

Assessment of Self-Care Dietary Practice and Associated Factors among Diabetic Patients in Bethel Teaching General Hospital, Addis Ababa, Ethiopia

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Abstract

Background: Diabetes is a general term for a group of metabolic disorders that affects the body's ability to process and use sugar (glucose) for energy. It is a serious public problem that threatens the quality of life, the success of long-term maintenance therapy for diabetes depends largely on patients' adherence with self-care practice. However, in the study area, there are no or few studies done about assessment of Self-care dietary practice and associated factors among diabetic mellitus patients. Hence this study aimed to assess Self-care dietary practice and associated factors among patients with type 2 diabetes on follow-up at Bethel Teaching General Hospital, Addis Ababa Ethiopia.

Methods: Cross-sectional study was conducted among diabetic patients attending in a bethel teaching hospital. The study subject was selected by using simple random sampling and data were collected by face-to-face interview with structured questionnaires. Data were entered into SPSS version 24. Frequencies and cross tab were computed. Bivariate and multivariate logistic regression was computed to assess statistical association between the outcome variable using Odds Ratio, the significance of statistical association was assured or tested using 95% and p-value less than < 0.05 considered as significances.

Results: The study revealed that 61.76% of the patients have good self-care dietary practice. Having secondary education (AOR = 1.88; 95% CI 0.87 - 17.23), having DM knowledge (AOR = 2.36; 95% CI 1.9 - 3.48), Family support of DM (AOR = 3.41; 95% CI 1.37 - 8.34) and having treatment satisfaction (AOR = 2.06; 95% CI 1.18 - 3.61) were among factors significantly associated with good self-care dietary practice of patients with diabetes.

Conclusion: The study demonstrated had good diabetic self-care dietary practice but a still substantial number of respondent had poor self-care. Good self-care was associated with having knowledge of diabetics, having family support and treatment satisfaction. Advocating and empowering patients regarding the importance of diabetic self-care practice is highly recommended.

Keywords: Type 2 Diabetes; Self-Care; Dietary Practice; Bethel Teaching General Hospital; Addis Ababa

Abbreviations

DM: Diabetic Mellitus; ETB: Ethiopian Birr; NGO: Non-Governmental Organization; OHA: Oral Hypoglycemic Agents; PI: Principal Investigator; SPSS: Statistical Package for Social Science; WHO: World Health Organization

Introduction

Background

Diabetes is a general term for a group of metabolic disorders that affect the body's ability to process and use sugar (glucose) for energy. The three most common forms of diabetes are type 1 diabetes, type 2 diabetes and gestational diabetes [1].

The most common is type 2 diabetes, usually in adults, which occurs when the body becomes resistant to insulin or doesn't make enough insulin. In the past three decades, the prevalence of type 2 diabetes has risen dramatically in countries of all income levels. Type 1 diabetes, once known as Juvenile diabetes or insulin-dependent diabetes is a chronic condition in which the pancreas produces little or no insulin by itself [2].

WHO found that diabetes reduces both qualities of life and life expectancy and imposes large economic burdens on individuals and on the national health care system direct medical costs include resources used to treat the disease and the indirect are those related to loss of productivity caused by morbidity, disability and premature mortality [3].

Diabetes is a major and growing public health problem affecting more than 171 million people worldwide and the number is expected to rise to 366 million by 2030. WHO estimated the number of diabetic cases in Ethiopia to be 800,000 by the year 2000, and the number is expected to increase to 1.8 million by 2030G.C [4].

Self-care is an important component in the management of type 2 diabetes. Self-care management focuses on lifestyle adaptation (diet and physical activity). Dietary management plays an important role in self-care management as poor dietary quality leads to poor glucose control and is associated with increased risk of complications, morbidity, and mortality [5].

Dietary practice refers to patients choices in food consumption based on diabetes nutrition education that emphasized on intake of lower fat, higher fiber, lower sodium and food that have.

Aim of the Study

This study aimed to assess how diabetic patients' dietary practices and influence these practices.

Methods

Study design and area

An institution-based cross-sectional study was employed in Kolfe Keraniyo sub-city Bethel Teaching General Hospital. Kolfe Keraniyo is one of the sub city in Addis Abeba region. The district is located in the western suburb of the city, near the Gefersa reservoir. Its bodies with the districts of Gullele, Addis Ketama, lideta, and Nifas silk-lafto. The area covers 61.25sq.km, and a latitude-longitude of 9° 01' 38" N 38° 44' 13" E.

Based on 2017 Addis Ababa city's total population of the Kolfe Keraniyo sub city is 546,219 of which 220,859 male and 235,360 females. It has 15 woredas. Health institutions in the sub-city are 5 governmental health centers, 2 governmental hospitals, 11 higher private clinics, 28 junior private clinics, 48 medium private clinics, and 2 private hospitals.

Source of study population

All adults diagnosed with Diabetes that were on regular follow up at Bethel Teaching General Hospital of Kolfe Keraniyo sub-city, Diabetic follow up Clinic.

Inclusion and exclusion criteria

Inclusion criteria: Adult diabetes patients who had to follow up at Bethel Teaching General Hospital and Age greater than 18 years.

Exclusion criteria: patients with mental health problem, hearing problem and those who do not provide appropriate information was not included, pregnancy mother.

Sample size determination

The sample size (n) was determined by using a single population proportion formula [6] by considering the following assumptions 95% confidence level, 5% margin of error, and proportion of diabetic patients risk factors was taken 9% which was reported in Tikur Anbesa Specialized Hospital Diabetic Clinic Addis Ababa [7]. The sample size was calculated as follows:

n = Where,

Z = value of standard normal distribution at 95% of confidence interval $(1.96)^2$

P = p=proportion of diabetic patients risk factors (9%).

d = margin of error 5% (0.05)

$$n = \frac{(1.96)^2 \times 0.09 [1 - 0.09]}{[0.05]^2}$$

$$= 124.4 \sim 124$$

The calculated sample size was 124 and by taking 10% non-response rate 12, the total sample size for this study was 136.

Sampling technique and procedure

A systematic random sampling technique was used. The diabetic clinics provide services on average for 20 patients per day (500 per month). The sampling interval was calculated by dividing the expected number of diabetic patients average per month (400) by the sample size because of one month the data collection period, and the interval was 3 ($400/136 = 2.94$). Thus, every other patient coming to the clinics for follow-up services was interviewed until the total sample size was fulfilled. The first respondent was selected by lottery method.

Data collection procedure

Data were collected by using a structured face to face interview open-ended questionnaire. The questionnaire was prepared in English and was translating into Amharic language. The questionnaires were pre-test on 5% of the sample size among DM patients in Bethel Hospital. To check sequence of questionnaires, lingering questions and time was taken for questionnaires.

The data were collected by 2 BSC nurses who are not currently working in the study health facility with a close follow-up of one supervisor.

One day of training was provided for data collectors and supervisors on research methodology, data collection technique, ethical issues. Every day each completed questionnaire was checked for completeness and the overall data collection processes were collected by the principal investigator.

Operational definition

- **High blood pressure:** For diabetes systolic blood pressure greater than 140 and diastolic blood pressure greater than 90.
- **Normal blood pressure:** For diabetes systolic blood pressure less than and equals 140 and diastolic blood pressure less than and equals 90.
- **Wealth index:** Scores given to households based on the number and kinds of consumer goods and addition to housing characteristics. These scores were derived using principal component analysis and classified into low, middle, and high wealth index [8].
- **Food secure:** Household experiences none of the food insecurity (access) conditions, or just experiences worry, but rarely [9].
- **Mildly food insecure:** Household worries about not having enough food sometimes or often, and/or was unable to eat preferred foods, and/or eats a more monotonous diet than desired and/or some foods considered undesirable, but only rarely. But it does not cut back on quantity nor experience any of the three most severe conditions (running out of food, going to bed hungry, or going a whole day and night without eating) [10].
- **Moderately food insecure:** Household sacrifices quality more frequently, by eating a monotonous diet or undesirable foods sometimes or often, and/or has started to cut back on quantity by reducing the size of meals or number of meals, rarely or sometimes. But it does not experience any of the three most severe conditions [10].
- **Severely food insecure:** Household has graduated to cutting back on meal size or number of meals often, and/or experiences any of the three most severe conditions (running out of food, going to bed hungry, or going a whole day and night without eating), even as infrequently as rarely [10].
- **Anxiety:** Those patients with HADs score of 8 and above for anxiety were considered as having anxiety [11].
- **Depression:** Those patients with HADs score of 8 and above for depression were considered as having depression [11,12].
- **Family support:** support for the patients from the family and relatives. who score above the mean score had family support (Yes) and below the mean score had no support (No).
- **Fasting:** Willful refrainment from eating for a period of time usually due to religious reasons.
- **Adult:** A patient with age of greater than or equals 18 years old.
- **Self-care:** Is any necessary human regulatory function which is under individual control, deliberate and self-initiated.
- **Self-care dietary practice:** In this study self-care dietary practice shows that the patients' action to take care of themselves through diet.
- **Adequate glycemic control:** Patients that have fasting plasma glucose levels between 90mg/dl-100mg/dl.

- **Nutritional status:** Is the physiological state of an individual, which results from the relationship between nutrient intake and requirements and from the body's ability to digest, absorb, and use these nutrients.
- **Diabetic knowledge:** Refers to the knowledge of the patients about disease management.
- **Household food insecurity:** The inability to provide enough food for a healthy and active lifestyle for all household members.
- **Anxiety and depression:** Anxiety is a mental health disorder characterized by a feeling of worry. **Depression** also a mental health disorder characterized by persistent depression mood or loss of interest in activities.
- **Self-care practices:** It is the practice of activities that individual diabetics were initiate and performs on their own behalf in controlling their disease, maintaining life, health, and wellbeing.
- **Good self-care practices:** individuals who have scored mean and above the mean value and above of the total 15 self-care practice questions.
- **Knowledge about diabetes:** This is measured by fifteen items in yes/no format. The correct answer was given "1" and "0" is given for incorrect and don't know. Then a total score is computed out of fifteen marks (with the range of 0 - 15) those who score mean and above the mean have good knowledge whereas those who score below the mean value have no good knowledge.
- **Physical activity:** Any bodily movement produced by skeletal muscle that requires energy expenditure- including activities undertaken while working, playing, carrying out household chores, traveling, and engaging in recreational pursuits.
- **Good:** Means for any structured question who answered least half of the question.
- **Poor (low):** Means for any structured question who answered below half of the question.

Data quality assurance

The data quality was maintained through careful design of the questionnaire by standardizing, translation from English to Amharic. As well as pre-testing for relevant amendments. The data collector and supervisor were provided with the necessary introduction and instruction to the participants. The questionnaire was checked for completeness immediately after data collection. During the interview, participants were have the chance to ask about what is not clear or difficult to understand. The principal investigator was to check the quality of the data collection process.

Data analysis procedure

The collected data through face-to-face interview questionnaire was edited before, entered into computer information from the completed questionnaire was entered into a computer and then data coded, edited, cleaned, and analyzed using SPSS version 24 software for analysis.

Descriptive analysis was performed and the results present by tables and figures multi variable linguistic regression was performed using a step-wise method to identify factors independently associated with dependent variable multivariable factors analysis was done used to adjust the effect potential confounding variables and show as independent effect of each independent variable. The strength of association was measure using odds ratio and 95% confidence interval and p-value ≤ 0.05 considered as statistically significant.

Ethical consideration

Ethical approval for the study was obtained from Addis Ababa medical and business college’s public health ethical review committee official letter was obtain from the college and submit to Kolfe Keranyo Sub-city health bureau. Letter of cooperation was written from Kolfe Keraniyo Subcity Health Bureau and submit to Bethel Teaching General Hospital.

Confidentiality was assured by informing the participant that they were not required to write their name on the questionnaire. They have the right not to participate and/or to withdraw from the study at any moment without any negative effect as a result of their refusal or withdrawal. Finally, verbal consent was taken from each participant by reaching the informed consent format attach to the questionnaires before collecting the data to ensure that the participant was voluntary.

Results

Socio-demographic characteristics

All together 136 diabetic patients were enrolled in the study among these males were 69 (50.86%). The majority of patients were in the age group of above 61 years 78 (57.35%) years the Mean age of the respondents was 51.48 ± 14.75 years with a minimum age of 18 and maximum age of 86. Most of the study participants 109 (80%) were married. Concerning the educational status of study 39 (28.45%) were attended primary school. 40 (29.41%) were a merchant.

Variables	Category	Frequency	Percent
Sex	Male	69	50.86
	Female	67	49.14
Age (years)	18 - 40 years	21	15.52
	41 - 60 years	37	27.2
	≥ 61 years	78	57.35
Educational level	Illiterate	14	10.63
	Can read and write	33	24.14
	Primary school (1 - 8)	39	28.45
	Secondary school (9 - 12)	21	15.8
	Tertiary	29	20.98
Marital status	Single	23	16.91
	Married	90	66.18
	Divorced	14	10.29
	Widowed	9	6.62
Occupation	Government employee	32	23.53
	Merchant	40	29.41
	Daily Labourer	8	5.88
	Private employee	22	16.18
	Student	10	7.35
	Housewife	24	17.65
Family size	< 5	66	49.53
	≥ 5	70	51.47

Table 1: Distributions of socio-demographic characteristics of participants at Bethel hospital Addis Ababa, Ethiopia.

Household wealth index

Income was one factor that affects the self-care behavior of a diabetes patient. The table below shows the participants' household wealth index has high and medium properties accounts 60 (44%) and 52 (38%) respectively of participants to self-care practice. Almost 24 (18%) of the participants were poor properties this maybe lead to patients to a riskier lifestyle with respect to income due to monetary condition, less accessibility and affordability of recommended self-care practice.

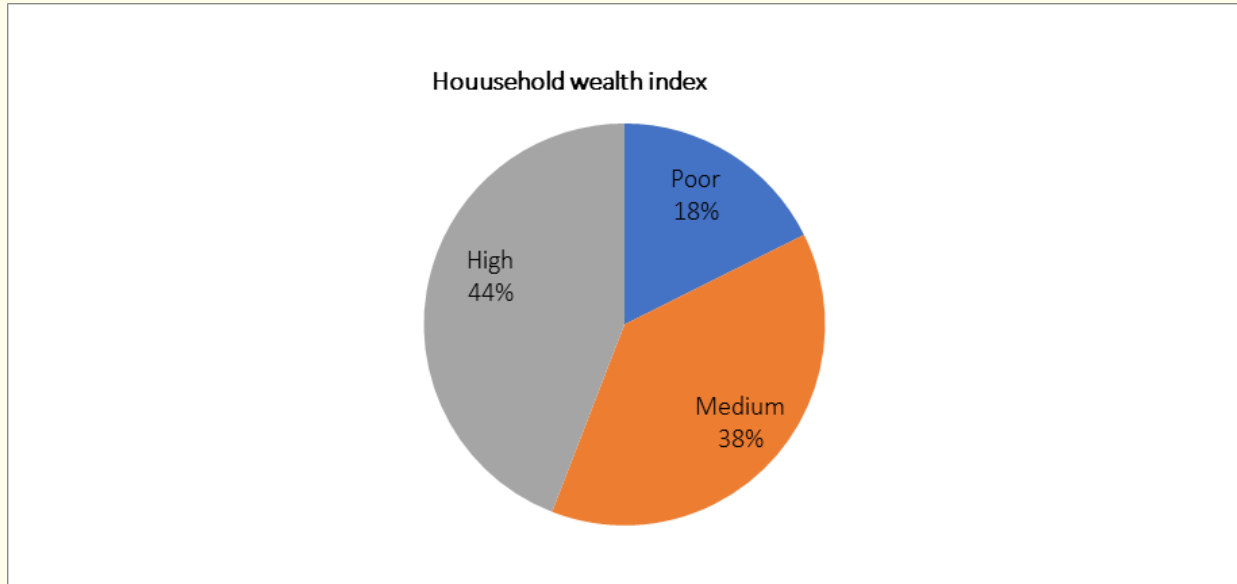


Figure 1: Distributions of household wealth index of participants at Bethel hospital Addis Ababa, Ethiopia.

Health status of the study participants

The study indicated that among the study participants 103 (75.74%) were type 2 diabetes, 88 (64.71%) had co-morbidities. The majority of the respondents, 101 (74.3%) were type 2 diabetic patients, 63.97% of the respondents had a history of family diabetes and most of the patients (49.26%) were on oral hypoglycemic agents and 31.62% were on both on oral hypoglycemic agents and insulin medication.

Only 27 (19.85%) of the participants were members of Ethiopian Diabetes Association. 73 (53.68%) of the participants usually received diabetes education and almost all of the participants got a source of information about diabetic self-management mainly from mass media.

Diabetic treatment satisfaction rate was 77.21% and from the total respondents, 47 (34.56) received detailed written instruction regarding exercise and a healthy dietary. More than one-third of the participants 81 (59.56%) had long-term diabetes and 89 (65.44%) last fasting Blood glucose indicates which was not controlled and almost half 77 (56.61%) have hypertension.

Question	Categories	No.	Percent
Duration of DM	≤ 5 years	55	40.44
	≥ 5 years	81	59.56
Co-morbidity	Yes	88	64.71
	No	25	18.38
	I don't know	23	16.91
Current treatment	Insulin injection	19	13.97
	Oral medication	67	49.26
	Both	43	31.62
	On diet	7	5.15
Do you have a family history of diabetes?	Yes	87	63.97
	No	36	26.47
	I don't know	13	9.56
Have you attended a diabetic education?	No never	54	39.71
	Yes sometimes	73	53.68
	Yes regularly	9	6.62
Source of information about diabetic self-management	Mass media	123	90.44
	Health professional	112	82.35
	Dietitians	13	9.56
	Social media	28	20.59
Received detailed written instruction regarding exercise and healthy dietary	Yes	47	34.56
	No	89	65.44
Satisfied with the care received at the current hospital	Yes	105	77.21
	No	31	22.79
Member of diabetic association	Yes	27	19.85
	No	109	80.15
Last fasting Blood Glucose level	Normal < 90 mg/dl - 100 mg/dl	47	34.56
	Abnormal ≥ 90 mg/dl - 100 mg/dl	89	65.44
Blood Pressure	Normal < 140/90 mmhg	59	43.38
	Abnormal ≥ 140/90 mmhg	77	56.61

Table 2: Medical related factors among participants at Bethel hospital Addis Ababa, Ethiopia.

Diabetes knowledge assessment

One hundred three (75.74%) of study participants had good knowledge of diabetes mellitus. Thirty-three (24.26%) had poor knowledge regarding diabetes mellitus. Almost all respondents knew that diabetes mellitus is a disease that is not transmittable and as it was a hereditary factor.

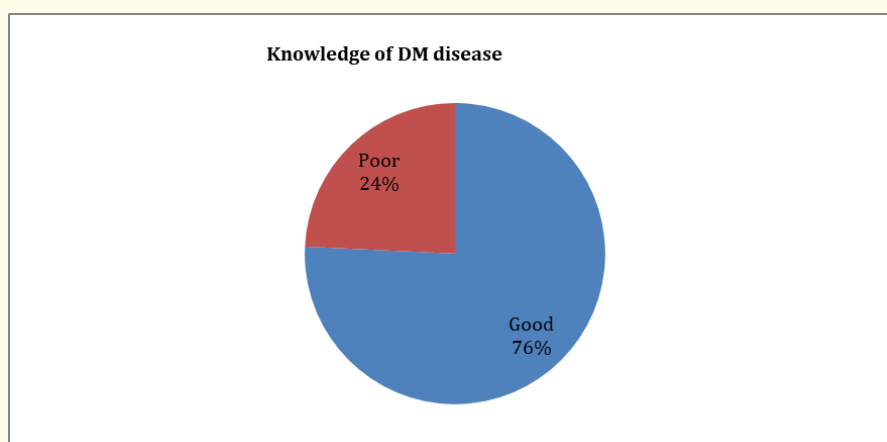


Figure 2: Participants knowledge on DM disease eat Bethel hospital Addis Ababa, Ethiopia.

Dietary practice related assessment

The majority of the study participants did adhere to the recommended diet management practices. Self-care dietary practice among DM patients was 84 (61.76%) of participants had good self-care practice on dietary while 52 (38.2%) of them had poor self-care practice of dietary. About 35% of them took nutritional education to practice self-care. Among the 136 diabetic patients, frequency of Skipped meal before DM diagnosis 78 (57.35%), experienced fasting before DM diagnosis 97 (71.32%) and experienced fasting after DM diagnosis decline to 42 (30.9%) with regard to diabetic disease there was no participants on fasting during the last three months.

Only 29 (21.32%) of the participants had eaten diet from outside with this 17 (12.5%) had difficulty of choose food. Difficult to choose foods was identified as a factor for poor dietary practice. This may be due to cultural and personal food choices, economic reasons, the unavailability of food guides prepared for DM patients in the country, and a lack of detailed understanding of the food disease association [13].

Variables	Categories	Frequency	Percent
Eat of diet from outside	Yes	29	21.32
	No	107	78.68
Have nutritional education	Yes	47	34.56
	No	89	65.44
Availability of fruit and vegetables in the area	Yes	112	82.35
	No	24	17.65
The difficulty of choose food	Yes	17	12.50
	No	119	87.50
Skipped meal before DM diagnosis	Yes	78	57.35
	No	58	42.65
Experienced fasting before DM diagnosis	Yes	97	71.32
	No	39	28.68
Experienced fasting after DM diagnosis	Yes	42	30.88
	No	94	69.12

Table 3: Frequency distribution of participant's response on practice toward dietary practice at Bethel hospital Addis Ababa, Ethiopia.

Dietary diversity of the participants

This was carried out using, 24-hour dietary recalls, individual dietary diversity scores, and food frequency. The Individual Dietary Diversity Score (IDDS) of the participants was sought by asking participants if they consumed foods from the food groups read to them. The participants with the least food groups consumed being three consider as low dietary diversity score which was the lowest tercile was 9% which is ≤ 3 food groups, medium tercile was 26% which is 4 and 5 food groups while highest tercile was 65% which is ≥ 6 food groups (Figure 3).

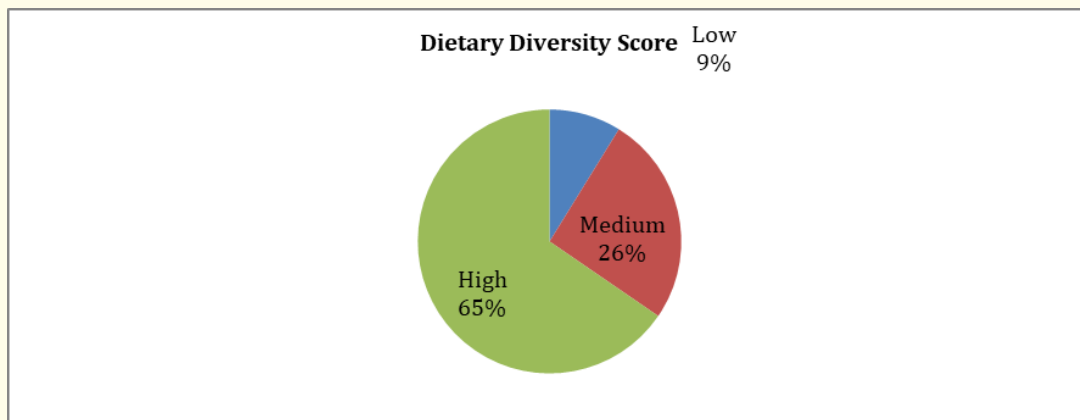


Figure 3: Dietary diversity score of the participant at Bethel hospital Addis Ababa, Ethiopia.

Hold food insecurity assessment

Overall households, food security majority of the participants were food secured while almost about 29% of the participants were food insecure.

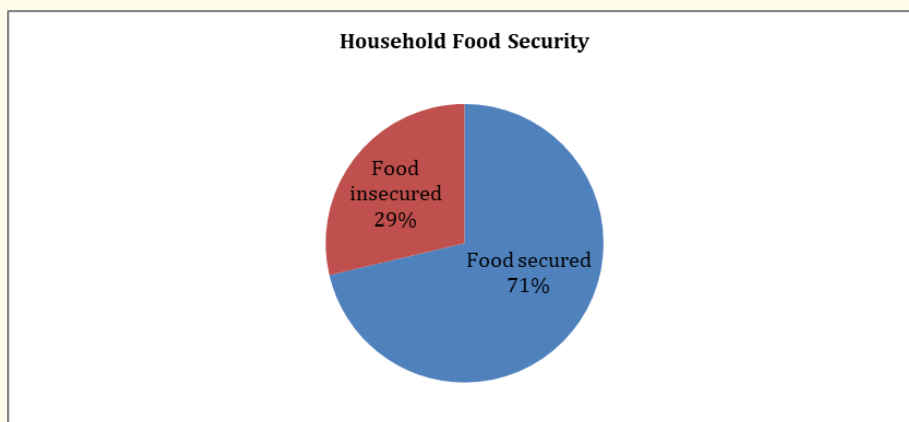


Figure 4: Frequency distribution of participant's response on household food insecurity assessment at Bethel hospital Addis Ababa, Ethiopia.

Physical activity factors

As indicated in below figure from the total 81.5% were involved in moderate physical activity such as carrying light loads, doing household chores, and walking were some of the activities indicated while only 3.8% of them have low physical activities by the participants. About 15% of the participants were involved in a vigorous and intensive type of physical exercise.

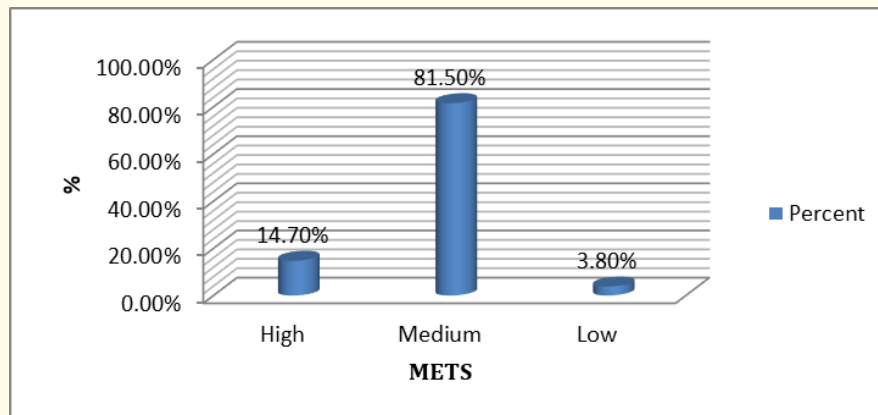


Figure 5: Frequency distribution of participant's response on question-related to physical activity factors at Bethel hospital Addis Ababa, Ethiopia.

Psychosocial related factors assessment

Diabetic family support

Overall diabetic family support was calculated using 7 assessment tools with a total score of 35. With this, the participant's scores above 50% were considered to have good family support. The majority of the participants had good family support.

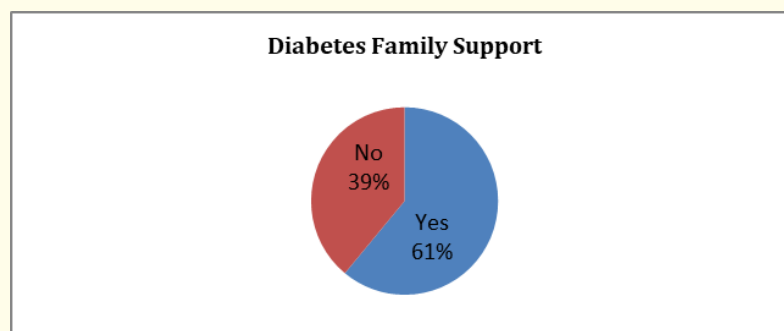


Figure 6: Diabetic family support among participants at Bethel hospital Addis Ababa, Ethiopia.

Diabetes food taboos

There were diabetes food taboos in the area like diabetes food prohibition, drinking alcohol, chewing chat, and smoking cigarette. The majority of the participants adhered to the diabetics patients’ can food prohibition.

Food taboos	Categories	No.	Percent
Diabetics patient prohibited food	Yes	112	82.35
	No	24	17.65
Non-DM can eat that food	Yes	110	80.88
	No	26	19.12
Diabetics patients can adhere to the prohibition	Yes	97	71.32
	No	39	28.68
Ever drunk alcohol	Yes	31	22.79
	No	105	77.21
Smoking cigarettes	Yes	19	13.97
	No	117	86.03
Chat chewing	Yes	11	8.09
	No	125	91.91

Table 4: Participant’s response on practice toward food taboos factors assessment at Bethel hospital Addis Ababa, Ethiopia.

Anxiety and depression on DM patients

Among the total respondents, 64 (47.06%) patients had anxiety participants. Of which, 43 (31.6%) of patients have used depression.

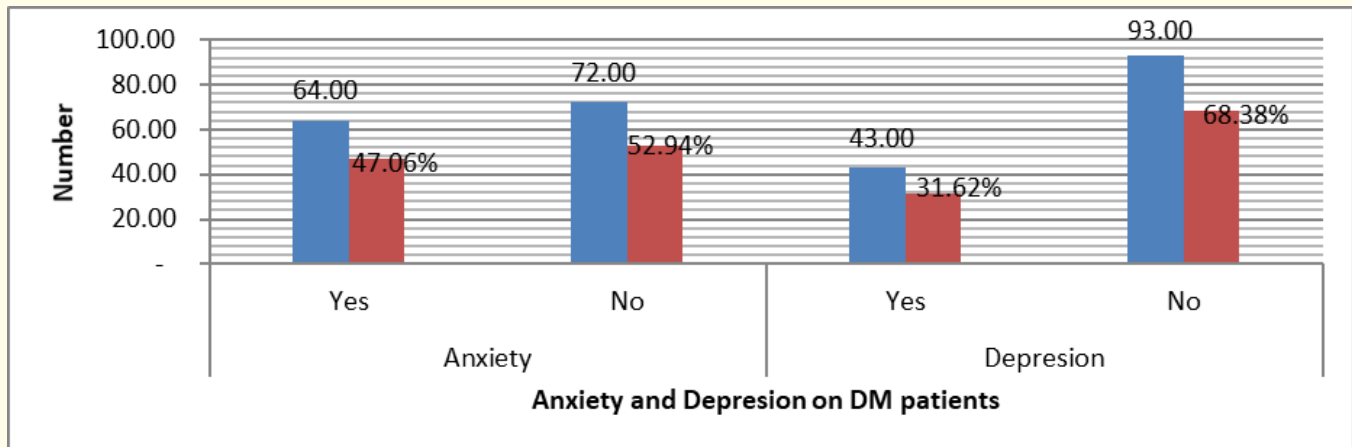


Figure 7: Participant’s response on practice toward Anxiety and depression related factors assessment at Bethel hospital Addis Ababa, Ethiopia.

Variables	Categories	Poor	Good	COR	P-value
Sex	Male	17 (24.64)	53 (75.36)	1	0.080
	Female	35 (52.24)	32 (47.76)	3.35 (2.16 - 5.21)	
Age	18 - 40 years	9 (42.86)	12 (57.14)	1	0.019
	41 - 60 years	17 (45.95)	25 (54.05)	0.91 (0.50 - 1.65)	
	≥61 years	26 (33.33)	52 (66.67)	0.67 (0.37 - 1.22)	
Edu	Illiterate	5 (35.71)	9 (64.29)	1	0.001
	Can read and write	12 (36.36)	21 (63.64)	1.03 (0.41 - 2.56)	
	Primary school (1-8)	9 (23.08)	30 (76.92)	0.62 (0.23 - 1.68)	
	Secondary school (9-12)	11 (52.38)	10 (47.62)	1.98 (0.72 - 5.42)	
MS	Tertiary	13 (44.83)	16 (55.17)	1.46 (0.58 - 3.65)	0.297
	Single	7 (30.43)	16 (69.57)	1	
	Married	22 (24.44)	68 (75.56)	0.87 (0.46 - 1.65)	
	Divorced	5 (35.71)	9 (64.29)	1.42 (0.43 - 4.66)	
HFS	Food secured	38 (39.18)	59 (60.82)	1	0.005
	Food insecure	14 (35.90)	25 (64.10)	0.87 (0.47 - 1.58)	
DDS	High	31 (31.96)	57 (68.04)	1	0.231
	Medium	17 (47.22)	19 (52.78)	0.72 (0.40 - 1.28)	
	Poor	4 (33.33)	8 (66.67)	0.92 (0.29 - 2.92)	
HWI	High	19 (31.67)	41 (68.33)	1	0.543
	Medium	21 (40.38)	31 (59.62)	1.46 (0.85 - 2.51)	
	Poor	12 (50.00)	12 (50.00)	0.46 (0.21 - 0.99)	

Table 5: Bivariate logistic regression of socio-demographic with Self-care practices among adults with diabetes at Bethel hospital Addis Ababa, Ethiopia.

Factors associated with the practice of disease control

In bivariate analysis, good diabetes knowledge, diabetes treatment satisfaction, duration on diabetes Miletus, diabetes Miletus family support of diabetes self-care practice, and have detailed instruction of diabetes-related information were statically associated with good diabetes self-care practice than their counterparts (Table 6).

Variables	Category	Self-care Practice of DM		COR (95% C.I)	P-value
		Poor (%)	Good (%)		
DM knowledge	Poor	5 (16.1)	15 (83.9)	1	0.000
	Good	47 (44.8)	58 (55.2)	4.20 (1.573 - 11.212)	
Duration of DM	≤ 5 years	16 (29.1)	39 (70.9)	1	0.007
	≥ 5years	36 (44.4)	45 (55.6)	1.95 (1.035 - 3.673)	
Satisfaction on t/t	Unsatisfied	7 (22.6)	24 (77.4)	1	0.005
	Satisfied	45 (42.9)	60 (71.4)	2.57 (1.131 - 5.842)	
DM family support	Yes	24 (28.9)	59 (71.1)	1	0.001
	No	28 (52.8)	25 (47.2)	2.4 (1.465 - 3.927)	
Have detailed instruction of	Yes	13 (27.7)	34 (72.3)	1	0.000
	No	39 (43.8)	50 (56.2)	2.04 (1.099 - 3.789)	

Table 6: Bivariate logistic regression showing that factors associated with Self-care practices among adults with diabetes at Bethel hospital Addis Ababa, Ethiopia.

Variables with a p-value less than 0.2 on bivariate analysis were entered into multivariate analysis. Among these variables which were entered to multivariate analysis treatment satisfaction, Education, DM knowledge and DM family were the independent predictors of good diabetic self-care practice.

Variables	Self-care practice of DM				P-value
	Poor	Good	COR	AOR	
Sex				1	
Male	17 (24.64)	53 (75.36)	1		
Female	35 (52.24)	32 (47.76)	3.35 (2.16 - 5.21)	1.93 (0.47 - 4.82)	0.180
Age (ears)					
18 - 40 years	9 (42.86)	12 (57.14)	1	1	
41 - 60 years	17 (45.95)	25 (54.05)	0.91 (0.50 - 1.65)	3.12 (1.17 - 11.23)	0.1935
> 61 years	26 (33.33)	52 (66.67)	0.67 (0.37 - 1.22)	0.99 (0.25 - 3.97)	0.327
Educational Level					
Illiterate	5 (35.71)	9 (64.29)	1	1	
Can read and write	12 (36.36)	21 (63.64)	1.03 (0.41 - 2.56)	1.12 (0.77 - 4.23)	
Primary school (1 - 8)	9 (23.08)	30 (76.92)	0.62 (0.23 - 1.68)	0.99 (0.25 - 3.97)	
Secondary school	11 (52.38)	10 (47.62)	1.98 (0.72 - 5.42)	1.88 (0.87 - 17.23)	0.001
Tertiary	13 (44.83)	16 (55.17)	1.46 (0.58 - 3.65)	1.41 (1.3 - 22.98)	
Household food security					
Food secured	38 (39.18)	59 (60.82)	1	1	
Food insecure	14 (35.90)	25 (64.10)	0.87 (0.47 - 1.58)	0.73 (0.18 - 1.17)	0.287
Family Size					
< 5 years	16 (24.2)	50 (75.8)	1	1	
≥ 5years	36 (51.4)	34 (48.6)	3.309 (1.88 - 5.84)	2.78 (1.54 - 4.72)	0.513
Duration on DM					
< 5 years	16 (29.1)	39 (70.9)	1	1	
≥ 5years	36 (44.4)	45 (55.6)	1.95 (1.035 - 3.673)	1.56 (0.99 - 2.46)	0.044
DM Family support					
Yes	24 (28.9)	59 (71.1)	1	1	
No	28 (52.8)	25 (47.2)	2.4 (1.465 - 3.927)	2.36 (1.9 - 3.48)	0.000
DM knowledge					
Poor	5 (16.1)	15 (83.9)	1	1	
Good	47 (44.8)	58 (55.2)	4.20 (1.57 - 11.212)	3.41 (1.37 - 8.34)	0.018
Satisfaction on t/t					
Unsatisfied	7 (22.6)	24 (77.4)	1	1	
Satisfied	45 (42.9)	60 (71.4)	2.57 (1.131 - 5.842)	2.06 (1.18 - 3.61)	0.000

*: P-value < 0.05, **: p-value < 0.01

Table 7: Multivariable logistic regression model showing factors associated with Self-care practices among adults with diabetes at Bethel hospital Addis Ababa, Ethiopia.

Discussion

There is limited literature regarding the diabetes self-care dietary practice among patients who are on follow up in private General hospital care level in Ethiopia, particularly in Addis Ababa where a higher number of private hospitals are found, therefore this study attempts to assess the magnitude of diabetes self-care practice and associated factors among patients on follow up at private general hospital care named as Bethel Teaching General Hospital.

This study indicates the majority of patients was in the age group of above 61 years 78 (57.35%) years with a minimum age of 18 and maximum age of 86 which was inlined of a study done in Kenya showed the prevalence of diabetes increases with advanced age and according to the WHO majority of diabetes type 2 cases are above 45 years of age [14]. This may be attributed to glucose intolerance associated with an increase in age [15].

In this study self-care, dietary practice among DM patients shows 84 (61.76%) of participants had good self-care practice on dietary while 52 (38.24.15%) of them had poor self-care dietary practice which was greater than the study in Nigist Eleni hospital in southern Ethiopian which indicates more than half of the study participant have not adhered to the recommended diet management practice [16] and also higher than the meta-analysis in Ethiopia which indicates the pooled estimate of self-care dietary practice was 50% [17]. The result was also greater than the study conducted in Addis Ababa on private and public health centers of shows 311 (52.3%) among diabetic patients on follow-up at public health centers and private clinics in Addis Ababa [18].

The predictors of self-care dietary practices were: getting higher education received nutritional education from professions, knowing diabetes, treatment satisfaction, having family support, and educational status.

The finding indicates overall self-care practice was (61.76%). This finding was in line with the results of the studies conducted in Dire Dawa (60.2%) (Asmere G., *et al.* 2018). However, the finding of this study was greater than the study conducted in Harar, Eastern Ethiopia (39.2%) Addis Ababa, Benishangul Gumuz 45.7% had poor diabetes self-care practice respectively [19-21].

This discrepancy may be due to some improvements in the health care systems (related to time period gap) and variation of cutoff point to classify good and poor self-care, mean and fifty percent of total self-care practices, respectively. Sample size variation may also attribute to this difference.

On the contrary, the finding of this study was lower than the study conducted in Eastern Nepal of which (70%), of the study participants, had good self-care practices [22]. This variation could be due to socio-cultural differences. The majority of the study participants in Nepal had a high income, so that they could afford their own glucometer and easily get a healthy diet. This finding is also lower than the study was conducted in Dilla, South Ethiopia which had 76.8% good self-care practices. Methodological and sample size variation may also account for this discrepancy [23].

This study revealed that those who had family support were more than two times more likely to have good self-care practices than those who did not. This is consistent with a study conducted in Dire Dawa [24]. Individuals who have family support could have better information related to disease, have a chance to get an education, and may have got a good income. This finding was also supported by different studies indicates patients who had strong social support and good self-care practice as compared to patients who had poor social support from different studies. Possible reasons could be social support from family or friends as a form of emotional, informational, or financial can help the patient to cope with problems and give emotional strength [25].

Respondents who had a higher level of education were nearly two times more likely to be engaged in self-care practices when compared with respondents who were unable to read and write. This finding was congruent with the studies conducted in Black Lion, hospi-

tal, and study conducted in Gondar [25]. This implies that education is the base for a diabetic patient to understand the disease process and to provide their own self-care practice, because they may be able to read and become more informed of the benefits of adherence.

Knowledge towards diabetes and its disease process was found to be positively associated with self-care practice. Knowledgeable individuals were more than three times more likely to have good self-care practice than those who had less diabetes knowledge. This finding was in line with the finding from Dire Dawa and Harari Region of Eastern Ethiopia [26].

The possible justification is that the right knowledge about diabetes and its self-care practice creates a clear understanding and avoids confusion about the practice and the disease condition.

Diabetes treatment satisfaction was two times more associated with good diabetes self-care dietary practice than unsatisfied once in agreement with the study conducted in Israel in 2009 (40), which identified that lower treatment satisfaction is related to difficulties in adherence to taking medications and attending follow-up clinic visits among other factors. Therefore, improving diabetes patient satisfaction can reinforce patients' adherence to the recommended diabetes self-care practices. This finding was congruent to a study conducted in Nigeria [27]. Since patient satisfaction is directly associated with the degree of satisfaction with expected care and is linked with cognitive evaluation and emotional reactions to the components of care services.

Dietary adherence was about 65% which is higher than the study in Dilla specialized hospital 2014 (49.7%) and Harari town 57.5 but lower than the study in Addis Ababa Tikur Ambesa specialized hospital 78% in [18]. This variation may be due to setting, measurement variation, perception towards fruits and vegetables, or patients' difficulty to differentiate the recommended diet. Since there is no one set of nutritional recommendation that apply to all diabetes patient's dietary recommendation had to be based on individuals' habits and preferences by thoroughly discussing with their physicians, which might not apply to this setting.

The study in Pakistan indicated 38% [28] received a diabetes education at clinics however, this study indicated 60% received diabetes education which is also higher than the study conducted in Addis Ababa diabetes health care system in 2005 (51%) [29], where only 24% received diabetes education. This variation might be due to the improved health service coverage in the city.

Diabetes knowledge level was found to be 76 % in the study higher than the study in UAE (56%) [30], Qatar 65.8% [31], however, it was by far higher than the study in western Ethiopia, Nekemte hospital (54.3%) [32], North West Ethiopia Felegehiwot hospital (49.8%) [33].

Conclusion

This study revealed that a majority number 52 (38.2%) of respondents in Bethel Teaching General hospital of Addis Ababa had poor self-care dietary practice. Regular exercise and daily dietary plan were the least practiced diabetes self-care practice. About half of the respondents had less dietary adherence, to blood glucose testing and regular eye examination. The good predictors of self-care practices were: getting higher education received nutritional education from professions, having knowledge about diabetes, treatment satisfaction, having family support, educational status, and high family wealth index.

The hospital administration should stress educating clients more during follow-up periods and diabetic self-care should be incorporated in the health education program of the hospitals. Healthcare professionals should use specific rather than general information and more aggressive counseling for those especially on diabetes dietary management with emphasis on lifestyle modification.

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Conflict of Interest

The authors declare that they have no conflict of interest.

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Data Availability

Not applicable.

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