ASRAT WELDEYES HEALTH SCIENCE CAMPUS

POST GRADUATE NURSING PROGRAM

ADHERANCE TO DIABETIC SELF-CARE MANAGEMENT AND ASSOCIATED FACTORS AMONG TYPE 2 DIABETIC PATIENTS IN NORTH SHEWA ZONE PUBLIC HOSPITALS AMHARA REGION, ETHIOPIA 2023.

BY: FITSUM HUNDESSA

A THESIS RESULT SUBMITTED TO DEBRE BERHAN UNIVERSITY ASRAT WOLDEYES HEALTH SCIENCE CAMPUS, SCHOOL OF NURSING AND MIDWIFERY FOR THE PARTIAL FULFILLMENT OF THE REQUIRMENT FOR MASTER DEGREE OF ADULT HEALTH NURSING.

SEPTEMBER, 2023

DEBREBERHAN, ETHIOPIA

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SEPTEMBER, 2023

DEBREBERHAN, ETHIOPIA

DECLARATION

The undersigned agrees to accept responsibility for the scientific, ethical and technical conduct of the research and for provision of required progress reports as pre-terms and conditions of the research and publications office of Debre Berhan University of Asrat Woldeyes Campus.

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Examiners 'Name	Signature	Date
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2. _____	_____	_____.

Abstract

Introduction: Adherence to diabetes self-care management is a lifestyle modification for people with diabetes.

The Objective:- To assess adherence of diabetic self-care management and associated factors among type 2 diabetic patients in North shewa public hospitals, Ethiopia 2023.

Methods: The study employed a concurrent mixed-methods approach among 600 type 2 diabetic patients in north shewa zone public hospitals, Amhara Ethiopia. The study was conducted from May 5 –May 20, 2023. The quantitative data was collected by using semi-structured interview-administered questionnaire and chart review. Logistics regression was employed, and a p-value <0.05 was considered statistically significant. Qualitative data was collected by in-depth interview and audio recorded was first transcribed verbatim and then translated to the English language by the first author and was analyzed manually using thematic approach.

Result: - Out of the total 600 type 2 diabetic patients 262 (43.7%) with (95% CI: 40–47.8%) of the study participants had good adherence to diabetes self-care practices. The multivariable analysis indicated that type 2 diabetic patients who lived in urban area [AOR: 5.4, 95%CI: (1.05-8.7)] were 5.4 times more likely had good diabetic self-care practice than those rural residents. Those who attended high school level [AOR: 2.9, 95% CI: (1.3-6.6)] were 2.9 times more likely had good self-care practice, college & above [AOR: 5, 95%CI: (2-12)] were five times more likely had good self-care practice. Regarding to occupation unemployed was less likely by 66% had good self-care practice than employed. No availability of health care services [AOR: 0.19 95% CI: (0,09-0.37)] were less likely by 81% had good self-care practice than availability of health care services. These are significantly associated with diabetic self-care practice. The qualitative component clarified six themes lack of education & awareness, financial affordability, accessibility, lack of family support & having diabetic related complication were identified as barriers.

Conclusion and Recommendation: - This study indicated that adherence of patients with type 2 diabetes to the recommended self-care practices was considerably poor. Different factors, including the respondents who attended in high school level, higher level of education, who were lived in urban, unemployed and the respondents who had no availability of health care services had statistically significant with self-care practice. This was supported by the results from the qualitative part & thus the endorsement to strengthen diabetes health education to patients & their families. So diabetic patients require an integrated approach through treatment as well as health education which will increase the health and well-being of the patient.

Key words: type 2 diabetes mellitus, adherence to diabetes self-care practice, North Shewa Zone.

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ACRONYMS

ADA: American Diabetes Association

DM: Diabetic Mellitus

HbA1c: Glycosylated Hemoglobin

IDA: International Diabetic Association

IDF: International Diabetic Foundation

IGT : Impaired Glucose Tolerance

NCD : Non-Communicable Diseases

SMBG: Self Measuring of Blood Glucose

T2DM: Type 2 Diabetes Mellitus

WHO: World Health Organization

1 Introduction

1.1 Background

A metabolic condition with numerous etiologies, diabetes mellitus (DM) is defined by an elevated blood glucose level and abnormalities in the metabolism of carbohydrates, fats, and proteins as a result of problems in insulin secretion, insulin action, or both(1). Insulin resistance is a metabolic disorder known as type 2 diabetes that is characterized by a progressive loss of adequate cell insulin production and a rise in blood sugar levels (hyperglycemia)(2, 3).

According to estimations from the World Health Organization (WHO), Type II Diabetes Mellitus (T2DM) is the third-highest risk factor for early mortality globally, behind only high blood pressure and cigarette use. Furthermore, considerable epidemiologic research demonstrates that T2DM incidence is rising globally. It affects 463 million people and is expected to affect 629 million people by the year 2045, making up around 90% of all diabetic patients (4).

Poor eating habits and physical inactivity are the two main modifiable risk factors for developing type 2diabetes (DM2) in addition to genetic predisposition (5) , which accounts for 90% to 95% of all instances of the illness. The increased prevalence of type 2 DM worldwide was influenced by changes in lifestyle and an increase in obesity(6). It is a terrible, widespread chronic condition that frequently results in limb amputations, blindness, renal failure, and stroke(7)

According to the World Health Organization (WHO), increasing the efficacy of self-management support may have a more significant impact on population health than medical therapies. The term "self-management" refers to the alterations in lifestyle required to manage a chronic illness(8).

Activities that people take on their own initiative to maintain their own health, happiness, and quality of life. Additionally, it is crucial and absolutely necessary in the overall control of diabetes and is frequently regarded as the cornerstone of diabetic care (9, 10).
Self-care practices in diabetes are critical in keeping the disease under control, and as much as 95% of the self-care is usually provided by the patients or their families(11). Self-management refers to the individual’s capacity to manage the symptoms, treatment, physical and psychosocial significances and lifestyle changes characteristic to living with a chronic condition(12)

Adhering to diabetic self-care management involves changing one's lifestyle and may involve taking medication, recommended diet, regular physical activity, foot care practice and self-monitoring blood glucose (SMBG) (7, 13). Adherence is a potent, complex process with many interrelated components. Factors relating to psychology and demographics, and society have been linked to diabetes patients' adherence. Commitment to these self-care practices enhances blood sugar regulation, maintains blood pressure, lessens the severity of problems, and lowers medical expenses(14).

1.2 Statement of the problem

Ethiopia is among the top five countries in Africa with regard to the number of people with DM. According to the latest IDF Atlas, 1.9 million people live with DM in 2021(8, 15). Type 2 diabetic become a global pandemic and threat to both human health and the world economy, diabetes is high on the international health agenda(16).

It affects all organs and almost no organ is free of diabetes-related complications, but mainly, the eyes (retinopathy, blindness), kidneys (nephropathy), and nerves (neuropathy), blood vessels, musculoskeletal system (poor wound healing), and oral cavity (periodontal diseases) are affected(17).

Diabetes self-care practices need to be persistent to achieve a reduction in diabetes complications and improve quality of life. The annual increase in severity of diabetes has been linked to lack of practice of proper self-care, while good self-care practices also reduce the risk of co-morbidities(10)

Inadequate self-care practice adherence is still a serious global health issue (10). According to the Rio de Janeiro Type 2 Diabetes Cohort Study's findings, uncontrolled chronic diabetic complications increase morbidity and premature mortality, placing a significant burden on people, families, society, and health care systems globally (18). A study done in Nigeria, DM is associated with high rates of mortality, morbidity, and disability, high expenses, and a reduction in quality of life. This frequently places a heavy load on the person and family (10).

A related study in Dire Dawa revealed that the frequency and prevalence of complications rise as a result of poor self-care, which raises morbidity and mortality. To reduce morbidity and mortality different articles were showed in different parts of the world. Although there was significant variation across countries, self-care practice on diabetes is less than optimal in all countries Diabetic’s self-care practices in Ethiopia is still low, which is in the range of 39–63.3%(19)

According to qualitative study in Iraq showed that program for diabetic self-management education (DSME). Because they were already verified in communities with distinct health beliefs and cultures from Iraqi patients, it is unfortunately impractical to immediately deploy a validated DSME program due to its deficiencies(20). A related study found that Pakistani diabetes self-care is frequently hampered by psychological and cultural variables (5).

The qualitative study result from Ethiopia reveals that understanding of patient self -care culture and value system are influenced on their diet, exercise choices, trend of blood glucose monitoring and compliance with prescribed medication(21). According to a parallel study conducted in Tigray forgetfulness, a sense of guilt, and the inability to disregard food flavor were the biggest obstacles to self-care(22).

So far most studies conducted in sub Saharan African countries including Ethiopia were used quantitative approach and also focused on some specific domains such as adherence of glycemic status, anti-diabetic medication and disease related condition. Therefore, the purpose of this study would to assess adherence of diabetic self-care management among type 2 diabetic patients by supporting qualitative method and attempt to fill the gap by adding health care facility related variables.

1.3 Significance of the study

Adherence to self-care practice among diabetes patients is essential to limit the complex condition of the disease in a communal setting. Those with type 2 diabetes who practice self-care adhere to recommendations for good nutrition, frequent exercise, diabetic foot care, self-monitoring of blood glucose (SMBG), and medication. Following these self-care habits helps to control blood sugar levels, lessens the severity of illness consequences, lowers blood pressure, and saves money on medical expenses(9).

The current study can utilize study population from different health institution and had better generalizability. Therefore the finding of this study would be important for the health professionals, zonal health department, regional and federal ministry of health and policy makers to emphasize adherence to diabetic self- care management and associated factors among diabetic patients.

Health practitioners can identify high-risk for disease related complication early and take prompt action to improve their outcomes by giving education emphasized on management of diabetes, helping patients improve their health and quality of life is considered an important aspect of diabetes self-care for patients and their relatives. Therefore, the finding of the current study will be helpful to design adherence to diabetic self-care practice and to explore different barriers of self – care practice and also it helps every staff in diabetic clinic to improve the health information about self-care practice.

2 Literature review

2.1 Magnitude of adherence to self-care practice of Type 2 DM

Type 2 DM accounts for 90% to 95% of all DM cases, poor eating habits and physical inactivity are the main modifiable risk factors for developing the disease(6). Good medical adherence to medication, food, and physical exercise are important for diabetes patients to reach and maintain normal blood glucose levels. Ensuring frequent foot care minimizes foot ulcers and issues including amputation(23). Patients who practice recommended self-care behaviors can enhance health outcomes and improve their quality of life. Self-care practices that have a favorable impact on diabetic outcomes include following dietary advice, exercising, taking medications as prescribed, self-monitoring blood glucose (SMBG) and taking precautions including taking care of one's feet(24).

2.1.1 Diet management practices adherence condition

The findings of a study on the evaluation of dietary practices among diabetic patients in the United Arab Emirates supported this. The study revealed that the implementation of healthy lifestyles, particularly healthier dietary practices and physical activities to delay the expansion of complications and prevent early mortality (25). The study conducted in Debre Markos showed that the majority of respondents 221(92.5 %) were trying to manage their diet and only 32.9 % of them were trying weight reduction (26).

2.1.2 Physical Activity Adherence condition

According to the WHO, insufficient physical activity, defined as less than 150 minutes of moderate physical activity per week [or equivalent] ADA recommends at least 150 minutes per week of moderate strength aerobic physical activity that achieves 50 -70% of maximal heart rate(27).

A study conducted in Osun State, Nigeria 45.2% had moderate level of adherence to physical exercise (10).A similar study done in Harar, Ethiopia, showed that only 31.1% had exercise for thirty minutes per day(28). A parallel study in Addis Ababa conducted that 194 (46.3%) of the study participants adhered to physical exercise, which means they were performed at least 30–60 minutes of moderate aerobic activity per day or 3 days per week(11). Similarly the study finding

in Debre Berhan referral hospital (60.2%) had self-care practice of regular physical activity over 30 minutes more than five days(29).

2.1.3 Blood sugar testing adherence condition

The study conducted in Ghana described that SMBG was the least adhered to by the participants(14). Similar study in Gamo Gofa revealed that almost half, 323 (49.9%) of the respondents were aware of their blood glucose level(7). A Study conducted in Tigray showed that having glucometer at home were 3.7 times more associated with good self-care practice than to those who were not having glucometer at home (AOR = 3. 719; 95% CI [1.700, 8.139])(30) Study conducted at Tikur Anbessa Specialized Hospital indicated the majority 270 (84.4%) respondents were not adhered to Self-Monitoring of blood glucose practice (13)

2.1.4 Diabetic Foot care adherence condition

Diabetic Foot Care among Patients Attending three tertiary hospital in Nigeria and result showed that of 352 diabetes patients, 30.1% had good knowledge yet only 10.2 % had good practice of DM foot care and the majority (78.4%) patients with poor practice had poor knowledge of foot care. study in Dire Dawa was conducted that (62.1%) of the respondents had practiced the recommended diabetic foot care, which scored mean and above the mean. From the total respondents, 386 (76.3%) had washed their feet all days of the week, 273 (54%) of diabetic patients had checked their feet on all days of the week (19). A parallel study in Debre Berhan referral hospital showed that 240 (59.3%) of respondents reported they checked their feet every day five days(29).

2.1.5 Medication adherence condition

According to research, the Middle East has poorer drug adherence rates, ranging from 38% to 41%(13). WHO has reported that as many as 50% of the patients with chronic diseases do not take their medications as prescribed (4). Diabetes patients who don't take their medications as prescribed run the risk of complications, which increases mortality, increases usage of healthcare services, raises treatment expenses, lowers quality of life, and even puts more financial strain on the nation(13) .

Study finding in New Delhi revealed that a total of 309 (82.4%) participants were adherent to the intake of their prescribed anti-diabetic medication(23). Study of 171 type 2 diabetes patients at Kenyata National Hospital revealed that 127 (74.3%) patients made up the majority of the group

diabetes treatment(31). Similar study finding revealed that the majority (87.7%) of the participants had self-care practice of taking recommended medication days(29).

The prevalence of adherence to self-care practice of Type 2 DM were in Philippines, 43.7% of participants had good self-care practice (32). A study conducted in Ethiopian general hospitals about (63.1%) study participants had good self-care practice (33). A study done in Hawassa 47.8% (95%CI: 41.2-55) of patients had good adherence to type 2 diabetic self-care practice(34). Another study conducted in Dilla university hospital (76.8%)(35), Harar town, Eastern Ethiopia (39.2%)(28), Dessie overall, 150(55.8%) had good adherence to diabetic self-care practice (36).

2.2 Factors influencing Adherence to type 2 diabetic self-care activities

Different factors were influencing on adherence to diabetic self-care management. According to different literatures conducted that socio demographic, such as (age, sex, marital status, living place, level of education and occupation), health care facility related factors (access to health care facility, patient satisfaction with quality health care services, physician patient relationship and communication of critical information), disease related factors (duration of type 2 DM, co- morbid and illness associated complication), treatment related factors (route of administration and duration of treatment) (11, 13, 37, 38).

2.2.1 Socio demographic factors

Patient related variables are influences/barriers to adhering to suggested self-care procedures in type II Diabetes Mellitus**.** Age is a key predictor of Type II Diabetes Mellitus self-care routine adherence. A mixed study in Nepal is around 26% in adults aged 60 and above, between 4.3% and 12% in adults aged 30 years and above(38).

A study finding in Morocco was conducted the older age group (>55 years of age) associated with good dietary practices(39). Similar study in Addis Ababa revealed that respondents within the age group of 40–49 years were 11 times more likely to be adhered to their prescribed anti-diabetic medications compared with those aged 60–76 years, (AOR [95% CI] =11 [1.03–13.6])(11).

The study results Hawassa University Comprehensive Specialized Hospital. Sex is one of the factors statically significance association with self- care practices. 54.6% (95%CI: 48.8-61.7) of female respondents adhered to recommended healthy diet management(9). Similar study in Addis

Ababa revealed that 33 (7.9%) and 36 (8.6%) of the respondents who adhered to the SMBG were male and female, respectively(11)

A study conducted in Morocco revealed that residents in rural areas reported better exercise practices (1.72 [1.07 - 2.78])(39). A study finding in Gamo Gofa zone public hospital participants who lived in the rural areas were 7 times more likely to have poor diabetic self-care than their counterpart (AOR; 7.16; 95% CI 3.31–15.46)(7) A cross-sectional study done in Debre Markos University the study participants who were rural residents were 29 % (AOR: 0.71, 95 % CI 0.40–2.23) less likely to practice self-care habits than those urban residents(26)

Regarding to occupation, unemployed were 2.4 times more likely to practice blood glucose monitoring than merchants (AOR [95% CI] =2.4 [1.3–5.9]) (11). Similar study in Debre Markos conducted that the odds of good diabetic self-care practice were 1.36 times (AOR: 1.36, 95 % CI 1.41-3.43) higher among respondents who were governmentally employed than those who are not employed(26). North shewa zone, Oromia being employed (AOR; 0.146, 95%; CI 0.18–0.94), having information on diabetic self-care (AOR; 3.003, 95% CI 1.24–5.3).

A study in Osun State Nigeria conducted that level of education and / or diabetes knowledge plays a vital role in practicing self-care (RII = 0.81)(10). A study conducted in Dire Dawa when a person was educated had increment of their knowledge about self-care practice and its advantage (19). A mixed study revealed that having diabetes education (AOR = 2.684, 95% CI (1.633, 4.412)) were significantly associated with good diabetes self-care(15). Similar study revealed that diabetic patients who had college and above level of education were 1.41 times (AOR: 1.41, 95 % CI 0.54–3.65) more likely to have good self-care practice than those who were under diploma level of education(26)

2.2.2 Health care facility related factors

Self-care and health education are important aspects of managing diabetes patients, according to the American Diabetes Association (ADA). Given the difficulties individuals with type 2 DM have with self-care, drug adherence, and routine checkups, health education is especially crucial (40). Comprehensive care and health education are necessary for effective diabetes treatment. Access to distance from healthcare, the standard of healthcare services, the doctor-patient

relationship, and the dissemination of critical information are hospital-related factors that affect diabetes treatment(31).

2.2.3 Disease related factors

The results of regression analysis reveal that the lack of disease acceptance has a negative impact on the patient's adherence to dietary recommendations(41). The study conducted that duration of diabetes illness ⩾10 years COR [3.48 (1.59, 7.63)], people with diabetes who were not develop complication [COR 1.61 (1.16, 2.22)] were associated with good adherence to diabetes self-care management practice(7). A mixed study revealed that having complications (AOR = 1.956, 95% CI (1.172, 3.262)), having co-morbidity (AOR = 0.443, 95% CI (0.262, 0.749)) were significantly associated with good diabetes self-care(15).

2.2.4 Treatment related factors

The need for patient adherence to treatment stems from the fact that diabetics need to be self-motivated to follow a lifelong regimen of pharmaceutical and non-pharmacological therapy (42). The study conducted in Poland showed that 52.47% of the participants presented a low level of adherence, 39.20% had a moderate level of adherence and only 8.33% had a high level of adherence(40). A study finding in Hawasa revealed that all respondents received at least 80% of the prescribed doses and frequency of anti-diabetic agents and 60.4% had good glycemic control(9).

A qualitative study in Singapore is widely accepted that individuals with diabetes must actively engage in self-care activities to control their condition, including diet management, regular exercise, medication regimens, regular foot screenings(43, 44).

In qualitative study in Addis Ababa observed that the patients must give their full and ongoing participation in order to effectively control their diabetes. Poor self-discipline, lack of support from family and/or doctors, poverty, and lack of access to health facilities are some of the main reasons why people don't follow through(21).

According to qualitative descriptive study in Mexico City T2D in 2016, 87% reported following a medical treatment; however only 16.6% in the social security health care system and 22.3% in the public health insurance system reported meeting targets for glycemic control(45).

Similar study conducted in Malaysia revealed that which the most commonly reported barriers among patients with diabetes lack of understanding of the general plan of care and hindrance from insufficient metabolic control and progressive disease despite compliance with the self-care approvals(46)

Most studies examining patient barriers to self-care come from developed countries such as the United States, Canada, and the United Kingdom. These studies have identified potential barriers to self-care behaviors in patients with type 2 diabetes as poor patient-provider communication, family support, inadequate understanding or knowledge of the disease, lack of motivation to change, need for education, cultural and psychological factors(47).

Lack of education is one of the barrier according to this, the study conducted in Pakistan education from physicians is one of the most important determinants for change in self-care practices(5). Similar study in Addis Ababa revealed that some of the participants also reported that adhering strictly to diabetes dietary recommendations is boring and practically impossible; food restrictions intensify their cravings and make life more stressful (21).

The study finding in Singapore revealed that most patients reported that these family members assisted with a wide range of management strategies, such as adjusting to new diet regimes and roles dictated by the patient, assisting with the preparation of recommended meals (48).Similar study in Pakistan getting support from family members is one of the important determinants of compliance with medication-taking(5).The study result from Tigray showed that lack of family support, shame feeling, forgetfulness and not being able to ignore foods(22).

Both patient and health care provider perspectives are relevant when examining barriers to self-care. Increased patient involvement in treatment decisions and satisfaction with communication with provider has been reported to lead to improved adherence to self-care behaviors and better patient health outcomes (47).

The use of herbal remedies, willful non-adherence, difficulties breaking old habits, feeling or missing motivation to exercise were barriers related to attitudes, as were the ideas that diabetes was brought on by supernatural powers or curses. Inadequate family support, social stigma, and cultural views were obstacles pertaining to subjective norms. Inadequate family support, social stigma, and cultural views were obstacles pertaining to subjective norms (47).

2.3 Summary

Overall, the themes of the literature review point to the importance of the patient's self-care routines in maintaining a favorable diabetic status. They are especially crucial because there are numerous chances to make improvements. The above research findings showed that the popular respondents were adhered to prescribed medication, diabetic foot care, diet management practices and physical activity. And it has been seen that a variety of factors, including financial resources, emotional support from family or friends, and prescription types, have an impact on self-care habits.

Conceptual framework

The framework was developed through review of different literatures. The diagram indicates that both adherence to diabetic self- care management and associated factors among type 2 diabetic patients in north shewa zone public hospitals, Ethiopia

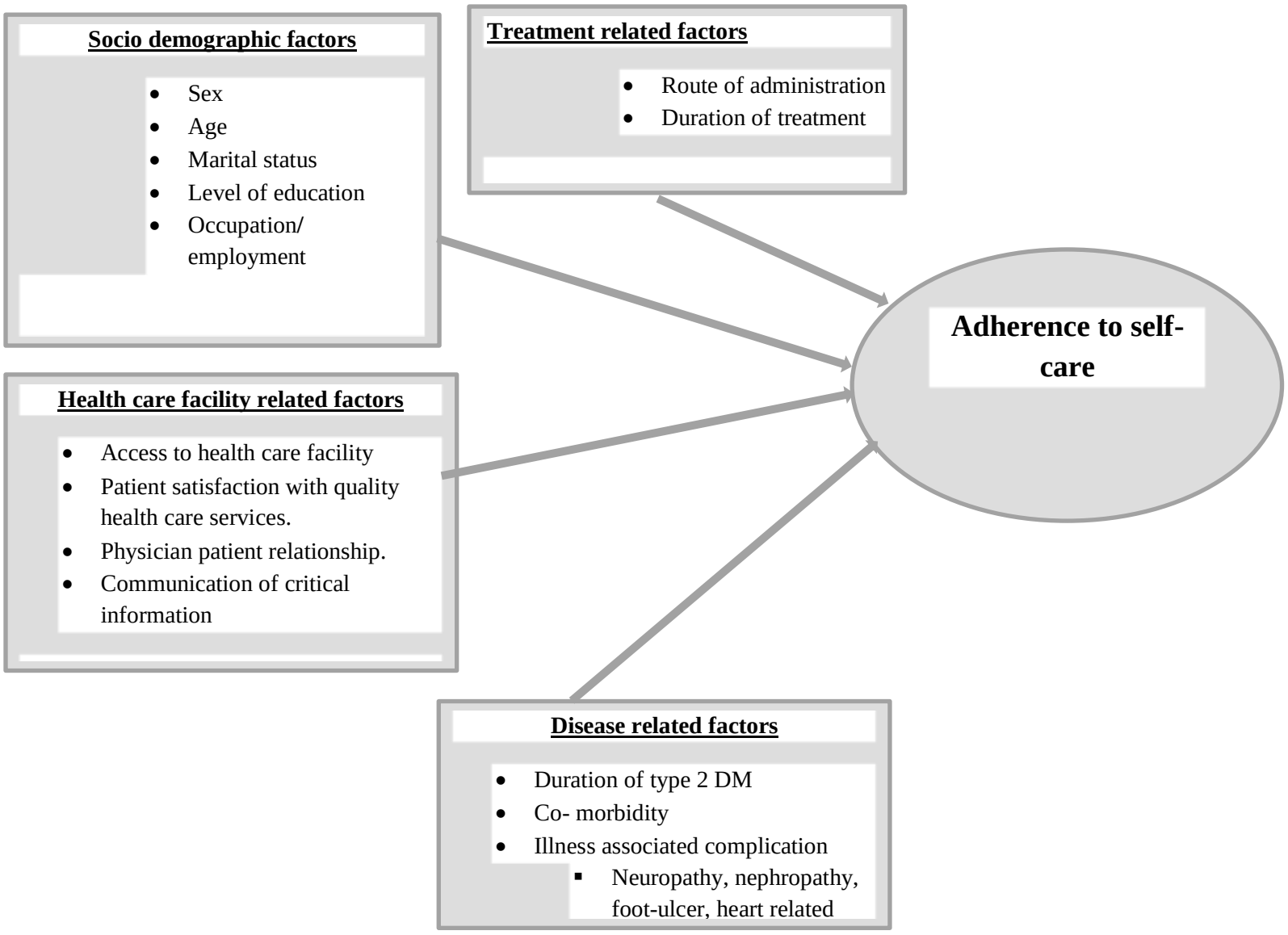

Fig.1 A conceptual framework for adherence to diabetic self- care management and its associated factors adapted from (9, 13, 19, 31)

3 Objectives

3.1 General objective

- ✓ To assess adherence to diabetic self-care management and associated factors among type 2 diabetic patients in north shewa zone public hospitals, Ethiopia 2023.

3.2 Specific objectives

- ✓ To assess adherence to self-care practices among type2 diabetic patients in north shewa zone public hospitals, Amhara region, Ethiopia, 2023.
- ✓ To identify factors associated with diabetic self –care practices among type2 diabetic patients in north shewa zone public hospitals, Amhara region, Ethiopia, 2023.
- ✓ To explore barriers of self-care practices among type 2 diabetic patients in north shewa zone public hospitals, Amhara region, Ethiopia, 2023.

4 Methods and material

4.1 Study area and period

The study was conducted in hospitals that are found in the north shewa zone, Amhara Region, Ethiopia. The north shewa zone is one of the 12 zones found in the Amhara regional state. Its city administration is Debre Berhan, which is located 130 km from Addis Ababa and 695 km from Bahir Dar, the capital city of Amhara regional State. The total population of the zone is 2322148, out of which 1171150 are males and 1150638 are females. The zone is bordered at the South and the West by the Oromia special zone on the northeast; and the Afar region on the east. According to the zonal health department report, north shewa zone has 164 private clinics, 97 governmental health centers, 391 health posts, 8 primary hospitals, 2 general hospitals, and one comprehensive specialized hospital. North shewa zone has a total of 11 public hospitals (56). The study was conducted from May 5- May 20, 2023.

4.2 Study design

The study employed a concurrent mixed-methods approach.

4.3 Source population

All type 2 diabetic patients who got services in north shewa zone public hospitals was considered as source population for both quantitative and qualitative study design.

4.4 Study population

Selected type 2 diabetic patients who got services in the selected public hospitals for both quantitative and qualitative study design.

4.5 Inclusion and Exclusion Criteria

4.5.1 Inclusion criteria

Study subjects included in this study was those who full fill the following inclusion criteria

- Age greater than 18 years
- Follow up for at least six months

4.5.2 Exclusion criteria

- Who could not communicate
- Pregnant woman

4.6 Sample size determination

- **Quantitative part**

The sample size was calculated using single population proportion formula based on the following assumption. Adherence to diabetic self -care management was taken from the study done at Debre Berhan referral hospital which was 44.7%(29) , level of confidence 95%, margin of error 5% none response rate 10% and give the final sample sizes of 417.

$$n = \frac{[Za/n\ ]\ p(1-p)}{d^2}$$

n=sample size

p =prevalence =0.447

d= error of margin =5 %(0.05)

$(z\alpha/2)^2$=standard confidence interval (95%)

p =prevalence =0.447

$$n = \frac{[Za/n\ ]^2\ p(1-p)}{d^2}$$

$$n = \frac{[1.96\ ]^2\ 0.447(1-0.447)}{0.05^2} = 379$$

n = 379

Since n=379 by adding

10% non- response rate is 38

Adding 10% non-response rate is 417

By using design effect 1.5, the total sample size becomes 626.

4.7 Sampling technique

A Simple random sampling technique was used for the selection of hospitals after identifying all public hospitals in the north Shewa zone. Debere-Berhan Comprehensive Specialized Hospital (DBCSH), Mehal Meda General Hospital, Deneba Primary Hospital and Shewarobit hospital were selected randomly and then drew a sample from each hospital based on primary data from type 2DM patients came to follow up and from their medical record number (MRN) was used as a sampling frame. The sample has been allocated proportionally for each hospital. Study participants were selected using a systematic random sampling technique. First, determine the sampling interval (K) value by dividing the total type 2 diabetic patients in the study period by the total sample size, which gives $2.268 \approx 2$. The first participant was chosen by lottery method, and the rest were chosen at every 2 interval until the desired sample size was reached.

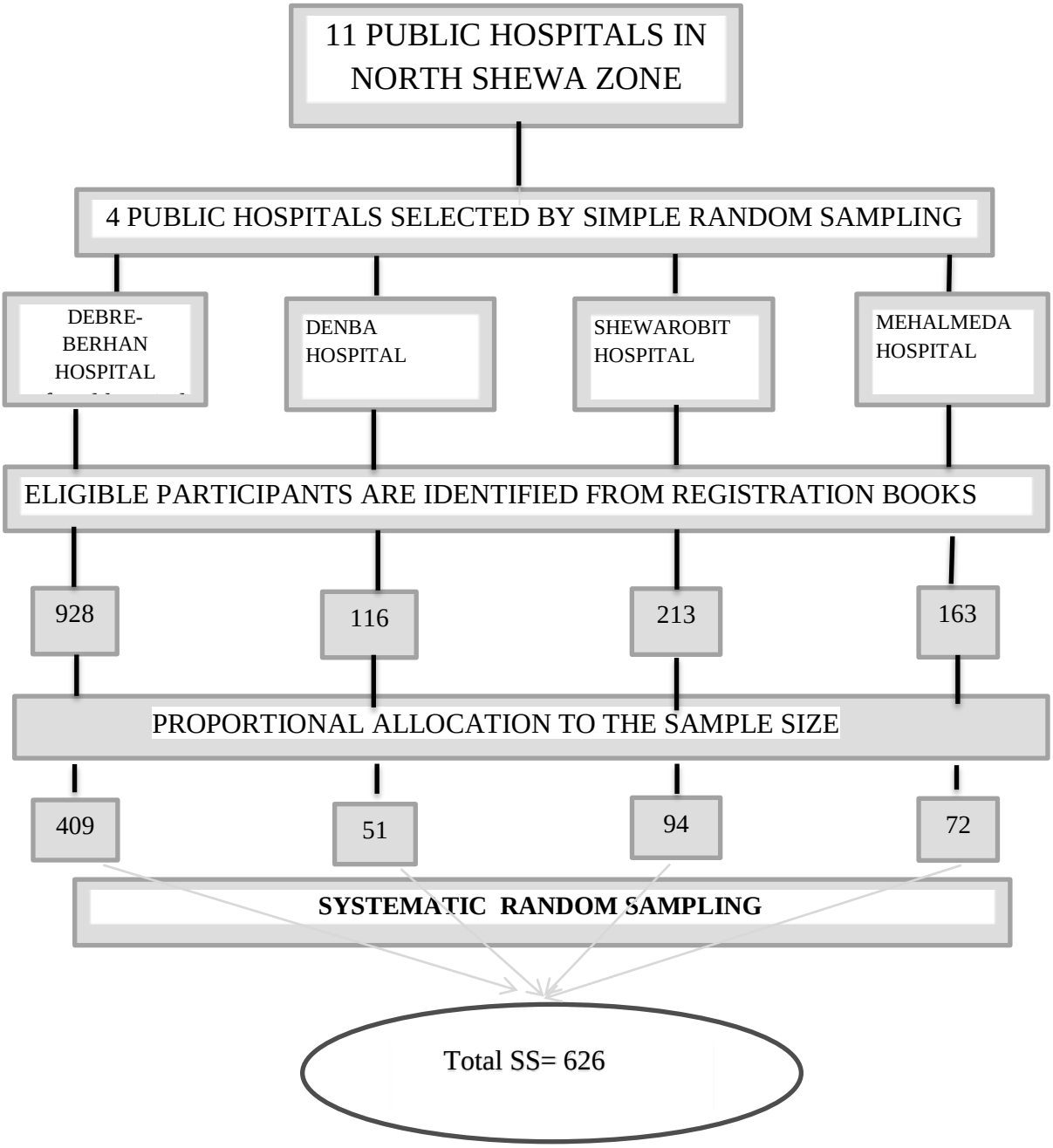

Figure 2. Adherence to diabetic self- care management and its associated factors among Type 2 diabetic patients in north shewa zone public hospitals

Qualitative part: The number of participants for the qualitative interview were 15 type 2 DM patients from four public hospitals that have been selected as participants it estimated from related researches (15, 22). From Debre Berhan comprehensive specialized hospital, Deneba primary hospital, Mehalmeda general hospital and Shewarobit primary hospital were participated using in-depth interviews till theoretical saturation during their monthly follow-up in hospital.

4.8 Data collection method

The data was collected by using a semi- structured interview-administered questionnaire and chart review. Quantitative questionnaire on adherence to diabetic self- care management was developed after reviewing of similar literatures (9, 13, 19). It was prepared in English after a thorough literature review of previously validated published studies. Then, the questionnaire was translated to the Amharic version and translated back to the English version for its consistency, completeness and to reduce translation error of questionnaire, the data collector used Amharic version questionnaire to collect data from and to ask type 2 DM patients on face to face interview. Four BSc nurses were employed for the data collection. Training was provided for data collectors on different issues regarding the research.

Qualitative part:

The study participants from the quantitative part, they were selected using systematic sampling at every other patient. The first respondent has been chosen by lottery from the first two patients to the hospital. A purposive sampling procedure was used to recruit type 2 DM patients for the study based on their sex, age, and the period of their diagnosis(15). This was done to be able to see the different methods of self-care practices from different perceptions.

All interviews were conducted by the first author in a private space within the hospital compound. The interview was conducted in Amharic language and tape recorded with verbal consent obtained from the study participants, then translated into English. The required data would be collected by four BSc nurses. Training was provided for data collectors similar to that of quantitative part.

4.8.1 Data collection tool

Data were collected by using a semi-structured interview administered questionnaire. Which was containing five subparts? Part one is socio demographic factors, it included 5 questions, Six questions made up the tool's second section, "Health care facility related factors," and three questions made up its third section, "Disease related factors." The fourth section included two questions and treatment-related parameters. The last one was the outcome variable or Adherence to diabetic self-care activities consisted of five domains, such as adherence of diet, physical activities, blood sugar testing, foot-care and anti-diabetic medication. Each domain has 4, 2, 2, 4 and 3 questions respectively. Within qualitative tools age and sex included in socio demographic questions for type 2 DM patients and also ask period of diagnosis. Four barriers of adherence to diabetic self-care practice questions were included in qualitative part. If the data were collected anonymously, confidentiality and beneficence would assure throughout the study period.

4.9 Study variable for quantitative study

4.9.1 Dependent variable

- ✓ Adherence to self- care

4.9.2 Independent variable for

- ✓ Socio demographic variables
  - Sex
  - Age
  - Marital status
  - Level of education
  - Occupation/ employment,
- ✓ Health care facility related factors
  - Access to health care facility
  - Patient satisfaction with quality health care services.
  - Physician patient relationship.
  - Communication of critical information
- ✓ Disease related factors
  - Duration of type 2 DM
  - Co- morbidity
  - Illness associated complication
- ✓ Treatment related factors
  - Route of administration
  - Duration of treatment

4.10 Operational definition

Adherence to diabetic self- care management(13)

- Adherence: the extent to which a person's behavior concerning taking medication, following a diet, and/or executing lifestyle changes, corresponds with agreed recommendations from a health provider(9).
- Self-care**:** activities that individuals initiate and perform on their behalf in maintaining life, health, and wellbeing(9).
- Self-care practice: It is a daily regimen task that the individual patients were performed to manage diabetes on their behalf (dietary practice, exercise, medication, daily foot care, monitoring blood glucose)(29)
- Diabetes self-care practice was assessed by participants' responses to the 14 item Summary of Diabetes Self-Care Activities (SDSCA) in the last 7 days. Response choices for each question were range from 0 to 7 based on the number of days on which the indicated behavior was performed(29).
- The overall mean score was estimated by summation of each item of the scale and divided by the total number of questions. Therefore, after calculating the overall mean score, participants who scored equal to or greater than the mean score were classified as having good diabetes self-care practice and those who scored below the mean were considered as having poor self-care practice(29).

Data quality management

The questionnaire was pre-tested on 5% of sample size done in Debre sina primary hospital in north shewa zone and necessary adjustment was made. Both the supervisors and the data collectors would receive adequate training. We should convey to the supervisors and data collectors the significance of the study and the requirement for honest responses. Any uncertainty or mistakes discovered during data collection were corrected. Supervision of the data collection process by the investigator and supervisors could be done to assure genuine data collection. The collected data were reviewed and checked for completeness before data entry. It was done to check for the reliability, validity, appropriateness of format, wording and time needed to fill the questionnaire.

4.11 Data Processing and Analysis

Data were cleaned, edited, and entered using EPI data version 4.6 and transported to SPSS version 25 statistical software for further analysis. Descriptive statistics was used to organize and summarize the variables. Bivariable analysis for each independent variable with the outcome variable was performed to select candidates for multivariable analysis. All independent variables with a p-value less than 0.25 were taken as candidates for the multivariable logistic regression model then finally p-value of less than 0.05 at 95% CI were used to declare statistical significance. Multicolinearity test was used to see the linear correlation among independent variables by using standard error and there was no existence of multicollinearity. Hosmer and Lemshow goodness of fit test was done and the model was fitted. The adjusted odds ratio (AOR) from multivariable logistic regression was used to measure the strength of association between dependent and independent variables. Finally, summary measures, tables, and figures were used to present the findings.

Qualitative part: A thematic method was used to manually examine the data, and as a result, codes and groups that made understanding easier arose. In addition to the quantitative findings, the findings were provided in textual narrations and quotations, and they supported the quantitative findings.

4.12 Ethical consideration

This study was conducted after obtaining ethical clearance from Debre Berhan University College of health sciences ethical review board. A formal letter obtained from the college of health sciences, Debre Berhan University, was submitted to the hospital administration to gain their co-operation. The respondents' rights and dignity were also respected. Written informed consent was obtained from the study participant to confirm willingness for participation after explaining the objective of the study. The respondents were notified that they have the right to refuse or terminate at any point of the interview. The information provided by each respondent was kept confidential throughout the research process.

4.13 Dissemination plan

The result of this study will be presented to Debre Berhan University, Asrat Woldeyes Health Science Campus**,** Department of Adult Health Nursing and copy of the study publication will be distribute to the Ministry of Health, Amhara Regional Health Bureau, for North shewa zone health department, districts, health centers and other concerned bodies through reports and publication on an appropriate journal.

5 Result

5.1 Socio demographic characteristics' of result

From a total of 626 participants, 600 were involved in this study making a response rate of 96 %. Of these, more than half 323(53.8%) were male. The age of study participant ranged from 30 to 85 with the mean age of 52.65 years (S.D ±12.347). Four hundred thirty (71.7 %) fail within the range of 30-60 years of age group. More than half, 313 (52.2%) of the participants were married. Among the study participants, Nearly 371(61.8%) of the participants was from an urban area. Regarding to educational status, 192(32%) were college and above. In terms of occupation, 445 (74.2%) were unemployed (Table 1)

Table1. Socio-demographic characteristics of type 2 diabetic patients in public Hospitals of north shewa zone, Ethiopia, 2023. (n=600)

Variables	Category	Frequency	Percent (%)
Age in year	30-60	430	71.7%
	61-70	118	19.7%
	>70	52	8.7%
Gender	Male	323	53.8%
	Female	277	46.2%
Marital status	Single/never married	117	19.5%
	Married	313	52.2%
	Divorced	61	10.2%
	Widowed	109	18.2%
Residence	Urban	371	61.8%
	Rural	229	38.2%
Level of education	No formal education	141	23.5%
	Primary School	105	17.5%
	High School	162	27%
	College and above	192	32%
Occupation	Unemployed	445	74.2%
	Employed	155	25.8%

5.2 Health care facility related factors

More than half, 361(60.2%) type 2 DM participants leaved in urban area. Of the respondents, nearly 350(58.3%) of them had got health care services at any time. According to the finding of this study around 515 (88.5%) of the participants were obtained satisfied with the quality of health care services and around 525(87.5%) got sufficient attention from health care professionals. Almost 522(87%) study participants said that "all healthcare practitioners told

about the critical nature of the disease," but from all study participants the only 245(40.2%) were got published patient education materials on diabetes (Table 2)

Table 2. Frequency and percentage distribution of health care facility related factors among type 2 DM patients in north shewa zone public hospitals, Ethiopia, 2023.(n=600)

Variables	Category	Frequency	Percent (%)
Distance from the hospital.	0-5km	361	60.2%
	6-10km	131	21.8%
	Beyond 10km	108	18%
Availability of health care services	Yes	350	58.3%
	No	250	41.7%
Quality of health care services	Yes	515	85.8%
	No	85	14.2%
Sufficient attention	Yes	525	87.5%
	No	85	12.5%
Published education materials	Yes	245	40.8%
	No	355	59.2%
Council about the critical nature of self-care	Yes	522	87%
	No	78	13%

5.3 Disease related factors

The mean duration of DM was 5.37 years with SD of ±3.114 years. 351(58.5%) respondents had DM duration between 1 and 5 years, 111(18.5%) had DM-related complications. Nearly 148(24.7%) admitted in hospitals as a result of Diabetes Mellitus complications for the last one year. With regard to presence of comorbidity along with diabetes, 358(59.7%) of respondents had comorbidity, among which hypertension was the most common 173(28.8%) followed by heart failure and Renal disease (Table 3)

Table 3. Frequency and percentage distribution of disease related factors among type 2 DM patients in north shewa zone public hospitals, Ethiopia, 2023(n=600)

Variables	Category	Frequency	Percent (%)
DM duration since its diagnosis, in years	1-5 years	351	58.5%
	6-10 years	203	33.8%
	>10 years	46	7.7%
DM treatment duration, in years	1-5years	348	58%
	6-10 years	203	33.8%
	>10 years	49	8.2%
Comorbidities			
	Yes	358	59.7%
	No	242	40.3%
Complication	Yes	111	18.5
	No	489	81.5%
History of hospitalization related to DM complication			
	Yes	148	24.7%
	No	452	75.3%

5.4 Treatment related factors

Most respondents 450(75%) took oral hypoglycemic agents. Of all participants 113(18.8%) were took both oral anti diabetics drug and insulin for their diabetes management. The remaining study participants were using insulin therapy. Regarding to this 127(21.2%) were took insulin therapy one times per day.

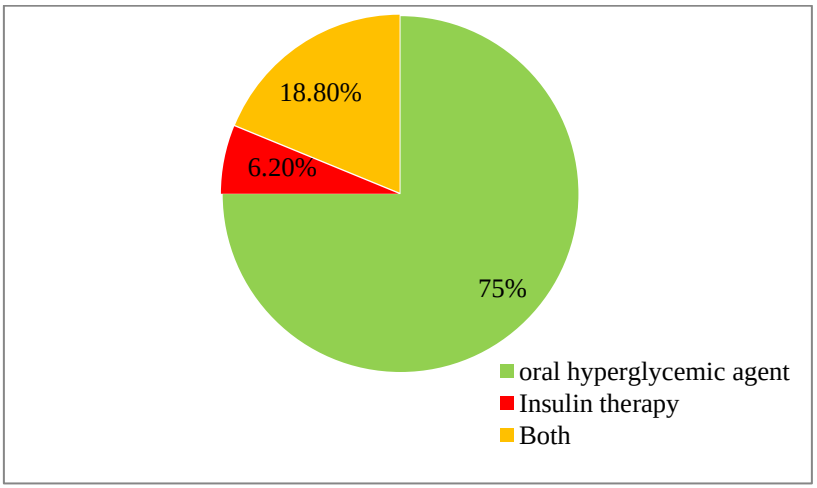

Figure 3:- Diabetes management type among adult type 2 diabetic patients, in North Shewa Zone public hospitals, Ethiopia 2023**(**n=600)

5.5 Frequency of adherence to diabetic self- care management

The majority 91.8% of the study participants had self-care practice of taking recommended medication, nearly 41% respondents had self-care practice of regular physical activity over 30 minutes more than three days per week, and 184 (30%)of respondents reported they checked their feet every day. Nearly 35.8% of respondents had good diet adherence and also around 26% of the respondents had good blood glucose test. The overall mean score for self-care among the study participants was 1.4367(SD ±0.49639). Overall, 262 (43.7%) of participants had good self-care practices.

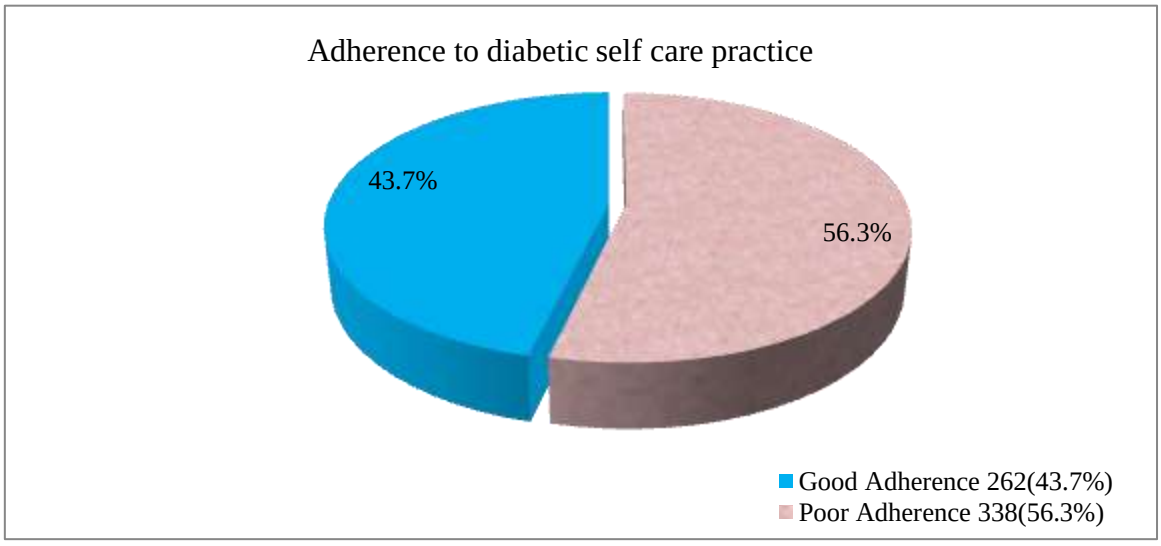

Figure 4:-The overall mean adherence to diabetic self-care practice among type 2 DM patients , in North Shewa Zone public hospitals, Ethiopia 2023(n=600)

Adherence to Diabetes Self Care and its barriers

A total of 15 type 2 DM patients participated in the qualitative interview study. The participants' age ranged from 35 to 68 years, with regard to their sex, 9 participants being male, while the remaining was female. Their duration of diagnosis ranged from 1 to 12 years. The six themes related to barriers for adherence to diabetic self- care practice that were recognized lack of education, financial affordability, limited awareness and negligence towards adherence to diabetic self -care practices, accessibility, lack of social support & having diabetic related complication.

Theme-1 Lack of education

Lack of information

Some participants are unable to read and write, some of them have lack of information due to health care providers were not well informed about adherence to diabetic self-care practice during follow up.

"*My children are not around all the time and I'm not well educated, so I don't know all the things should do to take care of my-self and miss out my medication."* (54 years female respondent)

Negligent

Most of the respondents consider their anti-diabetes medications as the most important component of the diabetes management and their existence, but they should be omit appropriate doses.

"…I don't take my medicine on time…."(65 years female respondent)

Theme-2 Financial Affordability

Most study participants felt that living with DM was very expensive, which required them to make adjustments in many things. They were recognized diet as a vital component of self-care practice for people lived with diabetes. Affordability of healthy food is a commonly mentioned barrier to accepting a recommended diet strategy. In this study respondents could not afford to buy appropriate and recommended food since most of them were unemployed.

"*…I really try to take care of my-self in every way, but it's hard to keep with this current living condition…."* (35 years male respondent)

Theme-3 Limited awareness & negligence towards diabetic self-care practices

Diabetic patients were not appropriately aware of the importance of diet, and did not know how to prepare their meals, family meal preparation habits. Most of the respondents reported being properly counseled by their physicians to do regular exercise and its importance also about uses of foot-care in their diabetes self-care.

"*Health care providers guided me to do easy exercise at least for 30 minutes per day to take care of foot cleanness. But I have done irregularly as I needed and I washed my foot at bedding time.*" (38 years male patient)

"*Frankly speaking, I lived in nearest to hospital, but I will not come to the hospital until my condition is predominantly serious. Even though health care providers taught about diabetic self-care, I don't give attention for my-self till now*." (57 years male respondent)

Misconceptions

Some patients even considered that diabetes was a common condition in older age and incurable therefore no need for it to be treated.

" *I know diabetes is common in older people and incurable. I preferred one cup of alcohol rather than treatment. So I don't take my pills daily*."(62 years male respondent)

Theme-4 Accessibility

Distance

Most of the respondents lived in the rural area; their appointment time is passing due to lack of accessibility of hospital and clinic around them. The majority of the respondents reported that they do not regularly check their blood glucose level because those who lived in distant area. It indicates high risk for diabetic complication due to poor glycemic control.

"…I live in rural area and could not get nearby hospitals and clinic…." (48 years female respondent)

"*I prefer more frequent checkups. When I know that the doctor is going to see the results of my blood glucose level. I am more careful about the food I eat and increment of blood glucose by measuring it….*" (42 years male respondent)

Theme-5 Lack of family support

Lack of support in the family setting can create difficulties for diabetic patients when handling with the illness in everyday life and to practice adherence of diabetic self-care. All participants revealed that social support had a great role to cope stressful events. On the other hand those who compared with other patients, needed to undergo medical checkups more frequently. Due to this reason family support contributed their own role, such as follow

treatment recommendations, attending clinic appointments and to support other diabetic self-care practices. This result showed that most participants had no family support as needed.

"*My husband died not too long ago and my kids are too young. So I don't really take care of my-self and also I don't have anyone take care of me*."(39 years female respondent)

Theme-6 Diabetic related complication.

All most all participants reported that, this diabetic disease was an illness that dictated changes in lifestyle and living habits. It was essential to modify the diet and to increase physical activity. The most commonly mentioned reasons for not doing regular physical exercise were feeling of pain or disturbed daily activities due to DM related complication, lack of interest and motivation.

"*Of course! In case of diabetes, my vision is blurred and disturbed to done daily activities, for instance stopped getting out of the house as usual also I was forced to leave my business.*"(55 years male respondent)

"*I know diabetes is incurable and had its own complication because I lived with diabetes for long period of time and it results me for kidney problem and hypertension. I felt weak and pain so, I am not interested to done different activities*."(52 years female respondents).

5.6 Factors associated with Adherence to diabetic self-care management

Based on bivariable analysis, the study participant age between 61-70 years (COR 0.68 95% CI) were 32%, higher than 70 years (0.16 95% CI (0.07-0.37) less likely had good adherence than age b/n 30-60 years. Regarding to gender females (COR: 1.2 times more likely had good adherence than male. Regarding to duration of type 2 DM diagnosis 1-5 years(COR 5.5- CI (2.5-12.1) were 5.47 times more likely had good adherence than > 10 years duration, similarly duration of type 2 DM diagnosis 6-10 years (COR 2.3 -CI (1.01-5.2) were 2.3 times more likely had good adherence than > 10 years duration of type 2 DM diagnosis. Those who have medical complication related to diabetes (COR 0.26 - CI (0.2-0.4) were 74% less likely had good adherence than have no medical complication related to diabetes.

However, in multivariable analysis, living place, level of education, occupation and Availability of health care services at any time were significantly associated with adherence to diabetic self-care practice to candidate for multivariable logistic regression analysis. Based on this finding people with type 2 diabetes who were lived in urban area about [AOR- 5.5, CI (1.1-8.8)] five times more likely to had better adherence to diabetic self- care practice than rural people.

The respondents who were attended in high school level [AOR: 2.98, CI (1.3-6.7)] were 2.98 times more likely had good adherence to diabetic self-care practice and also those who were attended in higher level of education, college and above [AOR: 5.1,CI (2.1-12.5)] five times had statistically significant association with their adherence condition.

The study participants who are unemployed [AOR: 0.34, CI (0.15-0.77)] was less likely by 66% adherence to diabetic self-care practice than employed. From the total respondents who were no availability of health care services at any time [AOR: 0.19, CI (0.09-0.37)] was less likely by 81% adherence to diabetic self-care practice than availability of health care services at any time (Table 4).

Table 4. Bivariable and multivariable logistic regression analysis on study of Adherence to diabetic self-care management and associated factors among type 2 diabetic patients in north shewa zone public hospitals, Ethiopia, 2023 (n =600)

Variables	Adherence to self-care practice		COR CI-95%	AOR CI-95%	P- value
	Good	Poor			
Age					
30-60 years	209(34.8%)	221(36.8%)	1	1	0.124
61-70years	46(7.7%)	72(12%)	0.68(0.45-1.02)	1.54(0.82-2.89)	0.182
>70 years	7(1.2%)	45(7.5%)	0.16(0.07-0.37)	0.51(0.19-1.38)	0.184
Gender					
Male	134(22.3%)	189(31.5%)	1	1	
Female	128(21.3%)	149(24.8%)	1.21(0.88-1.68)	1.53(0.99-2.36)	0.058
Residence					
Urban	221(36.8%)	151(25.2%)	6.67(4.49-9.92)	5.49(1.05-8.78)	0.044*
Rural	41(6.8%)	187(31.2%)	1	1	
Level of education					
No formal education	18(3%)	123(20.5%)	1	1	
Primary school	10(1.7%)	95(15.8%)	0.71(0.32-1.63)	0.41(0.16-1.08)	0. 070
High school	93(15.5%)	69(11.5%)	9.21(5.13-16.52)	2.97(1.33-6.67)	0.008*
College & above	262(43.7%)	338(56.3%)	18.9(10.5-34.1)	5.08(2,07-12.5)	0.000*
Occupation					
Unemployed	146(24.3%)	299(49.8%)	0.16(0.11-0.25)	0.34(0.15-0.77)	0.010*
Employed	116(19.3%)	39(6.5%)	1	1	
Availability of health care services					
Yes	234(39%)	116(19.3%)	1	1	
No	28(4.7%)	222(37%)	0.06(0.04-0.09)	0.19(0.09-0.37)	0.000*
Duration of type 2 DM diagnosis					
1-5years	188(31.3%)	163(27.2%)	5.48(2.49-12.08)	9.26(0.80-10.7)	0.075
6-10years	66(11%)	137(22,8%)	2.29(1.01-5.18)	3.34(0.22-5.51)	0.055
>10years	8(1.3%)	38(6.3%)	1	1	
Medical complication related to diabetes					
Yes	22(3.7%)	89(14.8%)	0.27(0.16-0.42)	0.56(0.15-2.06	0.380
No	240(40%)	249(41.5%)	1	1	

*P-value <0.25 in Bivariable analysis, ***P-value <0.001, ** P-value<0.01, *P-value <0.05 in multivariable analysis and 1 indicates the reference variable. COR crude odd ratio, AOR Adjusted odd ratio, CI confidence interval

6. Discussion

The magnitude of overall good adherence of diabetes self-care practice was 262(43.7%) with (95% CI: 40–47.8%) among type 2 DM diabetic patients in north shewa zone public hospitals. This study was consistent with the study conducted in Debre Berhan referral hospital North east Ethiopia (44.7%)(29), Debre Markos (48.5%)(26), Hawassa University Comprehensive Specialized Hospital(47.8%)(34), Hossana, southern Ethiopia (43.1%) hyperglycemia)(2, 3), Philippines(43.7%) (32).

However, the finding of this study was greater than the study conducted in Arba Minch General Hospital, Southern Ethiopia(41.2%)(27) and Tigray Region, Ethiopia (37.3%)(30). This discrepancy may be due to some enhancements in the health care services related to the period gap.

On the contrary, the finding of this study was lower than the study conducted in Dessie Referral Hospital, North-Eastern Ethiopia (50.3%)(15), Dire Dawa(55.9%)(19), Eastern Ethiopia Harer(53.2%)(28), Hadiya zone(52.3%), Dilla university south Ethiopia(76.7%)(35), Gamo gofa zone public hospital (53.7%)(7) and in Morroco (63.6%)(39) of the study participants, had good self-care practices.

This variation could be due to socio-cultural differences, different study period, study area that means north shewa zone is very wide area and population live in rural area more scattering than other cities, it might be a reason for health service utilization educational status of the respondent, and current economic crisis which can be some of the major justifications for lower result of good adherence to diabetic self-care practice.

This study revealed that those who lived in urban area were 5.4 times more likely had good diabetic self-care practice than those rural residents. This is consistent with a study conducted in Debre Markos (26) and Gamo Gofa zone public hospital(7).

In the present study the respondents who were attended in high school level were 2.9 times more likely to be engaged good self-care practice, also college & above were five times more likely had good self-care practice when compared with respondents who were no formal education. This finding was congruent with the studies conducted in Dire Dawa (19), Addis Ababa(11) and study conducted in Ghana (47). This indicates that education is the base for a diabetic patient to understand the disease process and to provide own self-care practice, because they may be able to read and become well-informed of the benefits of adherence.

Based on the study finding unemployed was less likely by 66% had good self-care practice than employed. This finding was in line with the study conducted in Addis Ababa(11), in Debre Markos (26) and study conducted in Tigray Region, Ethiopia(30). Respondents who were no availability of health care services at any time were by 81% less likely adherence to diabetic self-care practice than availability of health care services at any time. This finding was congruent with a study conducted in Kenya referral hospital(31).

A complete self-care practice among type 2 diabetic patients was uncommon. Most of the respondents entirely depended on their medications, feeding habits, measure blood glucose level; to manage their illnesses and its complication tend to undermine the importance of the other elements of self-care either due to lack of education, financial affordability, limited awareness and negligence towards adherence to diabetic self-care practice, accessibility, lack of social support.

In this study financial affordability was the major barrier of good adherence to diabetic self-care practice elements. This finding was in line with the study conducted in Addis Ababa, Ethiopia (21). Similarly the study done in Tigray, Ethiopia indicated that too restrictive nature of diet recommendations and financial problem had negative influence on their adherence to self-care behaviors to self-care(22).

The findings from the study revealed that majority of the respondent had lack of education, limited awareness and negligence towards adherence to diabetic self –care practices, some of negligent respondents had got access, but they should not give attention for them-selves towards self –care practice. This finding was congruent with the studies conducted in Addis Ababa revealed that some of the participants also reported that adhering strictly to diabetes dietary recommendations is boring and practically impossible(21) and Pakistan education from physicians is one of the most important determinants for change in self-care practices (5).

On the other hand this study explored patient compliance, the respondents feel hopelessness due to the disease should be incurable and they preferred alcohol than the recommended drug, and some of them faced loss of social support. This finding in line with the study conducted in Ghana Most patients reported that these family members assisted with a wide range of management strategies, such as adjusting to new diet regimes and roles dictated by the patient, assisting with the preparation of recommended(48), similar study in Pakistan

getting support from family members is one of the important determinants of compliance with medication-taking behavior(5)

In case of diabetic related complication, these study participants disturbed to perform daily activities, unable to done their business and faced economic crisis. This finding was in line with the study conducted in Dessie referral hospital that low risk perception of complications among DM patients may make them reluctant to practice recommended self-care(15). A study conducted in Singapore showed that participants expressed an awareness of risking diabetes-related complications due to poorly controlled diabetes(43)

7. Conclusion

This study indicated that adherence of patients with type 2 diabetes to the recommended self-care practices was considerably poor. Different factors, including the respondents who attended in high school level, higher level of education, People with type 2 diabetes who were lived in urban, the respondents who were unemployed and people with type 2 diabetes who had no availability of health care services at any time had statistically significant association with adherence to diabetic self-care practice according to the quantitative study. This was supported by the results from the qualitative part and thus the endorsement to strengthen diabetes health education to patients and their relatives.

8. Recommendation

Based on the finding of this study, the following recommendations are forwarded

- **Policy makers:** should have to develop health information dissemination programs and strategies to improve the awareness of diabetic patients about the importance of diabetic self-care practices.
- **Regional Health Bureau and Zonal Health Department** with north shewa zone public hospitals diabetic clinic coordinators should give greater emphasis towards accessibility of nearby health facilities around the rural area as much as possible.
- **Health care professional** should counsel and educated DM patients during follow up, need to spend more time in alerting patient's about diabetic self-care.
- **For researchers**: Other researchers better to explore unanswered issue towards factors affecting adherence to diabetic self-care management.

9. Strength of the Study

- Since a large study setting was used & includes new variables as health care facility related variable.
- Furthermore, this study used a mixed methods approach which allowed us to identify factors related to diabetes self-care practice quantitatively and individually perceived barriers qualitatively.

Limitations of the Study

- Self-care practices is determined based on the respondents' self-reported values, performance of these activities were not observed and could not be confirmed.
- Interviewer bias and social desirability were another limitation for this study.

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Annex

This questioner adopted from (9, 13, 19, 31) and adapted

1.2. STUDY SUBJECT CONSENT FORM

You are invited to participate in research study to be conducted by **Fitsum Hundessa** Student of Debreberhan University Asrat woldeyes campus. Please be patient while the interviewer read the following statement to you and ask any unclear question before you agree to participate.

Introduction:- These information sheet and consent form is prepared to explain the purpose of this research in order to get your willingness to participate the study.

Study Topic:- Adherence to diabetic self- care management and associated factors among type 2 diabetic patients in North Shewa zone public hospitals, Ethiopia 2023.

Objective of the study:- To Assess adherence to diabetic self- care management and associated factors among type 2 diabetic patients in North Shewa Zone public hospitals, Ethiopia 2023.

Study period: from May 5-May 20, 2023.

Procedure:- For this study a semi-structured questioner will be used for interviewing selected participants with their local language since they fulfill the criteria. I have selected you to be one of the study participants. If you are willing to participate, you are kindly requested to give your genuine response to me during interviewing.

Risk and/or discomfort:- by participating in this research you may feel that, it has some risk or discomfort. The interview will not take more than 15 minutes.

Confidentiality:- the information collected from you will be kept confidentially. It will be stored in a file using codes, without your name. And it will not be revealed to anyone except the principal investigators. In addition, it will be used only this particular research but not for other purposes.

Right to refusal or withdraw:- you have the full right to refuse from participating in this research. You can choose not to answer any or all or all questions and this will not affect you and your family from getting any kind of health care services. You have also the full right to withdraw from this study at any time you wish, without losing any of your right.

Annex II: consent form

The investigator has briefly explained the purpose and benefits of the research with mine language. I think you have understood about the advantage of the research and the roles, you will have in the research. Finally, I assure that my interest to participate in this study is truly from my knowledge. Information was gathered with each participant's explicit consent after describing the study's goals to them. True verbatim transcriptions of audio recordings of interviews were made, and then they were translated into English. Respondents had the option to decline or discontinue their participation at any time. Anonymity, beneficence, and secrecy were all ensured throughout the study.

Do you agree to participate?

A. Yes_____
B. No_____

Adherence to diabetic self- care management and associated factors among type 2 DM patient. I- Quantitative part -Questionnaires

Part one :-Socio demographic factors				
S. no	Questions	choice	code	skip
1.	Gender	1.Male 2.Female		
2.	Age (in years):	_____ year		
3.	Where do you live ?	1.urban 2.rural		
4.	Marital status	1. Single/never married 2. Married 3. Divorced 4. Widowed		
5.	Level of education	1. No formal education 2. Primary School 3. High School 4. College and above		
6.	Occupation/ employment:	1. Unemployed 2. Governmental employed 3. Non -Governmental employed 4. Merchant 5. Daily laborer 6. Farmer 7. Other		

Part two :- Health care facility related factors

s.n	Questions	choice	code	skip
1.	How far is your home from the hospital?	1.0-5km 2. 5-10km 3.beyond 10km		
2.	Are you able to get health care anytime you need it?	1.yes 2.No		
3.	Are you satisfied with the quality of health care services offered to you?	1.yes 2.No		
4.	Are your health care professionals able to devote sufficient attention to you?	1. Yes 2. No		
5.	Is the hospital providing you with published patient education materials on diabetes self-care?	1.Yes 2.No		
6.	Have you been told by your healthcare practitioner about the critical nature of self-care in the treatment of Type II Diabetes Mellitus?	1.Yes 2.No		

Part Three:- Disease related factors

s.n	Questions	choice	code	skip
1.	How long you been diagnosed for type 2 DM?	_____ year		
2	How long have you been receiving therapy for Type II Diabetes Mellitus (in years)?	_____yea r		

3.	Do you have any other chronic illness?	1.Yes 2. No		If your answer is no skip question number4.
4.	If your answer will be yes mention it?	1. Hypertension 2. Heart Failure 3. Renal Failure 4. Other mention		
5		1.Yes 2.No		If your answer is no skip question number 6
6	If yes, What was the complication?	_____		
7	Have you been admitted to the hospital as a result of complications from Type 2 Diabetes Mellitus in the last one year?	1.Yes 2.No		
Part four:- Treatment related factors				
1.	Which type of drug do you take for this disease?	1. Oral Hypoglycemic agent 2. Insulin therapy 3. Both		
2	If your choice is insulin therapy, how many times do you take insulin shot per day?	_____		

Part five- Adherence to diabetic Self-Care Activities Questionnaire the questions below ask you about your diabetes self-care activities during the past 7 days. If you were sick during the past 7 days, please think back to the last 7 days that you were not sick.

Adherence to diabetic Self-Care Activities		**Number of days**						
	0	1	2	3	4	5	6	7
1. Diet								
1.1 How many of the last SEVEN DAYS have you followed eating balance diet?								
1.2 On how many of the last SEVEN DAYS did you eat five or more serving's different types of fruit and vegetables?								
1.3 On how many of the last SEVEN DAYS did you eat high-fat foods, such as red meat or full-fat dairy products?								
1.4 On how many of the last SEVEN DAYS did you space carbohydrates evenly through the day?								
2. **Physical Activity**	0	1	2	3	4	5	6	7
2.1 On how many of the last SEVEN DAYS did you participate in at least 30 minutes of physical activity *(*Total minutes of continuous activity, including walking).								
2.2 On how many of the last SEVEN DAYS did you participate in a specific exercise session (such as swimming, walking, biking) other than what you do around the house or as part of your work?								
3. **Blood Sugar Testing**	0	1	2	3	4	5	6	7
3.1 On how many of the last SEVEN DAYS did you test your blood sugar?								
3.2 On how many of the last SEVEN DAYS did you test your blood sugar the number of times recommended by your health- care provider?								
4. **Foot Care**	0	1	2	3	4	5	6	7
4.1 On how many of the last SEVEN DAYS did you check your feet?								

4.2 On how many of the last SEVEN DAYS did you wash your feet including nail, skincare?								
4.3 On how many of the last SEVEN DAYS did you dry between your toes after washing?								
4.4 On how many of the last SEVEN DAYS did you soak your feet?								
5. Anti- diabetic medication	0	1	2	3	4	5	6	7
5.1 On how many of the last SEVEN DAYS, did you take your recommended diabetes medication?								
5.2 On how many of the last SEVEN DAYS did you take your recommended insulin injections?								
5.3 On how many of the last SEVEN DAYS did you take your recommended number of diabetes pills?								

II- Qualitative questioner(38)

Part one:- for type 2 DM patients **:-**

Socio demographic factors

1. Gender: 1. Male 2. Female

2. Age (in years): _____

3. where do you live? 1. Urban 2. Rural

4. Marital status

1. Single/ never married 2. Married 3. Divorced 4. Widowed

5. Level of education

1.No formal education 2.Primary School 3. High School 4. College and above

6. Occupation/ employment:

1. Unemployed 2. Governmental employed 3. Non -Governmental employed

4. Merchant 5. Private worker 6.Farmer 7.Other

Part two :- Barriers of adherence to diabetic self-care practice

1. How do you perceive fruits and vegetables consumption as diabetic patient ?
2. What is your practice look like, accesses and cost?
3. Do you have social supporter and how do you get your social support for self-care practice as possible?
4. Do you think that diabetic complication or diabetic it-self as barriers to engaging your daily physical activities? If yes, tell me? How?

የጥናቱ ተሳታፊዎች የመረጃ ቅጽና ለጥናቱ ቃለ መጠይቅ ለማድረግ የግለሰቦች ፍቃደኝነት መጠየቂያ ቅጽ

- በደብረብርሃን ዩኒቨርሲቲይ አስራት ወልደየስ ጤና ሳይንስ ኮሌጅ በነርሲንግ ትምህርት ክፍል በጎልማሶች ጤና ነርሲንግ ድህረ ምረቃ ትምህርት ፕሮግራም በደብረብርሃን ሪፈራል ሆስፒታል፣ ሸዋሮቢት ሆስፒታል፣ መሃልሜዳ ሆስፒታል እና ደነባ ሆስፒታል ስኳር ሕመም ማእከል የስኳር ህመም ህክምና በመከታተል ላይ ያሉ ወንዶች እና ሴቶች ስለ የግል እንክብካቤ ተግባራት ለማጥናት ቃለ መጠይቅ ለማድረግ የግለሰቦችን ፈቃደኝነት መጠየቂያ ፎርም::

  በቅድሚያ በዚህ ጥናት እንዲሳተፉ ስንል በአክብሮት ጥያቄያችንን እያቀረብን ጥናቱ በደብረብርሃን ሪፈራል ሆስፒታል፣ ሸዋሮቢት ሆስፒታል፣ መሃልሜዳ ሆስፒታል እና ደነባ ሆስፒታል ስኳር ህክምና ማእከል እየተመላለሱ ለሚታከሙ የስኳር ህመምተኞችን ያካትታል::ጥናቱ የሚያተኩረው የስኳር ህመምተኞችን ስለ ግል እንክብካቤያቸው ሁኔታ ማጥናት ነው፡፡ የግል እንክብካቤ ችግር በስኳር ህመም በተያዙ ህመምተኞች ላይ ጎልቶ የሚታይ ሲሆን ይህውም ለተጨማሪ ህመምና ሞት ይዳርጋል ስለዚህ ጥሩ የሆነ የግል እንክብካቤ ተጨማሪ ህመምና ሞት ለመከላከል በጣም ወሳኝ ነው:: ስለሆነም ይህ ጥናትና የስኳር ህመምተኞች ስለ ግል እንክብካቤ ሁኔታ በማጥናት በቀጣይ ከፍተኛ አስተዋኦ ይኖረዋል::

  ስሜ _____ ይባላል፡፡ እኔ ከደብረብርሃን ዩኒቨርሲቲይ አስራት ወልደየስ ጤና ሳይንስ ኮሌጅ የጥናት ቡድን ጋር አብሬ እየሰራሁ ነው፡፡ አሁን በዚሁ በ_____ ሆስፒታል የስኳር ህመም ህክምና በመከታተል ላይ ያሉ ወንዶች እና ሴቶች ስለ የግል እንክብካቤ ተግባራት ለማጥናት ቃለ መጠይቅ እያደረግን ነው፡፡ ይህ ጥናት ለስኳር ህመምተኞች የስኳር ህክምና ክትትል ለሚያደርጉ ሰዎች ህክምና አሰጣጥ ላይ ለውጥ ያመጣል ብለን እናምናለን፡፡

ሀ. የጥናቱ ዓላማ፡ በዚህ ጥናት የስኳር ህመምተኞች ስለ ግል እንክብካቤያቸው ሁኔታ ማጥናት ነው፡፡

ለ. የሚፈጀዉ ግዜ ይህ ጥናት ከሚያዚያ 1-15 2023 ባለው ግዚ ውስጥ ይጠናቀቃል፡፡

ሐ. የናሙናና የመረጃ አወሳሰድ ሄደት፡- በዚህ ጥናት ከሚሳተፉ የስኳር ህመምተኞች ሶሽ ዲሞግራፊክ መረጃን፣የጤንነት ሁኔታ መረጃን ና፣ ስኳር ህመም የግል እንክብከቤ ሁኔታ መረጃን በመጠይቅ በአራት መረጃ ሰብሳቢ ነርሶች ይሰበሰባል፡፡

መ. ሊደርስ የሚል አደጋ፡- በዚህ ጥናት ውስጥ አደጋ የሚያደርስ ድርጊት የለም፡፡

ሠ. የሚገኝበት ጥቅም፡- በዚህ ጥናት መረጃ ለሰጡ በሽተኞች ልዩና ቀጥተኛ የሚባል ጥቅም የለውም፡፡ የዚህ ጥናት ጠቅላላ ውጤት ግን የሰኳር ህመም ታማሚዎች የግል እንክብካቤ ሁኔታ በማሳየት አሁን እየተሰጠ ያለውን ህክምና ማገዝና በተለይ ደግሞ አግባብ ያለው የመከላከያ ህክምና ና የጤና ትምህርት ለመስጠት ከፈተኛ ጥቅም ይኖረዋል፡፡

ረ. ሚስጥራዊነት፡- የማንኛውም የጥናቱ ተሳታፊ መረጃ በሚስጥራዊነት ይያዛል፡፡ የእያንዳንዱን ግለሰብ መረጃ ከዋናው ተመራማሪና ከአማካሪዎቹቹ በስተቀር ማንም ሊያገኘው አይችልም፡፡

ሰ. ፈቃደኝነትን ስለማቋረጥ በዚህ ጥናት ውስጥ የመሳተፍ መብትዎ ሙለ በሙለ በፈቃደኝነት ላይ የተመሰረተ ነዉ፡፡በጥናቱ ለመሳተፍ ፈቃደኛ መሆን ወይም ራስዎን ማግለል ይችላሉ፡፡ እንዲሁም በጥናቱ ባለመሳተፍዎ ምክንያት በአሁ ወይንም የወደፊት የህክምና እርዲታዎ ላይ ተፅእኖ አይኖርም፡፡

የ ‘ኳንቲታቲቭ የጥናት ዓይነት መጠየቂያ ቅጽ

ክፍል አንድ ፥ የስኳር ህመምተኞች ማህበራዊ ፣ ኢኮኖሚያዊ ና የጤንነት ሁኔታና ተያያዥ መረጃዎች				
ጥ . ቁ	ጥያቄዎች	አማራጮች	ኮድ	ዝለል
7.	ፆታ	1.ወንድ 2.ሴት		
8.	ስንት አመትህ ነው/ አመትሽ ነው?	_____አመት____		
9.	የመኖርያ ቦታዎ የት ነው?	1.ከተማ 2.ገጠር		
10.	የትዳር ሁኔታ	5. ያላገቡ 6. ያገቡ 7. አግብተው የፈቱ 8. የትዳር አጋራቸው		

		የሞተባቸው፣		
11.	የትምህርት ደረጃ /የትምህርት ሁኔታ	5. መደበኛ ትምህርት ያልተማረ/ች 6. 1ኛ ደረጃ 7. 2ኛደረጃ 8. ኮሌጅ እና ከዚያ በላይ		
12.	13.የስራ ሁኔታ	8. ስራ የሌላቸው 9. የመንግስት ሰራተኛ 10.መንግስታዊ ያልሆነ ድርጅት ሰራተኛ 11.ነጋዴ 12.የግል ሰራተኛ 13.ገበሬ 14.ሌላ		

ክፍል ሁለት፥	ከጤና ተቋሙ ጋር ተያያዥነት ያላቸው ጥያቄዎች			
ጥ . ቁ	ጥያቄዎች	አማራጮች	ኮድ	ዝለል
7.	መኖሪያ ቤትዎ ከሆስፒታሉ ምን ያህል ኪሎሜትር ይርቃል?	1.ከ0-5ኪ..ሜ. 2.ከ5-10ኪ..ሜ. 3.ከ10ኪ..ሜ. በላይ		
8.	እርስዎ በፈለጉ ሰዓት የጤና እንክብካቤ ማግኘት ይችላሉ?	1.አዎ 2.ማግኘት አልችልም		
9.	በሚሰጥዎት የጤና እንክብካቤ አገልግሎት እርካታ አግኝተዋል?	1.አዎ 2.አላገኘሁም		
10.	የጤና ባለሙያዎች በታማኝነት እና በበቂ ትኩረት የጤና አገልግሎት ይሰጥዎታል?	1.አዎ 2.አይሰጡኝም		

11.	ሆስፒታሉ የስኳር ህመም ጤና አጠባበቅን በተመለከተ አስተማሪ ፅሁፎችን አዘጋጅቶ ያውቃል እርስዎስ የዚህ ተጠቃሚ ሆነው ያውቃሉ?	1.አዎ 2.አላውቅም		
12.	በስኳር ህመም የራስን ጤና መጠበቅ ዋነኛ ጠቀሜታውን ከመድሃኒቱ ጋር አያይዞ የጤና ባለሞያዎች ገለፃ አድርገውሎት ያውቃሉ?	1.አዎ 2.አያውቁም		

ክፍል ሶስት፥ ከህመሙ ጋር ተያያዥነት ያላቸው ጥያቄዎች

ጥ.ቁ	ጥያቄዎች	አማራጮች	ኮድ	ዝለል
1.	የስኳር ህመምተኛ መሆንዎትን ካወቁ ምን ያህል ጊዜ ሆኖት?	_____ ___		
2	ለስኳር ህመሙ ብለው መድሃኒት መውሰድ ከጀመሩ ምን ያህል ጊዜ ሆኖት(በዓመት) ?	_____ ዓመት		
3.	ከዚህ ህመም ውጪ ሌላ የሚታመሙት ህመም አለ ?	1.አዎ 2. የለም		መልስዎ የለም ከሆነ ጥያቄ ቁጥር 4 ን ዝለሉት
4.	መልስዎ አዎ ከሆነ ምን ዓይነት ህመም ነበር የታመሙት?	5. የደም ግፊት 6. የልብ ህመም 7. የኩላሊት ህመም 8. ሌላ ካለ ይጥቀሱ		
5	ከስኳር ህመሙ ጋር ተያይዞ በተፈጠረ ውስብስብ ችግር ምክንያት የተከሰተ	1.አዎ 2.የለም		መልስዎ የለም ከሆነ ጥያቄ

	የውስጥ ደዌ (ሕመም) አለ?			ቁጥር 6ን ዝለሉት
6	መልስዎ አዎ ከሆነ ምን ዓይነት ችግር ነበር ?	_____ _____		
7	ባለፈው አንድ ዓመት ዉስጥ የስኳር ህመሙ ባስከተለው ውስብስብ ችግር ምክንያት ሆስፒታል ለህክምና ተኝተው ያውቃሉ?	1.አዎ 2.አላውቅም		
	ክፍል አራት፡ ከመድሃኒት ጋር ተያያዥነት ያላቸው ጥያቄዎች			
1.	የትኛውን ዓይነት የስኳር ህመም መድሃኒት ይወስዳሉ?	4. በአፍ የሚወሰድ ኪኒን 5. በመርፌ የሚወሰድ መድሃኒት 6. ሁለቱንም		
2	መዲሃኒቱን በመርፌ የሚወስዱ ከሆነ፡በቀን ስንት ጊዜ ይወስዳሉ?	_____ ጊዜ		

ክፍል አምስት፡ የስኳር ህመም የግል እንክብካቤ ተግባራት መጠይቅ

- ከዚህ በታች የተዘረዘሩት ጥያቄዎች ባለፉት ሰባት ቀና ውስጥ ስለ ስኳር ህመምዎ የግል እንክብካቤ ተግባራትን በተመለከተ ምን እንደሚመስል የሚጠይቁ ናቸው፡፡
- ሆኖም ግን ባለፉት 7 ቀናት ውስጥ ታመው ከነበሩና እራስዎ በራዎ መንከባከብ

ካልቻሉ ተጨማሪ 7 ቀናት ወደኋላ በመሄድ ጤነኛ በነበሩበት ግዜ ያደረጉት እንክብካቤ ሁኔታ መውሰድ ይችላሉ።

ስኳር ህመም የግል እንክብካቤ ተግባራት መጠይቅ		የቀናት ብዛት (አማራጭ መልሶች)						
	0	1	2	3	4	5	6	7
1. አመጋገብን በተመለከተ								
1.1 ባለፉት 7 ቀናት ውስጥ ምን ያህል ቀን/ናት ነው ጤነ¼ አመጋገብ እቅድ የነበርዎት?								
1.2 ባለፉት 7 ቀናት ውስጥ ምን ያህል ቀናት 5ና ከዚያ በላይ ጊዜ አትክልትና ፍራፍሬ ይመገባሉ?								
1.3 ባለፉት 7 ቀናት ውስጥ ለምን ያህል ቀን/ናት ከፍተኛ የስብ መጠን ያለው ምግብ ይመገባሉ፣ /ለምሳሌ፣ቀይ ስጋ ወይም በስብ የተሞላ የእንስሳት ተዋፅኦ?(ያም ከመጀመሩ በፊት ያለዉ ጊዜ ይዉሰዱ)								
1.4 ባለፉት 7 ቀናት ውስጥ ምን ያህል ቀን /ቀናት ነው ሀይል ሰጪ ምግብ በአንድ ቀን ውስጥ በእኩል በማመጣጠን የወሰዱት?								
2. የአካል እንቅስቃሴን ማድረግ በተመለከተ	0	1	2	3	4	5	6	7
2.1 ባለፉት 7 ቀናት ውስጥ ለምን ያህል ቀን/ናት ለ30 ደቂቃ ያክል የአካል እንቅስቃሴ ተሳትፏል (ሁሉም እንቅስቃሴ፣የእርምጃ እንቅስቃሴን ጨምሮ፣ ጠቅላላ ደቂቃ) ?								
2.2 ባለፉት 7 ቀናት ውስጥ ለምን ያህ ቀን/ቀናት በተወሰኑ የአካል እንቅስቃሴ(ምሳሌ ዋና መዋኘት ፡ ብስክሌት መንዳት፡ እግር ጉዞ ተሳትፈዋል? ይህም ቤት ዉስጥ ና ስራ ቦታ ከሚያደጉት እንቅስቃሴ ዉጭ								
3. በደምውስጥ ያለውን የስኳር መጠን ምርመራ ማድረግ በተመለከተ	0	1	2	3	4	5	6	7
3.1 ባለፉት 7 ቀናት ውስጥ ምን ያህል ቀን/ቀናት የስኳር መጠን ምርመራ አካሂደዋል (በቤት ውስጥም								

ከቤት ዉጭም)?								
3.2 ባለፉት7ቀናት ውስጥ ምን ያህል ቀን/ቀናት የጤና ባለሞያዎ/ሀኪምዎ በነገርዎት ብዛት ልክ የስኳር መጠን ምርመራ ያካሂዳሉ?								
4. የእግርና የእግር ጣቶች እንክብካቤን በተመለከተ	0	1	2	3	4	5	6	7
4.1 ባለፉት 7 ቀናት ውስጥ ምን ያህል ቀን /ቀናት እግሮችዎን እና የእግሮችዎን ጣቶች መሀል ፍተሻ ያደረጋሉ?								
4.2 ባለፉት 7 ቀናት ውስጥ ምን ያህል ቀን /ቀናት ነው እግሮችዎን የታጠቡት?								
4.3 ባለፉት 7 ቀናት ውስጥ ምን ያህል ቀን /ቀናት ነው ከታጠቡ በኋላ እግሮችዎና የእግሮችዎን ጣቶች መሃል በለስላሳ ፎጣ እንዲደርቅ የሚደርጉት?								
4.4 ባፉት 7 ቀናት ውስጥ ምን ያህል ቀን /ቀናት ነው እግሮችዎን የዘፈዘፉት?								
5. የስኳር ህመም መድሀኒትን በተመለከተ	0	1	2	3	4	5	6	7
5.1 ባለፉት 7 ቀናት ውስጥ ምን ያህል ቀን /ቀናት ነው የታዘዘሎትን መድሀኒት በትክክል የወሰዱት?								
5.2 ባለፉት 7 ቀናት ውስጥ ምን ያህል ቀን /ቀናት ነው የታዘዘሎትን መርፌ በትክክል (መጠን፣ግዜ፣ሰአት) የወሰዱት?								
5.3 ባለፉት 7 ቀናት ውስጥ ምን ያህል ቀን /ቀናት ነው የታዘዘሎትን ክኒን በትክክል (መጠን፣ግዜ፣ሰአት) የወሰዱት?								

የ 'ኳሊታቲቭ' የጥናት ዓይነት መጠየቂያ ቅጽ ጥያቄዎች

ክፍል አንድ ፥ የስኳር ህመምተኞች ማህበራዊ ፣ ኢኮኖሚያዊ ና የጤንነት ሁኔታና ተያያዥ መረጃዎች

1. ዕድ ወንድ ሴት
2. ስንት አመትህ ነው/ አመትሽ ነው? _____
3. የትዳር ሁኔታ

 ያገቡ አግብተው የፈቱ . የትዳር አጋራቸው የሞተባቸው፣

 ያላገቡ . ሌላ_____

4. የትምህርት ደረጃ /የትምህርት ሁኔታ

 መደበኛ ትምህርት ያልተማረ 1ኛ ደረጃ 2ኛደረጃ ኮሌጅ /ዩኒቨርስቲ

5. የስራ ሁኔታ

 ተቀጣሪ ሰራተኛ ስራ የሌላቸው ነጋዴ የቤት ሰራተኛ የቀን ሰራተኛ ገበሬ

ክፍል ሁለት፥ የስኳር ህመምተኞች የግል እንክብካቤ ተግባራትን በአግባቡ እንዳያከናውኑ የሚያደርጉ መሰናክሎችን አመልካች ጥያቄዎች፥

1. የስኳር ህመምተኞች ስለሚመገቧቸው አትክልትና ፍራፍሬዎች ያሎት ግንዛቤ ምን ያህል ነው።
2. የስኳር ህመምተኞች ጤናቸውን ለመጠበቅ የሚያከናውኗቸው ተግባራት አሉ። ከነዚህ ተግባራት የእርስዎ ምን ይመስላል ፡ ተግባራቱንስ ለማከናወን አጋጣሚውን አግኝተዋል? ይህንን ለመተግበር ከኢኮኖሚ አቅምዎት ጋር የተመጠነ ነው።
3. እርስዎን የሚንከባከብ ቤተሰብ ወይም ጓደኛ አለዎት? የግል እንክብካቤ ተግባራትን እንዲያከናውኑ እረዳትዎት ምን ያህል እገዛ ያደርጉሎታል?
4. በስኳር ህመም ምክንያት የሚከሰት ችግር ወይም እራሱ የስኳር በሽታው የእለት ከእለት እንቅስቃሴዬ ላይ ተፅዕኖ አድርሶብኛል ብለው ያስባሉ?

   መልስዎ አዎ ከሆነ እንዴት ሊሆን ይችላል ብለው ያስባሉ?

11. APPROVAL SHEET

This proposal is developed by Fitsum Hundessa (BSc Nurse) on Adherence to diabetic self-care management and associated factors among type 2 diabetic patients in North shewa public hospitals, Ethiopia 2023 It is accepted in its present form by board of examiners as satisfying thesis requirement for the masters in Adult health nursing 2023 for requirement for the degree of masters Adult health nursing.

Name of Investigator: **Fitsum Hundessa** **signature**:-_____

NAME OF ADVISOR (s)

Eyasu Tamru		
MAINE-ADVISOR	**SIGNATURE**	**DATE**
Fetene Nigussie		
CO-ADVISOR	**SIGNATURE**	**DATE**