መኼድ ያለብኝ እየመሰላኝ ተረጋግቶ መቀመጥ ይቸግረኛል	0 በፍጹም 1 ብዙ ቀን 2 እኩለ ቀን	

		3 ቀኑን ሙሉ	
ጥ820	መጻኢ ነገሮችን በደስታ እጠብቃለው	0 በፍጹም 1 ብዙ ቀን 2 እኩለ ቀን 3 ቀኑን ሙሉ	
ጥ821	በድንገት የመሸበር የመደንገጥ ስሜት ይሰማኛል	0 በፍጹም 1 ብዙ ቀን 2 እኩለ ቀን 3 ቀኑን ሙሉ	
ጥ822	በመጻሕፍት/በሬድዮ/በቲቪ ራሴን አዝናናለው	0 በፍጹም 1 ብዙ ቀን 2 እኩለ ቀን 3 ቀኑን ሙሉ	
8.3. ጾምን በተመለከተ			
ጥ823	የስኳር ህመም ከመታመሞ አስቀድሞ ጾም ይጾሙ ነበር	1. አዎ 2. አይደለም	
ጥ824	አዎ ከሆነ ምን ያክል ሰዓት ይጾማሉ	---------ሰዓት	
ጥ825	የስኳር ህመምተኛ ከሆኑ በኋላ ጾም ጾመው ያውቃሉ	1. አዎ 2. አይደለም	
ጥ826	አዎ ከሆነ ምን ያክል ሰዓት ይጾማሉ	---------ሰዓት	
ጥ827	ባለፉት 3 ወራት ማንኛውም ጾም ጾመዋል	1. አዎ 2. አይደለም	
ጥ828	አዎ ከሆነ እንዴት ነበር የሚጾሙት	1 ከሁሉም እንስሳት ተዋጾ ምግቦች አሳ ሲቀር 2 ከሁሉም እንስሳት ተዋጾ ምግቦች 3 ከሁሉም እንስሳት ተዋጾ ምግቦች አሳ ሲቀር እና እስከ ምሳ 4 ከሁሉም እንስሳት ተዋጾ ምግቦች እና እስከ ምሳ ሰዓት 5 ከሁሉም እንስሳት ተዋጾ ምግቦች አሳ ሲቀር እና እስከ 9 ሰዓት 6 ከሁሉም እንስሳት ተዋጾ ምግቦች እና እስከ 9 ሰዓት 7 ቀኑን ሙሉ 8 ሌላ ካለ ይጠቀስ	

ክፍል ዘጠኝ፡ ሱስን በተመለከተ

ጥ901	አልኮል መጠጥ ተጠቅመው ያውቃሉ	1.አው 2. አላወቅም	አላወቅም ከሆን ወደ ጥ906 የገዘለሉ
ጥ902	የሚውቁ ከሆነ ምን አይነት ነው	1.ቢራ 2 ወይን 3 ውስኪ 4 አረቄ 5 ጠጅ 6 ጨቃ	
ጥ903	አሁን አልኮል የጠቀማሉ	1 አው 2 አልጠቀምም	
ጥ904	ለምን ያህል ጊዜ ይጠቀማሉ	1 በየቀኑ 2 በሳምንት ከ5-6 ቀን 3 በሳምንትከ1-4 ቀን 4 በወር ከ1-3 ቀን 5 በወር ከ1 በታች	
ጥ905	በቀን ምን ያህል መጠን የጠቀማሉ	----------	
ማጨስን በተመለከተ			
ጥ906	ሲጋራ አጨሰው ያውቃሉ	1.አው 2. አላወቅም	አላወቅም ከሆን ወደ ጥ911 የገዘለሉ
ጥ907	አሁን ሲጋራ ያጨሳሉ	1.አው 2. አላወቅም	አላወቅም ከሆን ወደ ጥ911 የገዘለሉ
ጥ908	በየቀኑ ሲጋራ ያጨሳሉ	1.አው 2. አላወቅም	
ጥ909	ለምን ያህል ጊዘ አጨሰዋል	----------	
ጥ910	በቀን በፍሬ ለምን ያህል ሲጋራ ያጨሳሉ	--------	
ጫትን በተመለከተ			
ጥ911	ጫት ቅመው ያውቃሉ	1.አው 2. አላወቅም	
ጥ912	አሁን ጫት ይቅማሉ	1.አው 2. አላወቅም	
ጥ913	ለምን ያህል ጊዘ ጫት ቅመዋል	1.ከ6 ወር ባነሰ 2 ለ1 ዓመት 3 ከ2-5 ዓመት 4 ከ5 ዓመት በላይ	
ጥ914	ባለአው አንድ ወር ጫት ቅመዋል	1.አው 2. አላወቅም	

አመሰግናለው