Self-Care Practices and Associated Factors in Diabetes Patients at Saint Paul's Hospital Millenuim Medical College, Addis Ababa, Ethiopia, 2021

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ABSTRACT

Background: Diabetes mellitus is a chronic non-communicable disease which is characterized by hyperglycemia due to absolute or relative deficiency of insulin. In order to prevent this non communicable disease self-care practice is the most preventable method. **Objectives:** To assess self-care practice and its associated factors among patients with diabetes mellitus in saint Paulo's hospital millennium medical college Addis Ababa, Ethiopia 2021. **Method:** Institutional based cross-sectional study was conducted among 385 Diabetes patients in SPHMMC, Addis Ababa, Ethiopia. English version standard questionnaires were adopted and pretest Amharic version was used to collect the data by using two data collectors and one supervisors. The collected data were coded and enter in EPI data version 3.1. And analyze using SPSS version 25. **Result:** About 158(39.5%) of respondents had good self-care practices. On multivariate logistic regression analysis educational status of illustrate (AOR=0.392,95% CI :0.1990 0. 772), primary school (AOR=0.337, 95% CI : 0.167-0.680), current treatment (with insulin injection AOR=3.375, 95% CI :1.3808-255), respondents those who had habit of physical exercise (AOR= 2.081, 95% CI :6.876,21.226),member of diabetic association (AOR=0.411, 95% CI :0.229-0.735) were significantly associated with self-care practice. **Conclusion:** Educational status, current treatment, family history of DM, member of diabetic association, knowing current FBS, effect of insulin injection & skip breakfast on blood glucose, effect of regular exercise on blood glucose and body mass index were significantly associated with self-care practice.

Keyword: Self-Care Practices, Diabetes Mellitus, Ethiopia.

INTRODUCTION

Diabetes mellitus (DM) stands as a prevalent chronic non-communicable disease characterized by hyperglycemia resulting from insulin deficiency or resistance [1]. With over 14 million global deaths annually due to non-communicable diseases, including diabetes mellitus, the majority occurring in developing countries, it highlights a significant public health concern [2].

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The repercussions of uncontrolled hyperglycemia encompass both macro- and microvascular complications. Adolescents with Type 2 DM face complications akin to adults, spanning cardiovascular disease, stroke, myocardial infarction, renal insufficiency, and chronic renal failure. While regular medical follow-up is imperative, holistic self-care practices, such as maintaining a healthy diet, engaging in physical activity, self-monitoring, and proper medication adherence, play a crucial role [3].

The acute and chronic complications associated with DM contribute substantially to morbidity and mortality. Continuous medical care and patient self-management education are imperative to mitigate acute complications and reduce long-term risks. Failure to prevent and manage diabetes effectively contributes significantly to global premature illness and death, registering approximately 5.1 million deaths [4].

The intricate nature of diabetes necessitates ongoing medical care and multifaceted risk-reduction strategies. Diabetes self-management education and support are pivotal in averting acute complications and mitigating long-term risks [5]. Despite advancements in diabetes treatment, suboptimal outcomes persist, leading to devastating complications due to inadequate self-care practices. Poor self-care practices escalate morbidity and mortality rates [6].

Self-care behaviors vary, with optimal practices observed in diet and exercise, while inadequacies are noted in foot care and blood glucose testing [7]. The global surge in diabetes prevalence, especially with prolonged durations, reshapes disease profiles, intensifying diabetes-specific complications like kidney failure and peripheral arterial disease [8].

Despite the critical role of self-care practices in diabetes management, a significant portion of patients exhibits poor adherence, particularly in regular exercise and blood glucose monitoring—integral elements in diabetes control [9].

A study conducted in Nigeria showed that 83.1%, 66.9% and 28.4%, of patients with type 2 diabetes adhered to prescribed medications, physical exercise and ad meal plans incorporated into their diabetes management respectively. There was a statistically significant association between male gender, duration of diabetes, and previous episode of hypoglycemia with adherence to self-care practices while lower educational level and use of insulin were associated with less likelihood of adherence to prescribed medications [10].

Another study done in Pakistan identified many barriers to diabetes self-care, particularly related to life situations and diabetes knowledge. Family support and education by healthcare providers were key influencers to self-care practices among Pakistani people with diabetes [11]. A cross sectional study done in five primary health-care centers in Amman- Jordan showed that knowledge of diabetes self-care was found to be associated with age, educational status, diabetic medications and years with diabetes [12].

METHODS AND MATERIALS

Study area and period

Addis Ababa is the capital and largest city of Ethiopia. According to the 2007 census, the city has a population of 2,739,551. It has ten sub-cities: Out of six specialized hospitals found in Addis Ababa city Administration two of them are found in Gulele sub-city. One of which is SPHMMC. SPHMMC is the second largest hospital in Ethiopia. ST Paulo's hospital millennium medical collage was first established in 1939 around what is currently known as Autobistera area, densely populated part of the city to provide medical care for the poor for free.In1968 it moved current location at Gulele sub city where the current compound is located. Since the turn of Ethiopian millennium, the hospital turned collage, however, has grown significantly in many aspects. Currently, SPHMMC provide care to more than 500,000 clients every year with 40,000 emergency patient flows. Residency training programs provide training in most medical disciplines. The bed capacity, though had lagged behind is increasing from time to time.from 280 in 200E.C has doubled in 8 years with the opening of trauma center at Abet and services provided at rented buildings, it will triple with the opening of the maternal and child health center very soon it is expected to pass 1000 bed capacity. The study will conduct in diabetes patient in outpatient department, at SPHMMC in Addis Ababa, Ethiopia, in, 2021

Study design

An institutional based cross-sectional study was conducted from January to June 2021.

Population

Source population

All diabetes patients who are on diabetes care follow- up at SPHMMC

Study population

All Sampled /selected diabetes patients who have diabetic follow-up during study period at SPHMMC.

Inclusion and exclusion criteria's

Inclusion criteria

• Patients belong to age group 20-60 years consider as productive age.

• Patients with minimum 6 months of diabetes care

follow -up was included in the study.

Exclusion criteria

• Patients who were gestational diabetes and unable to communicate were excluded.

• Patients who were critically ill and mentally incompetent were excluded.

Sample size and sampling procedures

The number of patient that include in the study was determined by using formula for estimating a single population proportion by assuming confidence interval of 95%, sample was calculated for second objectives proportion taken as 54.4% from study done in Ananda [2], 43.4%from study in India [3],and 28% from study conducted in DebreBirhan prevalence and associated factor of self-care practice proportion taken from educational status proportion (p)of self-care practices among individuals with DM and Associated Risk Factors, and degree of precession taken us 5% [4].

The formula was as follows:

The finding of the study conducted in Desse hospital 51 % had poor self-care practices [5], Tigray region stated that 62.7% had poor diabetic self-care practice [6], Ethiopian General Hospital in 2018 stated that 63.1% had good self-care practice [7].

$n=z^2 pq/d^2$,

Where n=sample size Z=confidence interval 95%=1.96
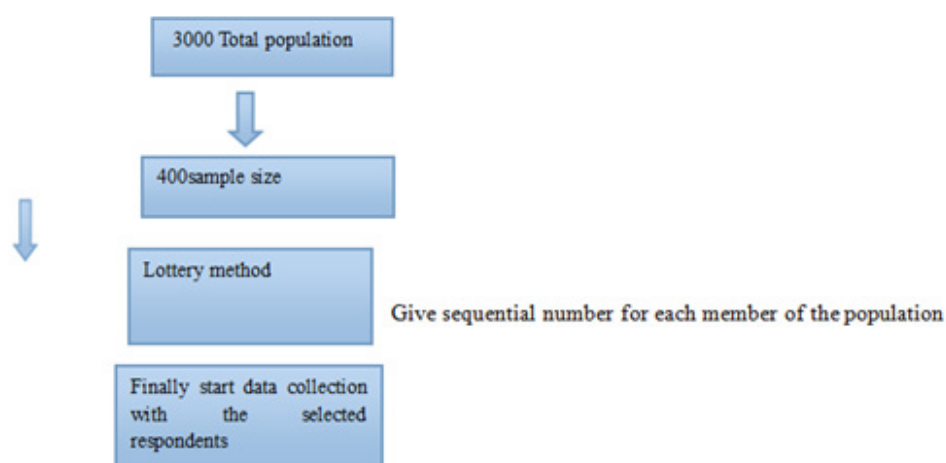
List of patients who have diabetics care follow at SPHMMC

P=Proportion=28% q=1-p d=margin of error =5% n= is the minimum required sample size.

$n_1 =z^2 pq/d^2 = (1.96)^2(0.28) (0.72)/ (0.05)^2$ n=310

$n_2 = (1.96)^2(0.434) (0.566)/ (0.005)^2=377$

$n_3= (1.96)^2(0.544) (0.456)/ (0.005)^2=381$ so the highest associated prevalence is 381

Then we add, contingency of 5%, which is 19% so the total sample sizes were 400.

Sampling technique

The number of study participants from the selected health facilities was determined from the previous total number of diabetic patients who have follow up which is 3000 in SPHMMC outpatient department diabetic's clinic. A sample was allocated to from the selected hospitals based on proportional allocation to sample size. The lists of respondents or sampling frames were prepared from the updated registry book of the follow-up clinics of the hospital. The study participants were selected by using a simple random sampling technique in order of their appointments. The first individual participant was selected by lottery method using their card number, and then every other participant was selected based on their order of entry for follow up. In cases where the patients have two follow-up appointments within a study period, the patient's appointment date was checked and he/ she were excluded from the interview (Figure 1).

Figure 1. Sampling frame

Study variable

Dependent variables

Self-care practices

Independent Variables

- ▪ Socio demographic Factors
- ➤ Age
- ➤ Education
- ➤ Income
- ➤ Marital status
- ▪ Personal and life style factors
- ➤ Physical exercise
- ➤ Smoking behavior
- ➤ Alcohol drinking
- ➤ Recreation activities
- ▪ Psychosocial factors
- ➤ Job satisfaction and job stress
- ➤ Relationship with family,
- ➤ Depression

Operational definitions and definition of terms

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) [8].

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<80MG/DL [8].

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 [9].

Regular checkup: If patients undertaking investigations at least once within three months.9 Regular exercise: If the participant performed 30 minutes of activity involved in walking and running for at least five days per week [10].

Data collection procedures

The data were collected by using adopted standardized endocrine questionnaires for assessing self-care practices of patients with diabetes mellitus. This tool was not developing for clinical diagnosis. It is repeatable, sensitive and useful as a screening and surveillance tool for chronic disorders including diabetes patient. The questionnaire was used to assessing associated factors, like socio demographic characteristics, life style and psychological and ergonomic factors to determine self-care practices of individual among diabetes.The data was collected by face to face interview using Amharic language structure questionnaire. And was managed by trained data collectors.

Data quality assurance

First the questioners was pretested on 5-10 members of the target population to evaluate the reliability and validity of the study prior to the final distribution then after data was collected. The quality of data was assured before, during and after the data collection. The questionnaire was prepared first in English and then translated into Amharic finally retranslated back to English to check for consistency. Four days training was given for assistant data collectors based on prepared training manuals and how to use field guiding, procedure of data collection and review of key terminologies and ethical issue of the study was discussed in detail by principal investigator and Prior to the actual data collection. During data collection period, the collected data were checked for completeness and for its consistencies by the principal investigators every night time of data collection. Missing questions and variables during the first visit was filled by re-interviewing the participants. After the data collection, the collected data were rechecked for its completeness and consistency by the principal investigator.

Data processing and analysis

The data were entered using Epi-Data version 3.1. And exported to statistical package for social science (SPSS version 25). Descriptive and inferential statistics was employed. Frequencies, proportion and summary statistics was used to describe the study population in relation to relevant variables. Logistic regression was fitted to identify the association between dependent and independent variables. Bivariable analysis was conducted to select candidate variables to initial multivariable model. Those variables that show association with self-care practice at p-value less than 0.25 was included into initial multivariable logistic regression model. Both crude and adjusted odds ratio with their corresponding 95% confidence interval was used to determine the strength of association. Assumptions of logistic regression was checked before final multivariable analysis using probability graph and co linearity diagnostic (variance inflation factor and correlation matrix).Final multivariable model goodness of fit was checked using classification table percentage, Hosmer-and Lemeshow chi-square test and log likelihood chi-square test. The p value of less than 0.05 was used to declare the statistical significance of the finding in this study. The result was presented using text, tables and graphs based on the types of data.

Ethical considerations

The study was carried out after letter of permission obtain from Yanet health science collage master of public health

department for postgraduate students. Before data collection Verbal consent was obtained from respected participants after a necessary explanation about the purpose, benefit and risk of the study and also their right on decision of whether or not participating in the study. The study participants was briefly inform that there is no any direct financial benefit and risk from this study, and the privacy of any information given by the participant were protected And all participants select for interview was equally treated including with active cases, on the other hand the study findings was used to design strategies for prevention and control lower DM by promoting good self-care practice among patients with diabetes patients. Concerning confidentiality rather than name of respondents' code were used in the questionnaire. Workers with active case were also interview equally with the others to reduce information bias.

RESULTS

Socio-Demographic characteristics of the study participants

A total of 400 DM patients, of which 261(65.3) were males, included in the study. The mean age (±SD) of the participants was 51.58 (±13.8) years. Two hundred sixty one (65.2%) of respondents were male and 311(77.8%) of them were married. One hundred seventy five (43.8%) of respondents educational status were Collage and above and 161 (41.0%) of them were under age greater than fifty-five years. One hundred twelve (28.0%) of respondents were governmental worker and 246(61.5%) of them monthly income were less than five thousand (Table 1).

Table 1. Socio-demographic characteristics of the study participants of Saint Paulo's Hospital Millennium Medical Collage, Addis Ababa Ethiopia 2021 (n=400)

Variable	Category	Frequency (n=400)	Percent (%)
Sex of participants	Male	261	65.2
	Female	139	34.8
Age (years)	18-34	44	11.0
	35-44	79	19.8
	45-54	113	28.2
	>=55	164	41.0
Marital Status	Married	311	77.8
	Single	76	19.0
	Divorced	13	3.3
Educational level	Ilitriate	94	23.5
	Primary	85	21.3
	Secondary	46	11.5
	Collage and above	175	43.8
Occupation	Farmer	83	20.8
	Merchant	33	8.3
	Governmental work	112	28.0
	Not at all	56	14.0
	Other	116	29.0
Monthly income (ETB)	<5000	246	61.5
	>5001	154	38.5

Clinical Characteristics of Study Participants

Of the total of the respondents, Three hundred sixty nine (92.3%) of the respondents were type 2 DM and 247 (61.8%) of them were currently on oral medication. More than half of the respondents `316(79.6%) had no family history of DM. Majority 315(78.8) of respondents has Glucometer at home. Majority of the respondents 237(59.3%) was member of Diabetic association. The majority of the respondents

366(91.5%) had family support but Majority 314(78.5%) of the respondents had no social support and more than half (51.7%) of them reported that they did not get diabetes education. Majority 131(32.8) of the respondents did not have habit of physical exercise and only (5.0%) of the participants had habit of drinking alcohol (Table 2).

Table 2. Clinical characteristics of the study participants at Saint Paulo's Hospital Millenium Medical Collage, Addis Ababa Ethiopia, 2021 (n=400)

Variables	Category	Frequency (n=400)	Percent (%)
Type of DM	Type 1	31	7.8
	Type 2	369	92.3
Types of current treatment	Insulin injection	95	23.8
	Oral medication	247	61.8
	Both	58	14.5
Family history of DM	Yes	84	21.0
	No	316	79.0
Knowing current FBS	Yes	117	29.3
	No	283	70.8
Diabetic education	No ever	207	51.7
	Yes sometimes	159	39.8
	Yes regularly	34	8.5
Members of Ethiopian Diabetic association	Yes	237	59.3
	No	163	40.8
Family support	Yes	366	91.5
	No	34	8.5
Social support	Yes	86	21.5
	No	314	78.5
Glucometer at home	Yes	315	78.8
	No	85	21.3
Do you have Habit of physical exercise	Yes	131	32.8
	No	269	67.3
Habit of Drinking alcohol	Yes	20	5.0
	No	380	95.0

Knowledge of the Study Participants

Two hundred forty seven (61.8%) of respondents stated that exercise lowers blood glucose and 318(79.5%) of them stated that taking tablet or insulin types of Diabetic medication and skip breakfast at the same time were decrease blood glucose. The majority 339 (84.8%) of the respondents stated eating food lower in fat can reduce the risk of developing adverse outcomes in the different organs of the body and 271 (67.8) of them stated that missing Diabetic medication increase blood glucose level. Three hundred thirty six (84.0%) of the respondents stated that blood testing were a better method for monitoring Diabetic control and 265 (66.3) of them aware infection can increase blood glucose. Two hundred sixty five (66.3%) of the respondents report that taking too much amount of fruit were increase blood glucose. In majority 387(96.8%), 364(91.0%), 372(93.0%) of participants Eye, Heart and foot related disease identified as the complication of diabetes. Three hundred thirty six (84.0%) of the respondents were that blood testing were a method for monitoring diabetic control and 265(66.3%) of them aware infection can have related to the blood glucose level (Table 3).

Table 3. Diabetes knowledge of among the study population at Saint Paulo's Hospital Millennium Medical College, Addis Ababa Ethiopia, 2021 (n=400)

Variables	Category	Frequency (%)
Effect of exercise on blood glucose	Raises it	14(3.5)
	Lowers it	247(61.8)
	Has no effect	59(14.8)
	Not sure	80(20.0)
Take tablet or Insulin injection but skip breakfast during the morning while blood glucose	Increase	23(5.8)
	Decrease	318(79.5)
	Remain the same	31(7.8)
	Not sure	28(7.0)
Eating food lower in fat reduces the risk of developing an adverse outcome in different organ	Yes	339(84.8)
	No	25(6.3)
	Not sure	36(9.0)
Missing diabetic medication affect blood glucose	Increase	271(67.8)
	Decrease	58(14.5)
	Remain the same	48(12.0)
	Not sure	23(5.8)
The better method for monitoring diabetic control	Urine testing	11(2.8)
	Blood testing	336(84.0)
	Both are equally	29(7.2)
	Not sure	24(6.0)
Infection can have related to the blood glucose level	Yes	265(66.3)
	No	135(33.8)
exercise can cause high blood glucose	Yes	64(16.0)
	No	336(84.0)
High blood glucose caused by taking too much fruit	Yes	265(66.3)
	No	135(33.8)
Described and identified complications		
Eye problem	Yes	387(96.8)
	No	13(3.3)
Kidney problem	Yes	35(8.8)
	No	365(91.3)
Heart problem	Yes	364(91.0)
	No	36(9.0)
Lung problem	Yes	346(86.5)
	No	54(13.5)
Nerve problem	Yes	359(89.8)
	No	41(10.3)
Stroke	Yes	363(90.8)
	No	37(9.3)
Foot problem	Yes	372(93.0)
	No	28(7.0)

Treatment satisfaction of Diabetes patients

One hundred nine (27.3%) of the respondents were strongly satisfied with current Diabetic medication and 82(20.5%) of them were dissatisfied. One hundred thirteen (28.2%) of respondents were dissatisfied with current convenience and 83 (20.8%) of them were strongly dissatisfied with current treatment flexibility.

One hundred forty six (36.5%) of respondents were strongly satisfied with current understanding DM and 144(36.0) of them were strongly satisfied with continue the current form of treatment (Table 4).

Table 4. Diabetes treatment satisfaction among the Diabetes patents at Saint Paulo's Hospital Millennnium Medical College Addis Ababa Ethiopia, 2021 (n=400)

Variables	Strongly Satisfied (%)	Satisfied (%)	Neutral (%)	Strongly dissatisfied (%)	Dissatisfied (%)
How satisfied are you with current medication	109(27.3)	74(18.5)	104(26.0)	31(7.8)	82(20.5)
How satisfied are you with current convenience	30(7.5)	70(17.5)	101(25.3)	86(21.5)	113(28.2)
How satisfied are you with current treatment flexibility	67(16.8)	60(15.0)	117(29.3)	83(20.8)	73(18.3)
How satisfied are you with your current understanding of DM	51(12.8)	146(36.5)	71(17.8)	80(20.0)	52(13.0)
How satisfied would you continue the current form of treatment	56(14.0)	144(36.0)	47(11.8)	40(10.0)	113(28.2)
Would you recommend this form of medication to someone else	64(16.0)	80(20.0)	134(33.5)	53(13.3)	69(17.3)

**Diabetic self-care practice among Diabetes Mellitus patients**

Two hundred ninety eight (74.5%) of respondents were poor self-care practice on physical exercise and 125 (31.3%) of them were good self-care practice on specific exercise like walking, swimming, biking. Majority 386(96.5%) of respondents were good practice on taking recommended diabetic medication and 289(72.3%) of them were good on checking their feet. Two hundred eighty nine (72.3%) of the respondents were inspect inside of their soles and 296(74.0%) of them were wash their feet. Three hundred forty one (85.3%) of the respondents were had poor practice on health full eating plan and 362(90.5%) of them were had poor on eating five or more fruit. Only 59(14.8) of the respondents were good on healthy eating plan and 155(38.8%) of them were good self-care practice over all 158(39.5%) of the respondents were good self-care practice (Table 5).

Table 5. Diabetes self-care practice among diabetes patients at Saint Paulo's Hospital Millennium Medical College, Addis Ababa Ethiopia, 2021 (n=400)

Variables	Self-care practice	Frequency (%)
Patient participate 30 minute of physical exercise	Good	102(25.5)
	Poor	298(74.5)
Patient participate in specific exercise(swimming,walking,biking)	Good	125(31.3)
	Poor	275(68.8)
On how many of the last 7 days, did you take your recommended diabetes medication? Taking recommended diabetic medication	Good	386(96.5)
	Poor	14(3.5)
On how many of the last seven days did you check your feet? Checking their feet	Good	289(72.3)
	Poor	111(27.8)
On how many of the last seven days did you inspect the inside of your shoes? Inspect inside of shoes	Good	289(72.3
	Poor	111(27.8)

For how many of the last seven days do you wash your feet? Wash feet	Good Poor	296(74.0) 104(26.0)
For how many of the last seven days Do you dry between your toes after washing? Drying between toes after washing	Good Poor	292(73.0) 108(27.0)
How many of the last 7 days have you followed a healthful eating plan? Healthful eating plan in the last seven days	Good Poor	59(14.8) 341(85.3)
On average over the past months how many days per week have you followed a healthy eating plan? Average health eating plan in the past months	Good Poor	53(13.3) 347(86.8
On how many of the last seven days did you eat five or more serving of fruits and vegetables? Eating fruit five or more per day	Good Poor	38(9.5) 362(90.5)
On how many of the last 7 days did you space carbohydrates evenly through the day? Carbohydrate spacing in the last seven days	Good Poor	42(10.5) 358(89.5)
How many of the last seven days did you eat high-fat foods like red meat or full-fat dairy products? Eating high-fat foods like red meat	Good Poor	11(2.8) 389(97.3)
On how many of the last 7 days did you test your blood sugar the number of times recommended by your health care provider? Blood glucose testing in the last seven days	Good Poor	155(38.8) 245(61.3)
Over all diabetic self-care practice	Good Poor	158(39.5) 242(60.5)

overall self care practice

Good 39%

Poor 61%
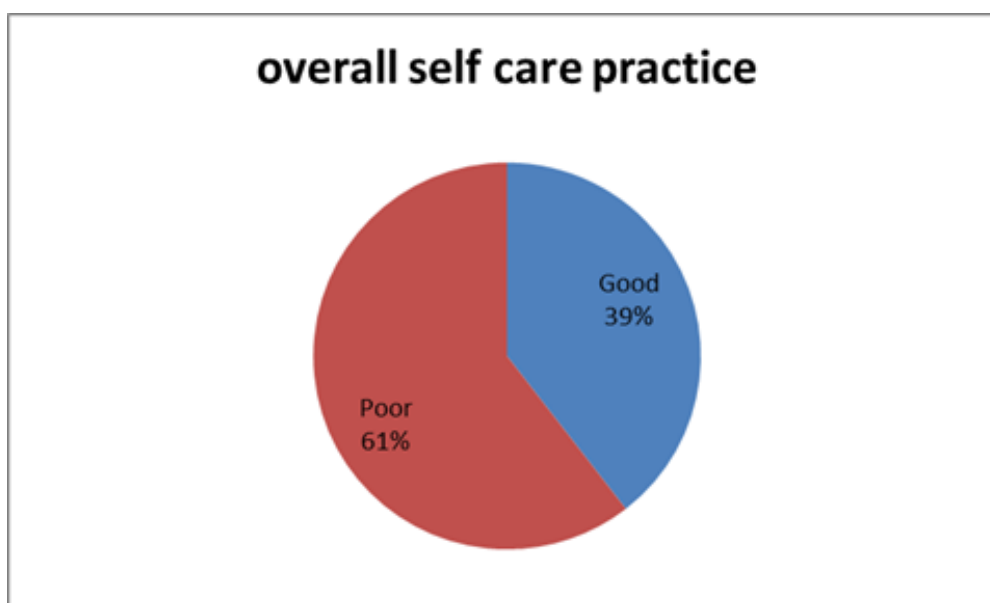
Factor associated with self-care practice

To identify the factor associated with self-care practice that were independently associated with se lf-care practice, all predictors having a p<0.25 on bivariate analysis, were included in a logistic regression model. Accordingly, marital status, Educational status, religion, current treatment, family history of DM, attending diabetic education, member of diabetic association, knowing current FBS, occupation, effect of exercise, tablet insulin injection skip breakfast at the same time, taking prescribed medication by physician, best method of monitoring blood glucose, high blood glucose caused by taking too much fruit, high blood glucose can caused by exercise, convenience satisfaction, treatment satisfaction, current understanding of DM, current flexibility of treatment, body mass index,age categories, were entered in to multi variant analysis.

On multi variate logistic regression analysis educational status of the participants (with illutrate(AOR=0.392,95% CI :0.1990-772), primary school (AOR=0.337, 95% CI: 0.167-0.680), current treatment of the participants in this finding

the odd of the respondents who were insulin injection 3 times more likely to had good self-care-practice than (AOR=3.375, 95% CI :1.3808-255) those who were on Both oral medication, and Insulin injection.

respondents those who were had habit of physical exercise two times (AOR= 2.081, 95% CI:(6.876,21.226) more likely to have good self-care practice than those who have not habit of physical exercise, in the odd of the respondents who had member of diabetic association less likely have good self-care practice than (AOR=0.411, 95% CI :0.229-0.735), that of who hadn't member. the odd of respondents who had good self-

care practice on knowing current FBS 2 times (AOR=2.004, 95% CI :1.034-3.885), that of who had unknowing current FBS, the family history of DM (AOR=0.391, 95% CI:0.203-0.752), taking tablet or insulin injection and skip breakfast at the same time were four times (AOR=4.218, 95% CI : 1.470-12.105) decrease blood glucose than those who were eat breakfast. High blood glucose can be caused by regular exercise (AOR=0.190, 95% CI :0.82-0.440) and body mass index (with underweight (AOR=0.105, 95% CI: 0.014-0.791), normal weight (AOR=0.104,95% CI :0.018-0.604), over weight (AOR=0.098, 95% CI :0.015-0.632)) were significantly associated with self-care practice (Table 6).

Table 6. factor associated with self-care practice among diabetes patient in Saint Paulo's Hospital Millennium Medical Collage, Addis Ababa, Ethiopia 2021

Variabels	Self-care practice Good N (%) PoorN (%)	COR,(95% CI)	AOR,(95% CI)	P-value
Educational status				
Illiterates	32(28.8) 79(71.2)	0.337,(0.1960.579)	0.392,(0.1990-772)	0.007**
Primary school	25(24.5) 77(75.5)	0.289,(0.163-0.514)	0.337,(0.167-0.680)	0.002**
Secondary school	18(39.1) 28(60.9)	0.567,(0.292-1.099)	0.744,(0.329-1.683)	0.477
Collage and above	101(54.0) 86(46.9)	1.00	1.00	
Current treatment				
Insulin injection	59(62.1) 36(37.9)	2.88,(1.467-5.684)	3.375,(1.352-7.656)	0.008**
Oral medication	78(31.6) 169(68.4)	0.813,(0.447-1.480)	1.709,(0.766-3.814)	0.191
Both	21(36.2) 37(63.8)	1.00	1.00	
have habit of doing physical exercise				
Yes	103(78.6) 28(21.4)	0.070,(0.042,0.117)	2.081,(6.876,21.226)	0.000***
No	55(20.4) 214(79.6)	1.00	1.00	
Member of diabetic association				
Yes	72(30.4) 165(69.6)			
No	86(52.8) 77(47.2)	0.391,(0.258-0.591	0.411,(0.229-0.735)	0.003**
		1.00	1.00	
Knowing current FBS				
Yes	72(61.5) 45(38.5)	0.273,(0.1740.428)	2.004,(1.034-3.885)	
No	86(30.4) 197(69.6)	1.00	1.00	0.040*
Family history of DM				
Yes	26(31.0) 58(69.0)	0.625,(0.3741.045)	0.391,(0.203-0.752)	
No	132(41.8) 184(58.2)	1.00	1.00	0.005**
Effect of insulin injection & skip brekfast on blood glucose Increase	8(34.8) 15(65.2)	1.333,(0.407-4.369)	3.601,(0.842-15.401)	0.084
Decrease	136(42.8) 182(57.2)	1.868,(0.799-4.368)	4.218,(1.470-12.105)	0.007**
Remain the same	6(19.4) 25(80.6)	0.600,(0.179-2.014)	0.817,(0.180-3.706)	0.0793
Not sure	8(28.6) 20(71.4)	1.00	1.00	
High blood glucose can be caused by regular exercise				
Yes	12(18.8)52(81.3)	0.300,(0.155-0.583)	0.190,(0.82-0.440)	
No	146(43.5)190(56.5)	1.00	1.00	0.000
Body mass index				
Under weight	14(56.0) 11(44.0)	0.424,(0.071-2.527)	0.105,(0.014-0.791)	0.029*
Normal	124(38.4) 199(61.6)	0.208,(0.041-0.045)	0.104,(0.018-0.604)	0.012*
Over weight	14(36.8) 30(68.2)	0.156,(0.028-0.87)	0.098,(0.015-0.632)	0.0158
Obesity	6(75.0) 2(25.0)	1.00	1.00	

DISCUSSION

In this institution-based cross-sectional study self-care practice and associated factors among individuals with DM at Saint Paulo's Hospital Millennium Medical collage have been assessed. The study found that (39.5%) of DM patients had good self-care practices. Educational status which has significant association with good self-care practices in our study is similar to the finding in Jordan [11]. The finding is also similar in the study conducted in Pakistan [12].

Moreover educational status, current treatment, family history of DM, member of diabetic association, knowing current FBS, effect of regular exercise on blood glucose and body mass index were significantly associated with self-care practice.

In this study, good self-care practice was lower than the study conducted in Australia (54%) [11], this might be due to differences in the source population, socio-economic and cultural difference, level of health care facility as well as the type of tools used to measure the self-care practice and treatment satisfaction.

Ethiopian General Hospital (63.1%) [7], Beneshanguel-gumez Region public hospital showed that (54.3%) [12], Eastern Ethiopia (45.9 %) [13], and Desse hospital (49%) [5], but higher than North West Ethiopia (28.4)% [14] and Tigray region (37.3%)[16]. This might be due to differences in the source population, socio-economic and cultural difference, level of health care facility as well as the type of tools used to measure the self-care practice and treatment satisfaction.

This finding is in line with a study conducted in Ethiopian general hospital [7] and Beneshanguel-gumez [12], Desse hospital [5] more than half of the study participants had poor diabetic knowledge. This may be due to the absence of regular diabetes education in the hospital and participants educational status more than half of the respondents had in the lower educational status.

With regard to adherence to medication 96.5% of patients were adherent but with regard to other practices there is negligence. The absence of regular exercise is about 74.5 % of the patients is one major problem observed; this is consistent with what I have been seen in studies done in Harari, Eastern Ethiopia and Jimma, South west Ethiopia where regular exercise was practiced by 31.1% and 48.5% respectively [15]. Regarding self-monitoring of blood glucose was practice only by 38.8 % of the patients. Comparable finding was obtained in the study done in Harari, Eastern Ethiopia [13]. They identified knowledge barrier as a barrier for not monitoring glucose level. Even if majority of respondents around 78.8% have their own glucometer at

home they cannot use properly due lack of knowledge it is not an unexpected result to have low percentage of people practicing that. As a result, most of the participants check their blood glucose only in hospitals during on their follow up visits.

In this finding respondents with lower educational status were less likely to had good self-care practice compared with those who had college and above educational status. This finding is similar to the study in North West Ethiopia [14], Addis Ababa [4]. Southwest Ethiopia [10]. And Southern India [15], this might be due to the fact that realizing and awareness of self-care practice and commitment for adhering to the self-care practices, improved with an increased level of education. Thus education on self-care practices has to be provided for all individuals with diabetes mellitus.

Those on insulin therapy were 3.375, (95 % CI: 1.352, 7.656) more likely to have good self-care practice than those who were on tablet. Comparable finding was found in Bahirdar 2.72, (95% CI: 1.01, 7.40) [16]. Addis Ababa 1.94, (95% CI: 1.31, 2.87) [9]. For insulin treatment, he relatively better self-care score among Insulin user in the present study could be these people may thave a diabetes which is uncontrolled by tables and may have serious health problem, may also have frequent contact with health care providers and they may also have better social support. There was a consistent finding in a study conducted in South Africa [13].

This finding reveal that those who had member of diabetic association were less likely to have good self-care practice than those did not have member of diabetic association. This finding was comparable with the study conducted in Gondar, northern Ethiopia where patients with member of diabetic association were more likely to have good self-care [17]. Individual who were knowing FBS were two times more likely to have good self-care practice than those who had not knowing their FBS. Similar to the finding in Debre birhan knowing FBS more likely to have good self-care [10].

This study reveal that patients who have family history of diabetes had less likely to have good self-care practice than those who did not have family history of DM. This study was similar to the finding in west Ethiopia were less likely to have good self-care practice [4].

CONCLUSION

Generally, more than half of respondents had low self-care practice. Several common characteristics of the study subjects that predicted poor self-care were identified. educational status, current treatment, family history of DM, member of diabetic association, effect of regular exercise on blood glucose and body mass index were less likely to have good self-care practice.

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