WOLKITE UNIVERSITY

COLLEGE OF MEDICINE AND HEALTH SCIENCES

DEPARTMENT OF NURSING

ASSESSMENT OF SELF-CARE PRACTICE AND ASSOCIATED FACTORS AMONG INDIVIDUALS WITH DIABETIC MELLITUS IN PUBLIC HOSPITALS OF GURAGE ZONE IN SOUTHERN ETHIOPIA

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A RESEARCH RESULT TO BE SUBMITTED TO WOLKITE UNIVERSITY, COLLEGE OF MEDICINE AND HEALTH SCIENCES, DEPARTMENT OF NURSING, IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE BACHELOR OF SCIENCE DEGREE IN NURSING

WOLKITE, ETHIOPIA

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Acronyms/Abbreviation

DM	Diabetes mellitus
DTSQ	Diabetes treatment satisfaction questionnaire
FBS	Fasting blood sugar
IDF	International diabetes federation
IGT	Impaired glucose tolerance
SDSCA	Summary of diabetic self-care activity
SMBG	Self-monitoring blood glucose

Abstracts

Background: Diabetes mellitus is a chronic non-communicable disease characterized by hyperglycemia due to deficiency of insulin. It results in majority of morbidity and mortality among patients. To prevent and control the disease, it requires continuing medical care and ongoing patient self-management education. Due to inadequate self-care practice still patients with Diabetes mellitus experience devastating complications that increases the incidence and prevalence of that complication. In order to identify and fill the gaps observed in self-care practice, the current study is going to identify the self-care practices and its related factors among individuals with the disease.

Objective:~~The general objective of the study is~~is the aim of this study was to assess self-care practice and associated factors among individuals with diabetic mellitus in selected public hospitals of Gurage Zone in southern Ethiopia by August 2021

Method: Insitutional ~~Hospital~~ based Cross-sectional study design was used. A structured self-administered questionnaire was used to collect data from 348 study participants by systematic random sampling method. The collected data was entered into SPSS version.23. Descriptive statistics such as frequency distribution and measure of central tendency and variability were computed. Bivariate and multiple logistic regressions were conducted to identify the association between dependent and independent variables~~on the basis of COR and AOR with 95% CI and p< 0.05~~. Finally, those variables with a p-value of <0.05 in multivariable analysis were considered statistically significant.

Result: A total of 348 (98% response rate) diabetic patients were participated. This study identified 140(40.2%) ~~208(59.8%)~~ of respondents as having ~~poor~~ good self-care practice. ~~About 289 (83%) had type II diabetes. About 51(14.7%) of respondents are uses glucometer at home and 34(9.8%) have documented diabetes-related complication. Majority of respondents 252(72.4%), gets regular diabetes education.~~being single and separated [AOR 2.08 (1.10, 3.95)], college and above educational level [AOR 1.51 (1.17, 1.94)], and type 2 diabetes mellitus[AOR 6.59 (1.86, 23.38)]. were factors associated with good self-care practice .~~The result shows, when compared to respondents who were single and separated those married respondents were 2.08 times more likely to have self-care practice [COR 2.08 (1.10, 3.95)]. Also, when compared to respondents who are in other educational range those respondents that have educational level of~~

~~college and above were 1.51 times more likely to have self-care practice [COR 1.51 (1.17, 1.94)]. Also, when compared to respondents who have type 1 diabetes those respondents that have type 2 were 6.59 times more likely to have self-care practice [COR 6.59 (1.86, 23.38)].~~

Discussion and conclusion: The study shows two out of three respondents have poor self-care practice. Marital status, level of education and type of diabetes has significant association and effect on self-care practice. Awareness creation by public hospitals should be needed for individuals with diabetes mellitus to increase knowledge and attitude about the importance of self-care practice.

Key Words: Self-care practice, Factors, Diabetic mellitus, Hospital

1. **INRODUCTION**

1.1. **Background**

Diabetes mellitus (DM) is a chronic non-communicable disease which is characterized by hyperglycemia due to absolute or relative deficiency of insulin (1).

Globally, prevalence of Diabetes is about 8.3% that affects about 371 million people around the world leading to around 4.8 million deaths every year. Around 80% of the world's diabetic population lives in developing countries (2). It has predicted that in 2025 will be doubling the number of people who suffer from diabetes and 76% of them in low-income countries like Ethiopia (3).

DM has acute or chronic complications, which are responsible for the majority of morbidity and mortality associated with the disease. Therefore, it requires continuing medical care and ongoing patient self-management education and prevent acute complications and to reduce the risk of long-term complications. When it is not prevented and properly managed, diabetes is one of the major causes of premature illness and death (4, 5).

Diabetes self-care is important to keep the disease under control; It includes performing activities such as healthful eating, regular physical activity, foot care, medication adherence, and self-monitoring of blood glucose (SMBG) (6).

Despite the great strides that have been made in the treatment of diabetes in recent years, many patients do not achieve optimal outcomes and still experience devastating complications due to inadequate self-care practice. Poor self-care practice increases the incidence and prevalence of complications resulting in increased morbidity and mortality (7). Self-care practices in diabetes patients are crucial to keep the illness under managed and prevent complications. Effective management of diabetes will be a difficult task without an adequate understanding of the existing level of practice related to diabetes self-care (1).

Diabetes self-care activities are behaviors undertaken by people with or at risk of diabetes in order to successfully manage the disease on their own. All self-care activities have been found to be positively correlated with good glycemic control, reduction of complications and improvement in quality of life (8).

1.2. Statement of the problem

According to the International Diabetes Federation (IDF) 2017 reports, more than 425 million people worldwide are reported as diabetic patients and nearly 80% of them are living in low and middle income countries including Ethiopia. Globally, more than 212 million people with diabetes are not aware of their disease and there are above 352 million people with impaired glucose tolerance (IGT) (9), which puts them at high risk of developing diabetes and its complications like cardiovascular diseases, stroke, kidney failure, foot ulcer, visual impairment and nerve damage (6, 9, 10).

A study conducted at Benishangul Gumuz regional hospital stated that 45.7% have poor self-care practice among study participants with DM (11). Another study revealed that the self-care practices of diabetic patients accounts for 60.7% (12) and also in another study poor self-care practice is noted as 51.86% (13). Based on the study conducted in northeast Ethiopia among individuals with DM, 181 (44.7%) of participants had good self-care practices (14).

Factors such as diabetes knowledge, physical activities, social support and self-efficacy can affect the self-care practice (15, 16). Previous studies had indicated that factors like older age, being male, lack of family/social support, lack of education, lack of knowledge about diabetes, presence of complications, being unemployed, poor adherence, lack of access for glucometer non-adherence to diet and exercise were significantly associated with poor self-care practices (17, 18). Also other factors such as Education, residence, socio-economic status, diabetic related complication and social support were significantly associated with poor self-care practice (13). In the same another study also stated that educational status, types of DM, family history of DM, and treatment satisfaction were the predictors of self-care practices among individuals with DM (14).

Most of the studies conducted in Ethiopia focused on some parts of the recommended self-care practice which might not give a full picture of the patient's self-care (19, 20). Moreover, some of the studies did not use standard tools. They also missed some important variables such as wealth status and social support which might be associated with better clinical outcomes and behavioral adaptations. Higher level of social support was associated with increased diabetes self-management and self-care behaviors (21). There is also relatively little information regarding the

level of self-care practice and associated factors among individuals with DM around the study area.

1.3. Significances of the study

Few studies conducted in developing countries have discrepancy on self-care practice among diabetes patients and all of the available literatures in Ethiopia were limited in addressing factors that influence self-care practice. Little information is available regarding the level of self-care practice and associated factors among individuals with DM around the study area. Therefore, this study was aimed to assess self-care practice and associated factors among individuals with diabetic mellitus in public hospitals of Gurage Zone in southern Ethiopia by August 2021. The finding of the study provided baseline information that can fill the gap-related to the level of self-care practice and associated factors. Also, the findings of this study will help program managers and policymakers to consider self-care practices in health care planning. The finding of this study can also serve as baseline information for other studies with similar interests in the future.

2. Literature review

2.1. Prevalence of MD and poor self-care practice among individuals with DM

International Diabetes Federation (IDF) reported that in 2015, Diabetes affected 415 million people worldwide, and it will be 642 million in 2040. An estimated 14.2 million adults aged 20–79 have diabetes in the Sub-Saharan, Africa region. In Ethiopia, it affects 1.3 million people. Its prevalence is around 3.8%, and one of the four priorities of non-communicable diseases (22, 23). Studies conducted in Northwest Ethiopia showed that the prevalence of DM was 5.1 for urban and 2.1 for rural, and the trend of DM cases in hospitals has increased by 125% over the 10 years observation since 2000 (24, 25).

Based on the study conducted in Benishangul Gumuz Regional State Public Hospitals, Western Ethiopia, more than half, 208 (54.3%) of respondents had good diabetic self-care practice. More than half, 222(58.0%) participants had type two diabetes, and the mean diabetic duration of the participants were 4.55 (± 3.381) years. Of the respondents, nearly three-fourth (79.9%) of them had no glucometer, only 54(14.1%) had a family history of diabetes and majority of them (82.8%) had no additional chronic illnesses. In addition, about (17.0%) respondents never had a diabetic health education (11).

Based on the study conducted in West Ethiopia, majority of the study participants 188 (74.6%) had no family/social support and most of them 220 (87.3%) had no family history of diabetes. More than half 61.1% of the participants treated for diabetes mellitus for less than 6 years. Only 10.3% of the participants had access for monitoring their blood glucose. About 159 (63.1%) of the patients were taking only insulin. Majority 169 (67.1%) of the participants had poor knowledge about diabetes. Of the participants 159 (63.1%) patients had type 1 DM. More than half of the participants 150 (59.5%) had poor glycemic control. One hundred fifty three (60.7%) participants had good self-care. Regarding self-care practice domains of diabetic patients majority of them 209 (82.9%) had adequate foot care and more than half 175 (69.4%) and 160 (63.5%) had adequate dietary plan and exercise management respectively. However of the total diabetic patients only 38 (15.1%) had adequate blood glucose testing practices (12).

The study conducted inUniversity of Gondar Referral Hospital, Gondar, Northwest Ethiopia indicated that among the study participants 228 (56.58%) were type 2 diabetes, 115 (28.54%)

had comorbidities, and 85 (21.09%) developed diabetes-related complication . The study also revealed that 209 (51.86%) of the study participants had poor diabetic self-care practice (13).

Based on the study conducted in northeast Ethiopia, the majority (87.7%) of the respondents had self-care practice of taking recommended medication, nearly three- fifth (60.2%) had self-care practice of regular physical activity over 30 minutes more than five days, and 240 (59.3%) of respondents reported they checked their feet every day. The overall mean score for self-care among the study participants was 3.2 (SD ±0.7). Overall, 181 (44.7%) of participants had good self-care practices. Of the total of the respondents, 280 (69.1%) were types 2 DM and more than half (53.6%) of the participants were currently on oral hypoglycemic agents. More than half of the respondents (52.3%) had no family history of DM. One hundred and twenty-three (30.4%) of the participants had a comorbid disease. The most common comorbidity (72.3%) was hypertension. The majority (89.6%) of the respondents did not have glucometer at home, and only 26 (6.4%) of respondents was a member of the Ethiopian diabetic association. The majority of respondents (94.6%) had no social support, and more than half (52.6%) of them reported that they did not get diabetes education. More than half of the respondents (54.6%) had poor glycemic control and nearly two-fifth (39.8%) was with at least one documented record of diabetes-related complications. The majority of the study participants (85.7%) stated eating food lower in fat can reduce the risk of developing adverse outcomes in the different organs of the body, and 317 (78.3%) of them said exercise affect the blood glucose level. In the majority (82.2%) of the participants' heart- related disease identified as the main complication of diabetes. Overall, 233 (57.5%) of respondents had inadequate diabetes knowledge (14).

2.2. Factors associated with self-care practice of individuals with DM

Based on the study conducted in Benishangul Gumuz Regional State Public Hospitals, Western Ethiopia, the odds of respondents who were unable to read and write was 3.6 times more likely (AOR = 3.63, 95% CI 1.33–9.89, p = 0.011) to have poor self-care practice than that of secondary and above educational level. For respondents who never had a diabetes health education, the odds of having poor self-care practice was 4 times (AOR = 4.09,95% CI 1.89, 8.84, p = 0.000) than those who had regular diabetes health education. For not having a glucometer, the odds of having poor self-care practice was 2.6 times (AOR = 2.66, 95% CI 1.30, 5.46, p = 0.007) that of who had a glucometer. For Respondents who had poor diabetes

knowledge, the odds of poor diabetes self-care practice was 5 times (AOR = 5.01, 95% CI 2.44, 10.28, p = 0.000) that of who had good diabetes knowledge. For Respondents who had poor diabetes self-efficacy, the odds of poor self-care practice was 3 times (AOR = 3.00, 95% CI 1.76, 5.11, p = 0.000) that of who had good self-efficacy. The odds of respondents who had no social support's poor self-care practice was 1.8 times (AOR = 1.84, 95% CI 1.08, 3.13, p = 0.023) that of who had social support (11).

Based on the study conducted in West Ethiopia, according to the result of multivariable logisticanalysis poor self-care practices were more likely to occur among male patients (AOR = 5.551, 95% CI = 2.055–14.997, p = 0.001), patients living in rural area (AOR = 5.517, 95% CI = 2.184–13.938, p < 0.001), patients with duration of diabetes < 6 years (AOR = 41.023, 95% CI = 7.373–228.257, p < 0.001), patients with no access for self-monitoring blood glucose (AOR = 9.448, 95% CI = 2.198–40.617, p = 0.003), patients with poor knowledge about diabetes (AOR = 67.917, 95% CI = 8.212–561.686, p < 0.001) and patients with comorbidities (AOR = 18.621, 95% CI = 4.415–78.540, p < 0.001) (12).

Based on the study conducted inUniversity of Gondar Referral Hospital, Gondar, Northwest Ethiopia, the odds of poor self-care for respondents who were unable to read and write and those with primary level education were 3.36 (AOR = 95% CI 1.42–7.90) and 2.62 (AOR = 95% CI 1.20–5.70) times higher than those with secondary education level and above, respectively. For respondents who come from rural areas, the odds of having poor self-care practice was 3.33 times (AOR = 95% CI 1.61–6.88) higher than those who came from urban areas. The odds of having poor self-care practice were lower by 69% among patients who had strong social support compared to patients who had poor social support. The odds of having poor self-care was 2.20 times higher (AOR = 95% CI 1.12–4.30) among diabetes patients with complication compared to patients without complication. For patients who had poor SES, the odds of having poor self-care practice was 2.16 times higher (AOR = 95% CI 1.17–3.98) compared to patients who had rich SES (13).

Based on the study conducted in northeast Ethiopia, a result from multivariate logistic regression analysis shows educational status of the participants (with no formal education (AOR=0.12, 95% CI: 0.03–0.42), can read and write (AOR=0.23, 95% CI: 0.07–0.75), secondary school (AOR=0.28, 95% CI: 0.09–0.88)), type 1 DM (AOR=0.27, 95% CI: 0.09–0.79), family history

of DM (AOR=3.71, 95% CI: 1.37–10.07), and treatment satisfaction (AOR=4.41, 95% CI: 1.52–8.59) were significantly associated with self-care practice (14).

2.3. Conceptual framework

A conceptual frame work that shows interrelationship of some factors affecting self-care practice among individuals having DM. They are taken from a number of studies listed above under literature review.

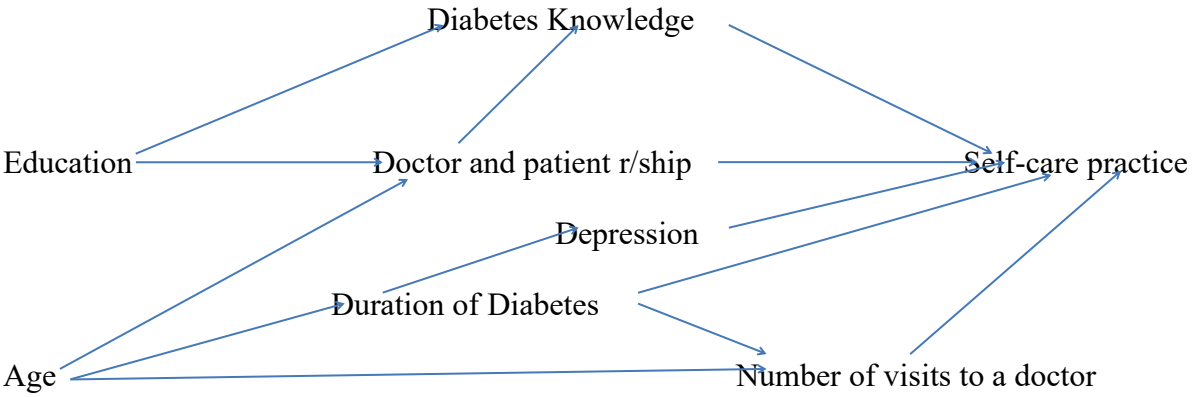

Figure 1: Conceptual framework to interrelate factors that affects Self-care practice among individuals with DM

3. OBJECTIVE

3.1 . General objective

~~The general objective of the study is~~ toassess self-care practice and associated factors among individuals with diabetic mellitus in public hospitals of Gurage Zone in southern Ethiopia by August 2021

3.2. Specific Objective

- To assess self-care practice among individuals with diabetic mellitus in public hospitals of Gurage Zone in southern Ethiopia by August 2021
- To identify factors affecting self-care practice among individuals with diabetic mellitus in public hospitals of Gurage Zone in southern Ethiopia by August 2021

4. METHOD AND MATERIALS

4.1. Study area and period

Gurage zone is one of the administrative zones in South Ethiopia. It has 13 districts and two town administrations. Wolkite town is the capital of Gurage zone. It is found 153 km southwest to Addis Ababa, the capital of Ethiopia. According to the 2007 national household census, Gurage zone has total population of 1,279,646, of which 657,568 are women. ~~The study was conducted in Wolkite University specialized teaching hospital and Atate hospital in Gurage Zone, SNNP region, Ethiopia by July 2021. Atate hospital is found 17Km away from Wolkite and 173 Km away from Addis Abeba. It is bordered by Yem Woreda in the west, Kambata and Hadiya Zone in the south and Siltse Zone in the east. There are 196 governmental professionals working in the hospital. About, 80-85 thousand patients are serves in the hospital per year. This hospital gave service to about 1056 diabetic patients starting from July, 2012 upto May, 2013 Ec.~~ Wolkite University specialized teaching hospital is covered 10 hectar of land which is found in Gubre town, Gurage zone in SNNPR along the road of Buttajera, at 172 Km away from Addis Abeba and 14 Km from Wolkite town. It is found /located North of Hossana, South of Woliso ,West of Zeway and East of Jimma. Its catchment areas are Gurage zone and Yem Special Woreda with total population of around 4 million. The hospital has 130 bed numbers and 22 Departments. It has 54 senior and GPA Doctors and also 370 Clinical plus Administrative personnel. On average around 2000 DM patients are on treatment and follow up in the two hospitals that can be used under this research.

4.2. Study design

~~Hospital~~ institutionbased cross sectional study design was conducted.

4.3. Population

4.3.1. Source population

All individuals with diabetic mellitus in ~~Atate hospital and Wolkite University specialized teaching hospital.~~selected public hospitals of gurage zone

4.3.1. Study population

All individuals with diabetic mellitus selected based on the sampling technique will beconsidered as the study population

4.3.2. Sampling unit

Individuals with diabetic mellitus from whom data can be collected are the sampling unit of this study

4.4. Inclusion and Exclusion criteria

4.4.1. Inclusion criteria

All selected individuals (≥185 years) with diabetic mellitus in selected public hospitals of gurage zone ~~Wolkite University specialized teaching hospital and Atate hospital~~during data collection period and attended for at least one year (12)

4.4.2. Exclusion criteria

- Severely ill individuals with diabetic mellitus who are unable to respond
- Those individuals with DM which are refused to participate and cognitive impairment

4.5. Sample size determination

The sample size for this study was calculated by using a single population proportion formula. To calculate the sample size, the prevalence rate of self-care practice taken from the previous research 44.7%was used(14). A total of 355 sample size was calculated and finally the data was collected from 348 which is 98% response rate.

$$n = \frac{(1.96)^2 * (0.447)(0.553)}{(0.05)^2}$$

$$n = 379.8 \approx 380$$

Since the source population is below 10,000, so population correction formula was used.

$\boldsymbol{nf = \frac{384}{1+\frac{384}{2000}}}$ **= 323,** By considering a 10%, non-response rate **t**he final sample size calculated was **323×10% (32.3) + 323= 355**

4.6. Sampling procedure

The hospitals were purposively selected for this study. The list of respondents or sampling frame was prepared from the updated registry book of the follow-up clinics of the hospitals. Then, the study participants were selected by using a systematic random sampling technique in order of their appointments at K^{th} value of 2000/355=5.

4.7. Variable

4.7.1. Dependent variable

- Self-care practice

4.7.2. Independent variables

- Socio-demographic character (Age, sex, marital status, level of education, monthly income, occupation, residence)
- Clinical Characteristics (Type of DM, Types of current treatment, Comorbidity, Family history of DM, Knowing current FBS, Diabetic education, etc..)
- Diabetic knowledge
- Diabetic treatment satisfaction

4.8. Operational definitions

Glycemic control: Glycemic status was considered as good glycemic control if an average of four consecutive fasting blood glucose measurement 80–130 mg/dL and poor glycemic control if an average of blood glucose values on four consecutive visits were >130 or <80 mg/dL (14).

Diabetes-related complications: If participants had a documented record of at least one of these; diabetes- related retinopathy, diabetes nephropathy, neuropathy, and diabetic foot ulcer (14).

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). Diabetes self-care practice was assessed by participants' responses to the 15- item Summary of Diabetes Self-Care Activities (SDSCA) in the last 7 days. Response choices for each question ranged from 0 to 7 based on the number of days on which the indicated behavior was performed. 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 was classified as having good diabetes self-care practice and those who scored below the mean was considered as having poor self-care practice (14).

Regular checkup: If patients undertaking investigations at least once within three months (14).

Regular exercise: If the participant performed 30 minutes of activity involved in walking and running for at least five days per week (14).

Knowledge: The knowledge level was assessed by the participants' responses to 15 knowledge-related questions. Each correct response was assigned "1 score" and an incorrect response and do not know the response was given "0 scores". Then a total score was computed and the mean can be used as a cut-off point. Participants was considered as having adequate knowledge if they respond to greater than or equal to the mean score (7.5) of the 15 knowledge-related questions. If they respond to less than the mean score of knowledge questions, considered as having inadequate knowledge (14).

Treatment satisfaction: The satisfaction level regarding service/treatment provided during their current visit was assessed using the diabetes treatment satisfaction questionnaire (DTSQ). DTSQ can be presented by using a 5-Likert scale (1-very dissatisfied, 2-dissatisfied, 3-neutral, 4-satisfied, and 5-very satisfied) (14). The participants were considered as satisfied with the current treatment if the score are more than or equals to {(total highest score-total lowest score)/2}+total lowest score and dissatisfied if less than {(total highest score-total lowest score)/2}+total lowest score obtained from the demarcation threshold formula. From the finding of this research, the total highest score was 30, and the total lowest score was 8. Hence, (30–8/2) +8=19. Therefore respondents scored more than or equal to 19 considered satisfied and those scored less than 19 can be considered dissatisfied in this research (14).

4.9. Data Collection Procedure and tools

4.9.1. Instruments and Measurements to collect the data

A structured self-administered questionnaire was used to collect data from study participants. The questionnaire was adapted from literatures with modification to this study setting.The questionnaire developed by English version was translated into Amharic language and then back into English after language experts both cases were used to check its consistency.

4.9.2. Data quality assurance

Training were given for data collectors/principal investigators and pre testing of questionnaire was done to ensure the quality of data in another hospital outside the hospitals under study by using 5% of the sample size. Principal investigators/Data collectors and advisors did spot-checking and reviewing all the completed questionnaires to ensure completeness and consistency of the information that were collected. We were both the data collectors and principal investigators for our study. Data entry was started on the process of data collection time.

4.9.3. Data processing and analyses

The coded data was entered in to statistical package for social sciences (SPSS) version 23 for data analysis. Descriptive statistics like tables and charts were used to describe study variables. The association between dependent and independent variables were checked by using bivariate and multivariable logistic regression. The strength of association between the dependent and independent variables was determined by calculating the odds ratio. Finally, the variables which have significant association were identified on the basis of AOR with 95% CI and $p< 0.05$.

4.10. Ethical Issues

Ethical clearance was obtained from Wolkite University ethical board committee. During data collection, the purpose of the study was clearly explained to the participants and informed verbal consent was obtained from each study participant for the data collection. Issues of rights, privacy and confidentiality were ensured during data collection period. Confidentiality was kept by making anonymous and assuring information was not accessible to anyone. Privacy was maintained by arranging silent and comfortable place to the interviewer and study subject. Participants have the right to participate or not and towithdraw at any time when they feel discomfort.

4.11. Dissemination of the result

The findings of this study was submitted and presented to Wolkite University, department of Nursing. Effort will be made to present this study in different symposiums. It will also be disseminated to interested institutions, and other concerned and interested organizations. Publication in peer reviewed, national or international journals will also be considered.

5. Result

5.1 Socio demographic characteristics

A total of 348 (98% response rate) diabetic patients were participated. This study indicated that 290 (83.3%) of the participants were male and 34 (9.8%) were from the rural setting. Two hundred thirty nine (68.7%) of them were between 35 to 54 years of age group. Majority or 270

(77.6%) married and 61(17.5%) were single. Among the study participants 110(31.6%) were illiterate, 99(28.4%) could read and write whereas the rest attended formal education. Regarding occupation 192 (55.2%) were self-employed, 65(18.7%) government employed, 45(12.9%) house wives and the rest 46(13.2%) were others. The detail was described below in table 1.

Table 1: Demographic Characteristics of study Participating (n = 348)

Characteristics	frequency	Percentage (%)
Age		
15-34	30	8.6
35-54	239	68.7
≥55	79	22.7
Sex		
Male	290	83.3
Female	58	16.7
Marital status		
Single	61	17.5
Married	270	77.6
Divorced/ Widowed /separated	17	4.9
Level of education		
Illiterate	110	31.6
Can read and write	99	28.4
Primary school	34	9.8
Secondary school	71	20.4
College and above	34	9.8
Occupation		
Self-employee	192	55.2
Government employee	65	18.7
Housewife	45	12.9
Other	46	13.2
Monthly income		
<5000	269	77.3
≥5000	79	22.7
Residence		
Urban	314	90.2
Rural	34	9.8

5.2 Clinical characteristics of study participants

Slightly greater than three fourth of the respondents 289 (83%) had type II diabetes and 59 (17%) had type I diabetes. Only 17(4.9%) of respondents were a member of Ethiopian diabetic

association. Type of current treatment for majority of respondents is oral 252(72.7%) and 323 (92.8%) did not have family history of DM. About 51(14.7%) of respondents are uses glucometer at home and 34(9.8%) we have a documented diabetes-related complication. Majority of respondents 252(72.4%), gets regular diabetes education. Based on mean score calculated as cut of point, 208(59.8%) of respondents were identified as having poor self-care practice and 303(87.1%) had poor knowledge. The details of clinical characteristics were described in table 2 below.

Table 2: Clinical characteristics of study participants (n = 348)

Characteristics	Number	Percentage (%)
Type of DM		
Type 1 DM	59	17
Type 2 DM	289	83
Types of current treatment		
Oral	253	72.7
Insulin	95	27.3
Comorbidity		
Yes	85	24.4
No	263	75.6
Divorced/ Widowed/separated	17	4.9
Family history of DM		
No	323	92.8
Didn't know	25	7.2
Glucometer at home		
Yes	51	14.7
No	297	85.3
Glycemic control		
Good	51	14.7
Poor	297	85.3
Presence of documented diabetes-related complication		
Yes	34	9.8
No	314	90.2
Knowing Current FBS		
Yes	85	24.4
No	263	75.6
Diabetic education		
Never	45	12.9
Sometimes	252	72.4
Regularly	51	14.7
Members of Ethiopian diabetic association		
Yes	17	4.9

No	289	83
Didn't know	42	12.1
Social support		
Yes	270	77.6
No	78	22.4
Self-care practice		
Poor	208	59.8
Good	140	40.2
Knowledge		
Poor	303	87.1
Good	45	12.9

5.3. Factors associated with stress status of respondents

The association between dependent and independent variables was checked by using bivariate logistic regression at $p< 0.05$ and then candidates were selected for analysis by multivariable binary logistic regression. Based on this, out of total variables used, variables like age, marital status, level of education and type of DM were identified as eligible by bivariate logistic regression for analysis by multivariable logistic regression. The strength of association between the dependent and independent variables was determined by calculating the odds ratio. Finally, the variables which have significant association were identified on the basis of AOR with 95% CI and $p< 0.05$ in multivariable logistic regression. By controlling confounding variables the result of multivariable logistic regression shows that age, marital status, level of education and type of DM have significant association with self-care practice of respondents.

Accordingly, using binary logistic regression analysis, when compared to respondents who were single and separated those married respondents were 3.12 times more likely to have self-care practice [COR 3.12 (1.79, 5.39)]. In the same way, when compared to respondents who are on other age range, those within aged range of 35-54 years were 3.03 times more likely to have self-care practice [COR 3.03 (1.95, 4.72)]. Also, when compared to respondents who are in other educational range those respondents that have educational level of college and above were 1.48 times more likely to have self-care practice [COR 1.48 (1.26, 1.74)]. Also, when compared to respondents who have type 1 diabetes those respondents that have type 2 were 3.11 times more likely to have self-care practice [COR 3.11 (1.59, 6.12)].

Multiple logistic regressions analysis shows age, marital status, level of education and type of DM have significant association with stress status of respondents. The result shows, when compared to respondents who were single and separated those married respondents were 2.08 times more likely to have self-care practice [COR 2.08 (1.10, 3.95)]. Also, when compared to respondents who are in other educational range those respondents that have educational level of college and above were 1.51 times more likely to have self-care practice [COR 1.51 (1.17, 1.94)]. Also, when compared to respondents who have type 1 diabetes those respondents that have type 2 were 6.59 times more likely to have self-care practice [COR 6.59 (1.86, 23.38)]. On the other hand, when compared to respondents who are on other age range, those within aged range of 35-54 years were 0.34 times less likely to have self-care practice [COR 0.34 (0.14, 0.79)].

Table 3: Bivariate and multivariable logistic regression analysis for prevalence of poor self-care practice among respondents

Characteristics	Self-care practice		COR(95% CI)	AOR(95% CI)
	Good No. (%)	Poor No. (%)		
Age				
15-34	0 (0)	30 (8.6)	3.03(1.95,4.72) P-value=0.00	0.34(0.14,0.79) P-value=0.01
35-54	95 (27.3)	144 (41.4)		
≥55	45 (12.9)	34 (9.8)		
Marital status				
Single	0 (0)	61 (17.5)	3.12(1.79,5.39) P-value=0.00	2.08(1.10,3.95) P-value=0.02
Married	140 (40.2)	130 (37.4)		
Separated	0 (0)	17 (4.9)		
Level of education				
Illiterate	28 (8)	82 (23.6)	1.48(1.26,1.74) P-value=0.00	1.51(1.17,1.94) P-value=0.00
Can read and write	51 (14.7)	48 (13.8)		
Primary school	0 (0)	34 (9.8)		
Secondary school	27 (7.8)	44 (12.7)		
College and above	34 (9.8)	0 (0)		
Type of DM				
Type 1	12 (3.4)	47 (13.5)	3.11(1.59,6.12) P-value=0.00	6.59(1.86,23.38) P-value=0.00
Type 2	128 (36.8)	161 (46.3)		

6. Discussion and conclusion

The result of this study showed that about 208(59.8%) of the study participants have poor self-care practice. Based on the result age, marital status, levels of education and type of DM have significant association with self-care practice of respondents.

Our study shows, 140(40.2%) of respondents have good diabetic self-care practice which is lower than the the study conducted in Benishangul Gumuz Regional State Public Hospitals that shows 208 (54.3%) of respondents had good diabetic self-care practice (11), study conducted in University of Gondar Referral Hospital showed 48.14% of the study participants had good diabetic self-care practice (13), study conducted in northeast Ethiopia indicated 181 (44.7%) of participants had good self-care practices(14) and study conducted in West Ethiopia 153 (60.7%) participants had good self-care (12).

This study shows slightly greater than three fourth of the respondents 289 (83%) had type II diabetes which is higher than other studies that shows 222(58.0%) participants had type two diabetes(11), 228 (56.58%) were type 2 diabetes (13) and 93(36.9%) (12). This study shows majority 297(85.3%) of study participants did not have glucometer at home which is higher when compared to result of other study showing nearly three-fourth (79.9%) of them had no glucometer. This study also shows that 25(7.2%) of participants had a family history of diabetes which is lower than other studies showing only 54(14.1%) had a family history of diabetes (11) and 32 (12.7%) (12).. Our study identified that 314(90.2%) of participants no additional chronic illnesses which is higher than other studies showing (82.8%) had no additional chronic illnesses (11) and 85 (21.09%) didn't developed diabetes-related complication (13). This study shows that 51(14.7%) of participants never had a diabetic health education which is lower than other study showing (17.0%) respondents never had a diabetic health education (11). Our study shows 78(22.4%) of respondents had no family/social support which is lower than study conducted in West Ethiopia, majority of the study participants 188 (74.6%) had no family/social support(12). Our study also shows that 297(85.3%) of respondents had poor glycemic control which is higher than other study indicating that 150 (59.5%) had poor glycemic control (12). Our study shows 85(24.4) of respondents had comorbidities which is almost equal with study conducted in University of Gondar Referral Hospital, showing 115 (28.54%) had comorbidities (13).

Our study shows illiterates were 1.51 times more likely (AOR = 1.51, 95% CI 1.17–1.94, p = 0.00) to have poor self-care practice when compared to educated respondents which is lower strength when compared to study in Benishangul Gumuz Regional State Public Hospitals that showed respondents who were unable to read and write was 3.6 times more likely (AOR = 3.63, 95% CI 1.33–9.89, p = 0.011) to have poor self-care practice than that of secondary and above educational level (11) and study conducted in University of Gondar Referral Hospital indicating poor self-care for respondents who were unable to read and write were 3.36 (AOR = 95% CI 1.42–7.90) times higher than those with other education level (13).

According to this study two out of three respondents were found to have poor self-care practice. Multiple logistic regressions were used to determine wither a variable is a factor or not based on stress status of respondents. Marital status, level of education and type of diabetes has significant association and effect on self-care practice. The result shows, when compared to respondents who were single and separated those married respondents were more likely to have self-care practice. Also, when compared to respondents who are in other educational range those respondents that have educational level of college and above were more likely to have self-care practice. Also, when compared to respondents who have type 1 diabetes those respondents that have type 2 were more likely to have self-care practice. On the other hand, when compared to respondents who are on other age range, those within aged range of 35-54 years were less likely to have self-care practice.

~~5. Result~~

~~5.1 Socio demographic characteristics~~

~~A total of 348 (98% response rate) diabetic patients were participated. This study indicated that 290 (83.3%) of the participants were male and 34 (9.8%) were from the rural setting. Two hundred thirty nine (68.7%) of them were between 35 to 54 years of age group. Majority or 270 (77.6%) married and 61(17.5%) were single. Among the study participants 110(31.6%) were illiterate, 99(28.4%) could read and write whereas the rest attended formal education. Regarding occupation 192 (55.2%) were self-employed, 65(18.7%) government employed, 45(12.9%) house wives and the rest 46(13.2%) were others. The detail was described below in table 1.~~

~~Table 1: Demographic Characteristics of study Participating (n = 348)~~

Characteristics	Numberfrequency	Percentage (%)
Age		
15-34	30	8.6
35-54	239	68.7
≥55	79	22.7
Sex		
Male	290	83.3
Female	58	16.7
Marital status		
Single	61	17.5
Married	270	77.6
Divorced/ Widowed /separated	17	4.9
Level of education		
Illiterate	110	31.6
Can read and write	99	28.4
Primary school	34	9.8
Secondary school	71	20.4
College and above	34	9.8
Occupation		
Self-employee	192	55.2
Government employee	65	18.7
Housewife	45	12.9
Other	46	13.2
Monthly income		
<5000	269	77.3
≥5000	79	22.7
Residence		
Urban	314	90.2
Rural	34	9.8

5.2 Clinical characteristics of study participants

Slightly greater than three fourth of the respondents 289 (83%) had type II diabetes and 59 (17%) had type I diabetes. Only 17(4.9%) of respondents were a member of Ethiopian diabetic association. Type of current treatment for majority of respondents is oral 252(72.7%) and 323 (92.8%) did not have family history of DM. About 51(14.7%) of respondents are uses glucometer at home and 34(9.8%) we have a documented diabetes-related complication. Majority of respondents 252(72.4%), gets regular diabetes education. Based on mean score calculated as cut of point, 208(59.8%) of respondents were identified as having poor self-care

practice and 303(87.1%) had poor knowledge. The details of clinical characteristics were described in table 2 below.

Table 2: Clinical characteristics of study participants (n = 348)

Characteristics	Number	Percentage (%)
Type of DM		
Type 1 DM	59	17
Type 2 DM	289	83
Types of current treatment		
Oral	253	72.7
Insulin	95	27.3
Comorbidity		
Yes	85	24.4
No	263	75.6
Divorced/ Widowed/separated	17	4.9
Family history of DM		
No	323	92.8
Didn't know	25	7.2
Glucometer at home		
Yes	51	14.7
No	297	85.3
Glycemic control		
Good	51	14.7
Poor	297	85.3
Presence of documented diabetes-related complication		
Yes	34	9.8
No	314	90.2
Knowing Current FBS		
Yes	85	24.4
No	263	75.6
Diabetic education		
Never	45	12.9
Sometimes	252	72.4
Regularly	51	14.7
Members of Ethiopian diabetic association		
Yes	17	4.9
No	289	83
Didn't know	42	12.1
Social support		
Yes	270	77.6
No	78	22.4
Self-care practice		
Poor	208	59.8
Good	140	40.2

Knowledge		
Poor	303	87.1
Good	45	12.9

5.3. Factors associated with stress status of respondents

The association between dependent and independent variables was checked by using bivariate logistic regression at p< 0.05 and then candidates were selected for analysis by multivariable binary logistic regression. Based on this, out of total variables used, variables like age, marital status, level of education and type of DM were identified as eligible by bivariate logistic regression for analysis by multivariable logistic regression. The strength of association between the dependent and independent variables was determined by calculating the odds ratio. Finally, the variables which have significant association were identified on the basis of AOR with 95% CI and p< 0.05 in multivariable logistic regression. By controlling confounding variables the result of multivariable logistic regression shows that age, marital status, level of education and type of DM have significant association with self-care practice of respondents.

Accordingly, using binary logistic regression analysis, when compared to respondents who were single and separated those married respondents were 3.12 times more likely to have self-care practice [COR 3.12 (1.79, 5.39)]. In the same way, when compared to respondents who are on other age range, those within aged range of 35-54 years were 3.03 times more likely to have self-care practice [COR 3.03 (1.95, 4.72)]. Also, when compared to respondents who are in other educational range those respondents that have educational level of college and above were 1.48 times more likely to have self-care practice [COR 1.48 (1.26, 1.74)]. Also, when compared to respondents who have type 1 diabetes those respondents that have type 2 were 3.11 times more likely to have self-care practice [COR 3.11 (1.59, 6.12)].

Multiple logistic regressions analysis shows age, marital status, level of education and type of DM have significant association with stress status of respondents. The result shows, when compared to respondents who were single and separated those married respondents were 2.08 times more likely to have self-care practice [COR 2.08 (1.10, 3.95)]. Also, when compared to respondents who are in other educational range those respondents that have educational level of college and above were 1.51 times more likely to have self-care practice [COR 1.51 (1.17, 1.94)]. Also, when compared to respondents who have type 1 diabetes those respondents that have type

2 were 6.59 times more likely to have self-care practice [COR 6.59 (1.86, 23.38)]. On the other hand, when compared to respondents who are on other age range, those within aged range of 35-54 years were 0.34 times less likely to have self-care practice [COR 0.34 (0.14, 0.79)].

Table 3: Bivariate and multivariable logistic regression analysis for prevalence of poor self-care practice among respondents

	Self-care practice			
Characteristics	Good No. (%)	Poor No. (%)	COR(95% CI)	AOR(95% CI)
Age				
15-34	0 (0)	30 (8.6)	3.03(1.95,4.72) P-value=0.00	0.34(0.14,0.79) P-value=0.01
35-54	95 (27.3)	144 (41.4)		
≥55	45 (12.9)	34 (9.8)		
Marital status				
Single	0 (0)	61 (17.5)	3.12(1.79,5.39) P-value=0.00	2.08(1.10,3.95) P-value=0.02
Married	140 (40.2)	130 (37.4)		
Separated	0 (0)	17 (4.9)		
Level of education				
Illiterate	28 (8)	82 (23.6)	1.48(1.26,1.74) P-value=0.00	1.51(1.17,1.94) P-value=0.00
Can read and write	51 (14.7)	48 (13.8)		
Primary school	0 (0)	34 (9.8)		
Secondary school	27 (7.8)	44 (12.7)		
College and above	34 (9.8)	0 (0)		
Type of DM				
Type 1	12 (3.4)	47 (13.5)	3.11(1.59,6.12) P-value=0.00	6.59(1.86,23.38) P-value=0.00
Type 2	128 (36.8)	161 (46.3)		

6. Discussion and conclusion

The result of this study showed that about 208(59.8%) of the study participants have poor self-care practice. Based on the result age, marital status, levels of education and type of DM have significant association with self-care practice of respondents.

Our study shows, 140(40.2%) of respondents have good diabetic self-care practice which is lower than the the study conducted in Benishangul Gumuz Regional State Public Hospitals that shows 208 (54.3%) of respondents had good diabetic self-care practice (11), study conducted in University of Gondar Referral Hospital showed 48.14% of the study participants had good

diabetic self-care practice (13), study conducted in northeast Ethiopia indicated 181 (44.7%) of participants had good self-care practices(14) and study conducted in West Ethiopia 153 (60.7%) participants had good self-care (12).

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7. conclusion and Recommendation

- Awareness creation by public hospitals should be needed for individuals with diabetes mellitus to increase knowledge and attitude about the importance of self-care practice.
- Regular trainings for individuals with diabetes mellitus should be needed to increase the skill of self-care practice
- Doing future researches on individuals with diabetes mellitus in a public hospitals, community and clinics should be needed to increase the knowledge on self-care practice and to fill any identified gaps.

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ANNEXES

Annex 1: Consent Form

My Name is ----------. I am working as a data collector/principal investigator in a study entitled with self-care practice and associated factors among individuals with diabetic mellitus in hospitals of Gurage Zone in southern Ethiopia by July 2021. The principal investigators are Abeba Dessalegn, Akililu Golele and Zeyituna Mehammed who are studying Bachelor of Science degree in Nursing at Wolkite University College of Medicine and health science. We are now conducting study in Wolkite University specialized teaching hospital and Atate hospital in Gurage Zone, SNNP region, Ethiopia by July 2021 on self-care practice and associated factors among individuals with diabetic mellitus. We have received permission letter from Wolkite university Ethical board committee.

You are randomly selected to participate in this study because you are currently attending diabetic clinics for follow- up. The study doesn't cause any harm to you. The information will be collected by face to face interview. The interview will take 15-20 minutes. If you agree to participate in the study, you will be asked to answer some questions about yourself. The

information that you provide will be kept confidential. Your willingness and active participation is very important for the success of this study. Participation in this study is fully voluntary. The participants have the right to declare to participate or not in this study. If they decide to not participate, they have the right to withdraw from the study at any time.

Bearing in mind this information, we would be thankful if you are willing to participate in this study. Are you agreeable to join?

1. If yes, continue to next page
2. If no, skip to next participant

Annex 2: Questionnaire in English Version

Questionnaire for individuals with DM used to assess self-care practice and associated factors among individuals with diabetic mellitus in hospitals of Gurage Zone in southern Ethiopia by July 2021.

Table 4: Part 1: Socio-Demographic Characteristics of the Study Participants

S.n0	Items	Response and categories	Answer
101	Age	1. 15-34 years 2. 35-54 years 3. > 54 years	
102	Sex	1. Male 2. Female	
103	Marital status	1. Single 2. Married 3. Divorced/Widowed/Separated	
104	Educational level	1. Illiterate 2. Can read and write	

		3. Primary school 4. Secondary school 5. College and above	
105	Occupation	1. Self-employed 2. Government employed 3. Housewife 4. Others	
106	Residence	1. Urban 2. Rural	
107	Monthly income(ETB)	1. <5000 2. ≥5000	

Table 5: Part 2: Clinical characteristics of study participants

	Variable	Category	Answer
108	Type of DM	1.Type 1 2.Type 2	
109	Types of current treatment	1.Oral 2.Medication 3.Insulin 4.Injection	
110	Comorbidity	1.Yes 2.No	
111	Family history of DM	1.Yes 2.No 3.Did not know	
112	Knowing Current FBS	1.Yes 2.No 3.Did not know	