COLLEGE OF MEDICINE AND HEALTH SCIENCES

SCHOOL OF PUBLIC HEALTH

MAGNITUDE OF HEALTH-RELATED QUALITY OF LIFE AND ASSOCIATED FACTORS AMONG ADULT DIABETES MELLITUS PATIENTS IN PUBLIC GENERAL HOSPITALS OF SIDAMA REGION, ETHIOPIA

BY: AHMED BEDRU (BPharm)

NOVEMBER, 2023

HAWASSA, ETHIOPIA

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A THESIS TO BE SUBMITTED TO HAWASSA UNIVERSITY COLLEGE OF MEDICINE AND HEALTH SCIENCES SCHOOL OF PUBLIC HEALTH IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTERS IN GENERAL PUBLIC HEALTH

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NOVEMBER, 2023

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Declaration

We, here by declare that this thesis is our original work and has not been presented for a degree in any university. All sources of materials used for this had been duly acknowledged.

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Name of Student	Signature	Date

This is to certify that the thesis entitled "Magnitude of health-related quality of life and associated factors among adult diabetic patients in Sidama region public general hospitals, Ethiopia, 2023" was carried out by Ahmed Bedru under our supervision. Therefore, we recommend that the student has fulfilled the requirements and hence here by can submit the thesis to the department for defense.

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HAWASSA UNIVERSITY

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EXAMINERS APPROVAL SHEET

We, the undersigned, members of the Board of Examiners of the final open defense by **Ahmed Bedru** have read and evaluated his thesis entitled " **Magnitude of health-related quality of life and associated factors among adult diabetic patients in public general hospitals of Sidama region**" and examined the candidate. This is, therefore, to certify that the thesis has been accepted in partial fulfillment of the requirements for the degree of masters of public health in general public health.

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Acronyms

AGH	Adare General Hospital
BGH	Bona General Hospital
BMI	Body Mass Index
CBHI	Community Based Health Insurance
DM	Diabetes Mellitus
HRQOL	Health Related Quality of Life
IDF	International Diabetic Federation
LGH	Leku General Hospital
QOL	Quality of Life
SF	Short Form
SPSS	Statistical Package for the Social Sciences
WHO	World Health Organization
WHO-QOL	World Health Organization Quality of Life
YGH	Yirgalem General Hospital

Abstract

Background: Diabetes mellitus is a chronic disease with considerable impact on health status and quality of life. Health-related quality of life (HRQOL) is a multifaceted concept that is strongly impacted by diabetes in developing countries.

Objective: This study aimed to assess the magnitude of health-related quality of life and associated factors among adult diabetic patients attending public general hospitals in Sidama Region, Ethiopia, 2023.

Methods: An institutional-based cross-sectional study design was applied on systematically selected 417 adult diabetic patients in public general hospitals in the Sidama region from June 16 to July 15, 2023. HRQOL was evaluated using the World Health Organization Quality of Life Brief Version questionnaire. Binary logistic regression analysis was used to see the association between dependent and independent variables. Candidates for multivariable analysis were variables with $p < 0.25$ in the bivariable analysis, and $p < 0.05$ with a 95% confidence interval was considered to declare a statistically significant association.

Results: Of the 417 study participants, 48.4% had a good HRQOL. Factors significantly associated with good HRQOL were age between 29 and 39 years [AOR = 2.54 (95% CI, 1.24-5.20)], marital status being married [AOR = 5.2 (95% CI, 1.80-14.97)], college and above education [AOR = 5.48 (95% CI, 1.41-21.33)], occupation being student [AOR = 5.47 (95% CI, 1.19-25.19)], community based health insurance utilization [AOR = 3.18 (95% CI, 1.55-6.53)], doing physical exercise [AOR = 4.25 (95% CI, 2.37-7.61)], duration of illness more than 59 months [AOR = 6.79 (95% CI, 3.28-14.05)], insulin only treatment modality [AOR = 2.46 (95% CI, 1.01-6.04)], absence of DM-related complications [AOR = 3.52 (95% CI, 1.57-7.89)].

Conclusion: Nearly half of the study participants had a good health-related quality of life. Except age, all associated factors identified in this study are modifiable if appropriate measures or strategies are provided and implemented accordingly.

Key words: Quality of life, diabetes mellitus, WHOQOL-BREF, cross-sectional, Sidama region

1. Introduction

1.1. Background

Diabetes mellitus (DM) is a serious, long-term disorder that manifests as elevated blood glucose levels when the body is either unable to make any or enough of the hormone insulin or is unable to efficiently use the insulin that is produced. It is divided into three main categories: type 1, type 2, and gestational diabetes (1).

The World Health Organization (WHO) defines DM as a metabolic disorder of multiple etiologies characterized by chronic hyperglycemia involving abnormalities in insulin secretion, insulin action, or both that cause disruptions in the metabolism of carbohydrates, fats, and proteins (2). DM prevalence continues to increase mainly due to the changes in lifestyles resulting in physical inactivity and increased obesity (3).

DM is a major driver of mortality worldwide, though its impact varies by region. Excluding the mortality risks associated with the COVID-19 pandemic, approximately 6.7 million adults between the ageof 20–79 are estimated to have died as a result of diabetes or its complications in 2021. This corresponds to 12.2% of global deaths from all causes in this age group. Approximately one-third (32.6%) of all deaths from diabetes occur in people of working age (under the age of 60) .This corresponds to 11.8% of total global deaths in people under 60. In the African, diabetes caused 8.9 % of adult fatalities, compared to 24.5 % in the Middle East and North African region (4).

Quality of life (QOL) is defined by the WHO as an individual's view of their place in life in relation to the culture and value systems in which they live, as well as their objectives, expectations, standards, and concerns (2). DM is a chronic condition that can have both micro vascular (like nephropathy, retinopathy, and neuropathy) and macro vascular (like stroke, myocardial infarction, and coronary artery disease) complications and can have co-morbid conditions that can significantly lower a patient's quality of life and have negative socio-economic effects (5). DM permanently changes a patient’s life. Patient’s self-care, consisting of daily insulin injections or oral anti-diabetic agents, self-monitoring of blood glucose and diabetic diet has an impact on QOL (6).

1.2. Statement of the problem

Diabetes may cause blindness, lower limb amputation, renal failure, and other long-term consequences that severely impair quality of life if it is not well treated. The need to adequately track the quality of life of individuals with diabetes and evaluate the effects of therapies on quality of life is indicated by the diversification of complications and the longer years spent living with the disease (4).

Several studies have demonstrated that diabetes has a negative influence on the overall HRQOL and its domains of physical, psychological, social relationships, and environment (7, 8, 9). In a longitudinal study, the psychosocial impact of diabetes was found to be one of the five strongest predictors of mortality in diabetic patients, stronger than many clinical and physiological variables (10).

Study in Mexico found that diabetes had an impact on the HRQOL. The determinants were age, sex, occupation, marital status, comorbidities and duration of DM (11). Similar studies done in Thailand, France, Switzerland and Ethiopia revealed that DM has impacts on various aspects of health related quality of life. According to these studies, QOL is affected by level of education, body mass index, gender, age, glycemic control, exercise, diet, drinking alcohol and complication (12, 13, 14, 15).

In general, even though diabetes mellitus has many effects on the wellbeing of a person, it is recommended that assessment should be taken on quality of life. It helps to predict the individual's capacity to manage his/her disease and maintain long-term well-being. Quality of life is also increasingly recognized as an important health outcome in its own right, representing the ultimate goal of all health interventions. Studies have shown that HRQOL survey scores for diabetics are much lower than those reported for non-diabetics (16).

The problems of complications resulting from DM, its treatments and psychological aspects may have adverse effects on patients HRQOL. Therefore, measuring HRQOL in DM patients is important for several reasons, such as for changing treatment and managing complications. In addition, improving quality of life is one of the primary objectives in the treatmentof DM, which implies that HRQOL is increasingly used as an outcome measure to monitor the burden of DM on the population. To improve the performance of everyday life activities and HRQOL, health

care providers should strive to understand the physical, emotional, and social impacts of having chronic disease and theoretically, such patient centered knowledge can be incorporated into chronic disease treatment (16, 17).

Studies done in some parts of the region shows thatthe region has high DM prevalencethan other parts of Ethiopia (18, 19, 20), so high prevalence may needs HRQOL assessment in order to improve patients quality of life. In addition, there is a difference in the determinant factors between studies, this suggests there is a lack of information on the issue that will help to make evidence based decision making. Therefore, the purpose of this study was to assess the magnitude of HRQOL and determinant factors among adult diabetic patients attending diabetes clinic of the public general hospitals in Sidama Region.

1.3. Significance of the study

This study attempts to assess the magnitude of HRQOL and associated factors among adult diabetic patients attending diabetes follow up clinic at public general hospitals of Sidama region. HRQOL assessment will allow the institutions or concerned bodies to detect alterations in the different domains and perform an early intervention. This way, an institution can incorporate these aspects into the nursing evaluation and interventions in the nursing care plan; allowing them to develop individualized care strategies and diabetes education programs that contribute to improving HRQOL in patients with diabetes.

It supports the existing knowledge on the determinants of health-related quality of life in adult diabetic patients and provides evidence-based information for health care professionals on determinants of health-related quality of life in adult diabetic patients. Finally this study can be used as resource for other studies on this regard.

2. Literature review

2.1. Magnitudes of health-related quality of life among adult diabetic patients

For people with diabetes and those who provide care for those with diabetes, the quality of life is crucial in many ways. Diabetes causes glycemic control to deteriorate, self-care to decline, and the risk of complications to rise. The quality of life for diabetics is crucial since these factors can serve as strong markers of their capacity to manage their diabetes and potential short- and long-term attacks. Another significant indicator of the effectiveness of diabetes treatment is quality of life (21).

Study conducted in Greece on quality of life among type II diabetes mellitus with the Short Form 36 (SF-36) sub-parameters found that the mean score and standard deviation values for physical functioning (PF) had 64.5 (29.5), role limitations due to physical problems (RP) 62 (40.8), body pain (BP) 73(30.5), general health (GH) 48.9 (23), vitality/energy (VT) 56.9(27.4), social functioning (SF)74.8 (29.7), emotional role limitations (RE) 63.6(40), and mental health (MH) mean scores 60.1(26.3) (22).

A multi-center cross-sectional study conducted in Netherland reported mean scores of SF-36 subscales which were 75 for PF, 81.1 for RP, 74.4 for BP, 58.5 for GH, 64.8 for VT, 81.1 for SF, 77.7 for RE and 76.0 for MH (23).

According to studies conducted in China(24, 25) the mean scores for the two summary measures were 42.5 and 47.0 for physical component summary (PCS) and 51.6 and 54.0 for mental component summary (MCS) respectively.

According to study conducted in Ethiopia to assess the effect of peripheral neuropathic pain on HRQOL among type II diabetes mellitus patients the mean score and standard deviation values for SF-36 subscales had, PF 57.2(25.7), RP 41.4(37.8), BP 57.9(20.8), GH 52.5 (21.5), VT 55.6(17.3), SF 65.3(18.3), RE 41.2(42.7), and MH 58.3(18.7). In addition to this, the physical component summery the mental component summery and the global scale had 41.7(9.3), 30(14.6) and 53(21) mean score and standard deviation respectively (26).

Another study done in Ethiopia said that the Mean score and standard deviation values for the four domains of WHOQOL-BREEF subscales had Environmental domain 53.6 (16.9), psychological domain 50.1 (13.0), physical domain 52.3 (11.5) and social domain 51.6 (20.3) (14).

2.2. Factors associated with health-related quality of life in adult diabetic patients

Socio-demographic characteristics

Studies done in health relate quality of life among patients with type II diabetes found that female had statistically significantly lower HRQOL scores in all domains of SF-36 sub scales (21, 22, 27, 28). However, a cross sectional study done in Mexico on health related quality of life among type II diabetes mellitus found that sex had no significant association with HRQOL (11).

Age: According to cross sectional study conducted in Saudi Arabia the HRQOL among the group with over 50 years of age showed significantly lower HRQOL on physical functioning, role of emotional, and vitality than the group with under 50 years of age (27). Being over 65 years of age had statistically significantly negative effect on PF and a statistically significantly positive effect on GH (29). However, other studies found that age had no significant association with the SF-36 subscales except for PF and GH (22). According studies conducted Switzerland, Singapore, and Ethiopia shows that age had a significant association with HRQOL (15, 29, 30, 31).

Marital status

Married patients had higher scores compared to patients who were not married in all domains of the SF-36 quality of life scales and significant association were seen between being married and the domains physical function, general health, and mental health parameters were found to be statistically significant (21). In any case, married patients reported better health in all scales and the differences were significant for body pain (BP), vitality (VT) and mental health (MH) (22). Other studies found that being separated or divorced had a negative effect on RE (29, 30).

Educational status

Education had a significant association with the domains PF, BP, RP, VT, SF and MH (22). When compared to those with poor economic status, patients with middle and high economic status had significantly higher HRQOL in all subscales. However, there was no significant difference found between middle and high economic status patients (27).

Body mass index (BMI)

Study conducted to evaluate the quality of life and depression levels in individuals with type II diabetes found that patients with obesity had a significantly lower scores of HRQOL in the sub-

parameters of SF-36, physical functions, physical role limitations, pain, energy/vitality, and emotional role distress, compared to patients with overweight and normal weight (21). Another studies conducted in China (24, 25) found significant association between BMI and the two summary measures (PCS and MCS).

Duration of diabetes mellitus

Sincediabetes mellitus is not curable; individuals who are diagnosed with diabetes suffer from diabetic complications which affect the patients' health related quality of life. Studies conducted in different places found that long life spent with diabetes had significantly associated with lower score of HRQOL (11, 21). According to study conducted in Ethiopia, duration of the disease had a statistically significant associated with only on PCS. Patients with illness duration less than five years had better quality of life compared to those above five years (26). However, studies done in Nepal, Debre Markos shows thatlong life spent with diabetes (> 59 months) had significantly associated with higherscore of HRQOL (14, 32). Study done by Wong et al.(24) demonstrated no significant association between duration of DM and HRQOL in patients with DM.

Treatment modality

Study conducted in Turkey found patients treated with oral anti-diabetic medication alone had significantly higher mean scores in the domains; physical functioning , role limitation due to physical health problem, body pain, general health, and social functioning compared to patients treated with insulin alone or combinations (21). According to studies conducted in China (24, 25) among type II patients found patients use insulin alone have lower HRQOL compared to those who used oral anti-diabetic medication.

Complicationsof DM

DM causes macro and micro vascular complications which affect the quality of life of patients. According to study done in Singapore, the presence of complications including

stroke, ischemic heart disease, and peripheral vascular disease had statistically significantly affected the physical component summery (PCS). Peripheral neuropathy and eye disease had statistically significantly affected both PCS and mental component summery (MCS) (33). Study done in China (24) found that type II DM patients with diabetic-related complications have poor HRQOL compared to those patients with no complication.

Study conducted in Saudi Arabia and Turkey found that having one or more complication had significantly lower scores in subscales of SF-36; physical functioning, role of physical health, role emotional, energy, emotional, social, pain, general health, and health change than those who had no complication (21, 27). Systematic review done in Ethiopia on the prevalence and related acute and chronic complication of diabetes found that 4-12% had retinopathy , 4-6% had neuropathy, 1-23% had nephropathy, 2-15% had foot ulcers, 1-22% had erectile dysfunction and 18-39% had hypertension(34).

Co-morbidity

Co-morbidities can have profound effects on patient's ability to manage their self-care and pose significant barriers to lifestyle changes and regimen adherence which affects the health related quality of life. Study conducted to assess the impact of co-morbid chronic conditions on quality of life in type 2 diabetes mellitus found that diabetes patients with co-morbid chronic conditions had a statistically significantly lower PCS and MCS scores, compared to those diabetes patients without co-morbid chronic conditions (35). Another study conducted in china also found a negative association between presence of co-morbidities and the two summary measures (physical component summary and mental component summary) (25).

Conceptual framework

Concepts directly related to the outcome variable of the study that is health related quality of life derived from literature review. Among these variables socio-demographic characteristics, clinical factors, and behavioral factors are expected to affect the dependent variable of the study. Diagrammatically, it is showed as follows:

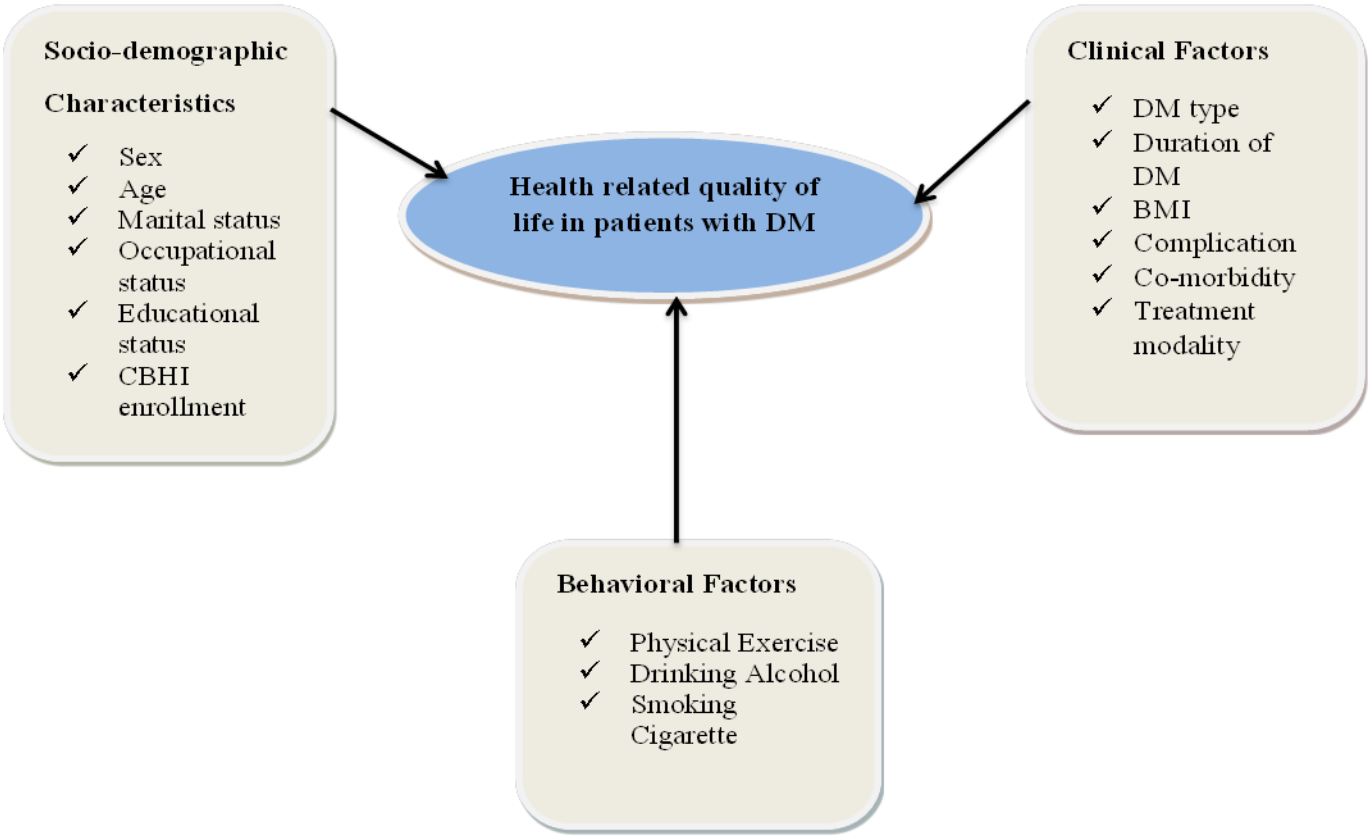

Figure1 Conceptual framework representation of interactions between the dependent and independent variables, in public general hospitals of Sidama Region, Ethiopia, 2023 (14, 30, 31, 36).

3. Objectives

3.1. General objective

To assess the magnitude of health-related quality of life and associated factors among adult diabetic patients in public general hospitals in Sidama Region, Ethiopia, 2023

3.2. Specific objectives

1. To determine the magnitude of health-related quality of life
2. To identify factors associated with health-related quality of life

4. Methods

4.1. Study area and period

The study was conducted at Sidama region general public hospitals. Sidama national regional state is one of 13 regions found in Ethiopia and Hawassa city is the capital of the region which is located 273 km south of Addis Ababa. The region is bordered in the south, north and east by Oromia region and in the west by Southern Ethiopia region. According to the 2021 Ethiopian central statistical agency report estimation, the total population of the region was 4,521,739 including Hawassa city administration (37). The region has four general public hospitals; Bona General Hospital (BGH), Adare General Hospital (AGH), Leku General Hospital (LGH), and Yirgalem General Hospital (YGH). The Study was conducted from June 16 to July 15, 2023.

4.2. Study design

Institution-based cross-sectional study was done to study the HRQOL among adult diabetic patients attending chronic care follow up clinic in public general hospitals of Sidama regional State.

4.3. Source population

The source population was all adult diabetic patients who were attending the DM follow up in public general hospitals of Sidama region.

4.4. Study population

The study population was all adult diabetic patients who were attending the DM follow up in public general hospitals of Sidama region during the study period.

4.5. Sampling unit

Adult individuals with a diagnosis of DM and fulfill the inclusion criteria.

4.6. Inclusion and exclusion criteria

4.6.1. Inclusion criteria

All adult diabetic patients whose age 18 and above, who were on treatment for at least six months and were willing to participate in the study were included in this study.

4.6.2. Exclusion criteria

Patients with gestational DM and those who had cognitive impairments

4.7. Sample size, sampling technique and sampling procedure

4.7.1. Sample size determination

The required sample size for the first objective was calculated manually by using single population proportion formula with basic assumptions of 95% confidence interval, 5% margin of error, and 56% estimated proportion of good health-related quality of life from a previous study (14). Hence, the following formula was used for sample size calculation.

$$n = (z\frac{\alpha}{2})^2 \times \frac{p(1-p)}{d^2} = (1.96)^2 \times 0.56(\frac{1-0.56}{0.05^2}) = 379$$

By considering the non-response rate to be 10% and adding 379 + 38 = 417 participants

For the second objective, significantly associated factors were obtained from a study conducted in Ethiopia to take the largest sample size these were doing physical exercise, duration of DM >59 months and sex being male were more likely to be associated with health-related quality of life in diabetic patients (14). The sample size was computed by using EPI Info version 7.2 with the assumptions of a 95% confidence interval and power to be 80%.

Table1 Sample size calculation for the second specific objective, in public general hospitals of Sidama region, Ethiopia, 2023.

Variables	Confidence interval	Power	Percent of outcome in unexposed group (P2)	AOR	Sample size
Doing physical exercise	95%	80%	41.54 %	2.33	198
Duration of DM >59 months	95%	80%	45.7%	2.93	132
Sex being male	95%	80%	42.4%	4.28	78

For the second objective the largest calculated sample size was 198 and by considering the non-response rate to be 10% and adding 198 + 29 = 218 participants. Finally, the first objective was preferable due to the largest sample size and the study participants were choosen by using a systematic random sampling technique.

4.7.2. Sampling technique and procedure

From each hospital, participants were selected by systematic random sampling based on the total adult diabetic patient flow in the study hospitals on previous year similar time with the data collection period. The total number of adult diabetic patients who visited the general public hospitals in the previous year similar time with the data collection period was; 2751 (725 from Yirgalem general hospital, 856 from Adare general hospital, 680 from Leku general hospital, and 490 from Bona general hospital. The calculated sample size was proportionally allocated to the study hospitals (sampling fraction = sample size/sampling frame = 417/2751= 0.152), and 110 from Yirgalem general hospital, 130 from Adare general hospital, 103 from Leku general hospital, and 74 from Bona general hospital was taken as study unit (Figure 2).

Study units were selected by calculating the sampling frame (k) for each hospital. Sampling frame (k) was calculated by dividing the total number of adult diabetic patients in all selected hospitals in one month period to sample size of the study (2751/417 ~ 7). So, the study units

were taken at every 7th interval of adult diabetic patients in DM followup clinic for each hospital. The first study participant was chosen by using lottery method for each hospital.

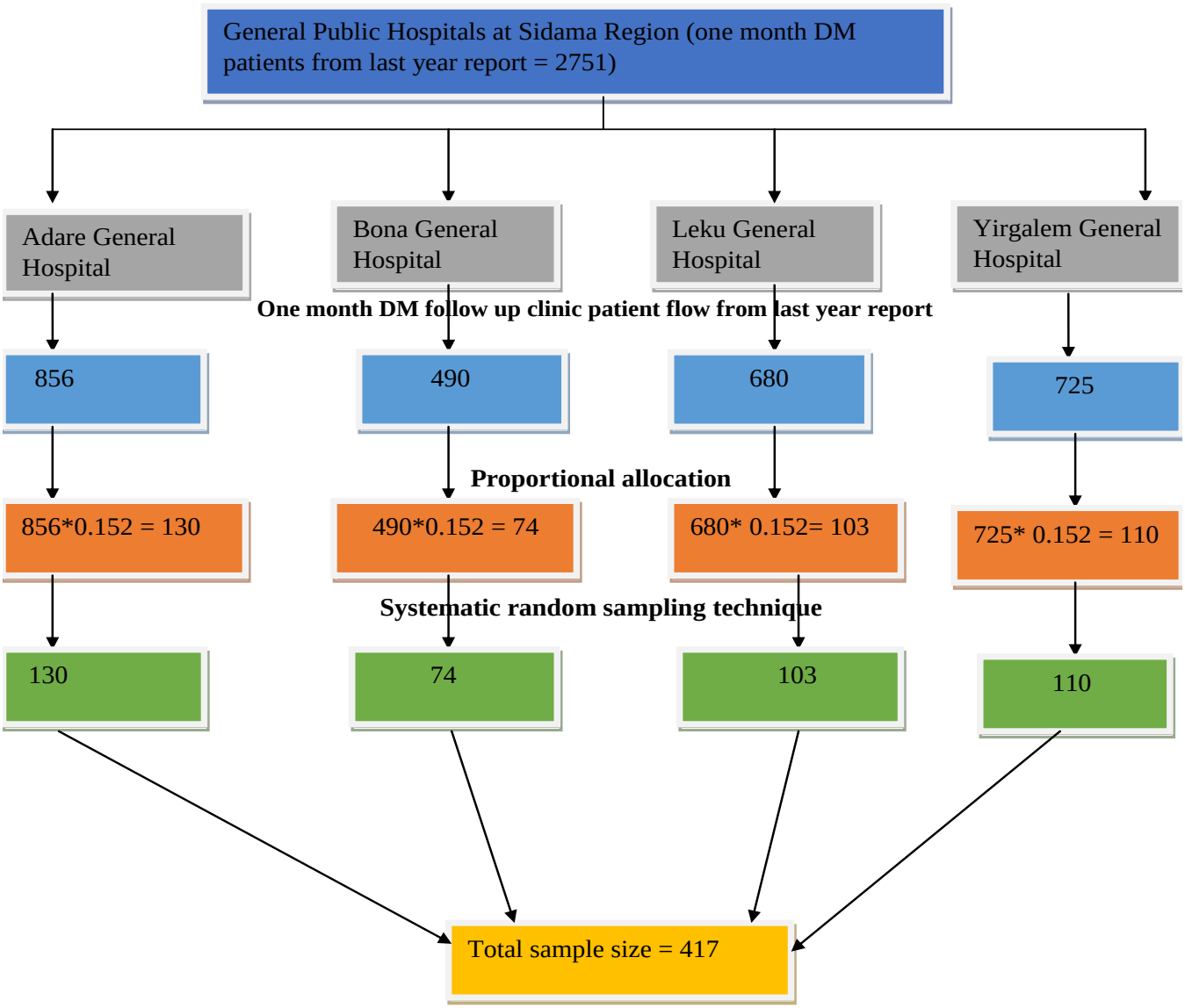

Figure 2 Schematic presentation of the sampling procedure, in public general hospitals of Sidama region, Ethiopia, 2023.

4.8. Study variable

4.8.1. Dependent variable

The magnitude of health related quality of life among adult diabetic patients (Poor or Good)

4.8.2. Independent variables

Socio-demographic characteristics including age, sex, marital status, educational status, occupation, and Community Based Health Insurance (CBHI) enrollment status

Clinical factors including BMI, duration of diabetes mellitus, treatment modality, DM type, diabetes-related complications and co-morbidities

Behavioral factors including physical exercise, history of alcohol, smoking status

4.9. Data collection procedure and tools

An interviewer-administered structured questionnaire was used to collect primary data, and medical record registration was used to take secondary data variables like co-morbidity, duration of patients with DM, treatment modality and diabetic complications. The questionnaire for assessing Socio-demographic, clinical and behavioral factors was taken by adapting and incorporating additional variables from studies conducted before (14, 30, 31, 36). The questionnaire for assessing HRQOL of adult diabetic patients was adopted from a validated instrument of WHOQOL-BREF (38), whose Amharic version has been validated and cross-culturally checked to be used in Ethiopia (39). It was developed with 15 international field centers to obtain an assessment tool applicable cross-culturally. 26 items make up the WHOQOL-BREF, which was divided into four domains: physical health (seven items), psychological health (six items), social relationships (three items), and environmental health (eight items). Each participant's perception of their general health and quality of life was measured by two questions. The organized questionnaire was used to gather the data, which was interviewed the patients as soon as they leave the diabetic room by four BSc nurses and two health officers. To improve participant comfort and safety, the interviewing process was conducted in a ventilated area. Finally the English version of the questionnaire was translated to

Amharic and Sidamuu Affo (two common local languages) for better understanding by data collectors and respondents, then back-translated to English in order to maintain its consistency.

4.10. Data quality control

Prior to the actual data collection, pretest of the questionnaire was conducted on 5% (21 samples) of the sample size at Hawassa University Comprehensive Specialized Hospital and the reliability of the questionnaire was checked by calculating Cronbach's alpha, which was 0.945. Data collectors and supervisors were given detailed training by the principal investigator for one day on the objectives of the study and how to select the samples, how to interview, how to fill out the questionnaire by Open Data kit /Kobo toolbox and how to send to the server, and also how to handle questions asked by respondents during an interview. Furthermore, the principal investigator and supervisor were given feedback and corrections daily to the data collectors before they were deployed to the field, and the completeness, accuracy, and clarity of the collected data were checked carefully from the user server.

4.11. Data entry and analysis

The collected data was downloaded from the kobo toolbox user server, exported to excel then download. Finally, the file was imported to Statistical Package for the Social Sciences (SPSS) Version 26 for further analysis. WHOQOL-BREF scores on a Likert scale of 1–5 were scaled in a positive direction. The scoring of three negatively phrased questions were reversed (Q3, Q4 and Q15), thus transforming them in to positively phrase questions. The mean was determined for each individual domain, multiplied by 4, and converted to a scale of 0-100 so that it may be compared to the WHOQOL-100 tool from which the WHOQOL-BREF tool has been taken. By summing up the respondents' mean scores and dividing the result by the tool's item count, HRQOL was evaluated. Categorization was done using the mean score. Scores less than the overall mean score were categorized as a poor HRQoL, while scores greater or equal to the overall mean score were categorized as a good HRQoL (31). Multicollinearity was checked using Variance Inflation Factor (VIF) and the value of all variables were < 5. The fitness of logistic regression model was assessed using the Hosmer-Lemeshow test with P- value of 0.336.

Descriptive statistics was done to present the socio-demographic, clinical, and behavioral characteristics of the study participants. Binary logistic regression analysis was done to check the association between the outcome variable and various independent variables.

Bivariable binary logistic regression analysis was conducted for each potentially explanatory variable. Those variables whose p-value < 0.25 in the bivariable binary logistic regression analysis was analyzed further using multivariable binary logistic regression analysis. Backward likelihood ratio was used for variable selection. Statistical significance of association was decided using $p < 0.05$ and strength of association was interpreted using the adjusted odds ratio, 95% confidence intervals (95% CI), and P-value.

4.12. Operational definitions

HRQOL in DM:

Good: Patients with total score greater than or equal to the overall mean score (58.8) were categorized as a good HRQOL (31).

Poor: Patients with total score less than the overall mean score were categorized as a poor HRQOL (31).

BMI: Is calculated as weight in kilogram divided by height meter square. Weight is taken to the nearest 0.5kg and height is to the nearest 0.5cm and is categorized in to four groups. Patients with BMI below 18.5 kg/m^2, 18.5-24.9 kg/m^2, 25-29.9 kg/m^2 and 30 kg/m^2 and above are categorized as underweight, normal, overweight and obese respectively (40).

Diabetes-related complications: The presence of unfavorable results due to diabetes such as peripheral neuropathy, retinopathy, nephropathy and diabetic foot ulcer.

Co-morbidities: The presence of one or more additional conditions concomitant with DM such as hypertension, cardiovascular disease, dyslipidemia, cancer and other diseases.

4.13. Ethical considerations

Ethical clearance was obtained from Hawassa University College of Medicine and Health Sciences institutional review board (IRB Ref.No;IRB/289/15). Permission was obtained from Sidama region public health institute and each hospital's concerned bodies; oral informed consent was obtained from participants. Throughout the data collection procedure, the confidentiality of the data was protected. In this study, participation was entirely voluntary and participants had the option to stop participating at any time, even after the interview would have been begun. They also had a right to choose not to answer any individual question or all of the questions in the questionnaire that were provided.

5. Results

5.1. Socio-demographic characteristics

A total of 417 adult diabetic patients who had follow-up in DM clinic of Sidama region general public hospitals were involved in the study to respond to interviewed questionnaire with the response rate of 100% (417). Among the total respondents, around two third of them 269 (64.5%) were male and more than 55% of them were ≥40 years of age, with a mean and standard deviation of 42.85±14.504. As for marital status, more than two third 281 (67.4%) of the study participants were married and for educational level, around one quarter of study participants 116 (27.8%) had received college and above education. Around one fourth of the study participants were merchants followed by government employee with percentage distribution of 24.0%, and 19.7% (Table 2).

Table 2 Socio-demographic characteristics of adult diabetic patients in Sidama region public general public hospitals, Ethiopia, 2023.

Variable		Number	Percentage (%)
Sex	Male	269	64.5
	Female	148	35.5
Age Group	18-28	77	18.5
	29-39	107	25.7
	≥40	233	55.9
Marital status	Single	83	19.9
	Maried	281	67.4
	Divorced	10	2.4
	Widowed	43	10.3
Educational	Can’t read and write	99	23.7
Status	Can read and write	71	17.0
	Primary school (grade 1-8)	65	15.6
	Secondary school (grade 9-12)	66	15.8
	College and above	116	27.8

Occupation	House wife	78	18.7
	Government organization	82	19.7
	Private organization	39	9.4
	Merchant	100	24.0
	Driver	9	2.2
	Farmer	70	16.8
	Student	39	9.4
Physical exercise	Yes	151	36.2
	No	266	63.8
Drinking alcohol	Yes	42	10.1
	No	375	89.9
Smoking cigarette	Yes	6	1.4
	No	411	98.6
CBHI enrollment	Yes	317	76.0
	No	100	24.0

5.2. Diabetic related clinical factors

Most of the study participants 351 (84.2%) were type 2 diabetes, 72.2% of them had five years or less diagnosis history. Nearly two third of the study participants (64%) were used oral anti diabetic medication only and around one third of them 140 (33.6%) had co-morbidities (Table 3).

Table 3 Diabetic related clinical factors of adult diabetic patients in Sidama region public general hospitals, Ethiopia, 2023.

Variable		Number	Percentage (%)
DM type	Type 1 DM	66	15.8
	Type 2 DM	351	84.2
Duration of illness	Less or equal to 59 months	301	72.2
	Greater than 59 months	116	27.8
Treatment modality	Oral anti diabetic medication only	267	64.0
	Combined (oral anti diabetes and insulin)	79	18.9
	Insulin only	71	17.0
DM-related complications	Yes	80	19.2
	No	337	80.8
Presence of Co-morbidities	Yes	140	33.6
	No	277	66.4
BMI	Underweight	6	1.4
	Normal	175	42.0
	Overweight	211	50.6
	Obese	16	3.8

5.3. Magnitude of health related quality of life of the study participants

More than half of the study participants (55.6%) rated their quality of life as good, and 49.2% were satisfied with their current health status (Table 4). The magnitude of overall HRQOL of the study participant was measured by the domains of the WHOQOL-BRIEF questionnaire. Among the domains of WHOQOL-BRIEF questionnaire; the first domain with the highest mean score was psychological domain with mean and standard deviation of 65.1 ± 16.5 followed by social domain with mean and standard deviation of 61.0 ± 15.0. The domain with a lowest score was role environmental with mean and standard deviation of 49.3±10.5. The mean score and standard deviation for the overall HRQOL was 58.8 ± 12.6 (Table 5). According to this study 48.4% of the study participants had a good HRQOL (Figure 3).

Table 4 Self-rating of quality of life and health status satisfaction among adult diabetic patients in Sidama region public general hospitals, Ethiopia, 2023.

Self-rating of quality of life		Satisfaction with health status	
Response	Frequency (%)	Response	Frequency (%)
Very poor	2 (0.5)	Very dissatisfied	-
Poor	54 (12.9)	Dissatisfied	29 (7.0)
Neither poor nor good	104 (24.9)	Neither dissatisfied nor satisfied	176 (42.2)
Good	232 (55.6)	Satisfied	205 (49.2)
Very good	25 (6.0)	Very satisfied	7 (1.7)
Total	417 (100)	Total	417 (100)

Table 5 Magnitude of HRQOL of adult diabetic patients in Sidama region public general hospitals, Ethiopia, 2023.

WHOQOL-BREF domains and their overall HRQOL score	Number of respondents	Mean with Standard deviation	Median	Minimum	Maximum

Physical domain	417	59.8 ± 14.1	57.1	4	96
Psycological domain	417	65.1 ± 16.5	62.5	25	100
Social domain	417	61.0 ± 15.0	58.3	25	100
Environmental domain	417	49.3 ± 10.5	46.9	13	78
Overall HRQOL	417	58.8 ± 12.6	57.6	25	88

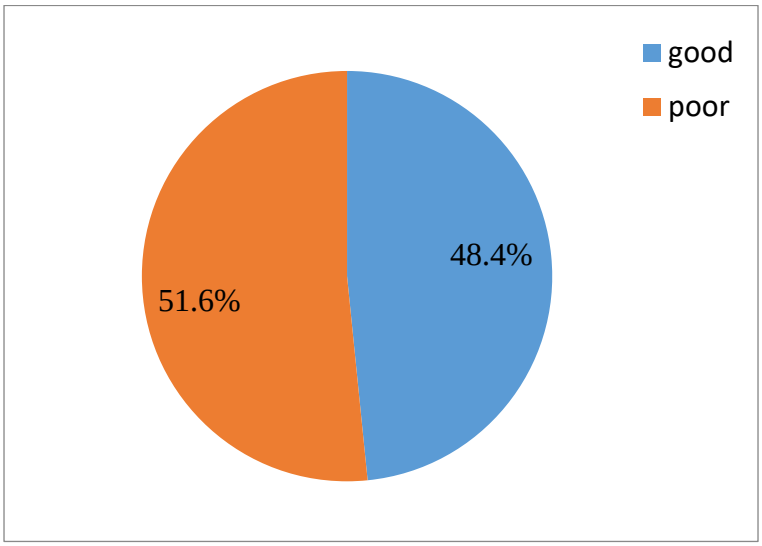

Figure 3 Overall HRQOL of adult diabetic patients in Sidama region public general hospitals, Ethiopia, 2023.

5.4. Factors associated with HRQOL of adult diabetic patients

The study showed that age, marital status, educational status, occupation, community-based health insurance (CBHI), physical exercise, body mass index (BMI), duration of illness, treatment modality, DM-related complications and co-morbidity were significantly associated with HRQOL at p-value less than 0.25 and were candidates for multi-variable logistic regression analysis. Multi-variable logistic regression of the study participants indicated that age, marital status, educational status, occupation, CBHI, physical exercise, duration of illness, treatment modality and DM-related complications were significantly associated with HRQOL at a p-value less than 0.05 and 95% confidence interval (Table 6).

In this study, participants whose age is between 29 and 39 are 2.54 times more likely to have good HRQOL than participants who were 40 years and older [AOR = 2.54 (95% CI, 1.24-5.20)]. Those patients who were married are 5.2 times more likely to have good HRQOL than patients who were single [AOR = 5.20 (95% CI, 1.80-14.97)].

Those patients who had an educational status of college and above are 5.48 times more likely to have a good HRQOL than patients who were can't read and write [AOR = 5.48 (95% CI, 1.41-21.33)]. According to this study, students were 5.47 times more likely to have had good HRQOL than housewives [AOR = 5.47 (95% CI, 1.19- 25.19)]. Those patients who did physical exercise are 4.25 times more likely to have good HRQOL than patients who did not perform physical exercise [AOR = 4.25 (95% CI, 2.37- 7.61)]. Patients who had CBHI are 3.18 times more likely to have good HRQOL compared to patients who did not have CBHI [AOR = 3.18 (95% CI, 1.55- 6.53)].

Adult diabetic patients who had been with the disease for more than 59 months have 6.79 times more likely to have a good HRQOL than patients who had been with the disease for less than or equal to 59 months [AOR = 6.79 (95% CI, 3.28- 14.05)]. Patients who were taking insulin only are 2.46 times more likely to have a good HRQOL than patients who were on oral anti-diabetic medications only [AOR = 2.46 (95% CI, 1.01- 6.04)]. Those patients who did not have DM-related complications are 3.52 times more likely to have good HRQOL compared to patients who had DM-related complications [AOR = 3.52 (95% CI, 1.57- 7.89)].

Table 6 Bi-variable & multi-variable logistic regression model for factors associated with HRQOL in adult diabetic patients in Sidama region public general hospitals, Ethiopia, 2023

Variable		HRQOL			
		Good	Poor	COR(95% CI)	AOR(95% CI)
Age	18-28	35	42	1.17 (0.60, 1.96)	0.52 (0.17, 1.63)
	29-39	70	37	**2.65 (1.65, 4.27)***	**2.54 (1.24, 5.20)***
	≥40	97	136	1	1
Marital status	Single	36	47	1	1
	Married	155	122	**1.66 (1.01, 2.720)***	**5.20 (1.80, 14.97)***
	Divorced	6	8	0.98 (0.31, 3.07)	1.59 (0.32, 7.88)

Widowed	5	38	**0.17 (0.06, 0.48)***	1.52 (0.31, 7.44)
Education				
can't read and write	28	71	1	1
Can read and write	41	30	**3.46(1.82, 6.59)***	1.74 (0.73, 4.14)
Primary school (grade 1-8)	29	36	**2.04(1.06, 3.94)***	1.27 (0.49, 3.30)
Secondary school (grade 9-12)	31	35	**2.25(1.17, 4.31)***	1.02(0.33, 3.25)
College and above	73	43	**4.31(2.42, 7.67)***	**5.48 (1.41, 21.33)***
Occupation				
House wife	37	41	1	1
Government organization	48	34	**1.56 (0.84, 2.92)***	0.45 (0.13, 1.59)
Private organization	21	18	1.29 (0.60, 2.79)	0.58 (0.16, 2.07)
Merchant	40	60	0.74 (0.41, 1.34)	0.48 (0.20, 1.16)
Driver	7	5	1.55 (0.45, 5.31)	0.33 (0.07, 1.60)
Farmer	26	44	**0.66 (0.34, 1.26)***	0.45 (0.18, 1.11)
Student	23	13	**1.96 (0.87, 4.42)***	**5.47 (1.19, 25.19)***
Physical exercise				
Yes	11 6	63	**3.25 (2.17, 4.88)***	**4.25 (2.37, 7.61)***
No	86	152	1	1
CBHI enrollment Yes	161	156	**1.49 (0.94, 2.34)***	**3.18 (1.55, 6.53)***
No	41	59	1	1
Body mass index				
Underweight	7	5	**3.08 (0.65, 14.66)***	1.68 (0.27, 10.37)
Normal	101	63	**3.53 (1.17, 10.63)***	2.20 (0.63, 7.67)
Overweight	89	136	1.44 (0.48, 4.28)	0.79 (0.23, 2.75)
Obese	5	11	1	1
Duration of illness				
≤ 59 months	132	169	1	1
>59 months	70	46	**1.95 (1.26, 3.01)***	**6.79 (3.28, 14.05)***
Treatment modality				
Oral anti diabetic medication only	134	133	1	1

Combined (oral anti diabetes and insulin)	26	58	**0.45 (0.26, 0.75)***	0.57 (0.27, 1.18)
Insulin only	42	24	**1.74 (0.99, 3.03)***	**2.46 (1.01, 6.04)***
DM related complications				
Yes	19	61	1	
No	183	154	**3.82 (2.18, 6.67)***	**3.52 (1.57, 7.89)***
Having co-morbidities				
Yes	62	78	1	
No	140	137	**1.29 (0.86, 1.93)***	0.54 (0.26, 1.15)

COR, crude odds ratio; AOR, Adjusted odds ratio; CI, Confidence interval; *, stastistically significant at p-value <0.05.

6. Discussion

In this study 48.4% of respondents had good HRQOL (95%CI: 57.59, 60.01). This result comparable with studies done in Ethiopia (14, 36, 41, 42). In contrast, a study done in Jimma had 67% good HRQOL, which is higher than a study conducted in this area (31). This difference might be because of variations in study time and the tool used to measure the outcome variable (SF-36). In the other hand, the current study finding is higher when compared to a study conducted in Botswana, where 42.5% of the study participants had good HRQOL (43). This discrepancy in findings might be due to the study area and the variation of the tool, which was a Short Form-12 (SF-12), used to measure the outcome variable.

Patients whose age group was between 29 and 39 had good HRQOL compared with those who were 40 and older. Studies conducted in Switzerland, Singapore, and Ethiopia (15, 29, 30) showed similar results to this study. This might be due to the fact that age is related to several changes in the body, increases the risk of developing different disease conditions, and further reduces individual well-being. The American Diabetes Association (44) indicated that the aging process causes degeneration of muscles, ligaments, bones, and joints and that diabetes may increase the problem.

Patients who were married had better HRQOL than single patients did. The results from other regions of Ethiopia concurred with those from the current study (30, 41, 42). This could be explained by the fact that married patients may be psychologically more stable and have more social or family support than single patients. In adult diabetic patients, HRQOL was directly associated with educational levels of college and above. In contrast to those who were can’t read and write, those with a college degree or higher had a favorable HRQOL. Studies conducted in various regions of Iran, Uganda, and Ethiopia (30, 31, 41, 45, 46, 47) provide evidence in support of this. Understanding how to manage one's own needs and sense of worth depends heavily on education. Patients with a high level of education can read and comprehend the effects of diabetes with ease, which may increase their knowledge of the disease's difficulties. Additionally, it supports a high proportion of self-care management compliance, including diet. Students in this study had better HRQOL than housewives. The low social and financial burden of students may be to blame for this.

In this study, adult diabetic patients who had CBHI had a significant relationship with HRQOL. In contrast, a study conducted in Mizan Tepi on year of 2019 (36) revealed that there was no association between CBHI enrollment and HRQOL. This discrepancy might be the result of the two findings different study periods. As is well known, CBHI is a new program in Ethiopia, and enrollment has increased recently. Therefore, the number of patients with CBHI has increased recently compared to two or three years ago.

Similarly, engaging in physical activity significantly increased the HRQOL of adult diabetic patients in this research location. The research undertaken in Nigeria and Ethiopia (14, 30, 48) are consistent with this study. This might be due to the fact that physical activity releases a variety of chemicals in the brain that make a person feel better, happier, more at ease, less anxious, and more energized. It may also increase their energy levels and promote better sleep, as exercise can also relax their muscles and make them happier (49).

Additionally, the number of months that patients had DM for over 59 months was discovered to be a major factor that enhances quality of life. The research carried out in Nepal, Nigeria, and Ethiopia (14, 32, 50) supports this conclusion. This might be due to the fact that long-term disease-bearing patients have had more opportunity to learn how to manage their condition, which enhances their HRQOL. The longer disease duration may also have given patients more time to learn about the therapeutic drugs and get support from their families to alter their lifestyles.

Adult diabetic patients who received only insulin treatment had better HRQOL than patients who received treatment with oral anti-glycemic medications. This outcome is consistent with research conducted in Turkey, and Iran (46, 51). Nevertheless, research carried out in United States of America, Switzerland, and Israel (15, 52, 53) revealed that diabetes patients who were treated solely with insulin had a lower quality of life than those who were exclusively treated with oral anti-glycemic drugs. Discrepancies in medication awareness might be the cause of this disparity. As is well known, the majority of Ethiopian society prefers parenteral drugs to those taken orally. In contrast to individuals who utilized other forms of treatment, patients who used insulin therapy needed to be more motivated and had to control their anger and fear less.

Furthermore, adult diabetic patients without DM-related complications had a higher HRQOL. This outcome is in line with the findings of the research done by Nekemte and Gondar (30, 42).

This could be a result of the fact that patients may experience worrying circumstances as a result of issues associated with diabetes. When a patient seeks medical attention for one or more of the aforementioned conditions, they may actually be emotionally ill, and the extent to which this is the case may be called into question. Patients who experienced prolonged side effects would also experience a double crisis. They were upset about having diabetes, but they would also experience psychological, physical, emotional, social, and spiritual suffering.

Limitations

The results of this study are very important; however they need to be interpreted on the background of several limitations. Due to a cross-sectional study in design; it only provides association not causal relationship. We used a generic tool rather than DM specific tool for data collection. And also comparision was not done between type 1 and type 2 diabetes mellitus.

7. Conclusion and Recommendation

7.1. Conclusion

Nearly half of the study participants had a good HRQOL. Age between 29 and 39, marital status being married, occupation being student, college and above educational level, CBHI utilization, doing physical exercise, insulin only treatment modality, duration of illness more than 59 months, absence of DM-related complications were factors significantly improved HRQOL in adult diabetic patients. Except age, all associated factors identified in this study are modifiable if appropriate measures or strategies are provided and implemented accordingly.

7.2. Recommendation

For policy makers/ government bodies

There are many clinical and socio-demographic factors affecting the health-related quality of life of patients with DM, so

The government bodies/ policy makers should pay necessary attention in this issue by incorporating the tools for assessing HRQOL in the treatment guidelines.

For health care providers

Understanding the effect of diabetes on HRQOL is important for day-to-day clinical management in order to improve the HRQOL and health outcomes of those with diabetes. So;

It will be better if the health care providers give attention on information provision or counseling of the patients on life style modification such as diet modification, weight reduction and physical exercises.

The health care team for diabetics should not be only disease-centered; the QOL of the diabetic patient should always be regularly assessed and improved accordingly.

For researchers

Conducting research using study designs that show a causal relationship between HRQOL and associated factors among adult diabetic patients might be crucial.

Further research needs to be conducted on comparing HRQOL and associated factors between type 1 and type 2 adult diabetic patients.

8. References

1. Sun H, Saeedi P, Karuranga S, Pinkepank M, Ogurtsova K, Duncan BB, et al. IDF Diabetes Atlas: Global, regional and country-level diabetes prevalence estimates for 2021 and projections for 2045. Diabetes research and clinical practice. 2022;183:109119.

2. Group TW. The World Health Organization quality of life assessment (WHOQOL): development and general psychometric properties. Social science & medicine. 1998;46(12):1569-85.

3. Shaw JE, Sicree RA, Zimmet PZ. Global estimates of the prevalence of diabetes for 2010 and 2030. Diabetes research and clinical practice. 2010;87(1):4-14.

4. Magliano DJ, Boyko EJ, committee IDFDAtes. IDF Diabetes Atlas. Idf diabetes atlas. Brussels: International Diabetes Federation © International Diabetes Federation, 2021.; 2021.

5. Fal AM, Jankowska B, Uchmanowicz I, Sen M, Panaszek B, Polanski J. Type 2 diabetes quality of life patients treated with insulin and oral hypoglycemic medication. Acta diabetologica. 2011;48(3):237-42.

6. Porojan M, Poantă L, Fodor D. Health-related quality of life of diabetic patients. environment. 2009;1:2.

7. Abdelgadir M, Shebeika W, Eltom M, Berne C, Wikblad K. Health related quality of life and sense of coherence in Sudanese diabetic subjects with lower limb amputation. The Tohoku journal of experimental medicine. 2009;217(1):45-50.

8. Eljedi A, Mikolajczyk RT, Kraemer A, Laaser U. Health-related quality of life in diabetic patients and controls without diabetes in refugee camps in the Gaza strip: a cross-sectional study. BMC public health. 2006;6(1):1-7.

9. Martínez YV, Prado-Aguilar CA, Rascón-Pacheco RA, Valdivia-Martínez JJ. Quality of life associated with treatment adherence in patients with type 2 diabetes: a cross-sectional study. BMC Health Services Research. 2008;8(1):1-10.

10. Davis WK, Hess GE, Hiss RG. Psychosocial correlates of survival in diabetes. Diabetes care. 1988;11(7):538-45.

11. Zurita-Cruz JN, Manuel-Apolinar L, Arellano-Flores ML, Gutierrez-Gonzalez A, Najera-Ahumada AG, Cisneros-Gonzalez N. Health and quality of life outcomes impairment of quality of life in type 2 diabetes mellitus: a cross-sectional study. Health and quality of life outcomes. 2018;16(1):1-7.

12. Bourdel-Marchasson I, Druet C, Helmer C, Eschwege E, Lecomte P, Le-Goff M, et al. Correlates of health-related quality of life in French people with type 2 diabetes. Diabetes research and clinical practice. 2013;101(2):226-35.
13. Khunkaew S, Fernandez R, Sim J. Demographic and clinical predictors of health-related quality of life among people with type 2 diabetes mellitus living in northern Thailand: A cross-sectional study. Health and quality of life outcomes. 2019;17(1):1-9.
14. Wonde TE, Ayene TR, Moges NA, Bazezew Y. Health-related quality of life and associated factors among type 2 diabetic adult patients in Debre Markos Referral Hospital, Northwest Ethiopia. Heliyon. 2022;8(8).
15. Arditi C, Zanchi A, Peytremann-Bridevaux I. Health status and quality of life in patients with diabetes in Switzerland. Primary care diabetes. 2019;13(3):233-41.
16. Taylor VR. Measuring healthy days: Population assessment of health-related quality of life. 2000.
17. Stewart AL, Greenfield S, Hays RD, Wells K, Rogers WH, Berry SD, et al. Functional status and well-being of patients with chronic conditions: results from the Medical Outcomes Study. Jama. 1989;262(7):907-13.
18. Bishu KG, Jenkins C, Yebyo HG, Atsbha M, Wubayehu T, Gebregziabher M. Diabetes in Ethiopia: a systematic review of prevalence, risk factors, complications, and cost. Obesity Medicine. 2019;15:100132.
19. Kassa A, Woldesemayat EM. Hypertension and diabetes mellitus among patients at Hawassa University comprehensive specialized hospital, Hawassa, Southern Ethiopia. International journal of chronic diseases. 2019;2019.
20. Seifu Y, Tsegaw D, Haji Y, Ejeso A. Prevalence and associated factors of diabetes mellitus among adult population in Hawassa Zuria Woreda, Sidama Region, Ethiopia. Diabetes, Metabolic Syndrome and Obesity: Targets and Therapy. 2020;13:4571.
21. Altınok A, Marakoğlu K, Kargın NÇ. Evaluation of quality of life and depression levels in individuals with Type 2 diabetes. Journal of family medicine and primary care. 2016;5(2):302.
22. Papadopoulos AA, Kontodimopoulos N, Frydas A, Ikonomakis E, Niakas D. Predictors of health-related quality of life in type II diabetic patients in Greece. BMC public health. 2007;7(1):1-9.

23. Verhulst MJ, Teeuw WJ, Gerdes VE, Loos BG. Self-reported oral health and quality of life in patients with type 2 diabetes mellitus in primary care: a multi-center cross-sectional study. Diabetes, metabolic syndrome and obesity: targets and therapy. 2019;12:883.
24. Wong CK, Lo YY, Wong WH, Fung CS. The associations of body mass index with physical and mental aspects of health-related quality of life in Chinese patients with type 2 diabetes mellitus: results from a cross-sectional survey. Health and quality of life outcomes. 2013;11(1):1-9.
25. Rejeski WJ, Lang W, Neiberg RH, Van Dorsten B, Foster GD, Maciejewski ML, et al. Correlates of health-related quality of life in overweight and obese adults with type 2 diabetes. Obesity. 2006;14(5):870-83.
26. Degu H, Wondimagegnehu A, Yifru YM, Belachew A. Is health related quality of life influenced by diabetic neuropathic pain among type II diabetes mellitus patients in Ethiopia? PloS one. 2019;14(2):e0211449.
27. Al Hayek AA, Robert AA, Al Saeed A, Alzaid AA, Al Sabaan FS. Factors associated with health-related quality of life among Saudi patients with type 2 diabetes mellitus: a cross-sectional survey. Diabetes & metabolism journal. 2014;38(3):220-9.
28. Mikailiūkštienė A, Juozulynas A, Narkauskaitė L, Žagminas K, Sąlyga J, Stukas R. Quality of life in relation to social and disease factors in patients with type 2 diabetes in Lithuania. Medical science monitor: international medical journal of experimental and clinical research. 2013;19:165.
29. Verma SK, Luo N, Subramaniam M, Sum CF, Stahl D, Liow PH, et al. Impact of depression on health related quality of life in patients with diabetes. Annals Academy of Medicine Singapore. 2010;39(12):913.
30. Aschalew AY, Yitayal M, Minyihun A. Health-related quality of life and associated factors among patients with diabetes mellitus at the University of Gondar referral hospital. Health and quality of life outcomes. 2020;18(1):1-8.
31. Muze M, Hailu E, Woldemichael K, Fekecha B. Health related quality of life and its associated factors among diabetic patients attending diabetes clinic in Jimma university teaching hospital, Ethiopia, 2014. J Diabetes Metab. 2017;8(751):2.

32. Mishra SR, Sharma A, Bhandari PM, Bhochhibhoya S, Thapa K. Depression and health-related quality of life among patients with type 2 diabetes mellitus: a cross-sectional study in Nepal. PloS one. 2015;10(11):e0141385.
33. Quah JH, Luo N, Ng WY, How CH, Tay EG. Health-related quality of life is associated with diabetic complications, but not with short-term diabetic control in primary care. Annals of the Academy of Medicine-Singapore. 2011;40(6):276.
34. Abebe N, Kebede T, Addise D. Diabetes in Ethiopia 2000–2016 prevalence and related acute and chronic complications; a systematic review. Afr J Diabetes Med. 2017;25(2):7-12.
35. Adriaanse MC, Drewes HW, Van Der Heide I, Struijs JN, Baan CA. The impact of comorbid chronic conditions on quality of life in type 2 diabetes patients. Quality of Life Research. 2016;25(1):175-82.
36. Gebremedhin T, Workicho A, Angaw DA. Health-related quality of life and its associated factors among adult patients with type II diabetes attending Mizan Tepi University Teaching Hospital, Southwest Ethiopia. BMJ Open Diabetes Research and Care. 2019;7(1):e000577.
37. https://www.statsethiopia.gov.et/population-projection/. Total population of sidama region. 2021.
38. Organization WH. WHOQOL-BREF: introduction, administration, scoring and generic version of the assessment: field trial version, December 1996. World Health Organization; 1996.
39. Reba K, Birhane BW, Gutema H. Validity and reliability of the Amharic version of the World Health Organization's quality of life questionnaire (WHOQOL-BREF) in patients with diagnosed type 2 diabetes in Felege Hiwot referral hospital, Ethiopia. Journal of diabetes research. 2019;2019.
40. Lim JU, Lee JH, Kim JS, Hwang YI, Kim T-H, Lim SY, et al. Comparison of World Health Organization and Asia-Pacific body mass index classifications in COPD patients. International journal of chronic obstructive pulmonary disease. 2017;12:2465.
41. Reba K. Health-Related Quality of Life and Its Associated Factors among Type 2 Diabetic Patients Attending Felege Hiwot Referral Hospital, Bahir Dar, Amhara Regional State, North West Ethiopia, 2015: Addis Ababa University; 2015.
42. Feyisa BR, Yilma MT, Tolessa BE. Predictors of health-related quality of life among patients with diabetes on follow-up at Nekemte specialised Hospital, Western Ethiopia: a cross-sectional study. BMJ open. 2020;10(7):e036106.

43. Rwegerera GM, Moshomo T, Gaenamong M, Oyewo TA, Gollakota S, Rivera YP, et al. Health-related quality of life and associated factors among patients with diabetes mellitus in Botswana. Alexandria journal of medicine. 2018;54(2):111-8.
44. Association AD. Standards of medical care in diabetes—2017 abridged for primary care providers. Clinical diabetes: a publication of the American Diabetes Association. 2017;35(1):5.
45. Kalayou Haftu H, Hailemariam D, Tassew B, Hagos Gufue Z, Aberhe W. Health-Related Quality of Life Using EQ-5D-3L Utility Score Among Type 2 Diabetes Patients: Experiences from Tigray Region, Northern Ethiopia. Patient preference and adherence. 2022:3143-55.
46. Kakhki AD. Health-related quality of life of diabetic patients in Tehran. International journal of endocrinology and metabolism. 2013;11(4).
47. Nyanzi R, Wamala R, Atuhaire LK. Diabetes and quality of life: a Ugandan perspective. Journal of diabetes research. 2014;2014.
48. Adeniyi A, Ogwumike O, Oguntola D, Adeleye J. Interrelationship among physical activity, quality of life, clinical and sociodemographic characteristics in a sample of Nigerian patients with type 2 diabetes. African Journal of Physiotherapy and Rehabilitation Sciences. 2015;7(1-2):12-8.
49. Non-Communicable O. National strategic action plan (nsap) for prevention & control of non-communicable diseases in Ethiopia. Google Scholar. 2016.
50. Akinyemi O, Owoaje E, Popoola O, Ilesanmi O. Quality of life and associated factors among adults in a community in South West Nigeria. Annals of Ibadan postgraduate medicine. 2012;10(2):34-9.
51. Akinci F, Yildirim A, Gözü H, Sargın H, Orbay E, Sargın M. Assessment of health-related quality of life (HRQoL) of patients with type 2 diabetes in Turkey. Diabetes research and clinical practice. 2008;79(1):117-23.
52. Wexler D, Grant R, Wittenberg E, Bosch J, Cagliero E, Delahanty L, et al. Correlates of health-related quality of life in type 2 diabetes. Diabetologia. 2006;49:1489-97.
53. Tamir O, Wainstein J, Raz I, Shemer J, Heymann A. Quality of life and patient-perceived difficulties in the treatment of type 2 diabetes. The review of diabetic studies: RDS. 2012;9(1):46.

Annexes

Annex I: Study informant sheet

Introduction and objective: Hello My name is _____You are invited to participate in a research study on health related quality of life and its associated factors among adult diabetic patients. From the information collected and studied in this research we hope to learn more about the health-related quality of life among with adult diabeticpatientsand its associated factors.

Procedures: With your permission, I would like to collect information about you, including information about your socio-demographic characteristics, clinical factors and behavioral factors and questions related to your health related quality of life will be obtained from you by administering certain questions using the standard health related quality of life measurement questionnaire.

Benefits- The information gained from this research will be used to make recommendations for best practice and will offer insights into the experiences of what it is like to live with diabetes. The results of the study may also lead on to further studies into health related quality of life and its associated factors in patients with diabetes mellitus.

Risks- Talking about your health related quality of life and what it is like to have diabetes mellitus may be upsetting for you. You are free to stop the interview at any time if you do not wish it to continue.

Rights and confidentiality

Your response will be treated with full confidentiality and anyone who takes part in the research will be identified only by code numbers. Your participation is purely voluntary, and you can withdraw any time after you get involved in the study without compromising the treatment you ought to get. No research participant will be identifiable from any publications.

Whom to Contact: If you need further information, you may contact to the persons stated below.

Ahmed Bedru - Tele: +251930496399

Email:-bedruahmed2010@gmail.com

Annex II: Consent form

I have received sufficient information about this research and understand my role in it. The purpose of my participation as an interviewee in this project and the future processing of my personal data have been explained to me andare clear. My participation as an interviewee in this project is completely voluntary. I have the right not to answer the question. If I fill uncomfortable in any way during the interview session, I have the right to withdraw from the interview. The proposal has been explained to me in the language I understand.

Participant's permission for participating in the study (please tick on the box provided)

Agree ☐ Disagree ☐

Interviewer

Name_____ Signature_____

Questionnaire number_____

Date of interview_____ Starting time_____ Completed_____

Annex III: English version questionnaire

1. Socio-demographic data questionnaires, please Circle the respondents possible answer in the response box.

No.	**Questions**	**Response**
101	Age of respondent in years	----------years
102	Sex of respondent	1. Male 2. Female
103	What is your marital status?	1. Single 2.Maried 3. Divorced 4. Widowed
104	What is your educational status?	1. Can't read and write 2. Can read and write 3. Primary school (grade 1-8) 4. Secondary school (grade 9-12) 5. College and above
105	What is your occupation?	1. House wife 2. Government organization 3. Private organization 4. Merchant 5. Driver 6. Farmer 7. Others (specify)----------
106	Body Mass Index	---------- kg/m^2
107	Do you have CBHI?	1. Yes 2. No

2.Questions related to diabetic condition of the patients

No.	Questions	Responses	Skip
201	DM type	1. Type I DM 2. Type II DM	
202	For how long you are living with diabetes since diagnosed?	---------- months	
203	Which treatment modality are you taking?	1. Oral anti diabetic medication only	

		2. Combined (oral anti diabetes and insulin) 3. Insulin only	
204	Have the patient developed any complication due to diabetes?	1. Yes 2. No	
205	If the answer is “yes” for question no. 204 which type of complications does the patient has?	1. Diabetic Nephropathy 2. Diabetic Neuropathy 3. Diabetic Retinopathy 4. Diabetic foot ulcer 5. Diabetic related heart disease 6. Others (specify)_____	
206	Have the patient been diagnosed with any other disease conditions recently?	1. Yes 2. No	
207	If the answer is “yes” for question no. 206 which type of disease conditions does the patient has?	1. Hypertension 2. CVD 3. Dyslipidemia 4. Cancer 5. Others ----------	

3. Questions related to behavioralconditions of the patients

No.	Questions	Responses	Skip
301	Do you have the habit of doing physical exercise?	1. Yes 2. No	
302	If your answer is “yes” for question no. 301, how much?	---------- minutes/week	
303	History of alcohol consumption?	1. Yes 2. No	
304	Smoking status?	1. Yes 2. No	

4. Health Related Quality of Life Questionnaire:WHOQOL-BREFquestionnaire

No.	Questions	Responses
Questions for assessment of self-rate quality of life and health satisfaction		
1	How would you rate your quality of life?	1. Very poor 2. Poor 3. Neither poor nor good 4. Good 5. Very good
2	How satisfied are you with your health?	1. Very dissatisfied 2. Dissatisfied 3. Neither dissatisfied nor satisfied 4. Satisfied 5. Very satisfied
Physical domain		
3	To what extent do you feel that physical pain prevents you from doing what you need to do?	1. Not at all 2. A little 3. A moderate amount 4. Very much 5. An extremely amount
4	How much do you need any medical treatment to function in your daily life?	1. Not at all 2. a little 3. A moderate amount 4. Very much 5. An extreme amount
5	Do you have enough energy for everyday life?	1. Not at all 2. A little 3. Moderately 4. Mostly 5. Completely
6	How well are you able to get around?	1. Very poor 2. Poor 3. Neither poor nor well4. Well 5. Very well
7	How satisfied are you with your sleep?	1. Very dissatisfied 2. Dissatisfied 3. Neither dissatisfied nor satisfied 4. Satisfied 5. Very satisfied
8	How satisfied are you with your ability to perform your daily living Activities?	1. Very dissatisfied 2. Dissatisfied 3. Neither dissatisfied nor satisfied 4. Satisfied 5. Very satisfied
9	How satisfied are you with your capacity for work?	1. Very dissatisfied 2. Dissatisfied 3. Neither dissatisfied nor satisfied

		4. Satisfied	5. Very satisfied
Psychological domain			
10	How much do you enjoy life?	1. Not at all 3. A moderate amount 5. An extreme amount	2. A little 4. Very much
11	To what extent do you feel your life to be meaningful?	1. Not at all 3. A moderate amount 5. An extreme amount	2. A little 4. Very much
12	How well are you able to concentrate on day to day activity?	1. Not at all 3. A moderate amount 5. An extreme amount	2. A little 4. Very much
13	Are you able to accept your bodily appearance?	1. Not at all 3. Moderately 5. Completely	2. A little 4. Mostly
14	How satisfied are you with yourself?	1. Very dissatisfied 3. Neither dissatisfied nor satisfied 4. Satisfied	2. Dissatisfied 5. Very satisfied
15	How often do you have negative feelings, such as blue mood, despair, anxiety, depression?	1. Never 3. Quite often 5. Often always	2. Seldom 4. Very often
Social domain			
16	How satisfied are you with your personal relationships?	1. Very dissatisfied 3. Neither dissatisfied nor satisfied 4. Satisfied	2. Dissatisfied 5. Very satisfied
17	How satisfied are you with your sex life?	1. Very dissatisfied 3. Neither dissatisfied nor satisfied 4. Satisfied	2. Dissatisfied 5. Very satisfied
18	How satisfied are you with the psychological support you get from your friends?	1. Very dissatisfied 3. Neither dissatisfied nor satisfied 4. Satisfied	2. Dissatisfied 5. Very satisfied

Environmental domain			
19	How safe do you feel in your daily life?	1. Not at all 3. A moderate amount 5. An extreme amount	2. A little 4. Very much
20	How healthy is your living physical environment?	1. Not at all 3. A moderate amount 5. An extreme amount	2. A little 4. Very much
21	Have you enough money to meet your needs?	1. Not at all 3. Moderately 5. Completely	2. A little 4. Mostly
22	How available to you is the information that you need in your day-to-day life?	1. Not at all 3. Moderately 5. Completely	2. A little 4. Mostly
23	To what extent do you have the opportunity for leisure activities?	1. Not at all 3. Moderately 5. Completely	2. A little 4. Mostly
24	How satisfied are you with the conditions of your living place?	1. Very dissatisfied 3. Neither dissatisfied nor satisfied 4. Satisfied	2. Dissatisfied 5. Very satisfied
25	How satisfied are you with your access to health services?	1. Very dissatisfied 3. Neither dissatisfied nor satisfied 4. Satisfied	2. Dissatisfied 5. Very satisfied
26	How satisfied are you with your mode of transportation?	1. Very dissatisfied 3. Neither dissatisfied nor satisfied 4. Satisfied	2. Dissatisfied 5. Very satisfied

አባሪ IV: የጥናቱ መረጃ ሰጪ ወረቀት

መግቢያ እና የጥናቱ አላማ፡- ጤና ይስጥልኝ ስሜ_____እርስዎ በአዋቂ የስኪር ህመምተኞች በጤና ተዛማጅ የህይወት ጥራት እና ከዚህ ጋር ተያያዥነት ባላቸው ነገሮች ላይ ጥናት ላይ እንዲሳተፉ ተጋብዘዋል። በዚህ ጥናት ላይ ከተሰበሰበውና ከተጠናው መረጃ በአዋቂ የስኪር ሕመምተኞችና ከዚህ ጋር ተዛማጅነት ባላቸው ምክንያቶች መካከል ስላለው ከጤና ጋር የተያያዘ የኑሮ ደረጃ ይበልጥ ለማወቅ ተስፋ እናደርጋለን።

ሂደቶች፡-በእርስዎ ፍቃድ ስለ እርስዎ መረጃ መሰብሰብ እፈልጋለሁ። ስለ እርስዎ ማህበራዊ እና ግለሰባዊ ባህሪያት፣ ከበሽታው ጋር ተያያዥነት ያላቸው ሁኔታዎች፣ የባሕርይ ሁኔታዎች እና ከእርስዎ የጤና ጥራት ጋር የተያያዙ ጥያቄዎችን ምላሽ መደበኛ የጤና ተዛማጅ የህይወት መለኪያ ጥያቄችን በመጠቀምከእርስዎ እናገኛለን።

ጥቅሞች፡-ከዚህ ጥናት የተገኘው መረጃ የተሻለ ልምምዶችን ለመስራት እና ከስኪር ህመም ጋር መኖር ምን እንደሚመስል ተሞክሮዎችን ለማስተዋል ይውላል። በተጨማሪም ጥናቱ ያስገኘው ውጤት ከጤና ጋር ተዛማጅነት ባላቸው የኑሮ ሁኔታዎችና ከዚህ ጋር ተዛማጅነት ባላቸው የስኪር ሕመምተኞች ላይ ተጨማሪ ጥናቶች እንዲስፋፉ ሊያደርግ ይችላል ።

አደጋዎች፡-ስለ እርስዎ ጤና ተዛማጅ የህይወት ጥራት እና የስኪር በሽታ ምን እንደሚመስል ማውራት ሊያበሳጭዎት ይችላል። ቃለ መጠይቁ እንዲቀጥል ካልፈለግጉ በማንኛውም ጊዜ የማቆም መብትዎ የተጠበቀ ነው ።

መብቶች እና ምስጢራዊነት

የእርስዎ ምላሽ ከሙሉ ምስጢር ጋር ይያዛል እናም ምርምር ውስጥ የሚካፈል ማንኛውም ሰው በኮድ ቁጥሮች ብቻ ተለይቶ የሚታወቅ ይሆናል። ተሳትፎ ማድረግ ያለብዎ በፈቃደኝነት ብቻ ነው፤እንዲሁም ልታገኙት የሚገባውን ሕክምና ሳያጡ በጥናቱ ውስጥ ከገቡ በኋላ በማንኛውም ጊዜ ሊያቋርጡ ይችላሉ። የትኛውም የጥናቱ ተሳታፊ ከማንኛውም ህትመቶች ሊለይ አይችልም።

ተጨማሪ መረጃ ለማግኘት ከፈለጉ ከዚህ በታች የጠቀስናቸውን ሰው ማናገር ይችላሉ።

አህመድ በድሩ፡-

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ኢሜል፡- bedruahmed2010@gmail.com

አባሪV:የስምምነት ቅጽ

ስለዚህ ምርምር በቂ መረጃ ደርሶኛል እናም በዚህ ውስጥ ያለኝን ሚና ተረድቻለሁ። በዚህ ፕሮጀክት ውስጥ ቃለ-መጠይቅ በማድረግ የምሳተፍበት አላማ እና ወደፊት የግል መረጃዎቼን የማከናውንበት ዓላማ ተብራርቶልኛል እናም ግልጽነው።በዚህ ፕሮጀክት ውስጥ የእኔ ተሳትፎ ሙሉ በሙሉ በፈቃደኝነት ነው ለጥያቄዎች መልስ ያለመስጠት መብት አለኝ ።በቃለ ምልልስ ወቅት በምንም አይነት ሁኔታ ምኞት ካልተሰማኝ ቃለመጠይቁን የመተው/የማቆም መብት አለኝ።የቀረበው ሀሳብ በምረዳው ቋንቋ ተብራርቶልኛል።

በጥናቱ ለመሳተፍፈቃደኛኖት?

እስማማለው ☐ አልስማማም ☐

የጠያቂው ስም _____ ፊርማ _____

የቃለመጠይቁቀን_____ የተጀመረበት ሰዓት _____ የተጠናቀቀበት ሰዓት_____

አባሪ VI: አማርኛ መጠይቆች

1. ማህበረሰባዊ እና ከግለሰባዊ የሕይወት ዘይቤ ጋር የተዛመዱ መረጃዎችን የተመለከተ መጠይቅ፡፡

ተ.ቁ	ጥያቄ	መልስ
101	እድሜ በዓመት	----------
102	ፆታ	1. ወንድ 2. ሴት
103	የጋብቻሁኔታ	1. ያላገባ/ች 2. ያገባ/ች 3. አግብቶየፈታ/ች 4. የሞተበት/ባት
104	የትምህርትደረጃ	1. ማንበብና መፃፍ የማይችል/የማትችል 2. ማንበብና መፃፍየሚችል/የምትችል 3. የመጀመሪያ ደረጃ ያጠናቀቀ/ች (1-8 ክፍል) 4. ሁለተኛ ደረጃ ያጠናቀቀ/ች (9-12 ክፍል) 5. ኮሌጅ እና ክዚያ በላይ
105	የስራሁኔታ	1. የቤት እመቤት 2. የመንግስት ሰራተኛ 3. የግል ተቋማት የሚስራ/የምትሰራ 4. ነጋዴ 5. ሹፍርና ሙያ 6. ገበሬ 7. ሌላ (ይጠቀስ)----------
106	የሰውነት ክበደት መረጃ ጠቋሚ	---------- ኪ.ግ/ሜ^2
107	የማህበረሰብ አቀፍ ጤና መድን ተጠቃሚ ኖት?	1. አዎ 2. አይደለም

2. ከታካሚዎች የስኳር በሽታ ጋር ተያያዥነት ያላቸው ጥያቄዎች

ተ.ቁ	መጠይቆች	መልስ	እለፍ
201	የስኳር በሽታው አይነት	1. አይነት 1 2. አይነት 2	
202	ምርመራ ከተደረገበት ጊዜ ጀምሮ ከህመሞ ጋር ለምን ያህል ጊዜ ቆዩ?(በዓመት ይግለፁ)	----------	
203	የትኛውን የስኳር ህመም መድሃኒት ነው የሚወስዱት?	1. በአፍ የሚወሰደውን የስኳር ህመም መድሃኒት ብቻ	

		2. ሁለቱንም (በአፍ የሚወሰደውን የስኳር ህመም መድሃኒት እና ኢንሱሊን) 3. ኢንሱሊን ብቻ	
204	ታካሚው/ዋ በስኳር ህመም ምክንያት የተወሳሰቡ ችግሮች አሉት/ላት	1. አዎ 2. አይደለም	
205	ለጥያቄ ተራ ቁጥር. 204 መልስ አዎ ከሆነየትኛው ችግር ወይም ህመም ነው ያለው/ላት? (ከአንድ በላይ መምረጥ ይቻላል) የታካሚውን ካርድ በማየት ያረጋግጡ	1. ከስኳር ህመም ጋር የተያያዘ የኩላሊትህመም 2. ከስኳር ህመም ጋር የተያያዘ የነርቭ ህመም 3. ከስኳር ህመም ጋር የተያያዘ የአይን ህመም 4. ከስኳር ህመም ጋር የተያያዘ የልብ ህመም 5. ከስኳር ህመም ጋር የተያያዘ የእግር ቁስለት 6. ሌላ(ይገለፅ)_____	
206	ታካሚው/ዋ ሌሎች ተጓዳኝ በሽታዎች አሉት/ላት	1. አዎ 2. አይደለም	
207	ለጥያቄ ተራ ቁጥር 206 መልስ አዎ ከሆነ የትኛው ተጓዳኝ ህመም ነው ያለው/ላት? (ከአንድ በላይ መምረጥይቻላል) የታካሚውን ካርድ በማየት ያረጋግጡ	1. የደም ግፊት 2. የልብና የደም ዝውውር በሽታ 3. የስብ መጠን መብዛት/ማነስ 4. ካንሰር 5. ሌላ(ይገለፅ)_____	

3. ከህመ·ማን የባህሪ ሁኔታ ጋር ተያያዥነት ያላቸው መጠይቆች

ተ.ቁ	መጠይቆች	መልስ	እለፍ
301	የሰውነት እንቅስቃሴ የማድረግ ልማድ አሎት?	1. አዎ 2. አይደለም	
302	ለጥያቄ ተራ ቁጥር 301 መልስዎ አዎ ከሆነ በሳምንተ ለምን ያህል ደቂቃ እንቅስቃሴ ያደርጋሉ?	---------- ደቂቃ/በሳምንት	
303	አልኮል ይጠጣሉ?	1. አዎ 2. አይደለም	
304	ሲጋራ ያጨሳሉ?	1. አዎ 2. አይደለም	

4.የጤና ሁኔታዎችን ለመዳሰስ የተዘጋጁ መጠይቆች

የሚከተሉት 26 ጥያቄዎች የጤና ሁኔታን ለመዳሰስ የተዘጋጁ ናቸው፡፡ እባክዎን፣ ሁሉንም ጥያቄዎች በቅንነትና ታማኝነት ይመልሱ፡፡ጥያቄዎቹን ሲመልሱ በቅደም ተከተል ሆኖ ያለምንም መቆራረጥ መሆን እንደሚገባው ልናሳስቦት እንወዳለን፡፡

ተ.ቁ	መጠይቅ	መልስ
በራስ-ሰር የኑሮ ጥራት እና በጤና እርካታ ላይ ግምገማ ለማድረግ የሚጠየቁ ጥያቄዎች		
1	የሕይወትዎን ጥራት ደረጃ እንዴት ይገመግሙታል?	1. በጣም ዝቅተኛ 2.ዝቅተኛ 3. መካከለኛ 4.ጥሩ 5. መጣም ጥሩ
2	በጤናዎ ምን ያህል ረክተዋል?	1. በጣም የማያረካ 2. የማያረካ 3. መካከለኛ 4. የሚያረካ 5. በጣም የሚያረካ
አካላዊዶሜን		
3	የአካል ህመሞ ማድረግ ካለብዎት ነገር ምን ያህል እንዳስተጓጎልዎት ይሰማዎታል?	1. በፍፁም አላስተጓጎለኝም 2. በጥቂቱ አስተጓጉሎኛል 3.በመጠኑ አስተጓጉሎኛል 4. በጣም አስተጓጉሎኛል 5. በከፍተኛ መጠን አስተጓጉሎኛል
4	የእለት ተእለት እንቅስቃሴዎን ለማካሄድ ምን ያክል የህክምና እርዳታ ያስፈልገዎታል?	1. በፍፁም አያስፈልገኝም 2. በጥቂቱ ያስፈልገኛል 3. በመጠኑ ያስፈልገኛል 4. በጣም ያስፈልገኛል 5. በከፍተኛ መጠን ያስፈልገኛል
5	ለእለት ተእለት ህይወትዎ የሚሆን በቂ ሃይል አለዎት?	1. በፍፁም የለኝም 2. ብዙም የለኝም 3. በመጠኑ 4. በአብዛኛው 5. መሉ በመሉ
6	በአከባቢዎ ለመንቀሳቀስ ምን ያክል አቅም አለዎት?	1. በፍፁም የለኝም 2. ብዙም የለኝም

		3. በመጠኑ 4. በአብዛኛው 5. ሙሉ በሙሉ
7	ምን ያህል በእንቅልፍዎ ረክተዋል?	1. በጣም የማያረካ 2. የማያረካ 3. መካከለኛ 4. የሚያረካ 5. በጣም የሚያረካ
8	የእለት ተእለት ተግባርዎት በማከናወን ብቃትዎ ምን ያክል ይረካሉ?	1. በጣም የማያረካ 2. የማያረካ 3. መካከለኛ 4. የሚያረካ 5. በጣም የሚያረካ
9	ስራ ለመስራት ባሰቡ ጊዜ የሚኖርዎ አቅም ምን ያክል ይረካሉ?	1. በጣም የማያረካ 2. የማያረካ 3. መካከለኛ 4. የሚያረካ 5. በጣም የሚያረካ
ሥነልቦናዊዶሜን		
10	በሕይወትዎ ምን ያህል ይደሰታሉ?	1. በፍፁም አልደሰትም 2. በትንሹ 3. በመጠኑ 4. በአብዛኛው 5. በከፍተኛ መጠን
11	ሕይወትዎ ትርጉም ያለው እንደሆነ የሚሰማዎት እስከምን ድረስ ነው?	1. በፍፁም አይሰማኝም 2. በትንሹ 3. በመጠኑ 4. በአብዛኛው 5. በከፍተኛ መጠን
12	በዕለት ተዕለት እንቅስቃሴዎች ላይ ምን ያህል ትኩረት ማድረግ ይችላሉ?	1. በፍፁም 2. በትንሹ 3. በመጠኑ 4. በአብዛኛው 5. በከፍተኛ መጠን
13	ቁመናህን መቀበል ትችላለህ?	1. በፍፁም አልቀበልም 2. በትንሹ 3. በመጠኑ 4. በአብዛኛው 5. ሙሉ በሙሉ
14	በራስህ ምን ያህል ትለካለህ?	1. በጣም አልረካም 2. አልረካም 3. መካከለኛ 4. እረካለው 5. በጣም እረካላው

15	እንደ ተስፋ መቁረጥ፣ ጭንቀትና ድብርት ያሉ አሉታዊ ስሜቶች ምን ያህል ጊዜ ያጋጥሞታል?	1. በፍፁም 2. አንዳንድጊዜ 3. ብዙጊዜ 4. በጣምብዙጊዜ 5. ሁልጊዜ
ማህበራዊ ዶሜን		
16	ከሰዎች ጋር ባለው ግንኙነት ምን ያክል ይረካሉ?	1. በጣም አልረካም 2. አልረካም 3. መካከለኛ 4. እረካለው 5. በጣምእረካላው
17	በወሲብ ህይወትዎ ምን ያክል እርካታን ያገኛሉ?	1. በጣም አልረካም 2. አልረካም 3. መካከለኛ 4. እረካለው 5. በጣምእረካላው
18	ከጓደኛዎት በሚያገኙት የስነ-ልቦና ድጋፍ ምን ያክል ይረካሉ?	1. በጣም አልረካም 2. አልረካም 3. መካከለኛ 4. እረካለው 5. በጣምእረካላው
አካባቢያዊ ዶሜን		
19	በዕለት ተዕለት ሕይወትዎ ምን ያህል አስተማማኝ ስሜት ይሰማዎታል?	1. በፍፁም 2. በትንሹ 3. በመጠኑ 4. በአብዛኛው 5. በከፍተኛ መጠን
20	የሚኖሩበት አከባቢ ምን ያክል ጤናማ ነው?	1. በፍፁም 2. በትንሹ 3. በመጠኑ 4. በአብዛኛው 5. በከፍተኛ መጠን
21	የሚያስፈሎጎትን ነገር ለማግኘት የሚያስችል በቂ ገንዘብ አልዎት?	1. በፍፁም 2. በትንሹ 3. በመጠኑ 4. ብዙ ጊዜ 5. ሁልጊዜ
22	ለዕለት ተዕለት ሕይወትዎ የሚያስፈልጎትን መረጃ ማግኘት ይችላሉ?	1. በጭራሽ 2. በትንሹ 3. በመጠኑ 4. ብዙ ጊዜ 5. ሁልጊዜ
23	ለመዝናናት ምን ያህል አጋጣሚ ይኖሮታል?	1. በጭራሽ 2. በትንሹ 3. በመጠኑ 4. ብዙ ጊዜ 5. ሁልጊዜ
24	በመኖሪያ ቤትዎ ሁኔታ ምን ያህል እርካታ ይኖሮታል?	1. በጣም አልረካም 2. አልረካም 3. መካከለኛ 4. እረካለው

		5. በጣም እረካላው
25	የጤና አገልግሎት መስጫ ተቋማትን ከማግኘት አንፃር ምን ያክል ይረካሉ?	1. በጣም አልረካም 2. አልረካም 3. መካከለኛ 4. እረካለው 5. በጣም እረካላው
26	በመንገድች(ሁኔታች) ምን ያክል ይረካሉ?	1. በጣም አልረካም 2. አልረካም 3. መካከለኛ 4. እረካለው 5. በጣም እረካላው

Qa’miso VII: Xiinxallote mashalaqqe aanno worqata

Bitimanna Xiinxallote Mixo: keereholla! su’ma’ya---------- ati jajjabbu sukkaarete xiwamaasinera fayimmate ledo xaaddanno heeshshote silanchimmanna konni ledo fiixoontanno coyubba aana xiinxallote aana beeqqatto gede koyinsoonnihe.

Tenne xiinxallo aana gamba assinoonninna xiinxallinoonni mashshalaqqenni jajjabbu sukkaarete xiwamaasinenna konninni ledo xaadooshshu noonsa korkaatubba mereero noo fayyimmate ledo amadisiisaminohunni heeshshote deerra roorinkanni afate hexxo assineemmo.

Ha’rinshubba: ate fajjonni ate daafira taje gamba assira hasi’reemmo. Ate daafira dagoomittenna hallanya akatubba, dhibbunni ledo xaadooshshu noonsa ikkitubbanna ate fayyimma silanchimma ledo amadisiisantino xa’mubbara dawaro madawanya fayimmate xaaddanno heeshsho bikkitanno xa’mubba horoonsi’ratenni ate afi’neemmo.

Ho’rubba: tenne xinxallonni af’noonni mashalaqqe woyyaabbino rosichubba loosatenna sukkaarete dhibbinni ledo hee’ra maa labbannoro wo’naalshubba qaagate loosira hossanno. Ledoteno xiinxallo afisiissanno gumi fayyimmate ledo fiixoomme noonsa heeshshote ikkitubbanna konninni ledo xaadooshshu noonsa sukaarete xiwamaano aana xiinxallubba hala’litanno gede assa dandiinanni.

Hekko/Danubba/: umikki daafira fayyimmatenni xaaddanno heeshshote silanchimmanna sukkaarete dhibbi maa lawannoro hasaawa aareessitahera dandiitanno. Qaali xa’mo xa’ma suffannota hasira hoogittoro ayee yannarano uurrisirakki qoosso agarantinote.

Qoossubbanna Fojaanchimma

Ate dawaro wo’ma fojo ledo amadantannonna xiinxallote giddo beeqqaanno ayee mancho koodete kiironni calla bande anfanniha ikkanno. Beeqqooshshe assa noohehu fajjamaanchimmatenni callaati, hattono afai’rate dandiitinanni xagiso hoogginiro xiinxallote giddo eittohu gedensaanni ayee yannarano mure agura dandaatto. Hiikkuno xiinxallote beeqqaanchi ayee attamonni baxxa didandaanno.

Ledote mashalaqqe afi’rate hasi’rittoro konni woroonni xawinsoommo mancho hasaawisa dandaatto.

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Qa’miso VIII : Sumimmete qitse

Tenne xiinxallora ikkado mashalaqqe iillitinoenna konni giddo nooe qeecha hegersoommo. Tenne pirojekite giddo qaali- xa’mo assatenni beeqqeemmo mixonna albillitte hallanya tajubba’ya looseemmo mixo buuxantinoe nna xawoho. Tenne pirojekite giddo ane beeqqaanchimma wo’munni wo’ma fajjamaanchimmatenniti. Xa’mubbate dawaro aa hoogate qoosso nooe. Xa’monna dawarote yannara ayee dani ikkitubbanni injo macciishshama hoogguero qaali xa’mo agurate/uurrisate qoosso nooe.

Shiqqino hedotenni hegersinannihu Afuu buuxaminoe.

Xiinxallote beeqqate fajjaameessaho?

Sumuu yeemmo ☐ sumuu diyeemmo ☐

Xa’maanchu su’ma _____ malaate_____

Qaali-xa’motebarra_____ Hanaffino saate_____ jeeffino saate_____

Qa'miso IX: Sidamuu Afii xa'mooshshubba

1 . Dagoomittenna hallanyimma heeshshote misilshi ledo fiixoontanno mashalaqqubba lainohunni

A.K	**Xa'mo**	**Dawaro**
101	Diro Dirunni	----------
102	Koo/tee	1. Gamata 2. Gimare
103	Adhammete gara	1.Adhantinokkita/inokkiha 2. Adhantinota/inoha 3. Adhe tirroha/tinota 4. Reynoseha/tinosita
104	Rosu deerra	1 Nabbawanna borreessa dandaannoha/kkita 2 Nabbawanna borreessa dandaannoha/ta 3 Umi dirima guddinota/ndoha (1-8 kifile) 4 Layinki dirima guddinota/ndoha (9-12 kifile) 5 Kolleejjenna hakkunni aleenni
105	Loosu gara	1.Mini ama 2.Mootimmate loosaasincho 3. Hallanya uurrinshara loosannoha/nnota 4. Daddalaancho 5. Oofaanchimmate ogimma 6. Loosi're galinoho 7. Wole (kuli) ……
106	Aganunniha eote bikka	----------birra
107	Qelpheepho	----------k/gm
108	Hojja	----------miitire
109	Dagoomitte fayyimmate Mediine horoonsiraanchooti?	1. Ee 2. Dee'ni

2. Xagisiraanotewiinni sukkaarete xibbinni ledo xaadooshshu noonsa xa'mubba

A.K	**Xa'ma**	**Dawaro**	**sai**
201	Sukkaarete dhibbi dana	1. Dana 1 2. Dana 2	
202	Buuxo assini yannanni kays dhibbunni ledo mageeshshi geeshshi yanna keeshshitto/a(dirunni xawisi)	----------	

203	Hiikkonne sukkaarete dhibbi xagichooti adhattahu/ohu?	1. Afoo qolle adhinanni sukkaarete dhibbi xagicho calla 2. Lamenka (afuunnino adhinanni sukkaarete dhibbi xagichonna insuline) 3. insuliine calla	
204	Xagisiraanchote/ho sukkaarte dhibbi korkaatinni duha ikkitino mitiimma noosi/se	1.Ee 2. Dee'ni	
205	Xa'mote kiiro 204 dawaro ee ikkituro hiitti mitiimma woy hiitte xiwanooti noosihu/seti?(mitteenni doodha dandiinanni) xagisiraanchu kaarde la''atenni buuxxe	1. Sukkaarete dhibbi ledo amadaminohunni mulu dhibba 2. Sukkaarete dhibbi ledo amadaminohunni nervete dhibba 3. Sukkaarete dhibbi ledo amadaminohunni illete dhibba 4. Sukkaarete dhibbi ledo amadaminohunni wodanu dhibba 5. Sukkaarete dhibbi ledo amadaminohunni lekkate mada 6. Wole (xawisi) ----------	
206	Xagisiraanchu/ote wolootu iima radhino dhibbi noosi/e	1.Ee 2. Dee'ni	
207	Xa'mote kiiro 206 dawaro ee ikkituro hiitti radhitino xisso noohe/se? (mitteenni doodha dandiinanni) xagisiraanchu kaarde la''atenni buuxxe	1. Mundeete xiiwo 2. Wodanunna Mundeete doycho dhibba 3. Comaa bakisaa batisaa/qnasaa 4. Kaansere 5. Wole (xawisi) ----------	

3.Xiwamaanote akati ikkito ledo amadantanno(xaaddanno) xa'mubba

A.K	**Xa'mubba**	**Dawaro**	**sai**
301	Mannimmate millimmo assate rosichu noo'ne?	1.Ee2. Dee'ni	
302	Xa'mote kiiro 301 dawarokki ee ikkituro lamalatenni mageeshshi geeshshi daqiiqa millimmo assatto/a	---------- daqiiqa/ lamalatenni	
303	Ago agatto/a	1. Ee 2. Dee'ni	
304	Sigaara wiliishshatto	1. Ee 2. Dee'ni	

4. Fayyimmate ikkito towanyora qixxeessinoonni xa'mubba

Aante noori 26 xa'mubba fayyimmate ikkito towanyo assate qixxeessinoonnireeti. Eeggatena baalanta xa'mo shaqqillunninna ammanamatenni dawari. Xa'mubba dawaratto/a woyte aantetenni ikkeenna mitte murmuramme nookkiha ikkasi hasiisanno garinni kullammohera banxeemmo.

A.K	Xa'mo	Dawaro
Umikki hunda heeshshote silanchimmanna fayyimmate kasso aana keeno qorqorsha aassate xa'minanni xa'mubba		
1	Heeshsho silanchimma deerra hiittoonni qorqoratto/a?	1. Addintanni Shiimunni2. Shiimunni 3. Mereerimunni 4. Ikkadunni 5. Addintanni Ikkadunni
2	Fayyimmakkinni mageeshshi geeshsha kassi yootto/a?	1. Addintanni Shiimunni 2. Shiimunni 3. Mereerimunni 4. Ikkadunni 5. Addintanni Ikkadunni
Bisu ragaanni		
3	Bisu xiwanikkira assa noohe coy mageeshshi geeshsha raateessihero macciishshamannohe?	1. Horontanni diraattessinoe. 2. Shiimunni raatessinoe 3. Bikkunni raateessinoe 4. Lowontanni raateessinoe 5.Addintanni raateessinoe
4	Barru barru millimmokki miillisatto/a gede mageeshshi geeshshi xagisote kaa'lo hasiissannohe?	1. Horontanni dihasiissannoe 2. Shiimunni hasiissannoe 3. Bikkunni hasiissannoe 4. Roorinni hasiissannoe 5. Wo'munni wo'ma hasiissannoe
5	Qooxeessikkira milli yaate mageeshshi wolqa noohe?	1. Horontanni dinoe 2.Lowotano dinoe 3. Bikkunni 4. Roorinni 5. Wo'munni wo'ma
6	Qooxeessikkira milli yaate mageeshsha ikkitanno wolqa noohe?	1. Horontanni dinoe 2. Lowotano dinoe 3. Bikkunni 4. Roorinni 5. Wo'munni wo'ma
7	Mageeshshi geeshsha goxanotenni kassi yootto/a?	1.Addintanni kassi 2. Kassi 3.Mereerima 4. Kassi 5. Addintanni kassi
8	Barru barrunku loosokki loosate dandookkinni mageeshsha kassi yaatto/a?	1.Addintanni kassi 2. Kassi 3.Mereerima 4. Kassi 5. Addintanni kassi
9	Looso loosate heditto/a yannara noohe wolqanni mageeshshi geeshsha kassi yaatto/a?	1.Addintanni kassi 2. Kassi 3.Mereerima 4. Kassi 5. Addintanni kassi
Tiiu ragaanni		
10	Heeshshokkinni mageeshshi geeshsha hagiidhatto?	1. Horontanni dihagiidheemmo 2. Shiimunni 3. Deerrunni 4. Roorinni5.Jawu deerrinni

11	Heeshsho tiro waagu noota ikkitanno gede macciishshamnnohehu may geeshshaati?	1. Horontanni dimacciishshamannoe 2. Shiimunni 3. Deerrunni 4. Roorinni5.Jawu deerrinni
12	Barru barrunku millimmokki aana mageeshshi geeshsha hixamanya dandaatto/a?	1. Horontanni 2. Shiimunni 3. Deerrunni 4. Roorinni 5.Jawu deerrinni
13	Uurrinshakki adha dandaatto/a?	1. Horontanni diadheemmo 2. Shiimunni 3. Deerrunni 4. Roorinni5. Wo'munni wo'ma
14	Meessaniitikkinni mageeshshi geeshsha kassi yaatto/a?	1. Horontanni kassi diyeemmo 2. Kassi diyeemmo 3. Mereerimunni 4. Kassi yeemmo 5. Jawunni kassi yeemmo
15	Hexxo mudha, aaraawanna e'lecha labbino macciishshamme mageeshshi geeshshi xaaddinoe?	1. Horontanni 2. Sae sae 3. Duucha yanna 4. Addintanni duucha yanna 5. Wo'ma woyte
Dagoomittete ragaanni		
16	Mannunni ledo noohe xaadooshshinni mageeshshi geeshsha kassi yaatto/a?	1. Horontanni kassi diyeemmo 2. Kassi diyeemmo 3. Mereerimunni 4. Kassi yeemmo 5. Jawunni kassi yeemmo
17	Siimu xaadooshshi heeshshokkinni mageeshshi geeshsha kasso afiratto/a?	1. Horontanni kassi diyeemmo 2. Kassi diyeemmo 3. Mereerimunni 4. Kassi yeemmo 5. Jawunni kassi yeemmo
18	Jaalikkiwinni woy jaalakkiwinni afiratto/a tiiu irkonni mageeshsha kassi yaatto/a?	1. Horontanni kassi diyeemmo 2. Kassi diyeemmo 3. Mereerimunni 4. Kassi yeemmo 5. Jawunni kassi yeemmo
Olliittete ragaanni		
19	Barru barrunku heeshshokkira mageeshshi geeshsha ammanchiishshanno hedo macciishshantannohe?	1. Horontanni 2. Shiimunni 3. Deerrunni 4. Roorinni 5.Jawu deerrinni
20	Hee'ratto/a qooxeessi mageeshshi geeshsha fayyoho/te?	1. Horontanni 2. Shiimunni 3. Deerrunni 4. Roorinni 5.Jawu deerrinni

21	Hasiisannohe coye afi'rate dandiisiisannohe ikkadu woxi noohe?	1. Horontanni 2. Shiimunni 3. Deerrunni 4. duucha yanna 5. Wo'ma woyte
22	Barru barrunku heeshshokkira hasiissannohe mashalaqqe afi'ra dandaatto/a?	1. Horontanni 2. Shiimunni 3. Deerrunni 4. Duucha yanna 5. Wo'ma woyte
23	Gangalatate mageeshshi geeshshi hedeweelcho noohe?	1. Horontanni 2. Shiimunni 3. Deerrunni 4. Duucha yanna 5. Wo'ma woyte
24	Galatto/a mini ragaanni mageeshshi geeshsha kassimma noohe?	1. Horontanni kassi diyeemmo 2. Kassi diyeemmo 3. Mereerimunni 4. Kassi yeemmo 5. Jawunni kassi yeemmo
25	Fayyimmate owaante uynanni uurrinsha afi'rate ragaanni mageeshshi geeshsha kassi yootto/a?	1. Horontanni kassi diyeemmo 2. Kassi diyeemmo 3. Mereerimunni 4. Kassi yeemmo 5. Jawunni kassi yeemmo
26	Hodhishshu doogga gari mageeshshi geeshsha kassi assanno?	1. Horontanni kassi diyeemmo 2. Kassi diyeemmo 3. Mereerimunni 4. Kassi yeemmo 5. Jawunni kassi yeemmo